Female Faculty Members in Medical Schools: An Exploratory Analysis of the Impact of Perception of Job Satisfaction, Culture, Opportunities for Advancement, and Formal Mentoring on Intent to Stay

A dissertation presented to

the faculty of

The Patton College of Education of Ohio University

In partial fulfillment

of the requirements for the degree

Doctor of Philosophy

Maureen Doyle Scharff

April 2017

This dissertation titled

Female Faculty Members in Medical Schools: An Exploratory Analysis of the Impact of Perception of Job Satisfaction, Culture, Opportunities for Advancement, and Formal Mentoring on Intent to Stay

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Abstract

DOYLE SCHARFF, MAUREEN, Ph.D., April 2017, Higher Education

Female Faculty Members in Medical Schools: An Exploratory Analysis of the Impact of Perception of Job Satisfaction, Culture, Opportunities for Advancement, and Formal Mentoring on Intent to Stay

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Challenges with institutional fit, burnout, overall job satisfaction and retention of female faculty in medical schools continue to persist. Fueling much of this is the omnipresent disparities between male and female faculty in senior and leadership positions, leaving junior female faculty little hope for advancement. Faculty development programs that include formal mentoring which can influence perception of culture have been shown to improve job satisfaction of female faculty, thus improving retention of this important resource.

Descriptive and bivariate statistics were used to evaluate similarities and differences between female faculty members in medical schools who plan to stay employed at their current institution and those who plan to leave or are undecided. Personal and workplace status characteristics, as well as perception of job satisfaction, culture, career advancement opportunities, and participation in a formal mentoring program were the specific attributes studied. In addition, a binomial logistic regression was conducted to assess the predictive value of one or more of these variables with a goal of determining whether or not participation in a formal mentoring program can predict intent to stay.

Results of the analysis showed statistically significant differences between female faculty who intend to stay and those who plan to leave their institution or are undecided. The model, including perception of global job satisfaction, interpersonal culture (fit/collegiality) and equal opportunity for all faculty members, coupled with participation in a formal mentoring program, was statistically significant and was able to predict intent to stay.

Dedication

To Kent, Sam, Leap and Ellie.

Thank you for your love, your understanding, your patience, and your support.

I love you forever and always.

Acknowledgments

I would like to thank a number of people without whom I would have not even begun this journey, let alone finish it. First and foremost, I thank my parents, Phillip and Mary Ann Doyle. The work ethic and drive you instilled in me at a very young age has served me well over the years, and I'm now convinced that your love of learning has definitely rubbed off on me. My mentor, Dr. Robert Fox, who helped open my eyes and mind to the science of learning and change. If it wasn't for you, I would have never pursued this degree and over the past seven years, I have both blessed and cursed you, but mostly blessed. Thank you for challenging me and for believing in me.

To my classmates of Cohort XI, one of the best things to come out of this experience is that I had the chance to meet all of you. Those of you who finished in a more timely fashion were my inspiration. In particular I would like to thank Larisa, Rebecca, and Danny, my study buddies and support network. I know I would not have made it this far without your help and encouragement. I can't imagine having done this without your friendship, which is as important to me as this degree. To all of my CME Ph.D. friends, especially Jann, Jack and Don, who always reminded me that this was a rite of passage and if anyone could do it, I could.

To my professors and committee members for your guidance and wisdom, I thank you for helping me get through this process. Thank you in particular to Dr. Gordon Brooks who made statistics fun, but more importantly relatable. Your assistance with the methodology for this research was immeasurable; Dr. Cathy Trower and Dr. Valerie Conley, I thank you both for your support and expertise, but also your inspiration for

what it means to be a successful female faculty member and leader in the academic arena; and a big thank you to Dr. Yegan Pillay who stepped up when I needed help getting to the finish line. I will be forever grateful for your support, time and attention.

Last, but certainly not least, I thank my husband, partner, and best friend Kenton Grant Scharff. You shouldered the bulk of our family responsibilities so that I could dedicate the time necessary to pursue this degree. You were my sounding board and fellow problem-solver when I got stuck on something or needed advice on how to interpret certain data. When juggling a career, raising three kids (who play eight different sports), and working on this research project *all at the same time* was almost too much for me to bear, you wouldn't let me give up. I absolutely could not have done this without you. Thank you, Bud.

Table of Contents

Page

List of Tables

Page

List of Figures

Page

Chapter 1: Introduction

Current and past literature, as well as practice, has placed significant attention on the need to create developmental relationships for underrepresented groups of faculty within the medical school professoriate to ensure their retention, tenure, and promotion (Bunton, 2008). Female faculty members are underrepresented among the medical school professorate, enjoy fewer opportunities with respect to their career advancement, and attain positions of leadership less frequently than their male counterparts (Chesler & Chesler, 2002; Nonnemaker, 2000; Pololi, 2010; Jagsi et al, 2012). Understanding the unique needs of female faculty in an academic medical center, in particular the impact of formal mentoring on perception of culture, career advancement opportunities, job satisfaction, and intent to stay, can help to stop this important resource from leaving academic medicine, while at the same time build a foundation of female leaders who will serve as role models for future generations of medical students.

The gender gap in higher education, including academic medical centers, could be blamed for the perception of unfairness held by female faculty represented in a number of areas: fewer females hold senior faculty and administrative positions; fewer opportunities exist for junior faculty to advance in their careers; female faculty consistently cite an unsupportive environment as the reason for dissatisfaction in their work and job; and females have fewer mentors and considerably smaller networks than males, which may leave them feeling isolated, unappreciated, and more apt to leave their employer or academia altogether (Wasburn, 2007).

Much has been written on the value of female leaders and their contribution to the success of businesses (Selhat, 2010). This same recognition has taken place in higher education and is now a focus in the specific realm of medical schools where increasing the number of females in leadership positions is desired (AAMC, 2014b).

A rapidly changing healthcare environment, defined by increased access to care for all Americans (Glied & Ma, 2015, Kaiser Foundation, 2011; Pololi & Knight, 2005) and the need to develop a healthcare system that is more efficient and effective are all reasons for improving efforts to recruit, develop and retain the academic medical center's most valuable resource—faculty. Faculty members are needed to educate and train the physicians of the future, but the future holds a degree of uncertainty.

The Association of American Medical Colleges (AAMC) forecasts that by the year 2025, the United States will face a deficit of at least 125,000 physicians (AAMC, 2014a). Many in the world of medicine are calling this a crisis, and in 2006 the AAMC called for a 30% increase in the number of trained physicians in the U.S. by 2015 (Dill & Salzberg, 2008). This meant an increase of nearly 5,000 students for a total of approximately 21,500 entering students by 2015. The 2013 Medical School Enrollment Survey results projected that first-year medical school enrollment in 2018-2019 will reach 21,349—a 29.5% increase over the 2002–2003 level and just slight less than the 30% target. By 2008, more than 86% of existing medical schools had expanded the number of first-year medical students or planned to do so by 2013. In 2002, there were 125 accredited medical schools in the United States. By March 2014, the Liaison Committee on Medical Education (LCME) had granted some form of accreditation status

to an additional 16 medical schools, and then added another six schools in 2015 and 2016, for a total of 147 U.S. medical schools. Each of the first 16 new medical schools had enrolled its charter class by 2015 with the remaining six expected to open their doors by 2018 (AAMC, 2014a; LCME, 2016).

Raising enrollment caps for undergraduate medical education, increasing residency positions, and building new medical schools are reasonable responses to the predicted physician shortage (Dill & Salzberg, 2008). However, one question that many in academe are asking is, "Who will teach all of these new medical students?" According to the Association of Academic Health Centers, 70% of American academic health centers CEOs cite faculty shortages to be a problem (Glied & Ma, 2015; Moskowitz, 2007). Keeping existing faculty engaged and employed while sorting through strategies for recruiting new faculty should be high priorities for medical schools; however, concerns about medical school faculty retention suggest that new strategies may be needed. A study conducted by the University of Colorado, School of Medicine found that faculty discontent is on the rise. Although limited to a single institution, nearly 42% of the participants in the study had seriously considered leaving academia within the next 5 years (Lowenstein, Fernandez, & Crane, 2007). If the challenges that the University of Colorado has faced are present in even a portion of academic medical centers, it should be viewed as an imperative for leaders and administrators of medical schools across the country to begin to more intentionally assess faculty job satisfaction and implement strategies that address areas of deficiency.

Faculty recruitment and retention represent a sizeable portion of any institution of higher education's operating budget. The cost of attrition adds to these figures with the cost of faculty leaving academia representing an estimated 5% of an annual budget for a medical school (Pololi, Krupat, Civian, Ash, & Brennan, 2012). Multiple factors have been cited as reasons for faculty departures. In particular, increased responsibilities and demands on medical school faculty members have led to concerns about overall satisfaction, especially in areas of career development, support, and work/life balance, in part due to evidence linking job satisfaction and retention (AAMC, 2008). The American Association of Medical Colleges (2008, p. 1) notes in a past report that research shows "faculty are affected by their perceptions of what is valued and rewarded in their work environments, and that supportive environments can foster faculty satisfaction. Given the high costs of faculty turnover, it is important that medical school administrators understand the factors that contribute to the retention of faculty."

The current health care environment places added burdens and challenges on medical school faculty in the form of increased financial and clinical responsibilities. In addition to teaching, faculty members are often juggling research agendas and a clinical practice, both responsibilities that generate revenue for their institution. These challenges can often lead to high faculty turnover, and academic medical centers are recognizing the need for a robust set of support programs that assist and empower faculty. Ultimately, it is more cost effective to invest in support programs that focus on job satisfaction and engender institutional loyalty than to engage in constant recruitment and retraining (Wingard, Garman, & Reznik, 2004).

Support programs for faculty can include career planning, dedicated office space, work/life balance policies and programs, and mentoring. There have been several studies that highlight the value of mentoring and mentorship programs, particularly in areas like business, law and higher education. Research in higher education has shown that structured mentoring efforts are most effective when the pairing of senior faculty members with junior faculty is intentional, and established guidelines and expectations are part of the program (Bland, 2005).

Far fewer studies exist on the true value of mentoring in medical schools, although it is a widely held belief that having a mentor or participating in a mentoring program is an important, inherent part of the medical school culture (Fox & Corrice, 2010; Pololi & Knight, 2005). Potential benefits of mentoring in an academic setting include facilitating the recruitment, retention and advancement of faculty; socializing an individual into the culture of the organization; increasing collegiality and productivity; building relationships; and promoting professional growth (Lumpkin, 2011).

Several studies have been published on medical school faculty mentoring programs. Each targeted a single institution and implemented a formal mentoring program that evaluated different aspects of the program on faculty perception. All concluded that formal mentoring could lead to career advancement, job satisfaction, and retention (Pololi, Knight, Dennis, & Frankel, 2002; Tracy, Jagsi, Starr, & Tarbell, 2011; Wingard, Garman, & Reznik, 2004).

In 1995, a study was conducted targeting 24 randomly selected U.S. medical schools focusing on the effects of mentoring on junior faculty and their professional

development. Palepu et al. (1998) found that mentoring relationships are prevalent in medical schools and suggested that mentoring should be promoted to support junior faculty career growth and development. Their study found no difference between male and female faculty regarding the prevalence and quality of the mentor relationships (Palepu et al., 1998).

Today, however, many organizations are beginning to focus specifically on female faculty recruitment and retention, both in higher education and medical schools. The National Science Foundation (NSF) has implemented the ADVANCE program, aimed at "increasing the participation and advancement [of females] in academic science and engineering careers. ADVANCE focuses on ensuring that female faculty with earned STEM degrees consider academia as a viable and attractive career option" (NSF, 2013).

The Association of American Medical Colleges (AAMC) is also interested in female faculty in medical schools, as is evident in their ongoing benchmarking survey aimed at understanding the progress of female representation in a variety of positions within a medical school. In 2009, the AAMC created the group *Women in Medicine and Science* (WIMS), a formal AAMC professional development committee whose charge is advancing the comprehensive participation of females in all roles throughout academic medicine (Joliff, Leadley, Coakley, & Sloane, 2012). Although first-year medical school students are fairly evenly split based on gender, the 2015 class was comprised of 52% males and 48% females (AAMC, 2015), there is still a gap in representation between male and female faculty members especially in senior or leadership positions. Why does this disparity between male and female faculty in medical schools persist? Although there

is near parity among males and females in the junior faculty ranks, females rarely advance beyond these levels into leadership positions within the academic medical center. Whether full professor (21% female), department chair (15% of all clinical chairs in medical schools are female), or dean (16% female), the ratio of female to male leaders at today's medical schools is disproportionate and does not reflect the composition of the medical student population (AAMC, 2014b; Pingleton & McCann, 2011). These disparities mean that potential and current medical students lack female authority figures and role models (Pololi, 2010).

Some have argued that gender gaps are due to cultural issues. For example, the culture of higher education, including medical schools, is steeped in tradition where males typically enjoy the majority of leadership roles and females serve more regularly as junior faculty (AAMC, 2008). Others suggest that females lack the personal and professional relationships that are essential for advancement within the world of academic medicine (Pololi, 2010, p. 21). Both viewpoints are likely accurate, and both speak to the need to better understand what kind of support mechanisms and resources enable female faculty to reach their full potential within an academic medical center.

Palepu et al. (1998) evaluated the benefits of support programs for male and female faculty and showed that academic medical centers that facilitate a culture of guidance and career development help to foster retention of expert physician-teachers—the primary function of medical school faculty (Pololi et al., 2002). When studying career advancement and success for females, mentoring is often cited as an important factor (Pololi et al., 2002). This can be particularly important when differences between male

and female faculty are considered, such as communication styles (Hall & Sandler, 1984) and the potential barriers females face like the lack of female role models and quality mentors (Johnsrud, 1991). Evaluation of the presence or absence of formal mentoring, specifically targeting the unique needs of female faculty, and how this impacts career development and growth, job satisfaction, and retention has not been studied in depth but could prove to be a significant contributor to the advancement of female leaders within academic medicine and ultimately their retention, and forms the basis of this research.

Statement of the Problem

Challenges with burnout, retention, and attrition of senior female faculty in medical schools are on the rise (Bunton, 2008; Carr et al, 2015; Pololi, & Knight, 2005). Coupled with the projected faculty shortages predicted by the Association of American Medical Colleges (Dill & Salzberg, 2008), it is not surprising that medical school leaders had begun to reprioritize faculty development strategies and initiatives (Morahan, Gold, & Bickel, 2002). While prior research suggests that mentoring programs in medical schools can lead to retention among faculty, those data were institutionally-specific and may not be generalizable to the broader population of medical school faculty (Pololi, et al., 2002; Tracy, et al., 2011; Wingard, et al., 2004). A single study that looked for trends across academic medical centers, linking mentoring with career advancement, focused on junior faculty, but did not address nor evaluate the unique needs of female faculty in the same setting (Palepu et al, 1998). By focusing specifically on female faculty and formal mentoring, this research will assess the potential linkages between formal mentoring and

female faculty job satisfaction, perception of culture and perceived opportunities for career advancement and intent to stay.

Purpose of the Study

The purpose of this study was to examine the relationship between participation in formal mentoring and female medical school faculty's intent to stay at their current medical school. Pololi (2010) found that one of the greatest sources of female faculty discontent in academic medicine was an unsupportive, uncaring environment where decision makers and those in power positions appear superior and out of touch with faculty. Formal mentoring can help to bridge this gap, building strong relationships among leaders, subordinates and peers, and assist in career development strategies for female faculty.

The study conducted a secondary analysis of the 2009 AAMC-COACHE Medical School Faculty Job Satisfaction Survey data which collected demographic information on individual faculty, various aspects of their work, and overall satisfaction with various aspects of the medical school environment including climate, culture, collegiality, mentoring, promotion and benefits, among others. Despite being seven years old, the AAMC-COACHE data is still the most substantial, comprehensive medical school faculty-specific data set in existence. After 2009, AAMC continued the Faculty Forward survey, but subsequent data exist at the institutional level only.

The focus of the study was to assess the relationship between female faculty members' perception of organizational culture, job satisfaction and opportunities for career advancement relative to their intent to stay at their institution and determine

whether or not participation in formal mentoring can predict intent to stay among female medical school faculty.

Research Questions

In order to understand the relationship between participation in formal mentoring and female medical school faculty members' intent to stay at their institution, the following questions were examined:

1. What are the personal and workplace status characteristics of female faculty members who intend to stay at their medical school in the next two years, compared to those who intend to leave or those who do not know if they will leave?
2. What are the similarities and differences in perception of job satisfaction, organizational culture, opportunities for advancement, retention efforts and participation in formal mentoring between female faculty who intend to stay and female faculty who intend to leave or those who do not know if they will leave?
3. Which combination of the following variables is the strongest predictor of female faculty's intent to stay at their current institution: perceptions of job satisfaction, organizational culture, and opportunities for advancement?
4. Can female faculty's participation in formal mentoring, after controlling for perceptions of job satisfaction, organizational culture and opportunities for advancement, predict intent to stay at their current institution?

Conceptual Framework

This research utilizes a conceptual framework that views culture through the lens of organizational justice theory, and evaluates each variable's potential impact on one or more aspects of organizational justice. Specifically, how the distribution of resources occurs and how decisions are made with respect to resource availability and distribution, as well as perceived respect can have a positive or negative effect on different aspects of culture, job satisfaction, perceived career advancement opportunities, and desire to stay employed at one's academic institution.

Organizational justice theory, first introduced by Greenberg (1987), describes how an employee views the behavior of an organization, and, consequently, how this view shapes the employee's attitude and behavior toward the employer. Justice, or fairness, refers to the employee's perception of actions and decisions regarding promotions, distribution of resources, inclusion, among other organizational actions. Numerous research studies have linked organizational justice with job satisfaction, citizenship, and commitment of an organization to its employees (Colquitt, Conlon, Wesson, Porter, & Ng, 2001).

Over the past 40 years, organizational justice theory has evolved and is currently viewed as a "multidimensional construct" (Colquitt, et al., 2001, p. 437). The four tenets are distributive, procedural, interpersonal, and informational justice (Colquitt et al., 2001). For the purposes of this research three of these tenets, distributive, procedural and interpersonal will serve as the theoretical foundation. Distributive justice focuses on an employee's perception of how fairly resources are distributed across a cohort of peers,

and the outcomes of decisions made by the organization like who is promoted, who gets a raise, or who receives tenure (Adams, 1966). Procedural justice is defined as the "fairness of policies and procedures or methods used to make decisions" (Greenberg, 1990, p. 400). When individuals perceive that they are participants in the process or that the process is appropriately consistent, accurate, ethical, and without bias, then procedural justice may be achieved (Leventhal, 1977). Interpersonal justice represents if an individual perceives that they are treated with dignity and respect by their employer and colleagues. In the case of female faculty, distributive, procedural and interpersonal justice could all be influenced through each of the four factors that will be evaluated in this study. These four factors, perception of organizational culture, job satisfaction, opportunities for advancement, and participation in formal mentoring, were chosen as specific indicators that are relevant to distributive, procedural and interpersonal justice and how faculty members perceive fairness in resource access and allocation, policies that guide decision making and the level of respect they receive. Figure 1 illustrates the conceptual framework, the three tenets of organizational justice that will be evaluated (distributive, procedural and interpersonal justice perceptions), the potential interplay between each variable, coupled with participation in a formal mentoring program, which could ultimately impact a faculty members' decision to stay at their current medical school.

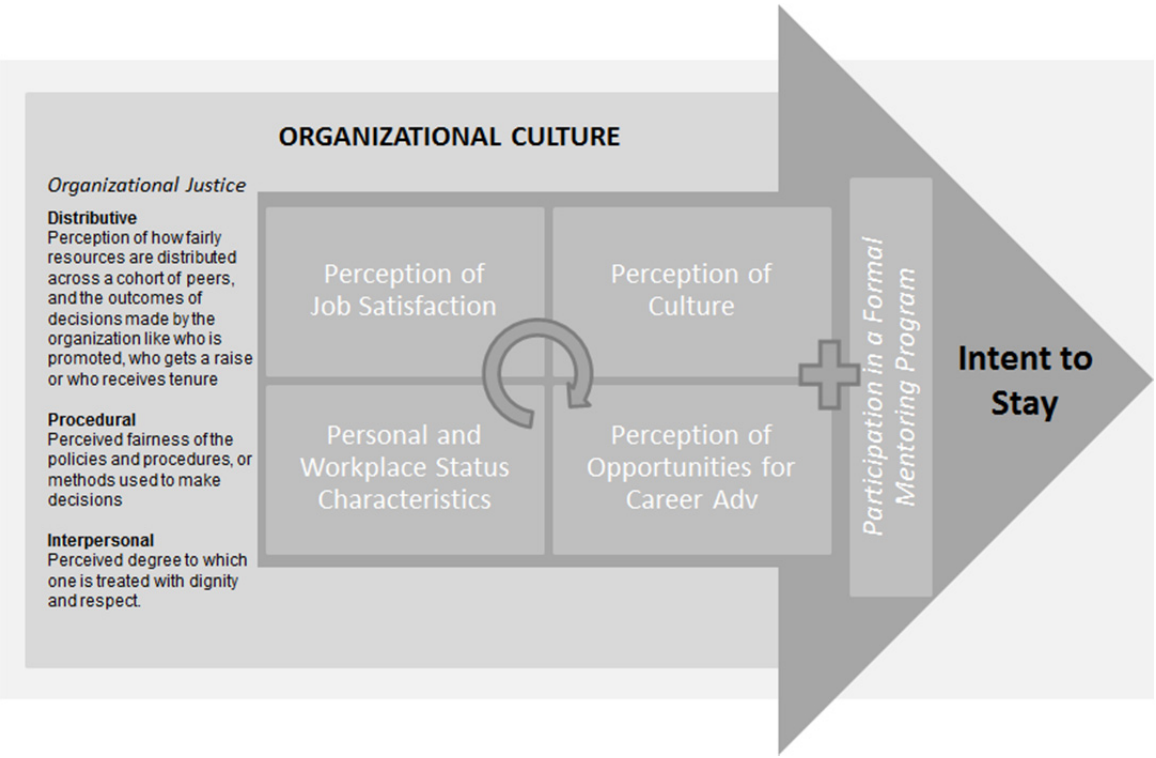

Figure 1. Perceptions of organizational culture defined by organizational justice, job satisfaction, career advancement opportunities, formal mentoring, and potential impact on intent to stay.

The fourth tenet of organizational justice theory, informational justice, will not be utilized as part of this research study primarily because of the lack of detailed insight and data regarding specificity of information and communications. Informational justice "relates to the adequacy of the explanations given in terms of their timeliness, specificity, and truthfulness" (Colquitt, et al., 2001, p.427). Limitations of the AAMC-COACHE survey instrument include lack of questions that ask about how information is communicated to the individual relative to decisions and outcomes (informational justice) (Bies & Moag, 1986). Assessment of answers to Question 51 (an open-ended question)

provided limited insight into the matter of communications. As such, this component of the conceptual framework was minimally evaluated and discussed in Chapter 4.

Definition of Key Terms

The following terms are used throughout this study:

Attrition: Commonly considered a reduction in faculty, usually as a result of resignation, retirement, or death.

COACHE (Collaborative on Academic Careers in Higher Education): provides the data set for this study. COACHE, administered by the Harvard Graduate School of Education, is a consortium of institutions participating in faculty job satisfaction surveys.

Culture: Culture is defined as what a group of individuals learn over time as they collectively solve problems both internal and external to the group (Schein, 1990). With respect to this research, culture is divided into interpersonal culture and institutional culture. The former includes a female faculty member's sense of fit within the organization and interpersonal relationships with peers, subordinates and leadership. Institutional culture represents the infrastructure, processes and norms that define the institution itself.

Formal mentoring program: In this study, a formal mentoring program is one where the institution takes an active role in their initiation and implementation. Processes and tools often accompany the program to enable both mentor and mentee full access to all available resources developed to ensure mentoring success that enhances career development (Douglass, 1997). The actual COACHE definition of a formal mentoring

program is whether or not a faculty member has been matched by the medical school or their department with a colleague to provide ongoing career guidance and advice.

Intent to stay: For the purposes of this study, intent to stay is faculty member's intent to stay at their institution.

Job satisfaction: Job satisfaction is defined as "the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs" (Spector, 1997, p. 2). This definition suggests job satisfaction is a general or global affective reaction that individuals hold about their job (Williams, 2004).

Junior faculty: For the purposes of this study, junior faculty members are defined as an Assistant Professor (including titles such as Research Assistant Professor, Clinical Assistant Professor, etc.)

Non-tenure-track faculty: Part-time and full-time faculty who do not hold tenured or tenure-track positions at a college or university. Non-tenure-track faculty positions are often tenure ineligible and are for fixed terms.

Retention: In this study, retention is a systematic effort by institutions to create and foster an environment that encourages faculty to remain employed by having policies and practices in place that address their diverse needs (Workforce Planning for Wisconsin State Government, 2005).

Senior faculty: Tenure-track or tenured faculty; those faculty holding positions of leadership or authority; administrative positions. COACHE defines senior faculty as those holding the following positions: Professor (including titles such as Research

Professor, Clinical Professor, etc.) and Associate Professor (including titles such as Research Associate Professor, Clinical Associate Professor, etc.).

Tenured faculty: Full-time faculty who have met the teaching, scholarship, service, and other criteria and requirements for tenure, as established by the institution, and have been awarded permanent or continuous employment at that institution.

Undergraduate medical education: The four-year period of medical education in a medical school. In the United States it follows the baccalaureate degree and precedes the granting of the MD.

Limitations of the Study

This study intended to assess the relationship between perceptions of organizational culture, job satisfaction, opportunities for advancement, and formal mentoring programs in a medical school setting and female faculty members' intent to stay. The potential limitations of the study include:

1. Although formal structure and processes are similar across most medical schools, cultures vary which may influence research subjects' personal interpretation of what formal mentoring is. The term *formal mentoring* is defined in the survey instrument; however, respondents could still apply their own view of mentoring when answering these questions.
2. Variations in the type and quality of formal mentoring and subsequent mentor-mentee relationship could have an impact on job satisfaction, career advancement, and intent to stay.

3. The combination of environment and faculty and how one another interact is as unique as the individual faculty members themselves, and therefore may make it difficult to conclude generalizability of the study outcomes.

Note that data and methodology study limitations can be found in Chapter 3.

Delimitations of the Study

The scope of this study included all female faculty surveyed through the AAMC-COACHE partnership (Bunton et al., 2012). Both junior and senior female faculty will be included in the analysis. This was not a study intended to compare male versus female faculty, therefore male faculty will not be included in the analysis. Countless research studies confirm the disparities between males and females in academia, including medical schools (Pololi, 2010). This study did not seek to explain these disparities, but to identify whether a resource like formal mentoring can be correlated to job satisfaction, career advancement, and/or retention specifically for female faculty in medicine. Additionally, as stated earlier, although the analysis included all females in the data set, regardless of race or ethnicity, separate analysis of minority female faculty was not conducted.

This study did not evaluate all of the data collected as a result of the AAMC-COACHE Medical School Faculty Job Satisfaction Survey (2009). The domains not included in this study are the following: Nature of Work, Collaboration, Feedback, Pay and Compensation, Benefits and Policies, Institutional Decision Making, Governance, and Operations. Those areas that were assessed include questions pertaining to organizational culture, job satisfaction, perceived career advancement opportunities, participation in formal mentoring, and intent to stay.

Significance of the Study

The current healthcare environment presents a set of challenges for academic institutions needing to solve the impending physician shortage. Recruiting and retaining high quality faculty is, and will continue to be, a high priority. Strategies to improve faculty job satisfaction will help facilitate retention. Understanding how support programs, specifically formal mentoring, can improve female faculty career development and retention could enable academic medical centers to evolve a male-dominated culture to one which values strong female role models for the medical students of the future.

By understanding the relationship between female faculty's perceptions of organizational culture, job satisfaction, opportunities for advancement, and participation in formal mentoring relative to their intent to stay, medical schools will potentially be able to:

1. Stop the depletion of one of their key resources by retaining talented female educators who can serve as role models to female medical students.
2. Facilitate a more inclusive, collegial, and supportive environment for female faculty.
3. Recognize the role that formal mentoring can play in mitigating intent to leave among female faculty.

Additionally, new medical schools can use these findings to provide a rationale for establishing mentoring programs with new cohorts of faculty which can be used as an incentive to attract high-quality faculty and to ensure future retention.

Organization of the Study

This research is reported in five chapters. Chapter One is an introduction to the research topic, including the purpose and the research questions to be answered. Chapter Two is a review of the literature on female faculty job satisfaction, career advancement, and retention, as well as a review of formal mentoring programs and their unique application to female faculty. Chapter Three includes an outline of the research design and the data analysis to be used. In Chapter Four, the researcher provides the results of the study's analysis, and in Chapter Five the researcher interprets the results and offers conclusions, and recommendations for further analysis.

Chapter 2: Literature Review

Overview

The following sections will review seminal research and literature that helps to frame this research project through the lens of each variable being studied. I begin with a review of the rich culture of medical schools in the United States, which has a long history of male domination and lends credence to the theory of organizational justice and female faculty's perception of fairness in the workplace.

Research on faculty job satisfaction, career advancement, and retention and intent to leave is also reviewed, with an emphasis on the considerable literature focusing on female faculty in academia and medical schools. Lastly, a comprehensive review of mentoring is evaluated including different types of mentoring models, the difference in how males and females engage in and value mentoring relationships, and the positive impact that engaging in formal mentoring can potentially have on female faculty job satisfaction, career advancement, and intent to stay employed in academic medicine.

Organizational Culture

Culture is defined as what a group of individuals learn over time as they collectively solve problems both internal and external to the group (Schein, 1990). Organizational culture is more complicated due to the ambiguous nature of organizations themselves. However, the simplest of explanations is that organizational culture can be described as the norms, common assumptions, rules (both explicit and implicit), and patterns of "perceiving, thinking, feeling and behaving" (Schein, 1990 p. 111) within the organization. Culture is both layered and complex. The layers are artifacts, espoused

values, and underlying assumptions pervasive within an organization. It's the underlying assumptions about males and females in the workplace, and in academic medical settings that are the drivers of behaviors and ultimately may explain inequities and differential outcomes. Culture should not be confused with the climate of an organization. They share similar qualities but are not the same. A simple way to distinguish between the two is to view culture as an organization's personality and climate as its attitude (Gruenert, 2008). The climate of an organization is flexible and relatively easy to change. Climate is the space that surrounds an organization. Culture is grounded in history, can take many years to evolve and is part of the organization itself (Gruenert, 2008). More often than not, climate measures are a proxy for culture. In the case of the AAMC-COACHE survey, climate is measured to try to understand culture (Trower, 2015), and this is why both terms are used in the survey instrument.

How males and females function relative to the culture of an organization has been assessed and researched significantly and is a direct reflection of societal norms and traditional roles. A social hierarchy has existed throughout time that favors males in leadership roles, relegating females to more submissive roles (Swope, 2012). Swope (2012) suggested that gender gaps, disparities, and an unfriendly, unwelcoming environment for female leaders can be traced back to ancient times and men's fear of women.

Research from the business world suggests that typical stereotypes that prevail throughout societies worldwide play a role in perceptions of female leadership abilities in the workplace. People associate characteristics of a good leader as similar or the same as

attributes they would use to describe males in general. This is not just a matter of descriptive but also prescriptive (belief in the roles males and females should play) characteristics (Eagly & Karau, 2002). A study by Prime, Carter, and Welbourne (2009, p. 31) classified "leadership behaviors as feminine (taking care—supporting, rewarding, mentoring, networking, consulting, team-building, inspiring) or masculine (taking charge—problem solving, influencing upward, delegating)" and asked 296 managers questions on leadership and organizational development issues. It was found that both males and females used gender as a "reliable predictor of leadership effectiveness" (2009, p. 44). This trend was even greater among females even though empirical research would suggest there is actually very little difference in how males and females actually lead (Eagly, Johannesen-Schmidt, & van Engen, 2003).

Both males and females at all levels of leadership allow gender-based stereotypes and perceptions to shape their opinions of leadership performance (Prime, et al., 2009, p. 44). Implications for the workplace with respect to stereotypes include the notion that females perceive female leaders favorably when they exhibit "female-like" behaviors but males do not. In male-dominated fields/environments, especially at the leadership level, this could have an impact on females and their ability to advance and succeed in the workplace. Ultimately, stereotyping and the resulting discrimination of females in the workplace, both overt and subtle, are real contributors to the gender-gap in leadership in business (Catalyst, 2003), and the same can likely be said for female faculty in academia.

Organizational Culture and Academe

Over thirty years ago, Hall and Sandler (1984) concluded that academia represented a "chilly climate" for females, in spite of the research, evidence and efforts of the private, business sector focusing on affirmative action strategies for females and minorities. Although focused on female students, their assessment of the "everyday inequities in the campus environment" (Hall & Sandler, 1984, p. 4) was as relevant to faculty as it was to students. Looking at both overt and subtle behaviors that impact females in all aspects of academia, they found evidence of disparaging females as a class of people generally, both intellectually and professionally. Examples of micro-aggressions include ignoring or giving little credence to females' questions or contributions to a conversation (versus males), seeking opinions and suggestions from males more than females, acting surprised when females have demanding/challenging career goals, and patronization of females (as if they need help to do their job or think for themselves). The notion of a chilly climate (or exclusion) was also evaluated using organizational justice as an independent variable by Maranto and Griffin (2011). The study found that both males (258) and females (108) perception of procedural fairness is a significant factor in increasing the perception of inclusiveness. Additionally, Maranto and Griffin (2011) found that the perception of gender equity improves both males and females sense of inclusiveness. Many theories exist to explain the gender gap and resulting hostile environment experienced by females in academe. The prevalence of female faculty in the "soft" or pure sciences could potentially be attributed to the

connection between the “hard” or applied sciences and industrial or military influence and research which historically was male dominated (Kulis, Sicotte, & Collins, 2002).

The deficits theory or model considers deficits in the scientific environment prevalent in higher education (Sonnert & Holton, 1996). In this culture, both formal and informal structures exist that include barriers for female faculty regarding opportunities and career success like obtaining tenure and leadership positions within the organization. When the perceived climate of an institution condones sexual harassment and gender discrimination (negative experiences), negative work outcomes can be expected (Settles, Cortina, Malley & Stewart, 2006, p. 53).

Sadly, many female faculty members report obstacles to a successful career even after tenure is obtained. “Old boys” networks (Etzkowitz & Kemelgor, 2001, p. 241) are strong and foundational, where leadership is distant and disinterested in the obstacles that female students and faculty face. Isolation is often a predominant theme, manifested through lack of collegial support (readily available to male colleagues) and being cut-off from information that is disseminated through informal channels (also readily available and inclusive of male colleagues).

There are opportunities to mitigate the negative consequences of the traditional culture of academe in support of female faculty. Faculty as an asset, institutional vitality, and institutional mission are concepts that are intrinsically connected (Clark, Corcoran, & Lewis, 1986). Caring for the institutional environment and supporting faculty development should be core responsibilities of an institution. Problems of morale, job satisfaction, and productivity can be traced back to an organization’s commitment to

faculty development needs. Therefore, more attention needs to be given to how the academic organization can influence faculty development needs including socialization among faculty members, structuring a career pathway, and faculty vitality (Clark et al., 1986). Most importantly, it is unlikely that there is a single solution or one-size-fits-all program that would work for all of academe. The combination of environment and faculty and how one another interact is as unique as the individual faculty members themselves.

A recent trend in higher education gives hope to the idea that organizational cultures can change and transform to the benefit of its female participants. The National Science Foundation has established a program called ADVANCE (Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers) offering grants to institutions targeting programs for female faculty in STEM (science, technology, engineering and mathematics) fields. The program goal is to increase the number of females who pursue an academic career in STEM and retain those who engage by becoming more inclusive and responsive to the unique needs of female faculty (National Science Foundation, 2013).

Facilitating factors of the ADVANCE program specifically address climate and culture to enhance organizational outcome. Issues addressed include satisfaction, performance, and retention. Additionally, education and training of male faculty to be more culturally aware and sensitive to the needs of females is encouraged. Efforts to support a more collegial environment and increasing leadership and departmental

awareness of diversity and inclusion strategies are also part of the program (NSF, 2013; Bilimoria, Joy, & Liang, 2008).

Organizational Culture and Medical Schools

There is little difference between the culture females experience in academe, especially in STEM fields, and that experienced by female faculty in medical schools or academic medical centers. In both settings, female faculty are more likely to leave academe than males due to organizational climate or culture, and those that do stay are far less likely to advance to senior leadership positions (Pololi, Conrad, Knight, & Carr, 2009; Bickel, Wara, Atkinson, 2002; Smart, 1990).

Kulis et al. (2002) spoke of a "leaking pipeline" when it comes to female faculty and their departure from academic institutions and blames, in part, various components of organizational structure like climate and policies which favor males over females. This is true for female faculty in medical schools as well.

A study by Shollen, Bland, Finstad, & Taylor (2009) looked at the climate of an organization and how different aspects affect female faculty at one medical school. An electronic survey was sent to all full-time faculty at the University of Minnesota Medical School. The number of all eligible faculty who responded was 354 (57%). Analysis of the data included descriptive statistics (means, percentages), comparisons among subgroups using chi-square, and one-way ANOVA for continuous variables. Results of their research found statistically significant differences between the perceptions of females and males in a number of areas related to organizational climate: policies related to family leave, barriers to job satisfaction, career goals and planning, gender equity, and

discrimination. Of note, on all items related to how faculty were treated by leadership and peers, female faculty perceived more bias against females than male faculty. Additionally, although few faculty members reported having seen or been discriminated against, females perceived more gender discrimination than males in the following areas: promotion, salary, and resource distribution. Family-life and work-life factors contribute to female faculty job satisfaction and their desire to stay in academe. Generally, these factors reflect the challenges that females face in an organizational culture that allows an undercurrent of gender bias and discrimination (Shollen et al., 2009).

A larger study looked at male and female faculty perceptions and experiences within medical schools (Pololi et al., 2009). Pololi et al. conducted a qualitative study across five representative medical schools geographically distributed across the United States in the North, South, East, West, and Midwest. A total of 96 faculty, diverse in specialty and career length, participated in semi-structured interviews. An inductive and data-driven analysis process helped to evaluate interview data. Relationships with and between various stakeholders in the medical school environment emerged as a theme. Positive relationships noted were with patients and learners (from a faculty perspective). Negative relationships among faculty and leaders were expressed as disconnection, competition and individualism, depreciation, disrespect, and erosion of trust. These cultural and organizational issues can have a lasting and substantial impact on female faculty advancement (Bickel, 2002). Negative aspects of the culture at medical schools are reflected in feelings of isolation and lack of supportive relationships. In addition, the

highly competitive nature and environment of academic medicine can offer little incentive to collaborate and form collegial relationships.

A culture of finding "fault" was prevalent, versus one of appreciation and support. Also present was a feeling that the institution is disloyal to faculty when grant funding disappears, instead of recognizing all of the good work that has been done over the years. Lack of trust of colleagues and leadership was commonplace among interviewees (Pololi, et al., 2009).

Organizational Justice Theory

Organizational justice theory seeks to explain how an employee perceives the behavior of an organization and consequently how this view shapes the employee's attitude and behavior toward the employer. Fundamental to this theory is the construct of fairness: fairness in how resources are distributed and the outcomes of decisions and fairness in how decisions are made (Adams, 1966; Greenberg, 1990). Research suggests organizational theory can help explain an employee's job satisfaction, their view of citizenship within the organization, and organizational commitment (Colquitt et al., 2001).

Using organizational justice theory as a foundation, it is not difficult to understand how the perceptions of fairness by females in the workplace can affect things like perception of organizational culture, job satisfaction, perceived opportunities for career advancement, and even retention. In academic medical centers, resources important to faculty include pay, administrative support, teaching loads, office space, and faculty development opportunities (e.g., a formal mentoring program) (AAMC, 2014b).

Additionally, how decisions are made and whether or not females have a voice in those decisions are another dimension of organizational justice.

Although the literature is rich in studies that look at the relationship between organizational justice theory and job satisfaction, few studies exist that apply this theory to academic faculty, and even less focus on females. Fitzgerald, Mahony, Crawford, and Hnat (2014) looked at distributive justice in a higher education setting from the perspective of administrators. The study was focused on how decisions were made relative to resource distribution. Deans and department chairs from public and private institutions in a single Midwestern state were surveyed and 126 administrators participated in the study (a response rate of 10.52%). The survey included questions that looked at demographics, characteristics, compensation practices, resource allocation, organizational commitment, job satisfaction, and retention although the researchers chose to analyze only three of these sections: demographics, compensation, and resource allocation. A series of ANOVAs were conducted to analyze the perception of fairness using various resource distribution and compensation methods. The differences between fairness and likelihood were significant for most measures and the results showed that from the administrators' standpoint, distribution of resources equally among all faculty, $F(5.61, 637.76)$ 25.63, $p<.01$, or based on need, $F(5.64, 614.83)$ 24.36, $p<.01$ were the least fair options when making allocation decisions. Those principles deemed most fair were related to quality of teaching and production levels. An interesting disconnect between concept and reality is the notion that the administrators admitted that although

they consider quality of teaching and production levels the fairest measure upon which to base resource allocation decisions, these are not always used. (Fitzgerald et al., 2014).

The same study found no difference between respondents based on rank or position, but did find differences based on the Carnegie classification of their institution. Not surprisingly, respondents from research institutions prioritized quantity and quality of publications and research funding when making decisions about compensation and resource distribution. Differences between male and female administrators were not assessed, nor was there a discussion on the impact of decisions on male faculty versus female faculty (Fitzgerald et al., 2014). Generally, the results of this study highlight an important perspective on how administrators make decisions about resource allocation. How these decisions could be perceived by female faculty, especially when resources are not distributed equally among faculty, nor based on need, could potentially impact perceptions of culture, job satisfaction, opportunities for advancement, and retention.

Building upon the earlier research conducted by Fitzgerald et al. (2014), Hnat et al. (2014) conducted a smaller, qualitative study where nine deans across multiple disciplines at the same higher education institution were interviewed regarding distributive justice and equity, or how resources are distributed among faculty, and across departments. As a result of these semi-structured interviews, five sub-principles of equity emerged: publications, grants, teaching, students, and service. Three of these principles, quality of publications, quality of teaching, and quality service, are highly subjective sources of data which could create issues for faculty regarding perception of fairness in how resources are allocated. Although the study did not single out females, either as a

study participant (although one dean was referenced as female) or in the context of decision making for female faculty, challenges with an unsupportive environment—work overload, and lack of networking within the profession—(Hnat et al. (2014) could all contribute to being disadvantaged when resource distribution decisions are made based on these principles. This could lead to a perception that resources are not fairly distributed therefore negatively affecting job satisfaction and retention.

One of the more relevant studies to this current research from an organizational justice perspective was conducted by Lawrence, Celis, and Ott (2014). Asking the question "Is the tenure process fair?" Lawrence et al. (2014) noted that pre-tenured faculty who view the tenure process to be unfair typically depart prior to the review process, and this is especially true for female and minority faculty (Lawrence et al., 2014, p. 156). Using data from the 2005 AAMC-COACHE Medical School Faculty Job Satisfaction Survey, the researchers employed structural equation modeling to determine how workplace experiences affect perceived fairness regarding equity of decision making about tenure.

The study evaluated responses from 2,247 pre-tenured assistant professors from 21 research institutions. The dependent variable, which was factor-derived, was called "perceived fairness." The independent variables representing working conditions included autonomy, collegiality, effectiveness of feedback, effectiveness of mentoring, resources, and equitable treatment of junior faculty. Structural equation modeling was used to analyze the data, evaluating impact of each independent variable on perceived fairness. The results concluded that perceived working conditions directly influence

beliefs of fairness regarding the tenure process. Fair and equitable treatment of junior faculty was the strongest relationship identified. In addition, perceived fairness was modestly impacted by mentoring effectiveness and independence in the workplace (Lawrence et al., 2014).

Female perception was that the tenure process was not equitable and they felt that junior faculty members were not treated equally. Of particular note, faculty working in the hard sciences (similar setting and culture to a medical school) felt that effective mentoring and perceptions of equitable treatment strengthened trust in the decision making of the tenure process. Additionally, effects of race were mediated by opinions of autonomy and mentoring effectiveness but do not directly influence perceptions of tenure fairness (Lawrence et al., 2014).

Job Satisfaction

According to Schuster and Finkelstein (2006, p. 148), faculty job satisfaction declined over the last half of the 20th Century across all of higher education. Studies at the time were inconclusive with respect to female faculty, with some showing female job satisfaction greater than their male counterparts, and others resulting in just the opposite. Overall, however, job satisfaction for all faculty at all institution types has declined with the number of faculty reporting that they were somewhat or very dissatisfied nearly doubling from 1969 to 1998 (Schuster & Finkelstein 2006, p. 149). Unfortunately, things have not improved significantly in the first part of the 21st Century which is likely why research on academic faculty job satisfaction continues (Bunton, et al., 2012).

Ambrose, Huston, and Norman (2005) studied faculty satisfaction at a single higher education institution using qualitative methodology. They found that dissatisfaction could result in more than just the departure of a single faculty member. Indeed, one dissatisfied or disengaged senior faculty member, even a productive one, can have a devastating effect on an entire academic department at a college or university (Ambrose et al., 2005; Huston & Ambrose, 2007). Results of the study support common reasons for faculty being less than satisfied including compensation, collegiality, mentoring, promotion, and leadership.

Effective mentoring, or lack thereof, was cited as a "primary source of satisfaction" and dissatisfaction respectively. However, mentoring on setting career goals is not enough. Knowing how to "survive and thrive" (Ambrose et al., 2005, p. 816) while moving through their careers and obtaining these goals is equally important. Their research (Ambrose et al, 2005) uncovered several problems: 39% of faculty interviewed did not feel supported by colleagues nor their institution, junior and senior faculty alike. Most concerning was the identified "levels of discontent expressed by senior faculty" (Ambrose et al., 2005, p. 826). Successful faculty are perhaps the one group that academic leadership should be paying closest attention to, not only from a retention standpoint but also from the kind of impact their dissatisfaction can have on colleagues in their department and beyond.

As noted earlier, perception of job satisfaction is indistinct between male and female faculty; however, the factors tied to job satisfaction may be different for females, especially for those who "assert the importance of social justice or feminism in their

work" (Ropers-Huilman, 2000, p. 21-22) who may find the culture of academia unfair and unjust. Colleagues, collaborators, and connections, including those with similar backgrounds and interests, are important to job satisfaction in females (Astin & Davis, 1993). To promote greater effectiveness of faculty development strategies, institutions should consider motivational differences between males and females. An understanding of what motivates faculty members and which aspects of organizational culture are prioritized by males and females can contribute to a more successful outcome for faculty development. Mentoring and various aspects of mentoring all contribute to job satisfaction (Ragins & Cotton, 1999). Female faculty members are more distrustful of organizational decision makers than male faculty (Driscoll, 2009). Male faculty, with a natural affinity to male leadership (and vice versa) may have more access to resources which could have an impact on job satisfaction. Mentoring and leadership can indeed impact job satisfaction for males and females. In 2006, Bilimoria et al., conducted a study at a single higher education institution. A total of two-hundred and forty-eight faculty members completed a survey which intended to understand how faculty construct job satisfaction. The analysis examined the relationships of each variable including effective leadership and mentoring at the institutional level, support and resources, job satisfaction, rank, and gender. The researchers found that both males' and females' perceived job satisfaction is influenced by their leadership and the mentoring they receive. However, this influence is mediated by support and resources. Females weighted relational supports higher that resources, and males weighted them equally. Bilimoria et al. (2006) conclude that the quality of interactions with colleagues and coworkers, as well as effective

leadership and mentoring, are functions of relational supports and therefore directly tied to female job satisfaction.

Faculty perception of work life significantly affects satisfaction with their job and morale (Johnsrud & Heck, 1998). Female perceptions of overload influence their level of satisfaction. Being the token female on committees and other responsibilities like heavier teaching loads could be very real contributors to work overload (Sonnert & Holton, 1996). Mentoring (access to and engagement in being more difficult for females than males) is another important aspect of job satisfaction. Department chairs serve as an important source of mentoring, yet females may be less positive regarding their relationship with chairs than males (Smith & Plant, 1982). A study of female faculty at a single university looked at both tenured and non-tenured faculty (August & Waltman, 2004, p.187). They found that "one of the most significant predictors of career [job] satisfaction for all [females studied] were variables in the environmental conditions" including issues with the departmental climate.

In another study, the notion of institutional fit with respect to interests and satisfaction, and its influence on job satisfaction, was evaluated (Olsen, Maple & Stage, 1995). Recognition and support by the university was a powerful predictor of job satisfaction. Anecdotal feedback obtained from female faculty highlighted the sense of invisibility where suggestions and ideas are put forth to a predominantly male committee by a female faculty yet virtually ignored but then when a man makes the same suggestion later on in the discussion, it is recognized and discussed.

Job satisfaction factors and influencers for female faculty in medical schools differ little from their counterparts throughout the rest of higher education. Nyquist et al. (2000) studied two different faculty types within a medical school: basic science and clinical. Basic science faculty members have positions outside of the medical school and teach medical students non-clinical courses during the first two years of undergraduate medical training. Clinical faculty members are typically physicians (MDs) who work within the academic medical center or teaching hospital and teach the clinical aspects of medicine.

Three categories of factors that affect faculty satisfaction were identified: organizational, job-related, and personal. Of note in the institutional category was the perceived environment which includes resources, advancement opportunities, mentoring, and obstacles based on gender. It also includes the following factors: perceptions of appreciation and respect, collegial relationships, a voice, and influence on the strategic direction of the department/organization. Job satisfaction can be affected when these factors are positively perceived (Probst, Baxley, Schell, Cleghorn, & Bogdewic, 1998) or can lead to dissatisfaction when negatively perceived (Levinson, Kaufman & Bickel, 1993).

The study suggests clear perceptions of differences in organizational environment between males and females (Nyquist et al., 2000). Negative feelings were tied to dissatisfaction among female faculty. Females reported receiving less institutional support, fewer opportunities for success, and barriers to success like lack of effective mentoring, obstacles to promotion based on gender, lack of networking opportunities, and

fewer collaborative opportunities. “Women felt much more isolated than men, less welcomed, less supported and more often denigrated by male colleagues” (Nyquist et al., 2000, p.39).

Career Advancement

Looking at career patterns of both males and females, Sonnert and Holton (1996) suggested that two models can explain the gender gap and disparities. The deficit model suggests that formal and informal mechanisms (i.e., legal, political, and social) exist within an institution that exclude females, therefore providing fewer chances and opportunities to advance in their career which lead to poor outcomes (fewer senior female faculty). The difference model suggests that there are inherent psychosocial aspects (i.e., behavior, outlook, and goals) of female versus male that form the basis for differences between the genders, leading to disparities in career advancement.

The deficit model provides a plausible explanation for the differences between females and males and how quickly, if at all, they advance in their careers. Although the number of females entering academia is increasing, significantly less are advancing to senior faculty levels compared to their male counterparts. This large disparity could have long-term negative effects on the number of females graduating from medical schools who choose not to stay in academia due to lack of female role models and mentors (Nonnemaker, 2000).

Over the past decade the American Association of Medical Colleges and a member sub-organization called Women in Medicine and Science (WIMS) have studied the demographics of women in leadership positions in U.S. medical schools (AAMC,

2014b) and although some progress has been made, the gap between males and females in senior leadership roles is still high. For example, in a study that evaluated promotions and salaries for female versus male medical school faculty, Ash et al. (2004) found that males (66%) are more likely than females (47%) to be full professors than in similar roles, given similar backgrounds (15-19 years' seniority) and credentials.

Surprisingly, Ash et al., (2004) also found that compared to males, once females reached a certain point in their academic career (20-24 years' seniority), each additional year is of less value in improving their chances of becoming a full professor. Equity in compensation was also found. Although this gap has narrowed slightly over the years, females still earn as much as 15% less than their male counterparts with the same seniority. Clearly, considerable disparities in rank and advancement exist for senior female faculty.

Evidence does exist that an intentional strategy specifically aimed at advancing the careers of females in medical schools can in fact increases the number of female leaders. Executive Leadership in Academic Medicine (ELAM) is a targeted leadership development program aimed at advancing females into leadership positions in academic medicine. Education, a personal leadership assessment, coaching, networking, and mentoring are all included in the program. From 1995 to 2000, ELAM fellows accounted for a number of increases in senior positions: Deanships increased by 2 (0 to 2) and Associate Deans increased by four (13 to 17). Department Chairs increased by six (10 to 16) and Full Professors increased by 20 (34 to 54). A key take-away from the success of ELAM is the power behind a more intentional approach to training and development

specifically aimed at females (Richman et al., 2001). More than just a training program, ELAM supports a culture shift and mindset that helps organizations understand the unique skills and perspectives that female leaders can offer and implements policies and strategies that ensure equal access to leadership positions and career advancement opportunities while helping to eliminate the unconscious bias toward females which is so ingrained in the medical school, and academia as a whole, culture (Richman et al., 2001).

Retention and Intent to Stay or Leave

Employee retention and the concept of adopting strategies to keep valued employees have been studied extensively in the business and academic arenas. Employee turnover is an expected part of running a business or a higher education institution and a natural progression for employees who want to advance in their careers. How can administrators and human resource managers ensure that the most highly valued employees stay? The key is to better understand why good employees leave in the first place.

Organizational culture and how the employee perceives it can impact employee retention. Sheridan (1992) studied employee retention at six international accounting firms all located in the same city. He found that the firms whose culture emphasized values of interpersonal relationships, teamwork, and respect for people had less turnover than those firms who were perceived to not embrace or prioritize these same values. The consequences of a good fit between employee and employer cannot be underestimated, and the nature of an organization's culture is sure to contribute to perception of this fit. This is why academic institutions, many of whom boast of their longevity and storied

tradition, must take employee retention seriously and appreciate the influence culture can have on a faculty member's intent to stay or leave.

The mere fact that many academic institutions have been in existence for decades, and in some cases more than a century, with defined roles and responsibilities of faculty that are as old as the institutions themselves has been reason enough to study faculty retention, assessing different variables like job satisfaction and morale that may impact a desire to stay or leave. Evaluating different perceptions of work life and how they affect job satisfaction and/or morale, in turn leading to intent to leave, is a common construct for research. Smart (1990) used three categories to describe faculty turnover or intent to leave: individual characteristics, reputation and fit, and organization and career satisfaction. Subsequently, many researchers have used these categories to influence the construct of their studies.

A study by Johnsrud and Rosser (2002) found that two important predictors of faculty turnover or intent to leave were lack of time and a lack of collegiality at their institution. When evaluating perceptions of overall work life, they found that morale and intent to leave are strongly correlated. Understanding why faculty members leave is important for the development of a successful retention strategy. Overall morale is an important aspect of faculty perception that administrators should pay close attention to. For many faculty, areas most commonly cited as reasons for leaving include stress (Barnes, Agago & Coombs, 1998); satisfaction; faculty productivity; and fit (Nyquist, 2000) meaning the extent faculty feels their work/role is valued by the institution; peers; and alignment with values and priorities (Ryan, Healy, & Sullivan, 2012). Indeed, it is

often the combination of faculty work-life issues, personal characteristics, and satisfaction that influences the decision to leave their job or academia (Rosser, 2004).

There are a number of influencers and barriers that can lead to faculty departures. As stated earlier, some departure is a natural part of professional advancement and can even be welcomed by leadership to maintain vitality and new thinking within the ranks of the professorate (Conley, 2001). A variety of reasons can influence a faculty member's decision to leave including institutional policies and actions. Zhou and Volkwein (2004) found that these reasons can be different for tenured versus non-tenured faculty. Length of employment and seniority is the highest predictor of retention. For tenured faculty, the more senior a person is, the less likely they are to leave; satisfaction is another predictor, first with compensation, next with job security and resources. The third highest predictor is the value of extrinsic rewards which include perceptions like opportunities for advancement.

Non-tenured faculty members leave for different reasons based on their rank within a department. Senior faculty who are non-tenured are less secure in their job and are more likely to leave than their tenured counterparts. This is also true of faculty without a doctorate. Non-tenured faculty members with high teaching productivity and a perceived "fit" or role in the department are less likely to leave (Zhou &Volkwein, 2004). With or without tenure, when senior faculty members lack a sense of community at their workplace, they are more apt to leave their institution. Additionally, these same senior faculty take issue with and have decreased job satisfaction when either they, or their more

junior colleagues, are not treated fairly when it comes to allocation of resources (Gappa, Austin, & Trice, 2007).

Diving deeper into the root causes of faculty turnover, Amey (1996) asked whether or not circumstances for leaving are purely individual or can they be attributed to the institution? In other words, what barriers might exist at the institutional level that may lead to a faculty member's decision to leave? After analyzing secondary data on reasons for faculty departure, Amey found that salary and retirement ranked first and second as reasons for leaving, but the third-highest ranked, was *Professional Advancement* which included promotion and tenure, advancement to leadership role, and promotion opportunities in the private sector.

When looking specifically at female faculty across academe, and including those working in the STEM disciplines, reasons for leaving include serious concerns regarding interpersonal dynamics, collaboration, and colleague support (Amey, 1996, p. 29). Professional climate, including lack of structural and policy support, career advancement, and free expression (Xu, 2008, Amey, 1996) can all be more important to females than salary adjustments.

Since faculty are an academic medical center's most critical resource and are a national investment (AAMC, 2016), it follows that strategies should be in place to protect this investment (Pololi, Krupat, Civian, Ash, & Brennan, 2012). There are nearly 160,000 faculty members in U.S. medical schools today (AAMC, 2016b) and the cost of replacing one clinical faculty member is estimated to be between $155,000 and $559,000 (Schloss,

2009) and rising. The cost of medical school faculty turnover represents approximately 5% of a school's annual operating budget.

Several studies that evaluated medical school faculty intent to leave have reported high dissatisfaction among both male and female faculty. Lowenstein, Fernandez, and Crane (2007) studied faculty at one medical school and evaluated prevalence and predictors of intent to leave (which they called sources of discontent). Of the faculty surveyed, 42% were seriously considering leaving academia and 40% reported that their career was not advancing at an acceptable rate. Additionally, although not a "top ten" predictor, the lack of mentoring was a persistent theme among faculty and was "strongly associated with intent to leave" (2007, p.8).

Pololi et al. (2012) supported the earlier work by Lowenstein, Fernandez, and Crane (2007) when they found that 43% of medical school faculty intended to leave their school. This group could be subdivided into those who planned to leave their school, but not academe (14%) or leave academe altogether (21%) due to dissatisfaction of some kind. The rest were leaving for personal reasons (5%) or retiring (2%). For faculty leaving due to dissatisfaction, the reasons included issues of isolation, lack of engagement, perceptions of self-efficacy, misalignment of values, and lack of institutional support of faculty. Dissatisfied younger faculty were more likely to express intent to leave than their older counterparts and, not surprisingly, faculty with a desire to move into a leadership role were more likely to leave academia altogether.

Isolation and the feeling of invisibility among faculty correlate with intent to leave (Pololi et al, 2012), as does the perceived absence of an academic community

(Lowenstein et al., 2007). These findings support years of organizational justice research where perceptions by employees of justice and fairness can relate to job satisfaction, trust, commitment, and retention.

Understanding why females choose a career in academic medicine in the first place can help inform strategies to retain them. Among these reasons, teaching and clinical practice rank the highest in addition to fit (they could see themselves in academic medicine versus private or group practice); an intellectual environment; and the people that influenced their early years in medical school like mentors, role models, colleagues, and family members (Borges, Navarro, & Grover, 2012). Once there, however, female faculty can quickly become disenfranchised with academic medicine. Attrition of female faculty in medical schools is a serious problem (Borges, Navarro, & Grover, 2012).

Cropsey et al. (2008) studied faculty at 160 medical schools who left their institution in 2005. They found that female faculty left because of issues tied to leadership, advancement opportunities, compensation, and personal life. Interestingly, males left due to lack of advancement opportunities, inadequate compensation, and insufficient faculty development and mentoring opportunities. They also found that male faculty advanced more quickly in their careers and were paid more than their female counterparts. Ultimately, females were significantly less likely to be satisfied (rated good to excellent) with their career advancement and promotion rate than men.

Mentoring

The term mentor is typically used to describe a teacher, advisor, or sponsor (Levinson et al, 1978). Mentoring is typically a relationship between a more senior,

seasoned, and experienced person, known as the mentor, and a protégé or mentee, with the express purpose of enhancing the mentee's professional development and career advancement (Fagenson, 1989; Kram, 1988; Paglis, Green, & Bauer, 2006; Savage, Karp, & Logue, 2004). A mentor relationship is less about the formal role of mentor or mentee, but defined more by the "character of the relationship and the functions it serves" (Levinson et al, 1978, p. 98). A mentor can be of the same or opposite gender. Both scenarios provide for a different, yet valuable experience. Generally speaking, females are engaged in mentor relationships far less than males, and female mentors are scarcer. Females who are willing to serve as mentors, especially those in business, have less time to devote to the task since they themselves struggle to survive in a male-dominated world (Levinson et al, 1978).

Kram (1988) suggested the construct of mentoring can be described as two aspects: career and psychosocial. Career mentoring involves coaching and support of career advancement strategies for the protégé through dialog, assignments, and exposure. The psychosocial aspect of mentoring includes assisting the mentee in developing a sense of self, counseling, and serving as a role model. Overall, however, the purpose of a mentoring relationship is primarily to support a mentee's career development, and this task rarely comes from a single source or mentor. Building off of Kram's idea that individuals rely on multiple sources for mentoring support, Higgins and Kram (2001) suggested that individuals derive the greatest benefit from mentoring when they engage in a collection of developmental networks. This type of network is comprised of a group

of people the protégé selects to guide and support the advancement of the protégé's career.

When male and female executives were studied to evaluate the differences in perceived pros and cons associated with being a mentor, Ragins and Scandura (1994) found that no difference between males and females and their desire to be a mentor, and both reported equivalent expected costs and benefits. Therefore, the lack of female mentors cannot be attributed to a woman's opposition to mentoring; on the contrary this deficit is likely a result of so few females in senior or higher ranking positions within an organization. Indeed, a number of barriers potentially exist for females when looking at cross-gender mentor relationships: lack of networks, tokenism, stereotypes, socialization and relationships, and reliance on inappropriate power bases (Noe, 1988, p. 67). Many believe that the lack of mentors for female employees could have detrimental consequences for both the employee and the employer. Mentors may be especially important for females in the early stages of their careers, providing both career advice as well as psychosocial support to overcome stress and anxiety associated with sorting through a new job in a new environment/culture. Females who work in traditionally male-dominated careers need a support system to include a mentor or mentors to assist in career guidance and advancement (Noe, 1988).

Informal versus formal mentoring. When discussing mentoring, two types are typically defined: informal and formal. Informal mentoring occurs through a spontaneous or serendipitous set of circumstances. Either a senior employee identifies a junior employee to take under their wing and develop—where the junior employee becomes the

protégé or the junior employee seeks out a more experienced individual to serve as a coach and provide guidance on career choices and decisions. These relationships can develop within the same company or through exposure and interaction in a professional society or some other setting where the two individuals might interact. The goals of such a relationship are not always specific or written down. Outcomes are not measured, but this type of mentoring relationship also has no defined endpoint. In fact, many informal mentoring relationships can last a lifetime. In the case of informal mentoring, the focus is on the mentee who is the ultimate and direct beneficiary of the relationship. The mentee's employer is an indirect beneficiary of the informal relationship, as is potentially the case with the mentor (Zachary, 2009).

Although both have similar goals, the construct of formal mentoring is often the antithesis of informal mentoring. Often facilitated by the employer, either in-house or by contracting a vendor, a formal mentoring program is organized, structured, or planned. Mentors and mentees are matched base on compatibility and access to the program is typically offered to all employees who meet a set of criteria. The program is time-bound, outcomes are measured, training and support materials are offered to the mentor-mentee pair, and the employer, mentor and mentee are all direct beneficiaries of the outcomes of the program (Zachary, 2009).

There is no consensus among the research community as to which type of mentoring is most effective, and little empirical data exists that actually compares the effectiveness of formal versus informal mentoring programs, especially when it comes to females (Blake-Beard, 2001). Some research reports slightly higher levels of success with

informal mentoring versus formal mentoring, and either is better than no mentoring at all (Chao, Walz & Gardner, 1992). Overall, Chao (1992) reports that informal mentorships are more effective with respect to psychosocial and career functions than formal, and those involved in an informal mentorship report higher levels of organizational socialization than those involved in a formal mentorship. Individuals involved in informal mentoring express greater job satisfaction than individuals involved in formal mentoring, and both are more satisfied than individuals without a mentor. Overall, there is a positive relationship between mentorship and job outcomes for both informal and formal mentoring.

Some research exists that suggests formal mentoring programs can have a greater impact when certain aspects of informal mentoring are simulated in a formal setting (Allen, Eby & Lentz, 2006; Wanberg, Kammeyer-Mueller & Marchese, 2006). For example, of particular importance is having input into the matching process for both mentors and mentees Additionally, making the program voluntary; allowing for frequent interaction between mentor and mentee; and paying close attention to rank, responsibility and departmental differences when making matches can all contribute to the program's success. Lastly, training (even a small investment in time) for all participants is an important contributor to perceived program success. (Allen, Eby & Lentz, 2006a, p. 568; Allen, Eby & Lentz, 2006b).

It has been suggested that mentoring can assist females in breaking the glass ceiling. Outcomes of mentoring include higher incomes, less turnover, more promotions, and better satisfaction with careers, and organizations are using formal mentoring

programs to address disparities in female management positions. By 1999, one third of all major corporations in the United States had implemented a structured mentoring program (Blake-Beard, 2001, p. 332; Ragins & Cotton, 1999). Formal mentoring programs can offer benefits to both employers and employees, yet there exist challenges to implement and maintain these type of programs.

Blake-Beard (2001) suggested that a formal mentoring program may provide considerable benefit to those involved, especially at the onset of ones' career, but the programs are not without their challenges, both strategically and logistically. Participation should not be the sole source of support for females, who would benefit from a variety of career development resources including multiple mentors, both formal and informal, peer groups, and participation in membership organizations. Ragins and Cotton (1999) compared formal and informal mentoring and discovered that formal mentoring may be most useful in areas like on-the-job-training and development of career goals and performance goals. Not surprising, female mentees with female mentors were significantly more likely to socialize with their mentors in activities outside of work than female mentees with male mentors.

Mentoring and faculty. Although much can be gleaned from the research and literature on mentoring in the private sector, mentoring in academia cannot necessarily be regarded in exactly the same way. Shared governance, the cornerstone of academic culture, serves as the framework for higher education decision making, where hierarchy gives way to consensus building and peer relationships can play a key role in how a faculty member is introduced to, and perceives "fit" within the organization. Having a

mentor or participating in a mentoring program in an academic setting can enhance organization socialization, particularly in the areas of getting to know people and understanding the organizational goals and values (Haynes & Petrosko, 2009). Mentoring also helps with "connectedness and ownership" for new faculty upon joining an institution (Schrodt, Cawyer, & Sanders, 2003, p. 26).

It has been suggested that for higher education faculty mentoring to be effective it must be driven by faculty and supported by the institution's leadership (Savage et al., 2004). Most mentoring programs today focus on new faculty with the goal of supporting growth and development; promoting faculty job satisfaction; providing opportunities for interaction between new or junior faculty and senior faculty; and supporting the notion of balance between teaching and research.

For female faculty members in particular, fit is a concept all too familiar and it is in this category that mentoring plays a significant role. Fit within the organizational structure and culture is tied directly to job satisfaction, career advancement, and ultimately whether or not one stays or leaves (Welch, Wiehe, Palmer-Smith, & Dankoski, 2011). A strong mentoring relationship and all that it includes can contribute significantly to a "genuine feeling of fit" (Welch et al., 2011, p.889) whether one is a student or faculty member.

Disparities and the "unfriendly climate" that females experience in academia have been discussed earlier in this paper. Chesler and Chesler (2002) recognized that mentoring alone cannot fix the disparity issue, but suggests it can help. Intentional, female-centric mentoring of females impacts both careers and the organizational climate.

Unfortunately, because of the climate, females may be seen as less effective mentors by younger, junior faculty because they lack connections, power, and influence within the organization. Nevertheless, the lack of senior female faculty role models and mentors can result in negative consequences for junior female faculty and female student recruitment and retention. (Johnsrud, 1991). Turnover in female faculty, particularly in STEM fields, is tied closely to perceived lack of organizational support, career advancement, and freedom to express ideas (Xu, 2008). The traditional norms of autonomy, individualism and competition in higher education, especially in the STEM fields and academic medicine are contrary to that which higher education presumably offers: a collegial community that, by its nature, exists to grow and develop all of its citizens (Doyle-Scharff & Conley, 2014). Ultimately, a successful mentoring strategy for females must take into account the diverse and distinct needs of female faculty (communication style, inclusive nature, and role as token female) wrapped in an environment that is not generally structured to accommodate these needs (Chesler & Chesler, 2002).

These distinct needs are reason to consider the type of mentor and mentoring opportunities offered to female faculty. Wasburn (2007) suggested that this consideration is crucial for females. A study of faculty mentoring relationships at a Midwest public university was conducted to evaluate the nature and extend of mentoring and other career development opportunities available to faculty (Sands, Parson, & Duane, 1991). The population studied included tenured and tenure-track faculty holding positions of associate, assistant and full professors. A random sample, stratified by rank, of eligible faculty (557) were surveyed and a total of 347 questionnaires were returned. Descriptive,

parametric, and non-parametric analyses were conducted and the researchers concluded that mentoring is “a complex, multidimensional activity” (Sands, Parson, & Duane, 1991, p. 189). Using factor analysis, they identified four types of mentors: “friend, career guide, information source, and intellectual guide”. Considering that mentees may have different needs, and therefore may need a different mentor type, it would seem appropriate for mentoring programs to take these different mentor types and the mentee needs that they potentially fill into account when designing a program and matching mentors with mentees.

If the type of mentor is important for a successful relationship, it follows that the mentoring format or program and when a mentor is engaged are equally important. Limitations of previous research have been in-depth analyses of the various sources that an individual uses to seek a mentor or mentors. These include the fact that mentors are not necessarily always from the same institution and many seek and develop mentoring relationships from a distance. Peluchette and Jeanquart (2000) identified that individuals indeed look to different mentors and different kinds of mentors depending upon the stage of their career. When they looked at both subjective (self-report) and objective (research productivity) career success and how mentoring could impact these two variables at different career stages, they found that mentoring had a positive impact for both variables for new (early career) faculty, but only objective for mid-career; however, there was no difference in either variable with respect to where their mentors came from (local, distant, etc.).

Faculty networks (also known as informal professional networks) and the role they play in the faculty development have been given more credence in recent history. These professional networks are a form of mentoring (Welch, Wiehe, Palmer-Smith, & Dankoski, 2011; Xu, 2008), and often females rate the importance of networks more important than males for professional/career development/advancement, friendships, and emotional support. In STEM fields, more males report belonging to same-sex networks than females. In all likelihood this is because there are simply more males than females; however, of concern is that most male faculty believe gender differences have no impact on network access or inclusion but 40% of females rated gender as an important aspect of network membership (Xu & Martin, 2011).

Recently, new forms of mentoring formats and programs have gained favor. Van Emmerik (2004) studied a concept called mentoring constellations. Utilizing different mentors or groups of mentors based on experience and expertise, these constellations were associated with increased job satisfaction and greater career benefits. Although not a substitution for a single, strategic mentor, the addition of a network or constellation adds to the success. Indeed, multi-mentor networks can help mentees develop competencies needed in an evolving complex academic world (DeJanasz & Sullivan, 2004; Sorcinelli & Yun, 2007).

Similar in concept, a mentoring web, like the program at Stevenson University's School of the Sciences (SOS) is a socially constructed, comprehensive faculty development program that includes regular meetings, shared leadership, and book clubs. This formal, structured mentoring program, developed to promote faculty growth and

development, is another example of innovative ways academe is trying to meet the mentoring needs of female faculty (Doyle-Scharff & Conley, 2014; Gorman, Durmowicz, Roskes & Slattery, 2010). Academic faculty with a mentor report higher job satisfaction, enjoy more promotions, and are less likely to leave their job. Mentoring also benefits the higher education institution through socialization of new faculty, fostering of positive perceptions of the institution, and higher commitment to the organization on the part of the faculty (DeJanasz & Sullivan, 2004; Gerdes, 2003).

Mentoring and medical school faculty. "Mentoring has never been so important to individual career development in academic medicine or to institutional health." (Bickel & Brown, 2005, p. 206). Medical school faculty have more in common with academic faculty, especially those working in the STEM fields, than not. However, there are nuanced differences in roles and responsibilities that bear reviewing. Faculty in medical schools can generally be described as two distinct groups: basic science and clinical. Faculty representing the basic sciences, approximately 10% of medical school faculty, typically come from departments outside of the medical school and teach medical students a core curriculum in their first two years of undergraduate medical education. The remaining 90% are clinical faculty, mostly MDs, who work with medical students in the next two years of undergraduate education, as well as residents (graduate medical education). These faculty teach and hold clinical positions (deliver patient care) in affiliated academic medical centers, hospitals, and/or health systems (Nyquist, Hitchcock, & Teherani, 2000). Additionally, both basic science and clinical faculty are often engaged in clinical research on behalf of the institution where they are employed.

The care and attention, or development, of these unique faculty members is not a new concept to medical schools. As early as the 1990s, medical school administrators were establishing faculty development offices. These programs can consist of everything from presentation skills development, to grant writing, leadership development, and mentoring. However, early on, although some formal mentoring programs were housed under faculty development or faculty affairs, the majority were facilitated at the department level (Morahan, Gold & Bickel, 2002). Over the years, medical schools have recognized that faculty development strategies foster quality in patient care, teaching, and improved leadership skills (Pololi, Dennis, Winn & Mitchell, 2003). Importantly, it has been shown that faculty retention is improved when faculty participate in an institutionally-sponsored faculty development program (Ries et al., 2012).

Where mentoring fits into these important faculty development programs and the role it plays in the success of the medical school have been studied, but only to a limited degree. The prevailing belief is that mentoring is critical in academic medicine. Indeed, the culture of medical schools is grounded in the concepts of apprenticeship and mentoring and reflected in the residency model. It is not the mentor relationship between faculty and student that is in question, however. It is somewhat ironic that medical schools embrace this idea as foundational, but seem to lose sight of this when looking at mentoring for and by faculty (Kashiwagi, Varkey, & Cook, 2013; Tracy, et al., 2004). Either way, successful mentoring of students or faculty requires a commitment on the part of leadership and an environment that supports and reflects the necessary resources,

a commitment to effectiveness and time required to participate (Sambunjak, Straus, & Marusic, 2010, 2006).

It is not enough to merely embrace the concept of mentoring. The effectiveness of a mentoring program or individual relationship is an important factor in determining success. Several scholars have looked at mentoring effectiveness and have found this to be especially true when looking at female faculty. The lack of effective mentoring, or lack of a mentor at all, may contribute to the disparity between male and female faculty in academic medicine (Blood et al., 2012; Varkey et al., 2012). When asked about mentoring, 54% of respondents in the study had a mentor and of those who did not, 72% desired a mentor. More than half (52% and mostly female) identified multiple mentor gaps that included developing and achieving career goals (Blood et al., 2012). Why is there a lack of effective mentors for females? Why do females face more obstacles than males in obtaining career assistance and advancing mentoring? Bickel, Wara, and Atkinson (2002) postulated that one answer to these questions is that males have difficulty mentoring females. This is an unfortunate circumstance because there are far more senior males in a position to mentor in academic medicine than females. Males often cannot always relate to female-specific issues, including work-life balance. Ultimately, the power within the system of academic medicine resides with males even though the majority of junior faculty members are female. Communication issues, mentee as subordinate, and physical and psychosocial differences all contribute to the challenge of a male mentoring a female which calls for a change in strategy, style, and purpose of mentoring programs in academic medicine moving forward (Robinson & Cannon, 2005).

Indeed, the speed of change in academic medicine and the healthcare environment requires a new mentoring model. The traditional mentoring dyad – one mentor, one mentee – is no longer sufficient. There is just too much information and too little time for a single mentor to satisfy the needs of a mentee, and as problematic as the male mentor and female mentee model is, the great challenge is the generational differences between senior faculty and junior faculty (Bickel & Brown, 2005).

Most eligible senior faculty mentors are from the Baby Boomer generation. Junior faculty, many known as Gen Xers, joined academic medicine with a mindset that is often at odds with its traditional values and culture. Gen Xers view mentoring as a right, not a privilege (Bickel & Brown, 2005). They also reject the idea of "sacrifice" for their job or employer, and do not subscribe to the idea of top-down management. Their communication style is often direct and outspoken (Bickel & Brown, 2005) and they tend to prefer collaboration over working alone. Another dimension that older generations of mentors must contend with is that by leveraging technology and social media, many junior faculty mentees come to academia with a global network of friends and acquaintances (Trower, 2010). Each of these differences can contribute to challenges when junior faculty engage in one or more mentoring relationships, leading to ineffectiveness and an unsuccessful outcome.

Although some would argue that the career impact of mentoring is based more on assumptions than demonstrated empirical evidence (Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005), research suggests a strong link between mentoring and a number of outcome variables important to academic medicine. A study that looked at junior faculty

with NIH K grants (mentoring for career development) found a strong association between mentoring and career and job satisfaction (Decastro, Griffith, Ubel, Stewart, & Jagsi, 2013). Levinson et al. (1991) found that female faculty in academic medicine with mentors were more published, engaged more in research, and had greater career satisfaction. In yet another study (Palepu, et al., 1998), researchers looked at the prevalence of mentoring; the quality of mentoring; and variations between males and females, junior faculty and institutional support. A significant number of females believed that inadequate mentoring was detrimental to their career advancement. Also, faculty with mentors (both male and female) rated institutional support high versus those without a mentor, and job satisfaction among faculty with mentors was higher than those without (Palepu, et al., 1998). In a qualitative study on academic medicine and mentoring, Jackson et al. (2003) interviewed 16 faculty members regarding their experiences with mentoring. They found that nearly 98% of the faculty surveyed cited lack of mentoring as the first (42%) or second (56%) factor that had the greatest impact on impeding their career advancement in their medical school.

Mentoring, or lack of mentors, can also play a role in faculty recruitment and retention. The American College of Surgeons evaluated the problems that exist when trying to recruit females into the field and found that one of the biggest issues cited is the lack of senior leader females available to serve as role models and mentors (Morton, Bristol, Atherton, Schwab, and Sonnad, 2008). As noted earlier, faculty development programs for junior faculty, many of which include a mentoring component, can influence retention of faculty in a positive capacity (Ries et al., 2012). In conclusion, a

systematic review of research that looked at many aspects of mentoring in academic medicine, much of which is self-reported data, suggests that in systems with a mentoring program, faculty generally report greater job satisfaction, more advancement opportunities, and faculty retention rates are improved (Kashiwagi, et al., 2013).

Summary

This review provided an overview of scholarly research and literature on organizational culture, job satisfaction, career advancement, retention, and mentoring. This chapter also reviewed details of organizational justice theory that is part of the conceptual framework used to explain the challenges female medical school faculty face and their perceptions of job satisfaction, organizational culture, and opportunities for career advancement that can have an impact on their decision to stay or leave.

The following chapter will outline the methodologies used to evaluate the differences between female faculty who plan to stay at their institution versus those who plan to leave or are undecided by studying demographic data and perceptions of job satisfaction, organizational culture, and opportunities for career advancement as well as participation in a formal mentoring program. Additionally, the researcher will provide detail on which statistical analyses will be conducted in order to identify which, if any, of these perceptions, as well as participation in a formal mentoring program, can predict intent to stay employed at their current institution.

Chapter 3: Methodology

Introduction

This study examined the relationship between female faculty's perception of organizational culture, job satisfaction, and opportunities for career advancement relative to their intent to stay at their institution and whether or not participation in a formal mentoring program can mitigate intent to leave among female medical school faculty.

Extant literature, explored in Chapter Two, provides the conceptual foundation for this study. The 2009 American Association of Medical Colleges and Collaborative on Academic Careers in Higher Education (AAMC-COACHE) faculty job satisfaction survey responses provide the data to be analyzed. Specifically, this study focused on female faculty in medical schools.

Research Questions

This study addressed the following four questions specifically:

1. What are the personal and workplace status characteristics of female faculty members who intend to stay at their medical school in the next two years, compared to those who intend to leave or those who do not know if they will leave?
2. What are the similarities and differences in perception of job satisfaction, organizational culture, opportunities for advancement, retention efforts and participation in formal mentoring between female faculty who intend to stay and female faculty who intend to leave or those who do not know if they will leave?

3. Which combination of the following variables is the strongest predictor of female faculty's intent to stay at their current institution: perceptions of job satisfaction, organizational culture, and opportunities for advancement?
4. Can female faculty's participation in formal mentoring, after controlling for perception of job satisfaction, organizational culture and opportunities for advancement, predict intent to stay at their current institution?

Data and Methodology Limitations

1. Using secondary data from the AAMC-COACHE Medical School Faculty Job Satisfaction Survey (2009), questions regarding formal mentoring programs, job satisfaction, and career advancement are pre-set, and may not adequately address specific dimensions of each category.
2. Medical school administrators and faculty have been "over-surveyed" by the AAMC in past years, which may have impacted response rate, and have an impact on how accurately and sincerely respondents answered questions.
3. Many academic medical centers lack a formal mentoring program altogether. However the survey instrument does not discern between the absence of a formal mentoring program or a respondent's participation in an existing one.
4. The AAMC-COACHE survey instrument was only distributed to AAMC members (all U.S.-based allopathic medical schools). Osteopathic medical schools were excluded from the survey because they are not AAMC members. Although the AAMC-COACHE data are considered to be representative of allopathic medical schools in general, due to differences in culture and

curricula framework within the osteopathic medical school environment, these data cannot necessarily be generalizable across all U.S.-based medical schools.

5. Faculty completing the survey could interpret questions differently, therefore leading to inconsistent data where technically none should exist.
6. Although there are a number of similarities between the challenges that female faculty face, and those of minority faculty, an evaluation of both segments could prove to be an important dimension to a study like this. The numbers of minority faculty in the AAMC-COACHE dataset are limited, making it difficult to conduct any meaningful analysis.
7. The lack of specific data regarding female faculty's perception of the timeliness, accuracy, and truthfulness of information that is disseminated prevents the use of the full theoretical framework that is organizational justice. Therefore interpretations that are made, as guided by the theoretical construct, may be missing certain aspects of the faculty member's perception of justice.

Population and Sample Description

The population of a study represents the total number of individuals who represent the subject or subjects to be evaluated. COACHE's target population consists of all full-time medical school faculty members from the 23 self-selected medical schools who could potentially participate in the AAMC/COACHE survey. A sample is a subset of the population that approximates the characteristics of the population (Salkind, 2010). The sample for this study consisted of all female faculty who took the survey (n=3,136).

See Table 1. Of this sample, about 2,764 (88%) answered at least one question beyond the demographic questions and among them, 67% of the female participants responded to the qualitative open-text question (n = 2,121).

Table 1.

Q7. Cleaned Gender Variable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	6,502	67.5	67.5	67.5
	Female	3,136	32.5	32.5	100.0
	Total	9,638	100.0	100.0	

Note. Supplemented with faculty database data if survey data missing.

COACHE Background

The Collaborative on Academic Careers in Higher Education (COACHE) is a research initiative and membership organization dedicated to the study of faculty satisfaction across U.S.-based institutions of higher education. Founded in 2002 through grants from the Ford Foundation and Atlantic Philanthropies, COACHE is based at the Harvard Graduate School of Education and is now supported completely by its members. In addition to surveys, COACHE researchers provide robust analysis of the data collected, facilitation of higher education leadership summits, peer institution comparisons, and coaching for individual institution on faculty challenges and opportunities.

Over 230 colleges, universities, and systems have “strengthened their capacity to identify the drivers of faculty success and to implement informed changes” (COACHE,

2015, p.1) by participating in the *COACHE Faculty Job Satisfaction Survey*. These data represent one of the few available resources of individual faculty-level data on attitudes and perceptions of job satisfaction. When studying faculty in medical schools, few data sets exist that can provide a detailed understanding of faculty job satisfaction and other job and career-related issues. In addition to individual institution research noted in Chapter Two, the Association of American Medical Colleges (AAMC) surveys medical school deans on an annual basis, called *Faculty Forward*, but this survey does not collect individual faculty-level data.

In 2007 and 2009, the Association of American Medical Colleges collaborated with COACHE to leverage their expertise in developing an instrument that was appropriate for the unique and special circumstances of clinical faculty in medical schools. This research will utilize the data set collected as a result of the 2009 AAMC-COACHE collaboration. It should be noted that the 2014-15 *COACHE Faculty Job Satisfaction Survey* has been updated and clinical faculty in medical schools will now be included in their target population. A "path" unique to this faculty type will include questions about patient care, clinical services, quality of care, and interprofessional interactions (how care teams work together) (COACHE, 2015). Once collected and analyzed, these data should prove to be valuable for future research on medical school faculty job satisfaction.

COACHE Survey Process

Part of the *Faculty Forward* initiative, a collaborative partnership between the AAMC and medical schools whose goal is to improve academic medical centers as a

workplace, the AAMC-COACHE Medical School Faculty Job Satisfaction Survey was designed for full-time medical school faculty (physicians and scientists). A call went out to all 126 allopathic medical schools (members of AAMC) to include their faculty in the survey. Twenty-three U.S.-based Liaison Committee on Medical Education accredited (LCME) medical schools self-selected to participate in the survey to better understand and improve faculty workplace vitality at their institution (Bunton, Corrice, & Mallon, 2010). Faculty members' email addresses were obtained from school administrators, and a participation invitation was sent to all eligible subjects. Several prompts were sent to subjects alerting them of the survey: first a pre-notification, then the actual participation invitation via a unique and confidential web link, and several follow-up reminders to participate were sent during a two-month period. Ultimately 8,773 faculty members participated in the survey.

The AAMC-COACHE survey consists of thirteen distinct areas of focus: nature of work; climate, culture, collegiality; collaboration; mentoring; feedback; promotion; pay and compensation; benefits and policies; faculty recruitment and retention; institutional decision making, governance and operations; clinical practice; and global satisfaction. The web-based survey instrument included 50 closed-ended questions, including demographic and appointment questions. Also included in the survey was one open-ended question dealing with workplace improvement.

Instrument Validity and Reliability

Validity and reliability are an important part of rigorous data collection. When using an existing instrument, validity and reliability are established based on past use of

an instrument. Creswell (2009) states that validity is established when “one can draw meaningful and useful inferences from scores on the instrument” (p. 149). Reliability is achieved when there is consistency of the instrument and how participants interpret the questions and when repeating the study generates similar results each time the instrument is administered.

First developed in 2007, and then redesigned in 2009, the AAMC-COACHE instrument was developed based on a number of inputs: literature reviews, medical school faculty focus groups, subject matter experts in higher education, and survey research and feedback from senior faculty at the pilot sites. Additionally, a cognitive testing lab was utilized where the instrument was administered to a diverse set of faculty over a dozen times before the pilot was implemented (AAMC-COACHE, 2009a).

With the data generated from the pilot, the COACHE researchers performed confirmatory factor analysis to identify the Cronbach's alpha ratings of the benchmarks. As a result, some survey questions were dropped and others were moved out of scales to stand alone. Results were also discussed with institutions that had administered their own or other faculty survey instruments. Ultimately, the feedback was unanimous that the surveys generally confirmed what had been learned via other instruments, although the AAMC-COACHE survey included several new aspects of medical school faculty job satisfaction (AAMC-COACHE, 2009a).

COACHE Data Conditioning

Once the survey closed, COACHE researchers undertook an extensive data conditioning process to test and validate respondent data for the final database of eligible

survey responses. First, patterns of responses and time-to-completion were reviewed to determine valid and invalid records and those that did not meet a determined threshold were removed. Drop-off rates were also analyzed; by gender; by majority versus minority; and by basic science, clinical MD/MD-PhD/DO, or clinical PhD/other degree. Open-ended and multiple selection items were recoded, where possible and appropriate, into existing response options. For example, Question 1 asks, "What is your current appointment status?" If the response in the "Other" cell was the equivalent of an existing response choice, it was recoded for that value and the "Other" open-ended response was cleared. Answers were flagged as invalid for open-ended responses that described a situation that was not valid for the study.

Paired and skipped variables were merged to create new variables for reporting. Certain questions followed a "skip pattern" in the survey. The "base n" for each of the conditional questions was determined, then responses were merged into question pairs and counted those that skipped the question in the "base n". The final steps in the data conditioning process were to focus on cleaning the response database for broader use and dropping ineligible records.

To develop a clean data file, all missing values in the SPSS data file were labeled and coded and left as missing (i.e., blank or ".") those questions a respondent skipped. All unnecessary, duplicate variables were removed, and all new variables created in the data were confirmed as properly labeled and reordered so that the data set matched the order of items in the survey. All personally-identifying information provided by the respondent for survey Question 51, Please use the space below to tell us the number one thing that

you, personally, feel your medical school could to do improve the workplace, was redacted, and all records that were not identified as full-time faculty, identified as invalid by their appointment from both institution and respondent databases; and all "non-completers" identified were removed (AAMC-COACHE, 2009b).

Dependent and Independent Variables

The following table (Table 2) provides an overview of all variables used in this study, the questions and sub-questions associated with each variable, and how they were measured using the survey instrument.

Table 2.

Dependent and Independent Variables

Variable	Label	Question(s)	Measurement
Dependent	Intent to stay	48. Do you plan to leave the medical school in the next 1-2 years	Categorical; 1 Yes, I plan to leave in the next 1-2 years 0 No, I plan on staying for at least that long 9 I don't know
Independent (Primary)	Formal Mentoring	26. Do you receive formal mentoring (that is, have you been matched by the medical school or your department with a colleague to provide ongoing career guidance and advice)?	Categorical; 1 Yes 0 No [go to 27, then 29] 9 I don't know [go to 27, then 29]
Independent	Culture	18. Please indicate your level of satisfaction or dissatisfaction with the following aspects of your workplace culture: A. How well you "fit" (i.e. your sense of belonging) in your department B. The quality of professional interaction you have with your department colleagues C. The quality of personal interaction you have with department colleagues D. The intellectual vitality in your department	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
		19. Please indicate your level of agreement or disagreement with the following statements: A. My department colleagues are respectful of my efforts to balance work and home responsibilities. B. The faculty in my department usually get along well together.	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
		20. I feel that my work is appreciated by: A. Patients B. Students/residents C. Faculty D. My immediate supervisor E. The medical school dean's office	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)

Table 2: continued

Variable	Label	Question(s)	Measurement
Independent	Culture	21. I feel that the workplace culture at this medical school cultivates: A. Collegiality B. Interdisciplinary work C. Entrepreneurialism D. Excellence E. A supportive climate for balancing work and home responsibility	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
		22. My medical school offers equal opportunities to all faculty regardless of their: A. Gender B. Race/Ethnicity C. Sexual orientation	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
Independent	Career Advancement	32. To be promoted in rank, what I must do in each of the following mission areas is clear to me: A. Teaching/education B. Research/scholarship C. Patient care/client services D. Institutional service	Continuous; Likert Scale (5=Strongly agree; 1=Strongly disagree)
		33. To be promoted in rank, what I must do in each of the following mission areas is reasonable to me: A. Teaching/education B. Research/scholarship C. Patient care/client services D. Institutional service	Continuous; Likert Scale (5=Strongly agree; 1=Strongly disagree)
		34. Please indicate your level of agreement or disagreement with each of the following statements: A. At my medical school the criteria for promotion are consistently applied to faculty across comparable positions B. At my medical school, female and male faculty members have equal opportunities to be promoted in rank. C. At my medical school, minority and non-minority faculty members have equal opportunities to be promoted in rank.	Continuous; Likert Scale (5=Strongly agree; 1=Strongly disagree)

Table 2: continued

Variable	Label	Question(s)	Measurement
Independent	Career Advancement	35. Please indicate your level of agreement or disagreement with each of the following items: A. The pace of your professional advancement at your medical school B. The opportunities for professional development at your medical school	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
Independent	Job Satisfaction	45. All things considered, how satisfied or dissatisfied are you with your department as a place to work?	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
		46. All things considered, how satisfied or dissatisfied are you with your medical school as a place to work?	Continuous; Likert Scale (5=Very Satisfied; 1=Very Dissatisfied)
		49. If I had it to do all over, I would again choose to work at this medical school.	Continuous; Likert Scale (5=Strongly agree; 1=Strongly disagree)
		50. If I had it to do all over, I would again choose an academic career.	Continuous; Likert Scale (5=Strongly agree; 1=Strongly disagree)

Intent to stay is a variable that was used to answer all four research questions, but will be considered the dependent variable in the logistic regression analysis used to answer research Questions 3 and 4. Answers to Question 48 on the survey instrument provides the data for the dependent variable:

Question 48. Do you plan to leave the medical school in the next 1-2 years?

1 Yes, I plan to leave in the next 1-2 years

0 No, I plan on staying for at least that long

9 I don't know

The following table (Table 3) is a frequency distribution of all females in the data set, and how they answered Question 48:

Table 3.

Q48. Plan to Leave the Medical School in the Next 1-2 Years | Female

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, I plan on staying for at least that long	2,004	63.9	91.6	91.6
	Yes, I plan to leave in the next 1-2 years	183	5.8	8.4	100.0
	Total	2,187	69.8	100.0	
Missing	I don't know	660	21.0		
	System	289	9.2		
	Total	949	30.2		
Total		3,136	100.0		

Note. BASE: Q47 = No or I don't know

A total of 183 (5.8%) of the females who completed the survey indicated they plan to leave. This uneven distribution of the data (63.9% versus 5.8%) needed to be

taken into account (and managed) as part of the statistical analysis. Additionally, the number of cases for “I don’t know” in the data set (660) are an important measure and one that required an exploration of the characteristics of those individuals, versus the females who selected “yes” or “no”.

There is conflicting evidence and opinion on whether or not to include the option of ‘I Don’t Know’ as an answer on surveys, and ultimately what an ‘I Don’t Know’ answer really means. Some suggest that providing this as an option is an easy ‘out’ for respondents who really have an opinion, but when provided with follow-up or probing questions, subsequent answers can be used to moderately predict behavior (Gilljam and Granberg, 1993). Other competing hypotheses believe that an ‘I Don’t Know’ answer is analogues to the more conservative answer between ‘Yes’ and ‘No’, or an ‘I Don’t Know’ really does mean that the respondent doesn’t know the answer or is undecided. (Groothuis and Whitehead, 2002). Whichever is true, in the case of this study, the answer of ‘I Don’t Know’ to Question 48 proved to be an obstacle when trying to predict intent to stay. Further assessment of the group of respondents who answered ‘I Don’t Know’ to Question 48 (n=660) will be addressed in Chapter 4.

The primary independent variable is participation in a formal mentoring program. Answers to Question 26 on the survey instrument provide the data for the primary independent variable:

Question 26. Do you receive formal mentoring (that is, have you been matched by the medical school or your department with a colleague to provide ongoing career guidance and advice)?

1 Yes

0 No [go to 27, then 29]

9 I don't know [go to 27, then 29]

The following table (Table 4) is a frequency distribution of all females in the data set and how they answered Question 26. A total of 860 females indicated that they receive formal mentoring.

Table 4.

Q26. Receive Formal Mentoring | Female

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2,010	64.1	70.0	70.0
	Yes	860	27..4	30.0	100.0
	Total	2,870	91.5	100.0	
Missing	I don't know	112	3.6		
	System	153	4.9		
	Total	266	8.5		
Total		3,136	100.0		

Demographics as an independent variable can be divided into two categories: personal and employment. Personal demographic data include: sex, race and/or ethnicity, and highest earned academic degree. Employment demographics include: employment status (full-time, part-time, volunteer, emeritus); academic rank (professor, associate professor, assistant professor, instructor/lecturer); department (basic science, clinical,

other); academic year of first faculty appointment at the current medical school; current tenure status (on tenure track, tenured, not on tenure track, no tenure at this school), administrative titles (dean, associate dean, assistant dean, vice dean, division chief, department chair, center director, none of these); and actively engaged in the clinical care of patients.

Principal components analysis was used to develop the independent variables job satisfaction, organizational culture, and career advancement. This type of analysis distills a large number of variables (in this case answers to multiple questions) down to a few (ideally one) factors by combining variables that are moderately or highly correlated with one another, where the components are calculated as linear combinations of the original variables. Principal components analysis is often used in research that uses data from a survey, to see if multiple questions can be grouped into a smaller set of questions or a single component that explains as much of the total variance in the variables being studied as possible. To manage missing data, listwise deletion (complete-case analysis) was utilized to remove all data for a case that has one or more missing values.

The independent variable "job satisfaction" is a factor scale construct based on four survey questions that asked faculty members to rate their satisfaction with their department as a place to work; their medical school as a place to work; and if they had it to do over, whether they would choose to work at the school or choose a career in academia. The independent variable "culture" is a factor scale construct based on five survey questions that asked faculty members to rate their level of satisfaction or level of agreement with respect to their departments and/or institution's culture of collegiality,

appreciation, and respect. The independent variable "perception of career advancement opportunities" is a factor scale construct based on four survey questions that asked faculty whether or not certain aspects of promotion are clear and reasonable; if they agree or disagree with statements that include criteria for promotion are consistently applied; if males and females and minority and non-minority faculty have equal opportunities for promotion; and how satisfied they are with the pace of their professional advancement and opportunities for professional development. A single question on department-specific retention, Question 40C My department is successful in retaining female faculty members, will also be included in the descriptive statistics. All analyses and comparisons were conducted using SPSS and Excel.

Finally, the survey instrument asks one open-ended question of faculty, Question 51 Please use the space below to tell us the number one thing that you, personally, feel your medical school could do to improve the workplace. Answers to these questions were reviewed and analyzed for themes and items aligned with each variable studied. Information gleaned provided context and texture to the quantitative data assessment that served as the basis for this research study.

Data Analysis Procedures

As stated earlier, the focus of this study was to assess the relationship between female faculty's perception of organizational culture, job satisfaction, opportunities for career advancement and participation in a formal mentoring program, and their intent to stay, and to determine if participation in a formal mentoring program can predict female medical school faculty's intent to stay.

Descriptive and bivariate statistics and binomial logistic regression were utilized to analyze the data in response to each research question. Descriptive statistics describe or summarize a set of data through measures of central tendency and measures of dispersion. The mean, median, and mode are three types of measures of central tendency. For this study, descriptive and bivariate statistics were used to answer Research Question 1 and Research Question 2. Utilizing SPSS, descriptive and bivariate statistics included means, standard deviation, and frequency distributions for each variable, as well as correlations, chi-square, one-way ANOVA and independent samples t-tests. Binomial logistic regression was used to answer Research Question 3 and Research Question 4.

Binomial logistic regression is the measurement of the relationship between a categorical dependent variable and one or more independent variables which are either continuous or categorical by estimating probabilities. Multiple logistic regression is an extension of simple linear regression. Multiple regression analysis is use to understand the relationship between several independent or predictor variables and a dependent variable. Logistic regression is based on a different set of assumptions regarding the dependent and independent variables. The key differences for logistic regressions include the fact that the conditional distribution is a Bernoulli distribution rather than a Gaussian distribution (the dependent variable is binary), and the estimated probabilities are limited to [0,1] through the distribution function because logistic regression predicts the probability of the instance being positive (Freedman, 2009). In this study, the hierarchical method of multiple logistic regression was utilized so that each independent variable

could be correlated with the outcome, intent to stay, while controlling for the effects of the other independent variables (Field, 2005).

In this study, the dependent variable was categorical or discrete (answers to Question 48 Do you plan to leave the medical school in the next 1-2 years? are "Yes," "No," and "I don't know"). To answer the third research question logistic regression analysis was conducted to identify which independent variable, or combination of variables, is most highly predictive of intent to stay.

Logistic regression analysis was also used to answer Research Question 4. Again, the dependent/outcome variable was intent to stay, and the independent variables are participation in a formal mentoring program, and the variable or combination of variables that is most highly correlated with intent to stay and demographics. Logistic regression analysis was used to determine if participation in a formal mentoring program strengthens the model and can more strongly predict intent to stay than the other variables on their own or in combination.

Summary

This chapter described the methods to be utilized within the present study in order to assess the relationship between female faculty's perception of job satisfaction, organizational culture, opportunities for career advancement and participation in a formal mentoring program, and their intent to stay, and determine if participation in a formal mentoring program can predict female medical school faculty's intent to stay more strongly than the other independent variables studied. The chapter described that the study utilized a secondary data set for a quantitative approach. The chapter also reviewed

the stated purpose of the study and the research questions and provided an overview of the data collection procedures, a description the population and sample, and a summary of the data analysis procedures.

Chapter 4: Results

Introduction

Chapter Four provides the results of the study's analysis. The first research question focuses on the characteristics that define female faculty who intend to stay at their academic institution versus those who plan to leave in the next two years and those who are not sure if they will leave or stay. Descriptive statistics that analyze frequencies and mean scores were used to evaluate personal and employment demographic data as well answer certain questions from the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey*. The second question provides a framework for distinguishing between female faculty who intend to stay at their academic institution versus those who plan to leave in the next two years and those who are not sure if they will leave or stay by comparing four distinct factors: job satisfaction, perception of culture, perception of career advancement opportunities, and participation in a formal mentoring program.

The third question looks at how three of the factors (job satisfaction, culture, and career advancement) impact, either by themselves or together, a female faculty's intent to stay or leave by measuring the predictive value of the factors on intent to stay. Binomial logistic regression allows this analysis with intent to determine which variables, if any, have the strongest predictive values. The fourth research question seeks to answer whether or not adding participation in a formal mentoring program will strengthen the predictive model. The results of all four research questions are interpreted and discussed in Chapter Five.

Research Question One: What are the personal and workplace status characteristics of female faculty members who intend to stay at their medical school in the next two years, compared to those who intend to leave or those who do not know if they will leave?

Research question one examines the differences in personal and workplace status characteristics, as well as answers various questions regarding job satisfaction, culture, and career advancement between faculty who intend to stay, those who plan to leave, and those who do not know if they will stay or leave. To explore these differences, descriptive statistics were conducted and analyzed.

Descriptive Statistics: Personal Characteristics

Descriptive statistics found in Table 5 provide a demographic overview of the personal characteristics of female faculty within this study, comparing three distinct groups based on their answer to Question 48. Do you plan to leave the medical school in the next 1-2 years? The majority of faculty members among those who intend to stay (65.5%), those who plan to leave (73%) and those who are not sure (65.7%) are physicians (MDs). Additionally, each group has a similar ethnic distribution with the majority of faculty identifying themselves as White (74.4% Stay, 66.4% Leave, and 71% Undecided). The second largest ethnic group, similarly distributed among all three faculty groups, was Asian (Stay 15.4%, Leave 21.6%, and Undecided 19.6%). A chi-square test for association was conducted between degree (Basic Science, Clinical MD and Clinical PhD) and the three groups, and there was not a statistically significant difference between degree and stay, leave or undecided, $\chi 2(4) = 4.271$, $p = .371$.

Likewise, the same test was conducted between race (White, Asian, Black/African American, Hispanic, American Indian, Alaskan, Native Hawaiian, Multiracial and Other) and the three groups, and there was not a statistically significant difference between race and stay, leave or undecided, $\chi 2(14) = 19.332$, $p = .153$.

Table 5.

Personal Characteristics of Female Faculty

	Stay		Leave		Undecided	
	N	%	N	%	N	%
Degree						
Basic Science	289	14.4	22	11.9	98	14.8
Clinical MD	1,313	65.5	134	73.0	433	65.7
Clinical PhD	402	20.1	28	15.1	128	19.5
Race						
American Indian, Alaska	9	0.5	0	0	3	0.4
Asian	308	15.4	39	21.6	129	19.6
Black/African American	83	4.1	11	6.1	32	4.9
Hispanic	99	5.0	10	5.4	21	3.2
Native Hawaiian	8	0.4	-	-	3	0.5
White	1,492	74.4	122	66.4	468	71
Other	2	0.1	0	0	1	0.2
Multiracial	2	0.1	1	0.6	1	0.2
Missing	0		0		0	
Total	2,004		183		660	

Descriptive and Bivariate Statistics: Workplace Status Characteristics

Descriptive statistics found in Table 6 provide a demographic overview of the workplace status characteristics of female faculty within this study, comparing three distinct groups based on their answer to Question 48. Do you plan to leave the medical school in the next 1-2 years? It is important to note that the majority of female faculty surveyed (70%) plan to stay at their current medical school for the next 1-2 years. In

contrast, only 6.4% of the female faculty respondents plan to leave, and 23% are undecided. All 2,847 female faculty who answered Question 48 indicate they are employed full time. When asked in which department is their primary appointment, all three groups had a similar distribution, with the majority identifying with a clinical department in the medical school (Stay 85.6%, Leave 87.7%, Undecided 85.1%). Similarly, the three groups look alike with respect to leadership positions or administrative titles. Of those female faculty who indicated they held an administrative position (N=555), the distribution between the three groups is not markedly different. The majority of those female faculty members across all three groups are either a Division Chief (Stay 42.1%, Leave 33.5%, Undecided 39.9%) or a Center Director (Stay 34.3%, Leave 39.5%, Undecided 43.6%). The percentages of female faculty who hold the position of Department Chair (Stay 8.9%, Leave 10.5%, Undecided 6.0%) or an executive leadership position at the medical school like Dean, Associate Dean, Assistant Dean or Vice Dean (Stay 14.7%, Leave 16.5%, Undecided 10.5%) are fewer, but still similar in distribution across the groups.

Table 6.

Workplace Status Characteristics of Female Faculty [a]

	Stay		Leave		Undecided	
	N	%	N	%	N	%
Rank						
Senior	897	44.80	43	23.5	256	38.9
Junior	968	48.30	111	60.6	347	52.7
Instructor, lecturer	137	6.90	29	16.0	55	8.4
Department						
Basic Science	289	14.40	23	12.3	98	14.9
Clinical	1,715	85.60	161	87.7	561	85.1
First Faculty Appt. in Current Medical School						
<10 years	1,204	60.64	149	81.9	444	69.0
10-20 years	564	28.40	30	16.5	150	23.2
>20 years	218	11.00	3	1.6	50	7.8
Missing	10		1		16	
Tenure Status						
On track, not tenured	245	13.40	21	12.3	98	16.0
Tenured	346	18.90	18	10.4	109	17.8
Not on track	1,167	63.70	116	68.2	378	61.9
No tenure at medical school	73	4.00	15	9.1	26	4.3
I'm not sure	166		13		50	
Missing	8					
Administrative						
Dean, Associate Dean, Assistant Dean, Vice Dean	58	14.70	5	16.5	13	10.5
Division Chief	165	42.10	10	33.5	49	39.0
Department Chair	35	8.90	3	10.5	7	6.0
Center Director	135	34.30	12	39.5	53	43.6
None of these admin titles	1,599		153		531	
Missing	12				7	
Clinical Practice?						
Yes	1,406	70.20	130	71.1	439	66.8
No	594	29.70	53	28.9	218	33.2
Missing	4				2	
Total	2004		183		660	

[a] All full-time

Over 60% of the faculty members in all three groups are not on a tenure track even though their medical school has a tenure system (Stay 63.7%, Leave 68.2%, Undecided 61.9%). However, of those who are tenured, a greater percentage falls into the Stay or Undecided groups than the Leave group (Stay 18.9%, Leave 10.4%, Undecided 17.8%). Interestingly, the distribution for those on a tenure track but not yet tenured is similar across all three groups (Stay 13.4%, Leave 12.3%, Undecided 16%).

The greatest percentage differences between the groups with respect to workplace status characteristics are in academic rank, tenure and years since their first faculty appointment at their current medical school. The survey choices for academic rank were Professor, Associate Professor, Assistant Professor, Instructor or Lecturer, and Other. These labels were subsequently categorized as Senior (Professor, Associate Professor), Junior (Assistant Professor) and Instructor or Lecturer. Those faculty members who intend to stay at their institution were divided equally between Senior and Junior faculty (Senior 48.8% and Junior 48.3%). The majority of respondents in the other two groups were Junior faculty, with 76.6% of the group planning on leaving within the next two year identifying as either Junior faculty or Instructor/Lecturer (Senior 23.5%, Junior 60.6%, and Instructor/Lecturer 16%). Those faculty members who are undecided had a slightly different distribution (38.9 % Senior, 52.7% Junior, 8.4% Instructor/Lecturer) than either those who will stay or those who plan to leave.

Of the female faculty who answered Question 3b (n=2,810), 63.9% have been at their current medical school ten years or less. The mean academic year of their first faculty appointment is 1999-2000, the median academic year is 2003-2004 and the range

for the entire population is academic years 1966-1967 to 2008-2009. Table 7 shows the differences in distribution among the three groups. Faculty who intend to stay are represented fairly evenly in terms of length of employment between two and twenty years of employment; 28.4% have worked for the school for more than ten but less than twenty years; 23.6% have been there between five and ten years; and 25.4% were employed more than one year but less than five years. Only 11.6% have been at their current institution for one year or less.

A chi-square test for association was conducted with each of the workplace status characteristics and the three groups. There was no statistically significant difference between the group with respect to department, patient care and administrative positions. However, there was a statistically significant difference between stay, leave and undecided and the following characteristics: rank (Senior, Junior and Instructor/Lecturer; $\chi 2(4) = 44.190$, $p < .005$); tenure (On track, not tenured, Tenured, Not on track and No tenure at medical school; $\chi 2(6) = 17.840$, $p = .007$); years at current medical school (<10 years, 10-20 years and >20 years; $\chi 2(4) = 45.300$, $p < .005$).

Table 7.

Number of Years Since First Faculty Appointment at Current Medical School?

	Stay		Leave		Undecided	
Years	Frequency	Percent	Frequency	Percent	Frequency	Percent
1 year or less	230	11.6	28	15.3	81	12.7
More than 1, less than 5 years	505	25.4	72	39.4	178	27.7
5 to 10 years	469	23.6	50	27.2	185	28.7
More than 10, less than 20 years	564	28.4	30	16.5	150	23.3
20 years or more	218	11.0	3	1.6	50	7.7
Total	1,985	100.0	182	100.0	643	100.0

The largest group of female faculty who plan to leave (n=72, 39.4%) have been at their current medical school less than 5 years, but more than 1 year. The smallest group, representing only three faculty (1.6%), have 20 or more years with their current school. Faculty who have the least number of years with their current school (a year or less) represent 15.3% in the group planning to leave. Faculty members who are undecided have a distribution similar to those who plan to stay. Like those who plan to stay, 23.3% have worked for the school for more than ten years but less than twenty, while 28.7% have worked there between five and ten years, and 27.7% more than a year but less than five years. The newest employees, having been at their current institution for a year or less, represent 12.7% of those undecided. The difference between the three groups with respect to the distribution of years at their current medical school was found to be statistically significant, $\chi 2(8) = 50.368$, $p < .005$)

Descriptive and Bivariate Statistics: Mentoring

As noted in Chapter Three, 2,721 female faculty answered either yes or no to Question 26. Do you receive formal mentoring? (Q26). The distribution across the three groups (Stay, Leave or Undecided) is similar (Table 8). A chi-square test for association was conducted between the three groups with respect to receiving formal mentoring, and there was not a statistically significant difference between the stay, leave and undecided groups, $\chi 2(2) = 1.019$, $p = .601$. In contrast, answers to Question 27 appear similar (Table 9), but an ANOVA test found there to be a statistically significant difference among the groups regarding the importance of having a mentor for those who do not receive mentoring, $F(2, 1{,}890) = 6.091$, $p=.002$; (Stay Mean 3.64, S.D. 1.043; Leave Mean 3.77, S.D. 1.085; Undecided Mean 3.84, S.D. 1.067). A Tukey post hoc test showed the mean difference between the 'No' and 'Undecided' groups to be statistically different at the 0.05 level (.197, $p=.002$).

Table 8.

Q26. Do you Receive Formal Mentoring?

Receive formal mentoring?	Stay		Leave		Undecided	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
No	1,330	69.1	127	72.5	440	69.9
Yes	596	30.9	48	27.5	189	30.1
Total	1,926	100.0	176	100.0	629	100.0

Table 9.

Importance of Having a Mentor and Quality of Mentoring

	Stay				Leave				Undecided			
	N	Mean		Standard Deviation	N	Mean		Standard Deviation	N	Mean		Standard Deviation
	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic
Q27. Importance of having a formal mentor at your institution *Do not receive formal mentoring.*	1,327	3.64	0.29	1.043	127	3.77	0.096	1.085	439	3.84	0.051	1.067
Q27. Importance of having a formal mentor at your institution *Receive formal mentoring.*	596	4.39	0.032	0.777	48	4.38	0.104	0.721	189	4.30	0.059	0.813
Q28. Quality of mentoring you receive *Receive formal mentoring.*	594	3.99	0.040	0.980	48	3.56	0.181	1.259	188	3.56	0.087	1.193

Alternatively, those faculty members who do receive formal mentoring rated the importance of having a formal mentoring at their institution as important to very important (Stay 4.39, S.D. 0.777; Leave 4.38, S.D. 0.721; Undecided 4.30, S.D. 0.813) and the difference in mean score among these three groups was not statistically significant, $F(2,1,084)=.885$, $p=.413$. These same faculty rated their satisfaction with the quality of the mentoring they receive as indifferent (neither satisfied or dissatisfied) to satisfied (Stay Mean 3.99, S.D. 0.980; Leave Mean 3.56, S.D. 1.259; Undecided Mean 3.56, S.D. 1.193) with faculty intending to stay rating their mentoring experience as slightly higher than those who plan to leave or are undecided. These differences were found to be statistically significant after conducting a Welsh ANOVA, $F(2,114.52)=11.852$, $p<.0005$. A Games-Howell post hoc test showed the mean difference between the 'Stay' and 'Leave' groups to be statistically different at the 0.05 level (.425, $p=.019$) and the 'Stay' and 'Undecided' groups to be statistically different at the 0.05 level (.432, $p<.0005$).

In order to further evaluate differences between the three groups (Stay, Leave and Undecided), a cross tabulation was run to see if rank, holding an administrative positon or years employed at their institution and participation in a formal mentoring program provided additional insight into whether or not these variables can further distinguish between the three groups. As noted earlier, the majority of faculty members across all three groups do not participate in a formal mentoring program, although a greater percentage of junior faculty who are planning to stay participate in mentoring (41.1%) than for the other two groups (Leave, 32.5%, Undecided, 37.1%). A chi-square test for

association was conducted between the three groups with respect to receiving formal mentoring and rank (Senior, Junior), and there was a statistically significant difference between the stay, leave and undecided groups, $\chi 2(4) = 41.013$, $p < .005$. (Table 10).

Table 10.

Workplace Status vs. Mentoring: Stay, Leave, Undecided

		Stay					Leave					Undecided				
Formal Mentor?		No	%	Yes	%	Total	No	%	Yes	%	Total	No	%	Yes	%	Total
Rank	Senior	708	81.0	166	19.0	874	38	88.3	5	11.6	43	199	80.5	48	19.4	247
	Junior	610	58.8	426	41.1	1036	89	67.4	43	32.5	132	234	62.9	138	37.1	372
	Total	1,317		592		1,910	127		48		175	433		186		619
Administrative Position	School of Med Dean, Associate Dean, Assistant Dean, Vice Dean	48	82.7	10	17.3	58	4	80.0	1	20.0	5	11	84.6	2	15.4	13
	Division Chief	135	82.8	28	17.2	163	9	90.0	1	10.0	10	38	82.6	8	17.4	46
	Department Chair	26	74.2	9	25.7	35	3	100.0	0	0.0	3	7	87.5	1	12.5	8
	Center Director	95	75.4	31	24.6	126	10	83.3	2	16.7	12	39	78.0	11	22.0	50
	Total	304		78		382	26		4		30	95		22		117
Years at Current Medical School	<10 years	677	59.0	471	41.0	1,148	96	67.6	46	32.4	142	264	62.9	156	37.1	420
	10-20 years	442	80.8	105	19.2	547	28	93.3	2	6.7	30	120	83.3	24	16.7	144
	>20 years	198	93.0	15	7.0	213	2	66.6	1	33.4	3	45	90.0	5	10.0	50
	Total	1,317		591		1,908	126		49		175	429		185		614

The three groups are less differentiated in terms of female faculty who hold administrative positions and also participate in a formal mentoring program, with the exception of Division Chiefs and Center Directors in the group planning to leave, who participate in formal mentoring to a lesser degree than their counterparts in the other two groups. A chi-square analysis of the three groups, participation in mentoring and administrative positions held (Dean, Associate Dean, Division Chief, Department Chair and Center Director) showed that the differences were not statistically significant, $\chi 2(6) = 5.087$, $p = .533$. The last demographic data assessed were the number of years at their current medical school and whether or not they participate in a formal mentoring program. Of the female faculty members who have been with their institution less than 10 years and are planning to stay, 41% participate in a formal mentoring program compared to 32.4% of the group planning to leave, and 37.1% of the undecided group. A chi-square test for association between the three study groups, participation in a formal mentoring program and number of years at their current institution (less than 10 years, 10-20 years and more than 20 years) found that there is a statistically significant difference between the three groups, $\chi 2(4) = 42.312$, $p < .005$. As expected, the numbers of participation in a formal mentoring program begin to drop as the length of employment increases, whether they plan to stay, leave or are undecided.

Research Question Two: What are the similarities and differences in perception of job satisfaction, organizational culture, opportunities for advancement, and participation in formal mentoring between female faculty who intend to stay and female faculty who intend to leave or those who do not know if they will leave?

Job Satisfaction, Culture and Career Advancement Mean Scores

An evaluation of mean scores for each of the three groups with respect to global job satisfaction, organizational culture, and opportunities for advancement provides another dimension of the similarities and differences between those who plan to stay, those who plan to leave, and those who are undecided. In general, faculty who intend to stay had higher mean scores on every question analyzed, versus those who plan to leave or those who do not know. In addition, those who intend to leave had the lowest mean scores on most questions. Those indicating that they do not know if they will stay had mean scores either similar to those who intend to leave or slightly above, but all were less than those who intend to stay.

Job satisfaction. Those faculty who intend to stay at their institution rated satisfaction with their workplace, both department and medical school, as satisfied or nearly satisfied, and if they had it to over again would choose to stay in academia and at their current medical school (Table 11). Faculty who indicated they would be leaving in the next two years had the lowest mean scores of all three groups for satisfaction with their department and their medical school, as well as choosing to work at their current institution. Undecided mean scores were lower than those who will stay for all four questions and slightly higher than those who plan to leave, with the exception of choosing an academic career, where their mean score was lower than those who will leave. A Welch ANOVA was conducted on the mean scores between the three groups for Q45. Your department as a place to work, which confirmed a statistically significant difference in mean scores between the three groups, $F(2, 361.408)=170.952$, $p<.0005$. A

Games-Howell post hoc test confirmed all three mean differences were significant at the 0.05 level. A Welsh ANOVA and post hoc tests were conducted for the remaining three Job Satisfaction questions and all were found to have statistically significant mean differences (Q46: $F(2, 364.615)=149.406$, $p<.0005$ between all three groups; Q49: $F(2, 360.377)=168.980$, $p<.0005$, a Games-Howell post hoc test found no statistically significant difference between the 'Leave' and 'Undecided' groups, $p=.079$; Q50: $F(2, 361.725)=21.598$, $p<.0005$, a Games-Howell post hoc test found no statistically significant difference between the 'Leave' and 'Undecided' groups, $p=.950$).

Table 11.

Job Satisfaction | Mean Scores

		Stay			Leave			Undecided		
		N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Q45.	Your department as a place to work.	1,999	4.02	0.861	183	2.86	1.249	657	3.20	1.043
Q46.	Your medical school as a place to work	1,996	3.85	08.25	183	2.92	1.120	657	3.16	0.955
Q49.	If I had it to do all over, I would again choose to work at this medical school.	1,889	4.04	0.846	172	2.95	1.313	541	3.23	1.055
Q50.	If I had it to do all over, I would again choose an academic career.	1,880	4.23	0.815	164	3.95	1.148	565	3.92	1.050
Valid N (listwise)		1,807			160			497		

Culture. Mean scores for all questions were similar for both faculty planning on leaving and those that do not know (neither satisfied nor dissatisfied), while the highest mean score for each question came from those planning on staying (Table 12). The lowest mean score for those leaving (2.66, S.D. 1.193) was Question 20E, I feel my work is appreciated by the medical school dean's office. This was also the lowest mean score for Undecided (2.71, S.D. 1.122) and was the second lowest mean score for those staying (3.33, S.D. 1.061) although a Welch's ANOVA indicated the three differences to be statistically significant, $F(2,149.490)=42.519$, $p<.0005$. A subsequent Games-Howell post hoc test confirmed a statistically significant difference between the Stay and Leave groups ($p<.0005$) and the Stay and Undecided groups $p<.0005$), but no significant difference between the Leave and Undecided groups ($p=.952$). The lowest mean score for faculty who plan to stay was Question 21C, I feel that the workplace culture at this medical school cultivates: Entrepreneurialism (3.24, S.D. 0.990). This difference in the mean score was statistically significant from the Leave group (2.73, S.D. 1.042) and the Undecided group (2.87, S.D. 1.039), ANOVA $F(2, 1,059)=18.755$, $p<.0005$. A Tukey post hoc test confirmed that the mean difference is significant at the 0.05 level between the Stay and Leave groups ($p<.0005$), and the Stay and Undecided groups ($p<.0005$), but not between the Leave and Undecided groups ($p=.305$).

Consistent, but low, mean scores were recorded for all three groups on Question 21E, The workplace culture at this medical school cultivates: A supportive climate for balancing work and home responsibility (Stay 3.38, S.D, 0.993; Leave 2.92, S.D. 1.175; Undecided 2.84, S.D. 1.035), Welch's $F(2,147.096)=40.177$, $p<.0005$. A Games-Howell

post hoc test showed that the mean difference is significant at the 0.05 level between the Stay and Leave groups (p=.017), and the Stay and Undecided groups (p<.0005), but not between the Leave and Undecided groups (p=.448). Similarly, there was a statistically significant difference between the Stay and Leave groups, and the Stay and Undecided groups, but not between the Leave and Undecided groups for the following questions: Question 21A (Welch's F(2,146.789)=36.909, p<.0005; Stay vs Leave, p=.001; Stay vs Undecided, p<.005; Leave vs Undecided, p=.919), Question 21B (Welch's F(2,431.040)=49.540, p<.0005; Stay vs Leave, p<.0005; Stay vs Undecided, p<.005; Leave vs Undecided, p=.254)., and Question 21D (Welch's F(2,146.510)=42.992, p<.0005; Stay vs Leave, p<.0005; Stay vs Undecided, p<.0005; Leave vs Undecided, p=.999).

Additionally, all three groups mean scores were similar (neutral to agree) with respect to equal opportunities for all faculty regardless of gender, race or sexual orientation, however a Welch's ANOVA found a statistically significant difference between the groups for Question 22A, F(2,146.645)=23.733, p<.0005 and the Games-Howell post hoc test confirmed the mean difference to be significant at the 0.05 level between the Stay and Leave groups (p=.021) and the Stay and Undecided groups (p<.0005), but there was no significant difference between the Leave and Undecided groups (p=.948). Similar differences were found for Question 22C, My medical school offers equal opportunities to all faculty regardless of their sexual orientation, Welch's F(2,146.645)=23.733, p<.0005 and a post hoc test confirmed a statistically significant difference (at the 0.05 level) between the Stay and Leave (p=.028) groups and the Stay

and Undecided groups (p<.0005), but not between the Leave and Undecided groups (p=.921). However, mean scores for the answer to Question 22B, My medical school offers equal opportunities to all faculty regardless of their Race/Ethnicity, Welch's $F(2,146.911)=19.972$, p<.0005, were only significant between the Stay and Undecided groups (p<.0005), but not the Stay and Leave groups (p=.182), nor the Leave and Undecided groups (p=.351).

The highest mean scores for all three groups were in answer to Question 20A, I feel my work is appreciated by: Patients (Stay 4.47, S.D. 0.639; Leave 4.24, S.D. 0.872; Undecided 4.35 S.D. 0.737) as agree to strongly agree. There was a statistically significant difference between the groups, Welch's $F(2,143.042)=9.225$, p<.0005, but a post hoc test confirmed a significant difference between the Stay and Leave groups (p=.033) and the Stay and Undecided groups (p=.001), but not between the Leave and Undecided groups (p=.694). Since the majority of the surveyed faculty members see patients, this is certainly an important aspect of global job satisfaction, but not necessarily an indicator of institutional or peer culture.

The remaining questions in this section, all dealing with Culture, and the subsequent mean scores between the three groups were found to have statistically significant differences. Furthermore, post hoc tests confirmed statistical significance at the 0.05 level between the Stay and Leave groups and the Stay and Undecided groups, but not the Leave and Undecided groups.

Table 12.

Organizational Culture | Mean Scores

		Stay			Leave			Undecided		
		N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Q18A.	How well you fit (i.e., your sense of belonging) in your department	1999	3.98	0.993	183	2.96	1.319	658	3.27	1.162
Q18B.	The quality of professional interaction you have with departmental colleagues	1998	4.05	0.927	183	3.34	1.164	659	3.51	1.07
Q18C.	The quality of personal interaction you have with departmental colleagues	1996	3.99	0.905	183	3.4	.131	658	3.53	1.007
Q18D.	The intellectual vitality in your department	1999	3.88	1.001	183	3.3	1.241	658	3.33	1.112
Q19A.	My departmental colleagues are respectful of my efforts to balance work and home responsibilities	1950	3.93	0.935	178	3.39	1.19	6.28	3.37	1.049
Q19B.	The faculty in my department usually get along well together	1997	4.03	08.56	183	3.56	1.082	655	3.58	0.946
Q20A.	My work is appreciated by: Patients	1441	4.47	0.639	138	4.24	0.872	435	4.35	0.737
Q20B.	My work is appreciated by: Students/residents	1852	4.13	07.53	171	3.93	0.842	584	3.97	0.869
Q20C.	My work is appreciated by: Faculty	1923	3.93	0.798	176	3.48	1.047	607	3.53	0.915
Q20D.	My work is appreciated by: My immediate supervisor	1928	4.10	0.919	179	3.44	1.286	619	3.53	1.186
Q20E.	My work is appreciated by: The medical school dean's office.	1435	3.33	1.061	134	2.66	1.193	445	2.71	1.122
Q21A.	The workplace culture at this medical school cultivates: Collegiality	1942	3.80	0.897	176	3.20	1.122	630	3.29	1.007
Q21B.	The workplace culture at this medical school cultivates: Interdisciplinary work	1939	3.65	0.982	176	3.10	1.165	628	3.25	1.023

Table 12: continued

	Stay			Leave			Undecided		
	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Q21C. The workplace culture at this medical school cultivates: Entrepreneurialism	1676	3.24	0.990	149	2.73	1.042	550	2.87	1.039
Q21D. The workplace culture at this medical school cultivates: Excellence	1954	3.84	0.895	176	3.18	1.191	629	3.29	1.010
Q21E. The workplace culture at this medical school cultivates: A supportive climate for balancing work and home responsibility	1903	3.38	0.993	176	2.92	1.175	612	2.84	1.035
Q22A. My medical school offers equal opportunities to all faculty regardless of their: Gender	1883	3.83	1.070	170	3.36	1.321	596	3.27	1.146
Q22B. My medical school offers equal opportunities to all faculty regardless of their: race/Ethnicity	1790	4.02	0.889	157	3.58	1.238	556	3.55	1.037
Q22C. My medical school offers equal opportunities to all faculty regardless of their: Sexual Orientation	1529	4.06	0.838	130	3.71	1.108	454	3.66	0.918
Valid N (listwise)	773			63			227		

Career advancement. This collection of questions had the lowest mean scores as a group (Table 13). No score reached 4.0 or better (agree to strongly agree) for any question and mean scores for all three groups were comparable to one another when considering standard deviation. (Table 12). Answers to Question 34A, At my medical school, the criteria for promotion are consistently applied to faculty across comparable positions were the lowest mean scores for all three groups (Stay 3.18, S.D. 1.153; Leave 2.67, S.D. 1.302; Undecided 2.65, S.D. 1.204). A Welch's ANOVA showed the differences in scores to be statistically significant, $F(2,291.110)=36.840$, $p<.0005$. A subsequent Games-Howell post hoc test confirmed a statistically significant difference between the Stay and Leave groups ($p<.0005$) and the Stay and Undecided groups $p<.0005$), but no significant difference between the Leave and Undecided groups ($p=.988$). Question 33A, To be promoted in rank, what I must do is reasonable to me: Teaching/education was the highest mean score for faculty staying (3.88, S.D. 0.839) and undecided (3.58, S.D. 0.925) and was the second highest mean score for those leaving (3.57, S.D. 0.966). Again, a Welch's ANOVA indicated the three differences to be statistically significant, $F(2,147.352)=19.111$, $p<.0005$. A Games-Howell post hoc test confirmed a statistically significant difference between the Stay and Leave groups ($p=.04$) and the Stay and Undecided groups ($p<.0005$), but no significant difference between the Leave and Undecided groups ($p=.434$).

Question 33C, To be promoted in rank, what I must do is reasonable to me: Patient care/client services was the highest scoring question for the group planning to leave (3.59, S.D 0.913). Those faculty staying and those who do not know had similar

mean scores (3.82, S.D. 0.856; 3.45, S.D. 0.977) respectively. Collectively, the differences were determined to be statistically significant, Welch's $F(2,147.352)=19.111$, $p<.0005$. However, the only significant difference was between the Stay and Undecided groups ($p<.0005$). The mean score differences between the Stay and Leave ($p=.07$) and the Leave and Undecided ($p=.381$) were not found to be statistically significant at the 0.05 level. The largest mean score differences between those who plan to stay and the other two groups (leave and undecided) were for Question 35A, The pace of your professional advancement at your medical school (Stay 3.41, S.D. 1.008; Leave 2.84, S.D. 1.165; Undecided 2.93, S.D. 1.005), $F(2,1,1030)=34.844$, $p<.0005$ and Question 35B, The opportunities for professional development at your medical school (Stay 3.42, S.D. 1.019; Leave 2.73, S.D. 1.207; Undecided 2.80, S.D. 0.996), Welch's $F(2,143.568)=48.268$, $p<.0005$. Further analysis using post hoc tests confirmed that for both Question 35A and Question 35B, the statistical difference was between the Stay and Leave groups, and the Stay and Undecided groups, but not the Leave and Undecided groups. This was also the case for the remaining questions addressing Career Advancement, where the subsequent mean scores between the three groups were found to have statistically significant differences. Furthermore, post hoc tests confirmed statistical significance at the 0.05 level between the Stay and Leave groups and the Stay and Undecided groups, but not the Leave and Undecided groups.

Table 13.

Career Advancement | Mean Scores

		Stay			Leave			Undecided		
		N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Q32A.	What I must do is clear to me: Teaching/education	1823	3.65	1.097	163	3.10	1.303	597	3.30	1.181
Q32B.	What I must do is clear to me: Research/scholarship	1856	3.75	1.098	167	3.22	1.335	605	3.46	1.147
Q32B.	What I must do is clear to me: Patient care/client services	1426	3.61	1.111	129	3.10	1.228	442	3.10	1.189
Q32D.	What I must do is clear to me: Institutional service	1814	3.44	1.092	161	2.85	1.191	583	3.01	1.139
Q33A.	What I must do is reasonable to me: Teaching/education	1775	3.88	0.839	155	3.57	0.966	566	3.58	0.925
Q33B.	What I must do is reasonable to me: Research/scholarship	1801	3.60	1.016	156	3.31	1.125	580	3.33	1.086
Q33C.	What I must do is reasonable to me: Patient care/client services	1378	3.82	0.856	119	3.59	0.913	414	3.45	0.977
Q33D.	What I must do is reasonable to me: Institutional service	1737	3.71	0.800	147	3.39	0.909	542	3.42	0.848
Q34A.	Criteria for promotion are consistently applied to faculty across comparable positions	1358	3.18	1.153	119	2.67	1.302	426	2.65	1.204
Q34B.	Female and male faculty members have equal opportunities to be promoted in rank	1494	3.54	1.045	131	3.04	1.312	464	2.95	1.156
Q34C.	Minority and non-minority faculty members have equal opportunities to be promoted in rank	1341	3.78	0.883	117	3.27	1.24	393	3.30	1.047
Q35A.	The pace of your professional advancement at your medical school	1894	3.41	1.008	167	2.84	1.165	614	2.93	1.005

Table 13: continued

	Stay			Leave			Undecided		
	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Q35B. The opportunities for professional development at your medical school	1954	3.42	1.019	175	2.73	1.207	632	2.80	0.996
Valid N (listwise)	759			60			214		

Data Reduction: Job Satisfaction, Culture and Career Advancement

Principal Components Analysis (PCA) helps to reduce a large set of variables into a smaller set of representative variables, called principal components. In the case of this study, the reduction of multiple questions into a set of factors will enable further assessment, using logistic regression, of how strongly these components can predict female faculty's intent to stay at their institution. Earlier evaluation of the survey questions that made up the AAMC-COACHE Medical School Faculty Job Satisfaction Survey led to three categories of interest: global job satisfaction, organizational culture, and opportunities for career advancement which are defined as three of the four independent variables used in this study (the fourth being participation in a formal mentoring program). In order to use PCA as a technique for data reduction, the data must pass four assumptions: linearity between variables (noted using a correlation matrix), Kaiser-Meyer-Olkin (KMO) sampling adequacy of the overall data set and of each individual variable, and Bartlett's Test of Sphericity. To reduce the questions of each category into (ideally) a single component representative of each independent variable, three separate principal components analyses were run using questions included in each of the three categories determined earlier in the study. The subsequent analysis and interpretation follows.

Job satisfaction. A principal components analysis (PCA) was conducted on four questions of the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey* that measured global job satisfaction. To determine if PCA could be used for this analysis, the correlation matrix was evaluated, which showed that all variables had at least one

correlation coefficient greater than 0.3. The Kaiser-Meyer-Olkin (KMO) measure was 0.75, a classification of "middling to meritorious" (Kaiser, 1974). Bartlett's Test of Sphericity was statistically significant ($p < .0005$), which means that the data could be factored. In addition, the PCA generated one component that had an eigenvalue greater than one, which explained 61.1% of the total variance. Evaluation of the scree plot confirmed that a single component should be retained (Cattell, 1966).

As noted, the single component explained 61.1% of the total variance. The scale had a high level of internal consistency, as determined by Cronbach's alpha of 0.783. As such, this interpretation was consistent with the intent of the questions, presumably designed to measure overall, or global, job satisfaction. Component loadings and communalities for the Job Satisfaction variable are presented in Appendix B.

Culture. A similar analysis (PCA) was run on 19 questions of the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey* that measured perception of organizational culture. As in the case of the Job Satisfaction questions, to determine if PCA could be used on the culture questions, the correlation matrix was evaluated which showed that all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.925, a "marvelous" fit according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .0005$), which meant the data was suitable for factoring.

PCA generated four components that had eigenvalues greater than one, which explained 42.5%, 9.11%, 7.99%, and 6.5% of the total variance. The scree plot confirmed that four components should be kept. However, further review of the Rotated Component

Matrix revealed loading of specific questions that either were likely not appropriate to include in the Organizational Culture set and/or should be moved to a different variable. Questions 20A and B focused on appreciation of faculty by students and patients. These two questions loaded strongly with one another (.790 and .794 respectively), yet not with any other component. As such, they were eliminated from the assessment.

Questions 22A, B and C all address equal opportunity based on gender, race/ethnicity, or sexual orientation. All three are highly correlated with one another, but not the other components, and therefore were moved to be included in the Career Advancement PCA. A second PCA was run excluding the questions that were eliminated (see above). The analysis resulted in two components that had eigenvalues greater than one, which explained 60.5% of the total variance. A Varimax orthogonal rotation was used to simplify interpretation. It was determined that the data were consistent with the attributes the questionnaire was designed to measure with strong loadings of fit, collegiality, and interpersonal relationship items on Component 1 (Cronbach's alpha = 0.901), and institutional environment items on Component 2 (Cronbach's alpha = 0.849). Component loadings and communalities of the rotated solution for the Culture variable are presented in Appendix C.

Career advancement. A Principal Components Analysis was conducted using the initial 13 questions of the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey* that were identified as measuring perception of opportunities for career advancement As in the case of the Job Satisfaction and Culture questions, to determine if PCA could be used on the career advancement questions, the correlation matrix was

evaluated which showed that all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.892, which like Culture, is a classification of *marvelous* according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .0005$), which confirmed that the data could be factored.

The PCA identified two components that had eigenvalues greater than one and which explained 54.51% and 11.27% of the total variance. Confirmation by the scree plot showed that two components should be retained. As indicated earlier, the decision to include Questions 22A, B and C in the opportunities for career advancement group required a second PCA. The second analysis of this new set of questions satisfied the requirements of PCA in that the correlation matrix showed all variables had at least one correlation coefficient greater than 0.3. Additionally, the Kaiser-Meyer-Olkin (KMO) measure was 0.890. The Varimax orthogonal rotation resulted in three components that had eigenvalues greater than one, which explained 71.52% of the total variance (Component 1 = 50.38%, Component 2 = 14.46%, and Component 3 = 6.68%). As with Job Satisfaction and Culture, analysis of the data showed it was consistent with the attributes the questionnaire was designed to measure with strong loadings of expectations for promotion items on Component 1 (Cronbach's alpha = 0.911), equal opportunity items on Component 2 (Cronbach's alpha = 0.922) and advancement opportunities on Component 3 (Cronbach's alpha = 0.806). Of note was the decision to keep Question 33B, *To be promoted in rank, what I must do is reasonable to me: Research/scholarship* in the Component 1 group, even though it also loaded with Component 3 (.538 vs. .513),

since it appears slightly more aligned with Component 1 and it would not be appropriate to include the same question in two different components. Component loadings and communalities of the rotated solution for the Career Advancement variables are presented in Appendix D.

The final step in the data reduction process is to compute a value for each of the six components that were identified (see Table 14). This was done by using only those questions identified for each component, and finding the average actual score for each combination of questions that loaded on each new component. Note that factor scores were not used to develop the new independent variables. These average scores now become the variables that will be used for the remaining analysis for this research to answer research questions 2, 3 and 4.

Table 14.

New Independent Variables: Component Name, Label, and Description

Component	Label	Description
Job Satisfaction Component 1	JobSat	Global Job Satisfaction
Culture Component 1	CultureFit	Fit, collegiality and interpersonal relationships
Culture Component 2	CultureInst	Institutional environment
Career Advancement Component 1	CAPromo	Expectations for promotion
Career Advancement Component 2	CAEqOp	Equal opportunity
Career Advancement Component 3	CAAdv	Advancement opportunity

Correlations of New Independent Variables

A Pearson correlation analysis was conducted on the total population to evaluate the relationship between the independent variables JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv to determine the significance of those relationships. Cohen (1988) provides guidance on interpreting the strength of the correlation using the Pearson correlation coefficient. Generally, when the coefficient value (| r |) falls between 0.1 and 0.3 (0.1< | r | <0.3), there is a small correlation; when the coefficient value is between 0.3 and 0.5 (0.3< | r | <0.5), there is a moderate correlation; and when the value is greater than 0.5 (| r | >0.5), the correlation between the variables is strong.

In the total population (N=2,598) there was a moderate to strong positive correlation between each of the variables JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv (see Table 15). The strongest correlations were found between JobSat (global job satisfaction) and CultureFit (fit/collegiality/interpersonal relationships) with a correlation coefficient of r=0.656, and between JobSat and CultureInst (institutional environment) where r=0.667. Another measure of correlation is the coefficient of determination. This metric represents the proportion of variance in one variable that is explained by the other variable. This is calculated by taking the square of the correlation coefficient (r^2). Table 15 also shows the coefficient of determination, r^2, for each of the variables. In each instance, this calculation shows the percentage variability that one component (variable) explains for another. Note that for each case, all of the correlations between variables are statistically significant, p<.0005.

Table 15.

Correlations[b] of New Independent Variables

		JobSat	Culture Fit	Culture Inst	CA Promo	CA EqOp	CA Adv
JobSat	Pearson Correlation	1	0.652**	0.664**	0.443**	0.490**	0.591**
	r^2		0.425	0.44	0.196	0.240	0.349
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
CultureFit	Pearson Correlation	0.652**	1	0.637**	0.389**	0.519**	0.530**
	r^2	0.425		0.405	0.151	0.269	0.280
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
CultureInst	Pearson Correlation	0.664**	0.637**	1	0.459**	0.535**	0.594**
	r^2	0.440	0.405		0.210	0.124	0.352
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
CAPromo	Pearson Correlation	0.443**	0.389**	0.459**	1	0.409**	0.578**
	r^2	0.196	0.151	0.210		0.167	0.334
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
CAEqOp	Pearson Correlation	0.490**	0.519**	0.535**	0.409**	1	0.565**
	r^2	0.240	0.269	0.124	0.167		0.319
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
CAAdv	Pearson Correlation	0.591**	0.530**	0.594**	0.578**	0.565**	1
	r^2	0.349	0.280	0.352	0.334	0.319	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	

**Correlation is significant at the 0.01 level (2-tailed).

[b] Listwise N=2598

Once the new independent variables were determined, descriptive statistics were run looking at the mean scores for each variable for the Total Population, those faculty who plan to stay, those who plan to leave, and those who are undecided (See Table 16).

Table 16.

Q48. Do you Plan to Leave the Medical School in the Next 1-2 years?

	Total Population		No		Yes		I Don't Know (IDK)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
JobSat	3.80	.771	4.01	.654	3.13	.932	3.34	.743
CultureFit	3.81	.771	3.98	.659	3.35	.893	3.45	.786
CultureInst	3.40	.769	3.55	.710	2.99	.914	3.07	.765
CAPromo	3.56	.849	3.67	.815	3.20	.973	3.33	.851
CAEqOp	3.66	.940	3.81	.872	3.37	1.15	3.31	.951
CAAdv	3.19	.934	3.35	.894	2.77	1.06	2.82	.860
Valid N (listwise)	2,598		1,797		160		563	

Faculty members who intend to stay have the highest mean scores for all six variables, with Job Satisfaction being the highest at 4.01 (SD 0.654). In contrast, each of the mean scores for faculty who intend to leave and those who are undecided are below that of the total population and the faculty who plan to stay. The highest mean score for the faculty who plan to leave (YES) was CAEqOp (Equal Opportunity) with a score of 3.37 (SD 1.15) and the highest mean score for those undecided (IDK) was CultureFit (fit, collegiality, interpersonal relationships) at 3.45 (SD 0.786). All of the mean scores for both the Yes and I Don't Know groups were less than the total population mean scores. Additionally, a Welch ANOVA was conducted comparing the mean scores of the three groups. There was a statistically significant difference between the three groups and all six variables: JobSat, Welch's $F(2,2,517)=298.423$, $p<.0005$; CultureFit, Welch's $F(2,2,517)=154.804$, $p<.0005$; CultureInst, Welch's $F(2,2,517)=123.480$, $p<.0005$; CAPromo, Welch's $F(2,2,517)=52.727$, $p<.0005$; CAEqOp, Welch's $F(2,2,517)=76.453$, $p<.0005$; and CAAdv, Welch's $F(2,2,517)=97.195$, $p<.0005$. Further post hoc tests

revealed a statistical difference in means scores (at the 0.05 level) between the Stay and Leave groups, and the Stay and Undecided groups for all six variables. On the other hand, there was no significant difference in mean scores between the Leave and Undecided groups for CultureFit (p=.258), CultureInst (p=.574), CAPromo(p=.383), CAEqOp (p=.968) and CAAdv (p=.708). A Games-Howell post hoc test showed that the Job Satisfaction scores between the Leave and the Undecided were significantly different (p=.026). Nevertheless, after a thorough review of the overall mean score comparison, assessment of the similarities between those faculty who intend to leave and those who are undecided found in the earlier raw score evaluation, and the fact that for both the Leave and Undecided scores there was a statistically significant difference from the Stay group, a decision was made to combine these two groups into a single group, defined as those faculty who did not answer 'No' definitively to Question 48, Do you plan to leave the medical school in the next 1-2 years?.

Analysis from this point forward will compare these two groups of female faculty in an attempt to evaluate differences between those who plan to stay and those who either plan to leave or are undecided. Subsequently, a check of the mean scores of the two new groups (No and Not No) versus the total population shows that the 'No' group's mean scores are higher than both the total population and the 'Not No' group (Table 17).

Table 17.

Q48. Do you Plan to Leave? Total Population vs. No vs. Not No

	Total Population		No		Not No	
	Mean	SD	Mean	SD	Mean	SD
JobSat	3.80	.771	4.01	.654	3.30	.771
CultureFit	3.81	.771	3.98	.659	3.43	.811
CultureInst	3.40	.769	3.55	.710	3.05	.800
CAPromo	3.56	.849	3.67	.815	3.30	.880
CAEqOp	3.66	.940	3.81	.872	3.32	1.00
CAAdv	3.19	.934	3.35	.894	2.81	.098
Valid N (listwise)	2,598		1,797		723	

Differences between the 'No' and 'Not No' Groups

The independent-samples t-test measures the difference between the means of two independent groups relative to a continuous dependent variable. For this analysis, an independent-samples t-test will be used to determine whether the mean scores for each of the variables (JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv), differ between female faculty who intend to stay versus those who plan to leave or do not know. The dependent variable for this analysis is the mean score and the independent variable is "intent to stay", which has two groups: "No" and "Not No".

Before the independent-samples t-test can be run, three additional analyses must be conducted. The first analysis is to look for outliers in the data. This was done using SPSS, selecting the 'Normality Plots with Test' option under the 'Explore: Plots' dialogue box, which looked at the two groups of faculty, and the six independent variables. The program identified 61 outliers out of a total number of 2,598 faculty members (this number is derived from a listwise deletion, where individuals missing one or more mean scores out of the six independent variables are excluded). To determine

whether these outliers should remain in the population for the remaining analysis, an in-depth review was conducted of these 61 individuals.

For the faculty group who intend to stay (answered 'No' to the question 'Do you plan to leave the medical school in the next 1-2 years?'), 55 faculty were identified as outliers. Mean scores for ten individuals were outliers on more than one variable. The demographic information on each faculty included seven associated/assistant professors, two professors and one instructor. Half worked in a clinical department and the other half a basic science department. Eight had been with the institution ten or more years (1988-1998), the other two since 2003 and 2008. Eight were either tenured or on a tenure-track and two indicated they were not on a tenure-track. Two held administrative positions (center director and division chief); half held either an MD or a combo MD and PhD; and the others held either PhDs or other degree. The race/ethnicity distribution of the ten was seven white, one Asian, one black, and one Hispanic.

An evaluation of individual answers on mentoring and the questions that served as the basis for the independent variables showed that only one faculty member received formal mentoring, yet most felt having a formal mentor at their institution was important or very important. Generally speaking, most scores to questions on job satisfaction, culture, and career advancement were either a 1 or 2, and their mean scores for one or more of five of the six variables were below the population scores (± S.D.). Note that there were no outliers in the 'No' group for the variable CA3 (Career Advancement: Advancement Opportunities). A review of the remaining outliers in this group confirmed similar answers and demographic distributions to the *Top 10* that were analyzed.

Similarly, those in the 'Not No' group (answered 'Yes' or 'I Don't Know' to Question 48, Do you plan to leave the medical school in the next 1-2 years?') were analyzed. In this group, only six faculty members were outliers. As with the other group, the demographic information on these individuals showed that four were associate/assistant professors, one was a professor, and one chose 'other' on the survey. Four worked in a clinical department and two in a basic science department. Three had been with the institution 10 or more years (1992-1996), two since 2003 and 2006, and one wasn't sure. Three were either tenured or on a tenure-track, two indicated they were not on a tenure-track, and one didn't know). None of the six held an administrative position. Four held either an MD or a combo MD and PhD and the other two either PhDs, or other degrees. The race/ethnicity distribution of the six was 3 white, 2 Asian and 1 Hispanic.

An evaluation of individual answers on mentoring and the questions that served as the basis for the independent variables showed that none of the faculty members received formal mentoring, yet like the other group, most felt having a formal mentor at their institution was important or very important. Most of the group's answers to questions on job satisfaction and culture were either a 1 or 2, and their mean scores for either JobSat or CultureFit were below the population scores (± S.D.). Note that there were no outliers in the 'Not No' group for the variables CultureInst, CAPromo, CAEqOp, and CAAdv. It is worth noting that four of the six respondents answered Question 50 *If I had it to do all over, I would again choose an academic career* with a raw score of either 4 or 5 (agree or strongly agree). The analysis of both groups did not uncover anything out of the ordinary

from the total population in terms of demographics; however, they were still excluded from further analysis based on their unusually low mean scores on one or more of the independent variables.

The second analysis is a test to determine if the mean scores for the two groups are normally distributed. Again, using SPSS, the 'Normality Plots with Test' option was selected under the 'Explore: Plots' dialogue box and an analysis was conducted on the new data set that did not include the outliers assessed above. The Tests for Normality output can be depicted using two types of statistics: the Kolmogorov-Smirnov test and the Shapiro-Wilk test. For tests on smaller sample sizes, Shapiro Wilks output is used since it has more power to determine differences in normality (Field, 2009; Laerd Statistics, 2016), and for those with an $n > 2000$ the Kolmogorov-Smirnov output is the appropriate statistic to use. When the distribution of data is normal (the assumption of normality is met), the significance level will be more than .05 (i.e., $p > .05$). However, if the data is not normally distributed, the assumption of normality is violated, and the significance level will be less than .05 (i.e., $p < .05$).

In this analysis, using the Kolmogorov–Smirnov test output since the $n>2000$, the significance level for each variable is $p<.0005$ (Table 18), which means the data's distribution is not equal to a normal distribution, and the assumption of normality is violated. Nevertheless, a decision was made to continue with the analysis since the sample size was so large.

Table 18.

Tests of Normality: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

		Kolmogorov-Smirnov [a]		
No_Not No		Statistic	Df	Sig.
JobSat	No	0.150	1,743	0.000
	Not No	0.075	719	0.000
CultureFit	No	0.081	1,743	0.000
	Not No	0.058	719	0.000
CultureInst	No	0.074	1,743	0.000
	Not No	0.063	719	0.000
CAPromo	No	0.107	1,743	0.000
	Not No	0.086	719	0.000
CAEqOp	No	0.190	1,743	0.000
	Not No	0.161	719	0.000
CAAdv	No	0.131	1,743	0.000
	Not No	0.086	719	0.000

Note. Additionally, a visual inspection of histograms and Q-Q plots confirmed that the data is not representative of a normal distribution.
[a] Lilliefors Significance Correction

The third analysis before the independent samples t-test can be interpreted is to check whether the population variances are equal. In SPSS, an Independent Samples Test was conducted, again using listwise deletion. The means, standard deviations, and standard error of the means of the two groups can be found in Table 19.

Table 19.

Group Statistics: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

No_Not No		N	Mean	Standard Deviation	Std. Error Mean
JobSat	No	1,743	4.0711	0.60238	0.01443
	Not No	719	3.3029	0.78239	0.02918
CultureFit	No	1,743	4.0324	0.64054	0.01534
	Not No	719	3.4419	0.80364	0.02997
CultureInst	No	1,743	3.5982	0.67972	0.01628
	Not No	719	3.0650	0.79820	0.02977
CAPromo	No	1,743	3.7181	0.77580	0.01858
	Not No	719	3.3313	0.86336	0.03220
CAEqOp	No	1,743	3.8587	0.82406	0.01974
	Not No	719	3.3231	0.99434	0.03709
CAAdv	No	1,743	3.3965	0.87097	0.02086
	Not No	719	2.8098	0.91805	0.03424

To check if the population variances are equal, the Levene's Test for Equality of Variances output is consulted (Table 20). If the population variance of both groups, No versus Not No, is equal, the p-value will be greater than 0.05 (i.e., $p > .05$), meaning the assumption of homogeneity of variances has been met. Alternatively, if the test shows a p-value less than 0.05 ($p < .05$), the population variances between the two groups are unequal, meaning the assumption of homogeneity of variances has been violated. For the variables JobSat, CultureFit, CultureInst and CAEqOp, $p<.005$ for Levene's Test for Equality of Variances which means the assumption of homogeneity of variances has been violated and the population variances are not equal. This is also true for the variable CAPromo, with a significance value of $p=.001$. In the case of CAAdv, however, the significant value is $p=.076$ which is greater than .05, therefore the assumption of homogeneity of variances is met.

Table 20.

Independent Samples Test: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
JobSat	Equal Variances Assumed	89.017	0.000	26.258	2460	0.000	0.76819	0.02926	0.71083	0.82556
	Equal Variances Not Assumed			23.598	1085.172	0.000	0.76819	0.03255	0.70432	0.83207
CultureFit	Equal Variances Assumed	58.198	0.000	19.247	2460	0.000	0.59047	0.03068	0.53031	0.65063
	Equal Variances Not Assumed			17.536	1111.985	0.000	0.59047	0.03367	0.52440	0.65654
CultureInst	Equal Variances Assumed	21.632	0.000	16.793	2460	0.000	0.53320	0.03175	0.47093	0.59546
	Equal Variances Not Assumed			15.714	1168.532	0.000	0.53320	0.03393	0.46662	0.59977
CAPromo	Equal Variances Assumed	12.078	0.001	10.877	2460	0.000	0.38685	0.03556	0.31711	0.45659
	Equal Variances Not Assumed			10.405	1219.994	0.000	0.38685	0.03718	0.3131	0.45979
CAEqOp	Equal Variances Assumed	63.725	0.000	13.775	2460	0.000	0.53559	0.03888	0.45935	0.61184
	Equal Variances Not Assumed			12.749	1144.452	0.000	0.53559	0.04201	0.45317	0.61802
CAAdv	Equal Variances Assumed	3.160	0.076	14.957	2460	0.000	0.58671	0.03923	0.50979	0.66363
	Equal Variances Not Assumed			14.633	1277.366	0.000	0.58671	0.04010	0.50805	0.6637

Earlier it was established that the mean JobSat score for No (4.07 ± 0.60) was higher than that for Not No (3.30 ± 0.78). The independent-samples t-test (Table 19) shows that there was a statistically significant difference in the JobSat score between No and Not No, with No scoring higher than not No, 0.76819 (95% CI, 0.71 to 0.82), $t(1085.172) = 23.598$, $p < .0005$.

Similar results were found for each of the remaining variables. There was a statistically significant difference in score between No and Not No for the variables CultureFit, CultureInst, CAPromo, CAEqOp and CAAdv. The assumption of homogeneity of variances was met for CAAdv, and there was also a statistically significant difference in CAAdv score between No and Not No, with No scoring higher than Not No, 0.58671 (95% CI, 0.03 to 0.50), $t(2460) = 14.957$, $p < .0005$. The independent samples t-test confirms that there is a statistically significant difference between the No and Not No groups, with mean differences ranging from 0.386 (CAPromo) to 0.768 (JobSat), and confirms that when analyzed independently, each independent variable can be used to measure a statistically significant difference between the No and Not No groups.

A comparison between the two groups and their answers to questions regarding mentoring offer another perspective on their similarities and differences. A total of 2,673 (86.9%) respondents answered Question 26 Do you receive formal mentoring (that is, have you been matched by the medical school or your department with a colleague to provide ongoing career guidance and advice)? The breakdown of this total and the two faculty groups can be found in Table 21. A chi-square test for significance between the

'No' and 'Not No' groups with respect to participation in a formal mentoring program found no statistically significant difference, $\chi 2(1) = 0.870$, $p = .351$.

Table 21.

Receive Formal Mentoring | No vs. Not No

Q48. Do you plan to leave the medical school in the next 1-2 years?		Q26. Receive formal mentoring		
		No	Yes	Total
	No	1,284	590	1,874
	Not No	562	237	799
Total		1,846	827	2,673

When asked Question 27. How important or unimportant to you is having a formal mentor at your institution?, 2,783 (90.4%) responded. Of those who do not plan to leave rated having a mentor as important or very important (3.86, S.D. 1.02). Similarly, the group that did not definitively state they do not plan to leave rated having a mentor as important or very important, yet their mean score was significantly higher than the group planning to stay (3.96, S.D. 1.01, $F(1,2,780) = 5.714$, $p=.017$).

The breakdown of Question 27 between the two groups based on how they answered Question 26 can be found in Tables 22, 23 and 24. The mean score for those who do not receive formal mentoring in the group who does not plan to leave rated having a formal mentor 3.62 (S.D. 1.04). In contrast, the mean score for those faculty who did not answer 'No' to Question 48 and do not have a mentor was higher at 3.82 (S.D. 1.06). An ANOVA test confirmed this difference is statistically significant, $F(1, 1,840) = 13.822$, $p<.0005$. Those who received formal mentoring in the 'No' group rated

the importance of having a formal mentor as important or very important with a mean score of 4.39 (S.D. .767), and the 'Not No' group rated it important or very important (4.32, S.D. .794). This difference was not found to be statistically significant, $F(1, 825) = 1.630$, $p=.202$.

Table 22.

Q27. Having a Formal Mentor at Your Institution | No vs Not No

Q48. Do you plan to leave the medical school in the next 1-2 years?	N	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
No					3.81	3.90
Not No	837	3.96	1.014	.035	3.89	4.03
Total	2783	3.89	1.022	.019	3.85	3.93

Table 23.

Importance of Having a Formal Mentor at Your Institution; Does Not Receive Formal Mentoring | No vs. Not No

Q48. Do you plan to leave the medical school in the next 1-2 years?	N	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
No	1281	3.62	1.039	.029	3.56	3.68
Not No	562	3.82	1.069	.045	3.73	3.91
Total	1843	3.68	1.052	.024	3.63	3.73

Table 24.

Importance of Having a Formal Mentor at Your Institution; Receives Formal Mentoring | No vs. Not No

Q48. Do you plan to leave the medical school in the next 1-2 years?	N	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
No	590	4.39	.767	.032	4.33	4.45
Not No	237	4.32	.794	.052	4.21	4.42
Total	828	4.37	.775	.027	4.32	4.42

Table 25.

Q28. Quality of Mentoring You Receive | No vs. Not No

Q48. Do you plan to leave the medical school in the next 1-2 years?	N	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
No	588	4.00	.974	.040	3.92	4.08
Not No	236	3.56	1.204	.078	3.40	3.71
Total	824	3.87	1.063	.037	3.80	3.94

Further assessment of those who received formal mentoring included rating the quality of the mentoring they receive (Table 25). The mean score (4.00, S.D. .974) for the 'No' group indicates they were satisfied or very satisfied with the quality of mentoring they receive. However the 'Not No' faculty group had a lower mean score of 3.56 (S.D. 1.204) for the quality of the formal mentoring they received. The differences between the means of these two groups with respect to the quality of the mentoring they receive was statistically significant, Welch's $F(1, 365.088) = 24.842$, $p<.0005$. Note that 108 (4% of the total population) faculty indicated that they 'Don't Know' if they received formal mentoring. These data were not included in the analysis.

A final analysis between the two groups, those who plan to stay versus those who plan to leave, or are undecided looked at mean scores in answer to questions on retention. Of the female faculty members who intend to stay at their institution, nearly 50% agreed or strongly agreed that their medical school is successful in retaining high quality faculty members (3.28, S.D. 1.067), in contrast to the 'Not No' group (planning to leave or undecided) where 50% disagree or strongly disagree with this statement (2.63, S.D. 1.120) (Table 26).

Table 26.

Retention: Overall and of Female Faculty Members | No vs. Not No

	Q48. Do you plan to leave the medical school in the next 1-2 years?	N	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean	
Q39D. My medical school is successful in retaining high quality faculty members	No	1534	3.28	1.067	.027	3.23	3.34
	Not No	602	2.63	1.120	.046	2.54	2.72
	Total	2136	3.10	1.122	.024	3.05	3.15
Q39E. My department is successful in retaining high quality faculty members	No	1534	3.47	1.027	.026	3.42	3.52
	Not No	602	2.75	1.153	.047	2.66	2.84
	Total	2136	3.27	1.112	.024	3.22	3.31
Q40C. My department is successful in retaining female faculty members	No	1534	3.71	.954	.024	3.66	3.76
	Not No	602	3.04	1.129	.046	2.95	3.13
	Total	2136	3.52	1.050	.023	3.48	3.57

When asked the same question about their department, 54% of the 'No' group agreed or strongly agreed (3.47, S.D. 1.027), compared with 31.2%, yet 43.1% of this same group disagreed or strongly disagreed with the second statement (2.75, S.D. 1.153). With respect to retention of female faculty, 66.9% of the 'No' group agreed or strongly agreed and only 13.5% disagreed or strongly disagreed (3.71, S.D. .954). The 'Not No'

group was somewhat more evenly distributed among their scores, where 40.8% agreed or strongly agreed, 27.7% were indifferent, and 31.3% disagreed or strongly disagreed (3.04, S.D. 1.129). There was a statistically significant difference in mean scores between both groups for each question related to retention, Q39D Welch's $F(1, 1{,}052.615) = 152.663$, $p=.042$; Q39E Welch's $F(1, 994.754) = 180.279$, $p<.0005$; Q40C Welch's $F(1, 954.444) = 163.918$, $p<.0005$.

Predictive Value of Perception of Organizational Culture, Job Satisfaction, and Opportunities for Advancement

Research Question 3: Which combination of the following variables is the strongest predictor of female faculty's intent to stay at their current institution: perceptions of job satisfaction, organizational culture, and opportunities for advancement?

The goals of a binomial logistic regression are to determine which independent variables (if any) have a statistically significant effect on the dependent variable and how well the subsequent model can predict the dependent variable. Before running a binomial logistic regression, a couple of assumptions must be met. The first is to determine if the data meet the assumptions of linearity. In the case of this study, linearity of the independent variables JobSat, CultureFit, CultureInst, CAPromo, CAEqOp and CAAdv relative to the dependent variable was assessed using the Box-Tidwell (1962) procedure. In addition, a Bonferroni correction was applied using all seven of the variables in the model (Tabachnick & Fidnell, 2006). Since there are 13 terms in this model, including 2-way interactions, I divided the p-value (statistical significance is typically accepted at p <

0.5) by the number of terms in the model. Therefore, the new level at which statistical significance would be accepted for this model is when $p < .00384$ (i.e., $.05 \div 13$). If the interaction term is statistically significant, the original independent variable is not linearly related to the logit of the dependent variable. Based on this new level of acceptance of statistical significance, all continuous independent variables in the model are linearly related to the logit of the dependent variable. We know this because all p-values are above .00384 (see Table 27). We can conclude then, that all of the independent variables JobSat, CultureFit, CultureInst, CAPromo, CAEqOp and CAAdv were found to be linearly related to the logit of the dependent variable, Intent to Stay.

Table 27.

Variable(s) Entered: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

Variables	B	S.E.	Wald	Df	Sig.	Exp.(B)
JobSat	1.388	1.110	1.565	1	0.211	4.007
CultureFit	1.356	1.024	1.754	1	0.185	3.883
CultureInst	-1.643	0.934	3.094	1	0.079	0.193
CAPromo	-1.292	0.719	3.226	1	0.072	0.275
CAEqOp	-0.289	0.634	0.209	1	0.648	0.749
CAAdv	0.545	0.635	0.736	1	0.391	1.724
In_JobSat by JobSat	-1.186	0.506	5.494	1	0.019	0.305
In_CultureFit by CultureFit	-0.728	0.461	2.495	1	0.114	0.483
In_ CultureInst by CultureInst	0.798	0.438	3.316	1	0.069	2.221
In_ CAPromo by CAPromo	0.596	0.334	3.176	1	0.075	1.815
In_ CAEqOp by CAEqOp	0.110	0.296	0.138	1	0.710	1.117
In_ CAAdv by CAAdv	-0.267	0.311	0.733	1	0.392	0.766
Constant	2.188	1.909	1.314	1	0.252	8.918

[A] Variable(s) entered: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, CAAdv, In_JobSat * JobSat, In_CultureFit * CultureFit, In_ CultureInst * CultureInst, In_ CAPromo * CAPromo, In_CAEqOp * CAEqOp, In_CAAdv * CAAdv

The other assumption is managing for, or deleting, outliers. As discussed earlier in this chapter, using SPSS, 61 outliers were identified out of a total number of 2,598 faculty members (this number is derived from a listwise deletion, where individuals missing one or more mean scores out of the six independent variables are excluded). These 61 cases were deleted from the data set and were not included in any subsequent analysis.

SPSS was used to conduct a binomial logistic regression. Using listwise deletion, 645 cases were missing, leaving 2,558 cases to include in the subsequent analysis. It is worth noting that an evaluation of those 645 missing cases did not uncover any trends relative to why one or more of the questions were not answered or variables were not present. To answer Question 3, (Can female faculty's perception of job satisfaction,

organizational culture, and opportunities for advancement predict intent to stay?) all six independent variables were loaded into the model to test for significance.

A baseline analysis provides a foundation to evaluate the core binomial logistic regression analysis before the independent variables are added to the model. In this case, without any independent variables, when we assume that all participants do not plan to leave, the model correctly classified 70.8% of the cases. That is the model correctly predicted that 1,743 participants will stay, which left 719 participants that were incorrectly predicted as staying (1,743/2,462 = .708).

The Omnibus Tests of Model Coefficients evaluated the overall statistical significance of the model. It does this by determining how well the model predicts categories versus no independent variables. The test concluded that the model was statistically significant ($p < .0005$). To test the strength of the model, the Hosmer and Lemeshow goodness-of-fit test is conducted. In this case, a good-fitting model would not be statistically significant. Using an alpha of $p<.05$ to test for statistically significance of the model, the statistical significance of the Hosmer and Lemeshow goodness-of-fit test is not significant ($p=.16$), confirming that the model accurately predicts the dependent variable, intent to stay (see Table 28).

Table 28.

Hosmer and Lemeshow Test: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

Chi-square	Df	Sig.
18.837	8	0.16

To determine how much variation in the dependent variable can be explained by the model, SPSS calculates the Cox & Snell R^2 and Nagelkerke R^2 values, also referred to as pseudo R^2values. In this case the Nagelkerke R^2 value is used. The variation explained in the dependent variable based on the model is 30.4% (see Table 29).

Table 29.

Model Summary: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
2382.502[a]	0.213	0.304

[a] Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.

Estimating the probability of an event occurring (in this case, 'Answering No to Question 48 *Do you plan to leave the medical school in the next 1-2 years?*) is the goal of logistic regression analysis. If the estimated probability of the event occurring is greater than or equal to 0.5, SPSS classifies the event as occurring (e.g., staying). If the probability is less than 0.5, SPSS classifies the event as not occurring (e.g., leaving or undecided). Note that for this analysis, "Not No" (leaving or undecided) was coded as a '0' and "No" (staying) was coded as a '1' in SPSS.

As noted in Table 30, the regression analysis used a cut value of .500. This means that if the probability of a case being classified into the "Not No" category is greater than .500, then that unique case would be classified into the "Not No" category. Otherwise, the case would be classified as being in the "No" category. Earlier analysis showed that 70.8% of the cases could be correctly classified by assuming that all cases were classified as "No" (do not plan to leave in the next two years). When the independent variables are added, the model correctly classifies 77.7% of cases, meaning the addition of the independent variables improves the overall prediction of cases into the original (observed) categories of the dependent variable.

Table 30.

Classification Table [a] *with JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv*

Observed	Predicted		
	Not No	No	Percentage Correct
Not No	313	406	43.5
No	142	1,600	91.8
Overall Percentage			77.7

[a] *The cut value is .500*

Sensitivity is a measure of the percentage of cases that had the observed characteristic ("Not No", meaning Intent to Leave or I Don't Know) and were correctly predicted by the model. In this study, 91.8% of participants who do plan to stay were also predicted by the model to stay (Table 30). Another measure is the percentage of cases that did not have the observed characteristic (e.g., "Not No", they plan to leave or are undecided) and were also correctly predicted as not having the observed characteristic

(true negatives). This speaks to the specificity of the model. In this study, 43.5% of participants who plan to leave or were undecided were correctly predicted by the model as planning to leave or undecided.

The positive predictive value is the percentage of cases that were correctly predicted with the observed characteristic, compared to the total number of cases predicted as having the characteristic. For this study the calculation is 100 x (1600 ÷ (1600 + 406)) which is 79.76%. Thus, of all cases predicted as Staying, 79.76% were correctly predicted. The negative predictive value is the percentage of cases correctly predicted without the observed characteristic, compared to the total number of cases predicted as not having the characteristic. The calculation for this percentage is 100 x (313 ÷ (142 + 313)) which is 68.64%. For all cases predicted as Leaving or IDK, 68.64% were correctly predicted

Table 31 highlights the contribution of each independent variable to the model and its statistical significance. To determine the statistical significance for each of the six independent variables in terms of their contribution to the model, the Wald test is used. For this model, where significance is determined at the 0.05 level, JobSat ($p < .005$), CultureFit ($p < .005$) and CAEqOp ($p = .039$) added significantly to the model relative to their predictive value, but CultureInst ($p = .408$), CAPromo ($p = .807$), and CAAdv ($p = .914$) did not add significantly to the model.

Table 31.

Logistic Regression Predicting Intent to Stay Based on Mean Scores for JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, and CAAdv

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
JobSat	1.374	0.105	171.142	1	0.000	3.953	3.217	4.857
CultureFit	0.350	0.093	14.169	1	0.000	1.420	1.183	1.704
CultureInst	-0.082	0.099	0.686	1	0.408	0.922	0.759	1.118
CAPromo	0.019	0.077	0.060	1	0.807	1.019	0.877	1.184
CAEqOp	0.139	0.068	4.246	1	0.039	1.150	1.007	1.313
CAAdv	-0.009	0.079	0.012	1	0.914	0.991	0.849	1.158
Constant	-5.806	0.355	266.980	1	0.000	332.140		

[a] Variable(s) entered: JobSat, CultureFit, CultureInst, CAPromo, CAEqOp, CAAdv.

The final measure, based upon the output from the binomial logistic regression analysis, is the odds ratio of each of the independent variables along with their confidence intervals. These statistics indicate the change in odds for each increase or decrease in one unit of an independent variable (Table 33). In the case of JobSat, when controlling for CultureFit and CAEqOp, for each unit increase, (one point on the Job Satisfaction mean score) the odds of answering No increase by a factor of 3.952. Similarly, for each unit increase in the CultureFit score, after controlling for JobSat and CAEqOp, the odds of answering No increase by a factor of 1.420. Lastly, when looking at the CAEqOp variable, controlling for JobSat and CultureFit, for each unit increase in the score, the odds of answering No to Question 48 increase by a factor of 1.15.

Predictive Value of Formal Mentoring, Job Satisfaction, Perception of Interpersonal Culture, and Equal Opportunity

Research Question 4: Can female faculty's perception of job satisfaction, organizational culture, opportunities for advancement, and participation in formal mentoring predict intent to stay at their current institution?

To answer the fourth, and final question in this study, a hierarchical binomial logistic regression was conducted using the three independent variables that were earlier found to be statistically significant in the prediction of the dependent variable, intent to stay, and a fourth independent variable, participation in a formal mentoring program. Hierarchical regression adds one variable at a time, allowing evaluation of the significance of the variable and its contribution to the model (how well one or more of the independent variables can predict the dependent variable).

First, however, a test for linearity for the three continuous variables, JobSat, CultureFit and CAEqOp, with respect to the logit of the dependent variable was again assessed using the Box-Tidwell procedure. Since there are seven terms in this model, including 2-way interactions (JobSat, CultureFit, CAEqOp, In JobSat*JobSat, In_CultureFit*CultureFit, In_ CAEqOp * CAEqOp and the constant), I divided the p-value (0.05) by the number of terms in the model. Therefore, the new level at which statistical significance would be accepted for this model is when $p < .007$ (i.e., $.05 \div 7$). As noted earlier, if the interaction term is statistically significant, the original independent variable is not linearly related to the logit of the dependent variable. Based on this new

level of acceptance of statistical significance, all continuous independent variables in the model are linearly related to the logit of the dependent variable (Table 32).

Table 32.

Variables in the Equation: JobSat, CultureFit, and CAEqOp

	B	S.E.	Wald	Df	Sig.	Exp(B)
JobSat	2.543	1.359	3.053	1	0.061	12.724
CultureFit	1.311	1.265	1.074	1	0.300	3.709
CAEqOp	1.680	0.659	6.498		0.011	5.265
In_JobSat by JobSat	-0.559	0.604	0.855	1	0.355	0.572
In_CultureFit by CultureFit	-0.424	0.559	0.576	1	0.448	0.654
In_CAEqOp by CAEqOp	-0.715	0.305	5.499		0.019	0.489
Constant	10.081	2.309	19.064	1	0.000	23889.314

[a]Variable(s) entered: JobSat, CulturFit, CA2, In_JobSat *JobSat, In_Culturefit*CultureFit, CAEqOp *In_ CAEqOp.

Using SPSS, a hierarchical logistic regression was run with the three statistically significant variables that contributed to the model utilized for Question 3: JobSat ($p < .0005$) and CultureFit ($p < .0005$), CAEqOp ($p=.039$) AND the primary independent variable, Mentoring. Using listwise deletion, 559 cases were missing, leaving 2,644 cases to include in the subsequent analysis. As with the analysis for Question 3, an assessment of these 559 cases did not identify any trends or commonalities among those female faculty who elected to not answer one or more of the questions, or have missing variables. The categorical coding of the fourth independent variable, answer to Question 26, Do you receive formal mentoring? was confirmed as either Yes or No.

The baseline assessment of the second model showed that without any independent variables added, the model can correctly classify 70.6% of the cases with an

assumption that all participants do not plan to leave. That is the model correctly predicted that 1,795 participants will stay, which left 747 participants that were incorrectly predicted as staying.

Next, the overall statistical significance of the model at each step shows how well the model predicts the categorical dependent variable compared to no independent variables. Table 33 shows that the model using only Mentoring to predict intent to stay is not statistically significant (p=0.318). However, adding the remaining independent variables, one at a time improves the predictive value of the model in a statistically significant capacity (Mentoring + JobSat, p<.0005; Mentoring + JobSat + CultureFit, p<.0005; Mentoring + Job Sat + CultureFit + CAEqOp, p=0.01).

Table 33.

Omnibus Tests of Model Coefficients: Mentoring, JobSat, CultureFit, and CAEqOp

	Chi-square	Df	Sig.
Mentoring	0.998	1	0.318
Block	0.998	1	0.318
Model	0.998	1	0.318
Men + JobSat	561.544	1	0.000
Block	561.544	1	0.000
Model	562.542	2	0.000
Men+JobSat+CultureFit	27.722	1	0.000
Block	27.722	1	0.000
Model	590.264	3	0.000
Men+JobSat+CultureFit+CAEqOp	6.677	1	0.010
Block	6.677	1	0.010
Model	596.940	4	0.000

Similar to the evaluation for Question 3, an additional test looking at goodness of fit was conducted using the Hosmer and Lemeshow goodness-of-fit test. Using the

adjusted alpha of $p < .007$, this test shows that the model with only Mentoring ($p<.0005$) is not a good fitting model in predicting the dependent variable. Yet when the variable JobSat is added ($p=.040$), it is a good fit. Adding CultureFit to Mentoring and JobSat is not a good fitting model ($p=.006$), but adding CAEqOp to the other three independent variables is a good fitting model ($p=.008$) (see Table 34).

Table 34.

Hosmer and Lemeshow Test: Mentoring, JobSat, CultureFit, and CAEqOp

Variables	Chi-square	Df	Sig.
Mentoring only	0.00	0	0.000
Men+JobSat	16.203	8	0.040
Men+JobSat+CultureFit	21.359	8	0.006
Men+JobSat+CultureFit+CAEqOp	20.576	8	0.008

How much variation in the dependent variable can be explained by the model was assessed using the Nagelkerke R^2 values for each step. As Table 35 shows, the model explains 0.1% of the variation of the dependent variable using only Mentoring, 28.3% of the variation when JobSat is added to Mentoring, 29.5% when CultureFit is added to Mentoring and JobSat, and 29.8% when CAEqOp is added to Mentoring, JobSat and CultureFit.

Table 35.

Model Summary: Mentoring, JobSat, CultureFit, and CAEqOp

Variables	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Mentoring only	3078.514[a]	0.000	0.001
Men+JobSat	2516.971[b]	0.198	0.283
Men+JobSat+CultureFit	2489.249[b]	0.207	0.295
Men+JobSat+CultureFit+CAEqOp	2482.572[b]	0.209	0.298

[A] Estimation terminated at iteration number 3 because parameter estimates changed by less than 0.001.
[B] Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.

Similar to the analysis conducted to answer Question 3, the logistic regression was used to estimate the probability of an event occurring (Answering No to Question 48 "Do you intend to leave your institution in the next 2 years?"). If the estimated probability of the event occurring is greater than or equal to 0.5, SPSS classifies the event as occurring (e.g., staying). If the probability is less than 0.5, SPSS classifies the event as not occurring (e.g., leaving or IDK).

Table 36 shows the improvement of the model's ability to correctly classify cases. As before, a cut value of .500 means that if the probability of a case being classified into the "No" category is greater than .500, then that case is classified into the "No" category. Otherwise, the case is classified as in the "Not No" category. The model's ability to correctly classify cases without any independent variables was noted earlier (70.6%), assuming that all cases were classified as "No" (do not plan to leave in the next 2 years).

Table 36.

Classification Table[a] *| Mentoring, JobSat, CultureFit, and CAEqOp*

		Predicted		
		Not No	No	Percentage Correct
Mentoring Only	Not No	0	747	0.00
	No	0	1,795	100.0
Overall Percentage				70.6
Mentor + JobSat	Not No	322	425	43.1
	No	166	1,630	90.8
Overall Percentage				76.8
Mentor + JobSat+CultureFit	Not No	323	425	43.2
	No	147	1,648	91.8
Overall Percentage				77.5
Mentor + JobSat+CultureFit+CAEqOp	Not No	331	416	44.3
	No	151	1,644	91.6
Overall Percentage				77.7

[a] The cut value is .500

Adding the independent variables one at a time, the model with just mentoring shows no improvement in the prediction rate of the model. However, adding JobSat improves the model's ability to correctly classify cases to 76.8%. Furthermore, the addition of CultureFit to Mentoring and JobSat improves the prediction rate to 77.5% and the overall percentage of accuracy in classification with all four variables, Mentoring, JobSat, CultureFit and CAEqOp is 77.7%.

The Wald test determines statistical significance for each hierarchical step in the model and the subsequent combinations of independent variables in terms of their contribution to the model (Table 37). Each independent variable, after controlling for the others, and its contribution to the model, is statistically significant at the 0.05 level. As noted earlier, the model including all four variables (Mentoring, JobSat, CultureFit and CAEqOp) is the strongest predictor of intent to stay at 77.7%.

Table 37.

Logistic Regression Predicting Intent to Stay Based on Participation in a Formal Mentoring Program and Mean Scores for JobSat, Culturefit, and CAEqOp

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Mentoring	0.278	0.109	6.503	1	0.011	1.312	1.066	1.634
JobSat	1.269	0.091	195.508	1	0.000	3.557	2.978	4.250
CultureFit	0.375	0.087	18.364	1	0.000	1.454	1.225	1.726
CAEqOp	0.159	0.061	6.718	1	0.010	1.172	1.040	1.322
Constant	-6.001	0.350	294.978	1	0.000	.002		

The odds ratio for each of the independent variables explains the change in the odds for each increase or decrease in one unit of the independent variable. In the case of Mentoring, the odds of answering No to Question 48, after controlling for JobSat, CultureFit and CAEqOp are 1.32 times greater for faculty who participate in a formal mentoring program. With Job Satisfaction, for each unit increase in the Job Satisfaction score the odds of answering No increase by a factor of 3.55 when holding Mentoring, CultureFit and CAEqOp at a constant value. Similarly, one unit increase of the CultureFit score, after controlling for Mentoring, JobSat and CAEqOp means the odds of answering No to Question 48 increase by a factor of 1.45, and for every one unit increase in the CAEqOp score, the odds of answering No, after controlling for Mentoring, JobSat and CultureFit improve by a factor of 1.17.

As described in Chapter Three, the survey instrument used to collect the data that was used for this study included open-ended Question 51 Please use the space below to tell us the number one thing that you, personally, feel your medical school could do to improve the workplace. A total of 3,278 female faculty members answered this question,

some with a single word, others a full paragraph or two. Over a third (n=1,157) of the answers were redacted, presumably due to information contained within the answer that would/could lead to the identity of the individual respondent, leaving 2,121 individual responses to Q51 to assess.

To evaluate the responses, in particular those relevant to the specific aspects of this study, answers were coded based on the following key words: satisfaction, culture, promotion and mentoring). A subsequent review of the data revealed six themes, or categories that were prevalent among the responses. Culture, career advancement/promotion and mentoring were among the six, rounded out by resources, communication and work/life balance. Appendix E shows these themes, along with sample verbatim responses that provide insight into the different perspectives relative to each theme. Additionally, the corresponding organizational justice tenet is assigned to each response in an effort to link the themes to the study's theoretical construct, providing context and texture to the general perspectives of the respondents.

In summary, this chapter reported on the results of the different analysis conducted to answer each research question. Descriptive statistics were run to compare and contrast demographic data among the three study groups: stay, leave, and undecided. Similarities among the groups were found in type of degree held, race, department, administrative positions held, and clinical practice. Differences that were found to be statistically significant included rank, years employed at current institution, and tenure status. Both similarities and differences between the three groups were found with respect

to participation in a formal mentoring program, as well as various aspects of mentoring in general relative to other employment characteristics.

Descriptive statistics were also run to compare and contrast the mean scores of answers to survey questions that made up each independent variable category in order to assess whether or not answers to those questions could distinguish one group from the other. Answers for all three categories: job satisfaction, culture, and career advancement were found to be statistically significant between the groups. Additionally, a data reduction technique called Principle Components Analysis was utilized to reduce the mean scores of multiple questions from the survey down to a set of six components or variables: Global Job Satisfaction, Culture 1, Culture 2, Career Advancement 1, Career Advancement 2, and Career Advancement 3.

Although the analysis started by comparing the three different groups of female faculty, ultimately those three groups were distilled to two: those female faculty members who answered 'No' to Question 48, *Do you plan to leave the medical school in the next 1-2 years?* and those female faculty members who did not answer 'No' to Question 48 in order to assess the predictive value of the difference variables. Logistic regression was then computed, using the six independent variables and participation in a formal mentoring program to determine which variables, or combination of variables, can predict intent to stay. Based on these assessments, it can be concluded that there are statistically significant differences between the two groups evaluated, and that Global Job Satisfaction, Culture (Fit, collegiality and interpersonal relationships), and participation in a formal mentoring program can predict intent to stay.

Chapter 5: Interpretations, Conclusions and Recommendations

The purpose of this study was to assess the relationship between perceptions of global job satisfaction, organizational culture, opportunities for advancement, and formal mentoring programs in a medical school setting and female faculty members' intent to stay employed at their current institution. To accomplish this goal, a thorough literature review was conducted to understand connections between these different aspects of employment and a theoretical construct was designed to help further explain the nuanced forces at play in an academic setting that could support a female faculty member's desire to stay. Descriptive statistics were conducted to answer Research Question 1 and Research Question 2 and to evaluate the differences in mean scores between female faculty who definitively planned to stay at their institution and those who planned to leave or were undecided.

In order to assess the predictive nature of the variables organizational culture, global job satisfaction, opportunities for advancement, and participation in a formal mentoring program, a data reduction process was employed and a subsequent analysis was conducted in order to answer Research Question 3 and Research Question 4. This chapter provides an interpretation of these results, conclusions and recommendations that resulted from this study.

Comparison of the Three Study Groups: Stay, Leave, Undecided

Personal characteristics. An evaluation of the personal characteristics of the female faculty who answered the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey* provides little in terms of distinguishing between the three groups

(stay, leave, undecided). Most faculty respondents have a medical degree (Clinical MD), versus a PhD, DO or other, regardless of how they answered Question 48, Do you plan to leave the medical school in the next 1-2 years?, which is generally representative of the medical school environment. Additionally, the ethnic distribution across the three groups is similar to that of the entire population surveyed. Among the three groups studied, the majority of the faculty members are white and the next largest group is Asian. This distribution is consistent with the composition of female faculty members in US-based allopathic medical schools today (AAMC, 2016b).

Workplace status characteristics. The workplace status characteristics of the three groups offer a more comprehensive picture of their similarities and differences. All faculty included in the data set are full time. Most have a primary appointment in a clinical department versus a basic science department and most are not on a tenure track even though their medical school has a tenure system, both of which are consistent with the typical medical school environment where upwards of 70% of all clinical faculty are not tenured or on a tenure track (AAMC, 2015). In addition, most of the faculty members who participated in the survey are actively engaged in the clinical care of patients. Those faculty members who hold leadership positions (19% of the total population) also look similar across the three groups, with the majority reporting that they are either a Division Chief or a Center Director. A small number of faculty members (2.6%) hold the highest administrative offices in their respective medical schools (Dean, Associate Dean, Assistant Dean, Vice Dean). It is worth noting that of the 30 faculty members who hold an administrative title and plan to leave their institution, only four participate in formal

mentoring. This lack of participation could be partially responsible for their dissatisfaction and intent to leave.

Academic rank (Senior versus Junior) can often be correlated with years of service and this holds true with the population evaluated for this study. Academic rank is another factor that distinguishes the different groups, at least to a certain degree. For faculty members who intend to stay, the subset is split equally between junior and senior status. However, the majority of those faculty members in both the leave and undecided groups are junior faculty and instructors, which is consistent with the literature which often suggests that the attrition rate for junior faculty is typically higher than that of senior faculty (Speck, 2012).

Years employed is another area where there are significant differences in the groups. Those faculty members who plan to stay and those who are undecided are similarly distributed between one and twenty years employed at their medical school, as well as those faculty members who have been at their school for less than a year. Of the faculty members indicating they will leave their school within the next one to two years, 81.9% have been with their current institution less than ten years and 54.7% less than five years. In contrast, only three faculty members who plan to leave have been employed by their current institution for twenty or more years. This is consistent with the literature which suggests that the more senior a person is and the longer they are at an institution, the less likely they are to leave (Zhou and Volkwein, 2004).

A comparison of the workplace status characteristics of each study group and whether or not they participate in formal mentoring provides another dimension of their

differences. The groups are similar with respect to senior faculty members; however, 41% of the junior faculty who intend to stay participate in a formal mentoring program versus 32.5% of the junior faculty planning to leave, and 37% of junior faculty who are undecided. Additionally, a greater percentage of administrators who plan to stay participate in mentoring than their counterparts who are leaving or are undecided. Lastly, slightly more female faculty members who plan to stay and have been with their institution less than 10 years participate in formal mentoring than the other two groups.

Overall, the similarities based upon demographic information between the three groups are greater than their differences: the majority of the female faculty members in the total population, regardless of whether they plan to stay or leave or are undecided, are full-time, white, work in a clinical department, are a medical doctor, see patients, and, if they hold an administrative position, most are either a Division Chief or a Center Director.

The statistically significant differences are found in rank, tenure status and years at their current institution: 76.6% of those female faculty members planning to leave are either junior faculty (assistant professor) or an instructor versus those with the same rank but are planning to stay (55%) or who are undecided (61%). Of those female faculty members planning to leave, 68.2% report they are not on a tenure track, compared with the same non-tenure track group of those planning to stay (63.7%) and those who are undecided (61.9%). And, of the junior faculty planning to leave, 81.9% have been with their current institution for less than 10 years. In contrast, of the group planning to stay, 60.6% have less than 10 years with their current institution leaving nearly 40% with 10 or

more years at their current school. The undecided group's distribution falls between the other two groups with 69% having less than 10 years at their school. A modest difference exists between those planning to stay and who are undecided versus those planning to leave with respect to participation in a mentoring program; however, the numbers in the group planning to leave are so few the differences are hard to measure.

Further analysis of employment characteristics compared those who participate in a formal mentoring program versus those who do not across the three groups, showed a statistical difference between the three groups and rank, regardless of whether they participate in a formal mentoring program. This also held true across the three groups, with or without formal mentoring, with respect to years at their current institution. The differences between the three groups, with or without mentoring and administrative positions held were not found to be statistically significant.

Perception of global job satisfaction. Mean scores for the questions that were analyzed for the study help to complete a picture of the similarities and differences between the three groups of faculty (Stay, Leave, and Undecided). It is not surprising that the female faculty members who plan to stay at their institution had the highest mean scores of each of the questions related to global job satisfaction (Pololi, Conrad, Knight, & Carr, 2009; Bickel, Wara, Atkinson, 2002; Smart, 1990). In contrast, those who plan to leave had the lowest mean scores, and the undecided group's scores fell in-between the two, with the exception of the thought of choosing a career in academia again, which was comparable to the group planning to leave. These scores represent a statistically significant difference between the three groups, although the significance wasn't always

between the three groups. For Questions 49 and 50, there was no statistically significant difference between the Leave and Undecided groups.

Generally speaking, faculty members planning to stay are satisfied with their department, but less satisfied with their school as a place to work. Those planning to leave are ambivalent to somewhat dissatisfied with their department and school and are not certain they would choose their current school if they had to do it again. The undecided group is less committed either way with respect to their department or their school as a place to work and whether or not they would choose their current school again. All three groups, however, would likely choose a career in academia if they had to do it again, which leads me to believe that any issues they may have with their job is not inherent to the world of academe, but is specific to their school and/or department. While global job satisfaction can provide a general sense of organizational justice in terms of fairness and respect, the questions asked in the survey did not capture this level of detail. Further analysis of culture and career advancement mean scores should shed more detailed light on the constructs of distributive, procedural, and interactional organizational justice and the role they play in job satisfaction and retention. Nevertheless, as previously noted global job satisfaction is one of, if not the best retention indicators for employers (HR Council, 2011), academic or otherwise.

Perception of culture. The conceptual framework used for this study looks at culture overall through the lens of organizational justice. The mean scores for questions related to culture provide more specific detail on the three groups' perception of the different aspects of culture at their institution, offering insight into culture's impact on

job satisfaction and intent to stay. Once again, the group who plans to stay had the highest mean scores for all of the culture questions, with the lowest scoring question for the group focusing on cultivating a culture of entrepreneurialism. This group is satisfied with the quality of interaction that they have with the colleagues in their department and believes that those same faculty usually get along. They believe they are appreciated by their patients (highest mean score in this section), their students, and their immediate supervisor, and for the most part are satisfied with their fit within their department. Additionally, they agree or mostly agree that their medical school offers equal opportunities to all faculty members regardless of gender, race, or sexual orientation. These answers collectively add to a positive perception of culture when evaluated through the lens of organizational justice by the faculty group who plans to stay at their institution. As noted in Chapter 4, the differences in nearly all of the mean scores between the stay group versus the leave and undecided groups were statistically significant.

The other two groups (leave and undecided) also believe they are appreciated by their patients (again the highest score among the questions on culture) and to a slightly lesser degree by their students. They also mostly agree or are indifferent to the idea that their school offers equal opportunity to faculty regardless of gender, race, or sexual orientation. Neither group believes their work is appreciated by the dean's office (the mean score represents the lowest score in this section for both groups), but it is worth noting that the group planning to stay were somewhat indifferent to this question (neither

agreed nor disagreed with it). In addition, both the leave and undecided groups had low scores regarding a supportive climate for balancing work and home responsibilities.

Another area where these two are similar is in their sense of fit or belonging within their department. Although their mean scores appear different – the undecided group was indifferent when answering this question, but those faculty members planning to leave had a raw mean score between dissatisfied and neither satisfied nor dissatisfied – these differences were not found to be statistically significant, which reinforces the role that sense of fit potentially plays in general satisfaction and intent to stay. Overall, when evaluating culture both of these faculty groups may in fact have some issues with organizational justice and their sense of respect and appreciation, at least from the highest levels of leadership in the medical school. In addition, but not surprisingly, faculty who plan to leave or are undecided have a weaker sense of fit within their department than those who plan to stay, which could likely contribute to a less-than-positive perception of fairness and respect within their school.

Perception of opportunities for career advancement. When perception of opportunities for career advancement was assessed, all three groups looked more similar than different, although the mean differences are statistically significant between the stay group versus the leave and undecided groups. None of the mean scores were above a 4.0 (Agree or Satisfied) on the survey scale for any of the groups. They are all moderately clear to indifferent on what they are expected to do with respect to teaching, research, patient care, and institutional service, except that there may be some confusion on the part of the group planning to leave with respect to expectations regarding institution

service. Additionally, they all generally believe (but do not definitively agree) that their job responsibilities are reasonable in terms of teaching, research, patient care, and institutional service.

Equal opportunity for promotion between male and female faculty and between minority and non-minority faculty is another area where all three groups are indifferent to modestly in agreement, except the leave and undecided groups rated these lower than those planning to stay. None of the groups believe (disagree to indifferent) that the criteria for promotion is consistently applied to all faculty across comparable positions. Also, the leave and undecided groups are either indifferent or dissatisfied with both the pace of professional advancement, as well as the professional development opportunities at their respective medical schools.

Again, these career advancement scores help to paint a potential picture of each group's perception through the lens of organizational justice. Where none may have issues with the tenet of distributive justice, challenges with promotion criteria and opportunities for advancement could contribute to a negative perception of both procedural and interpersonal justice. The net perception, when assessing career advancement, is at best indifferent or worst negative when it comes to different aspects of organizational justice.

Participation in and attitudes toward formal mentoring. A review of the mentoring questions highlights the lack of differentiation between the three groups, but does provide insight into the differences between those female faculty who receive formal mentoring and those who do not and the perceived quality of the mentoring at

their school. Participation in formal mentoring is similar across all three groups, where less than a third of the respondents indicated that they receive formal mentoring. Reflecting upon the tenets of organizational justice and the conceptual framework developed for this research, it is not possible to evaluate distributive or procedural justice relative to mentoring since the original survey did not ask if their schools provide formal mentoring. Without this information, it is not possible to assess the commitment of the organization to faculty, at least as it relates to the role the formal mentoring plays, and how it may or may not be perceived as fairly distributed and used to provide insight into organizational decision-making.

For those faculty members who do not receive formal mentoring, their attitudes range from indifference to important when asked how important it is to have a mentor at their school. Even though the data cannot tell us if the school actually offers formal mentoring, this question is still relevant to distributive justice in that even if offered, faculty may not always believe that formal mentoring is a valued resource. To be expected, those faculty members who receive formal mentoring believe that having a mentor is important to very important, but when asked to rate the quality of the mentoring they receive, their scores range from indifferent to satisfied. This question can provide insight into the interpersonal tenet of organizational justice where the quality of the mentoring received could influence a faculty member's perception of respect.

Implications of the Data Reduction Process

Although the mean scores of the different questions provided insight into the differences between the three groups, additional analyses were necessary to understand

whether or not the differences in the means were statistically significant. Instead of continuing the assessment on each individual question, I chose to conduct Principal Components Analysis on the data set to reduce the questions to a smaller number of variables (components) that could be used as representative mean scores for the remaining analyses. The subsequent PCA reduced the 33 questions that were included in the survey sections of global job satisfaction, culture, and career advancement to just six components.

When designing this study, the intent was to be able to reduce the questions down to three variables: perception of job satisfaction, culture, and career advancement. Once I conducted the analysis, however, it became clear that the survey questions and how they were answered represented several nuanced, but distinct sub-categories in two of these variables. Culture is represented at the institutional level and at the interpersonal relationship level. Career Advancement was divided into three separate categories that deal with promotion, equal opportunity, and advancement opportunity. Since the survey was designed to assess job satisfaction and the various constructs that typically contribute to job satisfaction or dissatisfaction, it is not surprising that there is a moderate to strong correlation between all of the variables. The two strongest correlations were between global job satisfaction and fit and job satisfaction and institutional environment. The potential impact of culture, both interpersonal and institutional, on overall job satisfaction has been studied in academia and is often cited as a key driver of retention (Welch, Wiehe, Palmer-Smith, & Dankoski, 2011) and subsequent analysis will show this to be true of this data set as well.

Up to this point, all of the analyses that were conducted looked at three separate groups: those planning to stay, those planning to leave, and those who were undecided. Again, when designing this research study, I knew I was going to have to deal with the undecided group since they represented 21% of the total population. The problem with this group is that their indecisiveness is not a predictor of intent to stay or intent to leave. Thus, once I evaluated all of the data previously, as well as the mean scores of the six new variables, I determined that overall the 'undecided' group looked more like the 'leave' group, than the group planning to stay. I then made the decision to combine the 'leave' and 'undecided' groups into one, describing them as the group that did not answer 'No' to Question 48, Do you plan to leave the medical school in the next 1-2 years? Once the two new groups were established, an independent samples t-test was run to determine if the mean differences, explored earlier, were statistically significant. The test confirmed that the difference in mean scores between the 'No' group (those planning to stay) and the 'Not No' group (those planning to leave, or undecided) for all six of the new variables (JobSat, CultureFit, CultureInst, CAPromo, CAEqOp and CAAdv) is statistically significant and in every instance the 'No' group scored higher than the 'Not No' group. Overall, assessment of these data paints a clear picture of the differences between the two groups, providing several indicators, consistent with the study's conceptual framework and organizational justice theory, which administrators may want to study when evaluating job satisfaction scores and retention.

Those faculty members who definitively state they do not plan to leave are more satisfied with their job, their sense of fit, and the relationships they have with their peers

and leaders than those who do not or will not definitively state that they do not plan to leave. Moreover, the 'No' group has a more positive view of the environment within which they work and believe more strongly there is equal opportunity for career advancement regardless of gender, race, or sexual orientation. They are also more satisfied with the overall construct for promotion and career advancement at their institution than their 'Not No' counterparts. Assessment of these scores, coupled with a comparison of the similarities and differences in perception of job satisfaction, culture, and opportunities for advancement between female faculty who intend to stay at their school versus those who intend to leave or those who are undecided highlight that indeed these variables can distinguish one from the other in a statistically significant capacity. Participation in a formal mentoring program, however, is not a differentiating factor between those who answered 'No' to Question 48, Do you plan to leave the medical school in the next 1-2 years?" and those who did not answer 'No' to Question 48. However, of those who do participate in a formal mentoring program, three-quarters of the 'No' group were satisfied with the quality of the mentoring they received versus only slightly more than half of the 'Not No' group. As important and valuable as a formal mentoring program might be at improving overall job satisfaction, a formal mentoring program of poor quality could potentially have the opposite effect. When assessed through the lens of the organizational justice constructs, dissatisfaction with a formal mentoring program could translate into a lack of dignity and the feeling of disrespect.

A Brief Review of Perception of Retention

Since this study seeks to determine whether or not perceptions of job satisfaction, culture, career advancement and participation in a formal mentoring program can predict intent to stay, it is appropriate to assess how the female faculty members surveyed answered specific questions on retention to help provide context for what the previous analysis has concluded. Of the female faculty members who plan to stay at their institution, nearly half believe their medical school is good at retaining high quality faculty members, and more than half feel the same about their department. Nearly 67% believe that their department is successful at retaining female faculty members. In contrast, close to half of the female faculty members from the 'Not No' group feel their school and department does not do a good job of retaining good talent, and over half are either indifferent, or strongly believe that their department fails at retaining female faculty members.

Although perception of retention, per se, is not a factor included in the conceptual framework developed for this study, the perception of female faculty member retention by departments could help explain the culture aspect, both in terms of distributive and procedural justice. Equal opportunity regardless of gender and the role that resources and policies play in retention can influence one's perception of fairness. In this case, retention could be perceived as a consequence of equal opportunity, when resources and policies are fair and equal.

Predictive Value of Six Independent Variables

As insightful as the mean scores between the study's two groups might be and the fact that they confirm what one could reasonably assume to be true, at least for the population studied—if you are generally satisfied with your job, happy with the environment you work in, and believe you have ample opportunities to advance in your career, you will likely stay in your job—alone they cannot predict intent to stay. Logistic regression is a statistical analysis that can help determine if a variable or set of variables can predict another. In the case of this study, the question was quite simple: can a female faculty's perception of job satisfaction, culture, and opportunities for advancement predict intent to stay at their current medical school? Of course, based on previous statistical analysis, the original three independent variables became six by subdividing Culture (interpersonal and institutional) and Career Advancement (promotion, equal opportunity, and advancement opportunity). The regression analysis yielded some interesting results.

The model, without the six independent variables (JobSat, CultureFit, CultureInst, CAPromo, CAEqOp and CAAdv), predicts 70.8% of the answers to Question 48 correctly by assuming that everyone answered 'No'. The addition of the independent variables improves the overall prediction rates of the model to 77.7%. The breakdown of the prediction rate with the independent variables is that the model can correctly predict 68.64% of the 'No Not' cases (leave or undecided), and 79.76% of the 'No' cases (Stay). When evaluating the contribution and significance of each IV, JobSat (global job satisfaction), CultureFit (fit, collegiality, and interpersonal relationships) and CAEqOp

(equal opportunity regardless of gender, race or sexual orientation) were significant at the 0.05 level.

As noted in Chapter 4, the odds ratio explains the predictive value of the variables. Not surprising, for each unit increase in the global Job Satisfaction score, the odds of answering 'No' to Question 48 increase by a factor of 3.953 which would suggest that mean scores of the independent variable JobSat can reasonably predict intent to stay. Less convincing, but significant nonetheless, are the variables CultureFit and CAEqOp. For each unit increase in the CultureFit mean score, the odds of answering 'No' to Question 48 increase by a factor of 1.420, and for each unit increase in the CAEqOp mean score, the odds of answering 'No' to Question 48 increase by a factor of 1.150 . As a reminder, the survey instrument used to collect the data analyzed for this research was developed to evaluate job satisfaction based on a number of different aspects of employment. What the regression analysis suggests is that answers to questions that comprise at least three specific sections of the overall survey, Global Job Satisfaction (JobSat, see Appendix B), Culture (CultureFit, see Appendix C), and Career Advancement (CAEqOp, see Appendix D) can predict whether or not female faculty will answer 'No' to Question 48, Do you plan to leave the medical school in the next 1-2 years?

Predictive Value of Mentoring, Job Satisfaction, Interpersonal Culture and Equal Opportunity

The answer to the final research question, Can female faculty's participation in formal mentoring, after controlling for perceptions of job satisfaction, organizational

culture and opportunities for advancement, predict intent to stay at their current institution? is yes. Since the independent variables CultureInst, CAPromo, and CAAdv did not contribute significantly to the model, the final regression analysis was run using JobSat, CultureFit and CAEqOp, the three variables that were shown to predict intent to stay in a statistically significant capacity, with the addition of the independent variable participation in a formal mentoring program. After adding the independent variables one at a time, the model with all four variables is the strongest at predicting intent to stay, improving a 70.1% overall percentage of accuracy in classification with no variables to 77.7% with all four variables, Mentoring, JobSat, CultureFit and CAEqOp. The odds ratios for each independent variable, after controlling for the others are as follows: the odds of answering 'No' to question 48 are 1.172 times greater for those faculty who participate in a formal mentoring program. For every unit increase in the mean score for JobSat, the odds of answering 'No' to Question 48 increase by a factor of 3.557.

Less impressive, but significant nonetheless, are when the odds of answering 'No' to Question 48 increase by a factor of 1.454 for every unit increase in the CultureFit score and finally, for each unit increase in the CAEqOp score the odds of answering 'No' to Question 48 increase by a factor of 1.172.

Implications for U.S.-Based Medical Schools

So what does all of this mean for U.S.-based medical schools with respect to female faculty? The outcomes of the study support the literature suggesting that overall job satisfaction is a strong predictor of retention, or intent to stay. However, if the leadership of academic medical centers would like to better understand which aspects of

academic life have more influence over female faculty's job satisfaction and therefore desire to stay employed at their institution, perception of the workplace culture—specifically a sense of fit, collegiality, and interpersonal relationships—would be a good place to start. In contrast to the overall organizational culture, which is not a statistically significant predictor of intent to stay, how female faculty interact with their peers and leadership and their sense of fit or belonging appears to have some predictive qualities. Another area to consider is female faculty's perception of equal opportunity and how decisions are applied across the organization.

Specifically, participation in a formal mentoring program is an underutilized tool for medical schools, yet it appears to influence female faculty's desire to stay employed at their institution. As the regression analysis showed, participation in a formal mentoring program can be a predictor of intent to stay. But how does mentoring, specifically participation in a formal mentoring program, tie in with a positive perception of culture and global job satisfaction? Let's look at the potential connections using organizational justice as a foundation.

Formal Mentoring and its Connection to Organizational Justice

The theory of organizational justice suggests that when employees, or in this case, female faculty members, perceive the behavior of an organization as fair, they are more satisfied in their job than those who experience the opposite (Adams, 1966; Greenberg, 1990). Furthermore, when female faculty members are satisfied in their job, they are more likely to stay at their institution (Pololi, Conrad, Knight, & Carr, 2009; Bickel, Wara, Atkinson, 2002; Smart, 1990). Mentoring can support the interpersonal dimension

of culture by helping with socialization, facilitating collegiality and relationships, and helping to promote professional growth (Lumpkin, 2011). As proposed in the framework for this research, a formal mentoring program can serve as a vehicle for positive perception of fairness, or organizational justice and the three tenets of distributive, procedural and interpersonal justice. A formal mentoring program is a valued resource in and of itself which can support a positive perception of resource distribution and the outcomes associated with those resources or could contribute to a negative perception if faculty members believe the mentoring offered is suboptimal.

When asked what their medical school could do to improve the workplace, a respondent wrote "Improve mentorship so that every faculty member can have the support and guidance necessary to succeed in their chosen career and be promoted successfully. Currently, the quality of mentorship is inconsistent and in some cases, it delays progress and [in] others, it frankly fails resulting in faculty attrition." Access to a formal mentoring program can convey commitment by the institution to support faculty development and serve as a conduit to the decision-making processes utilized by the medical school. In this respect, a formal mentoring program can support a positive perspective on procedural justice. Consistent with the literature, faculty with mentors rate institutional support higher than those without, which in turn leads to greater job satisfaction. (Palepu, et al, 1998). With respect to interpersonal justice, the basic construct of a formal mentoring program is at its core, based on mutual respect and dignity. Additionally, the quality of the mentoring received and the relative value of the

output or outcomes of participation in a formal mentoring program could be linked to a sense of respect on the part of the mentee.

It could be posited that perception of organizational culture is directly influenced by the positive sense of organizational justice achieved through participation in a formal mentoring program. From this foundation, we can identify different aspects of culture, through the tenets of organizational justice, which can contribute to an even stronger sense of fairness and respect. Equal opportunities, both in terms of resource allocation and the policies that determine how resources are distributed, add to a perceived sense of fairness on the part of the faculty members. A formal mentoring program, through its connections and networking opportunities, could contribute to a sense of fairness. Importantly, interpersonal justice is perceived positively when faculty members feel respected by their peers and leaders and there exists a perception of fit, or belonging. This too could be influenced through a formal mentoring program.

Global Job Satisfaction, Interpersonal Culture, Equal Opportunity, Mentoring, and Female Faculty

Global job satisfaction is the sum total of these various constructs or components. Participation in a formal mentoring program, along with the belief that equal opportunities exist for all faculty, begets a positive perception of organizational culture, especially the interpersonal aspects of culture, which in turn positively influences job satisfaction. This study shows that, at least with respect to female faculty in medical schools, perception of global job satisfaction, perception of interpersonal culture, perception of equal opportunity and participation in a mentoring program can offer

insights into retention. This combination of attributes is to be expected when considering the unique needs and perspective of female faculty members, especially in a medical school where male domination in leadership positions is still commonplace. A substantial amount of scholarly research cited in Chapter Two highlighted these needs and perspectives where turnover and intent to leave are closely tied to a lack of interpersonal dynamics, collaboration, and colleague support (Amey, 1996), and where fit within the organizational structure and its culture is tied directly to job satisfaction, career advancement, and ultimately whether or not one stays or leaves (Welch, Wiehe, Palmer-Smith, & Dankoski, 2011). Indeed, the outcomes of this research support, in part, similar conclusions that suggest the quality of interactions with colleagues (a component of interpersonal culture) as well as effective mentoring are directly tied to female job satisfaction (Bilimoria et al., 2006).

Young, Junior Faculty and Intent to Stay

Since the survey did not ask the age of the respondents, it is not possible to know for certain that the female faculty members studied are actually young or new faculty. All we know is how long they have been with their current institution and what their rank is. Of all the faculty members who identify as being junior faculty, 86.5% have been with their current institution ten years or less. These are the same individuals who comprise 82% of those faculty members who intend to leave, along with 69% of those who are undecided. When considering global job satisfaction, interpersonal culture, and formal mentoring as a measure of intent to stay for this subset of the population it is important to recall that younger faculty are more likely to express intent to leave than their older

counterparts (Pololi et al, 2012) and that female junior faculty are a particularly vulnerable group (Ries et al., 201).

This study's findings not only support the literature on junior faculty and their propensity to leave (or express their desire to leave), but the idea that formal mentoring influences perception of interpersonal culture, which in turn could lead to a measure of global job satisfaction seems particularly relevant to junior female faculty. Washburn (2007) noted that because junior faculty experience fewer opportunities to advance in their career, coupled with many of the barriers to success that most female faculty encounter (few mentorship opportunities, small to non-existent networks, and an unsupportive environment), the resulting feelings of isolation and lack of appreciation could lead to departure. If medical school administrators could construct a faculty development program, targeting young junior faculty members that included a formal mentoring program and elements that support a positive perception of interpersonal culture, it is likely they would enjoy a cohort of junior faculty who are satisfied with their job and their school.

Balancing Research, Teaching, and Patient Care

I would be remiss if I did not speak to what I see as one of the greatest drivers of stress and dissatisfaction among female faculty in schools of medicine, and how formal mentoring, a belief that equal opportunity exists for all faculty, perception of interpersonal culture, and global job satisfaction could help to mitigate the challenges of working in today's complex world of healthcare. Balancing teaching obligations while also adding to the body of scholarly literature through research (publish or perish) is

common place among faculty who desire to stay with their institution, and particularly those who seek tenure. Medical school faculty often must contend with a third dimension of employment in academia and that is the care of patients. One respondent commented on this challenge as follows:

> The physicians in our department all work very hard at providing excellent care to patients and teaching to residents and medical student. We work a lot of extra-long hours for less pay compared to the community. Although I feel appreciated by my department, [I do] not at all by the medical school. The medical school is driven by a financial bottom line.

In contrast, the following individual feels that patient care responsibilities take away from teaching and research:

> As a clinician in [a] non-tenure track, I am penalized if I want to teach or do research because it takes away from my productivity/RVUs of patient care. Although it is a University mission it isn't valued for all of us to have some of each of these roles, and my pay & evaluations are based on # of patients seen. Because of this I cannot get promoted because I need to do these other things to be promoted. If I switch to tenure track and join research physicians, then my pay will be cut. This is a lose-lose situation for improving professional growth, without compromising financial incentive.

Either way, the demands of these faculty, especially female faculty without a support structure, may be too much to bear which could lead to poor job satisfaction and a desire to leave their institution or academic medicine altogether. A formal mentoring

program, for both junior and senior faculty, that helps to open doors to opportunity and reinforces positive interpersonal relationships, a sense of fit and belonging, collegiality, and teamwork could play a role in a female faculty member's ability to manage multiple aspects of the medical school environment leading to a positive perception of job satisfaction.

Recommendations for Future Research Opportunities

In 2016, the *COACHE Faculty Job Satisfaction Survey* was expanded to include a module for clinical faculty in medical schools. Not only will institutions now be able to track year-over-year individual faculty member data on demographic information and the traditional COACHE job satisfaction categories, but data will also be collected on patient care and clinical services, quality of care and relationships between physician faculty and other clinical staff (COACHE, 2016). Replicating this study, using more recent data (if the same questions were asked) and then comparing the two sets of outcomes could provide perspective on whether or not job satisfaction means scores have improved over the past 10 years, as well as confirm the predictive value of global job satisfaction, culture and participation in a formal mentoring program over time.

Another option would be to use the 2009 AAMC-COACHE data set, or data from the new COACHE medical school module, and assess the predictive value of variables based on the major themes identified using answers to the open-ended question (Question 51). Principal Components Analysis could be used to reduce the questions from the survey instrument that make up each theme, and the full complement of the survey could be

analyzed to explore the potential relationship of each, and their predictive value relative to intent to stay.

The limitations of the data with respect to participation in a formal mentoring program would not allow for a deeper dive regarding the type of program offered, the resources and support infrastructure associated with the program, nor what the characteristics of the mentors were. Conducting a similar study, but collecting data from female faculty only from institutions with a developed formal mentoring program, then comparing those who participate versus those who do not could allow for analysis that shows formal mentoring as a stronger predictor of intent to stay.

Expanding the number of components or variables measured to include Collaboration and Feedback (two additional sections of the *AAMC-COACHE Medical School Faculty Job Satisfaction Survey* instrument) would enable utilization of the full construct of organizational justice theory. This additional information might provide more insight and clarity as to why respondents were planning to leave, or were undecided, and could strengthen the model in terms of prediction.

The limitations of the survey instrument utilized for this study do not allow analysis of why respondents plan to leave their institution. A future study could utilize a similar survey to collect data, analyze the quantitative data, and pair the assessment with a qualitative component that includes follow-up interviews with those individuals who plan to leave to provide a more thorough understanding of the perceptions, attitudes, and forces for this behavior. In particular, exploring circumstances like family status (e.g., planning a family, young children, caregiver for a parent) and benefits available to

faculty like maternity leave and childcare, could offer more specific insight into the disproportionate burdens and challenges that come with being a female faculty and often lead to departure (Carr et al., 2015).

Alternatively, a sub analysis focusing on female faculty who are undecided regarding intent to leave their institution would not only add to the literature on why someone answers 'I Don't Know' on a survey, but could offer more insight into the female faculty's psyche and their perception of various aspects of job satisfaction.

Finally, it is important to note that medical schools are part of higher education, albeit a unique component, and therefore the results of this study should provide insight into female faculty retention challenges across higher education, especially in the STEM fields. These findings could give way to future research in areas of higher education where male versus female faculty ratios are disproportionate and schools are seeking solutions to increase the ranks of female faculty as a whole. Focusing research efforts on perceptions of global job satisfaction and interpersonal culture, as well as formal mentoring programs could provide insights into how any institution of higher education can improve satisfaction overall, which in turn could improve retention.

Recommendations for Medical School Administrators and Leadership

When considering the development of a female faculty retention strategy, it might be prudent to use organizational justice theory as the framework. Recognizing that perception of fairness in resource distribution, policy and decision making, dignity and respect, and communication strategies influence global job satisfaction, perception of culture, and career advancement opportunities is key. Moreover, a formal mentoring

program could serve as the foundation of a retention strategy built within a framework based upon different tenets of organizational justice, serving as a resource, a distribution channel, a conduit to policies and procedures, and enabling the perception of being treated with dignity and respect.

A formal mentoring program in medical schools, beyond that which is required by the National Institutes of Health (NIH) for K01 research grants (Mentored Research Scientist Career Development Awards) can help to retain female faculty. Data from this study and countless others show the potential impact a formal mentoring program can have on intent to stay. All medical schools interested in retaining this valuable asset should consider implementing a formal mentoring program, engaging faculty at all levels of the organization.

Those academic medical centers that have or are considering a female faculty development and retention strategy should pay particular attention to junior faculty members who have been at their institution between one and ten years. For a number of reasons (rank and tenure, fit, and interpersonal relationships), this seems to be a particularly vulnerable time in a female faculty's career pathway.

Recommendations for Female Faculty in Medical Schools

As noted throughout this paper, female faculty members in medical schools are often faced with significant obstacles when it comes to career advancement, especially when there is a desire to move into a senior leadership or administrative position. The bad news is that the culture and environment within medical schools as it relates to female faculty, although progressing, has not kept up with the pace of female matriculants,

offering fewer female leadership positions and role models, and little for junior faulty to aspire to. The good news, however, is that there are programs and strategies specifically in place to support female faculty (Richman et al., 2001) and to assist them in career development, networking and mentoring. For these programs, this research should help reinforce the position that female faculty have unique needs, and as such, medical schools need to recognize the importance of meeting these needs, creating an environment where a sense of 'fit' is a real, tangible metric of success and facilitation of positive, interpersonal dialog and inclusive connections take priority over competition and egotistic mindsets. For female faculty at medical schools, the following recommendations are grounded in existing literature and are supported by this research. Participate in a formal mentoring program if your school offers one. If they do not, suggest adding it to the faculty development program. Better yet, demand it. Female faculty members with a mentor are more satisfied in their job. They feel more connected to their school and the decisions that are made. They typically have a clearer path for career advancement, and they stay at their school, and in academia (DeJanasz & Sullivan, 2004; Gerdes, 2003).

If you already participate in a formal mentoring program, challenge your school to raise the bar. Explore and implement some of the newer models of mentoring like peer mentoring (Varkey et al., 2012), mentoring networks (Sorcinelli & Yun, 2007) and mentoring webs. If you are a mentee, become a mentor. Everyone has something to offer in a mentoring relationship, regardless of their age or experience.

Final Thoughts

In conclusion, as the body of scholarly literature continues to grow with respect to analysis of faculty job satisfaction, programs like COACHE will continue to analyze and assess trends and characteristics of faculty, now including medical school faculty, in hopes of finding the right combination of attributes to inform academic leaders on how to keep faculty satisfied, and therefore retained. Medical school leaders who are looking for ways to improve female faculty job satisfaction scores and retention rates should consider the role that faculty development programs, including formal mentoring, play in the perception of organizational culture and job satisfaction, which could lead to improved faculty retention rates.

This study has shown that evaluating four specific aspects of medical school employment: how female faculty members perceive global job satisfaction, equal opportunity and interpersonal culture, combined with whether or not one participates in a formal mentoring program can provide insight into their desire to stay at their current institution. The predictive value of global job satisfaction as shown in this study is not surprising, as it is consistent with existing literature. This is especially true when part of the construct of job satisfaction includes a belief that equal opportunity exists, and is fair, for all faculty. Likewise, the perception of interpersonal culture, specifically a sense of collegiality and fit, has also been found to improve job satisfaction and therefore retention among faculty.

Formal mentoring programs and their value to academic institutions continue to be debated. However, the results of this study indicate that there indeed is a connection

between female faculty's participation in a formal mentoring program and intent to stay at their current medical school. These data support earlier references cited that suggest academic faculty with mentors are less likely to leave their jobs. At the very least, these findings should provide medical school leaders with evidence to consider implementation or enhancement of a formal mentoring program to help stop female faculty from leaving academic medicine; and at most, offer the prospect of a foundation for female leaders who will serve as role models for future generations of female medical students.

References

AAMC (2006). Medical faculty job satisfaction: Thematic overviews from ten focus groups. Retrieved from http://casemed.case.edu/wfsom/files/AAMC%20Faculty%20Satisfaction%20Themes.pdf

AAMC (2008). Differences in U.S. Medical School Faculty Job Satisfaction by Gender. *Analysis in Brief*, *8*(7). Retrieved from https://www.aamc.org/data/aib/archive/52162/aib_archive.html

AAMC (2014a). Results of the 2013 medical school enrollment survey. Retrieved on March 10, 2014 from https://members.aamc.org/eweb/upload/13239%20Enrollment%20Survey%20201310.pdf

AAMC (2014b). The state of women in academic medicine: The pipeline. Retrieved on January 11, 2015, from https://www.aamc.org/members/gwims/statistics/

AAMC (2016a). Medicare direct graduate medical education (DGME) payments. Retrieved from https://www.aamc.org/advocacy/gme/71152/gme_gme0001.html

AAMC (2016b). U.S. medical school faculty, 2015. Retrieved April 2, 2016 from https://www.aamc.org/data/facultyroster/reports/453490/usmsf15.html

AAMC (2015). Medical school applicants, Enrollees reach new highs. *Analysis in Brief*, *15*(10). Retrieved November 10, 2015 from

https://www.aamc.org/newsroom/newsreleases/446400/applicant-and-enrollment-data.html

AAMC-COACHE (2009a) Medical school faculty job satisfaction survey. Appendix B: Background, Method & Definitions.

AAMC-COACHE (2009b) Medical school faculty job satisfaction survey. Data conditioning, 2009.

Adams, J. S. (1966). Inequity in social exchange. *Advances in Experimental Social Psychology, 2*, 267–299. doi:10.1016/S0065-2601(08)60108-2

Allen, T. D., Eby, L. T., & Lentz, E. (2006a). Mentorship behaviors and mentorship quality associated with formal mentoring programs: closing the gap between research and practice. *The Journal of Applied Psychology, 91*(3), 567–78. doi:10.1037/0021-9010.91.3.567

Allen, T. D., Eby, L. T., & Lentz, E. (2006b). The relationship between formal mentoring program characteristics and perceived program effectiveness. *Personnel Psychology, 59*(1), 125–153. doi:10.1111/j.1744-6570.2006.00747.x

Ambrose, S., Huston, T., & Norman, M. (2005). A qualitative method for assessing faculty satisfaction. *Research in Higher Education*, *46*(7), 803–830.

Amey, M. J. (1996). The institutional marketplace and faculty attrition. *Thought & Action, 12*(1), 23–35.

Ash, A. S., Carr, P. L., Goldstein, R., & Friedman, R. H. (2004). Academia and clinic compensation and advancement of women in academic medicine: Is There Equity? *Annals of Internal Medicine*, *141*, 205–212.

August, L., & Waltman, J. (2004). Culture, climate, and contribution: Career satisfaction among female faculty. *Research in Higher Education*, *45*(2), 177–192. doi:10.1023/B:RIHE.0000015694.14358.ed

Barnes, L. B., Agago, M. O., & Coombs, W. T. (1998). Effects of job-related stress on faculty intention to leave academia. *Research in Higher Education*, *39*, 457–469.

Berk, R. A, Berg, J., Mortimer, R., Walton-Moss, B., & Yeo, T. P. (2005). Measuring the effectiveness of mentoring relationships. *Academic Medicine, 80*(1), 66–71.

Bickel, J., & Brown, A. J. (2005). Generation X: Implications for faculty recruitment and development in academic health centers. *Academic Medicine, 80*(3), 205–210.

Bickel, Janet, Wara, Diane, Atkinson, B. (2002). Increasing women's leadership in academic medicine: Report of the AAMC project implementation committee. *Academic Medicine, 77*(10), 1043–1061.

Bies, R. J., & Moag, J. S. (1986). Interactional justice: Communication criteria of fairness. *Soc Just Res*, *1*(199). doi:10.1007/BF01048016

Bilimoria, D., Joy, S., & Liang, X. (2008). Breaking barriers and creating inclusiveness: Lessons of organizational transformation to advance women faculty in academic science and engineering. *Human Resource Management. 47*(3), 423–441. doi: 10.1002/hrm.20225

Blake-Beard, S. D. (2001). Taking a hard look at formal mentoring programs: A consideration of potential challenges facing women. *Journal of Management Development, 20*(4), 331–345. doi:10.1108/02621710110388983

Bland, C. J. (2005). *Mentoring. The research-productive department: Strategies from departments that excel.* (pp. 64-79). Bolton, Mass.: Anker Publishing.

Blood, E. A., Ullrich, N. J., Hirshfeld-Becker, D. R., Seely, E. W., Connelly, M. T., Warfield, C. A., & Emans, S. J. (2012). Academic women faculty: Are they finding the mentoring they need*? Journal of Women's Health, 21*(11), 120820115618003. doi:10.1089/jwh.2012.3529

Borges, N. J., Navarro, A. M., & Grover, A. C. (2012). Women physicians: Choosing a career in academic medicine. *Academic Medicine*. *87*(1), 105-14. doi:10.1097/ACM.0b013e31823ab4a8

Bunton, S. A, Corrice, A. M., Pollart, S. M., Novielli, K. D., Williams, V. N., Morrison, L., Mylona, E. and Fox, S. (2012). Predictors of workplace satisfaction for U.S. medical school faculty in an era of change and challenge. *Academic Medicine, 87*(5), 574–581. doi:10.1097/ACM.0b013e31824d2b37

Bunton, Sarah, A. (2008). Differences in U.S. medical school faculty job satisfaction by gender. *AAMC Analysis in Brief*, *8*(7). Retrieved from https://www.aamc.org/download/67970/data/aibvol8no7.pdf

Carr, Phyllis L.; Gunn, Christine M.; Kaplan, Samantha A.; Raj, Anita; Freund, Karen M.; (2015). Inadequate progress for women in academic medicine: Findings from the national faculty study. *Journal of Women's Health*, *24*(3): 190-199. ISSN: 1540-9996 PMID: 25658907

Catalyst. (2003). Women in U. S. Corporate Leadership. Retrieved from http://www.catalyst.org/knowledge/women-us-corporate-leadership-2003

Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate behavioral research, 1*(2), 245-276.

Chang Shine, Morahan Page S., Magrane Diane, Helitzer Deborah, Lee Hwa Young, Newbill Sharon, Peng Ho-Lan, Guindani Michele, and Cardinali Gina. Retaining faculty in academic medicine: The impact of career development programs for women. *Journal of Women's Health, 25*(7): 687-696. doi:10.1089/jwh.2015.5608

Chao, G. T., Walz, P., & Gardner, P. D. (1992). Formal and informal mentorships: a comparison on mentoring functions and contrast with nonmentored counterparts. *Personnel Psychology, 45*(3), 619–636. doi:10.1111/j.1744-6570.1992.tb00863.x

Chesler, N. C., & Chesler, M. A. (2002). Gender-informed mentoring strategies for women engineering scholars: On establishing a caring community. *Journal of Engineering Education, 1*, 49–55.

Clark, S. M., Corcoran, M., & Lewis, D. R. (1986). The case for an institutional perspective on faculty development, *The Journal of Higher Education, 57*(2), 176–195.

COACHE (2015). Collaborative on Academic Careers in Higher Education. http://sites.gse.harvard.edu/coache

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Colquitt, J. A, Conlon, D. E., Wesson, M. J., Porter, C. O., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice. *Journal of Applied Psychology. 86*(3), 425-445. doi:10.1037//0021-9010.86.3.425

Conley, V.M. (2001). Separation: An integral aspect of the staffing process. *Student Affairs Journal, 21*(1). doi: 0888210X, 20010901

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage.

Cropsey, K. L., Masho, S. W., Shiang, R., Sikka, V., Kornstein, S. G., & Hampton, C. L. (2008). Why do faculty leave? Reasons for attrition of women and minority faculty from a medical school: four-year results. *Journal of Women's Health, 17*(7), 1111–8. doi:10.1089/jwh.2007.0582

Decastro, R., Griffith, K. A, Ubel, P. a, Stewart, A., & Jagsi, R. (2013). Mentoring and the career satisfaction of male and female academic medical faculty. *Academic Medicine, 89*(2), 301–311. doi:10.1097/ACM.0000000000000109

DeJanasz, S. C., & Sullivan, S. E. (2004). Multiple mentoring in academe: Developing the professorial network. *Journal of Vocational Behavior, 64*(2), 263–283. doi:10.1016/j.jvb.2002.07.001

Dill, M. J., & Salzberg, E. S. (2008).The complexities of physician supply and demand. Retrieved from https://members.aamc.org/eweb/upload/The%20Complexities%20of%20Physician%20Supply.pdf

Doyle Scharff, M. & Conley, V.M. (2014). Women faculty in STEM and the value of mentoring in advancing the field. *Mentoring for the professions: Orienting toward the future* (pp. 243-258). Charlotte, NC: Information Age Publishing.

Driscoll, L., Parkes, K., Tilley-Lubbs, G., Brill, J., & Pitts Bannister, V. (2009). Navigating the lonely sea: peer mentoring and collaboration among aspiring women scholars. *Mentoring & Tutoring: Partnership in Learning, 17*(1), 5–21. doi:10.1080/13611260802699532

Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. (2003). Transformational, transactional and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin, 129*, 569–591.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109*(3), 573–598. doi:10.1037/0033-295X.109.3.573

Etzkowitz, H., & Kemelgor, C. (2001). Overcoming isolation: Women's dilemmas in American academic science. *Minerva, 39*(2), 153–174. doi:10.1023/A:1010344929577

Fagenson, E. A. (1989). The mentor advantage: perceived career/job experiences of protégés versus non-protégés. *Journal of Organizational Behavior, 10*(4), 309-320.

Field, A. P. (2009). *Discovering statistics using SPSS: (And sex and drugs and rock 'n' roll)*. Los Angeles: SAGE Publications.

Fitzgerald, S. M., Mahony, D., Crawford, F., & Hnat, H. B. (2014). Distributive justice in higher education: Perceptions of administrators. *Innovative Higher Education*, 1–15. doi:10.1007/s10755-014-9287-2

Freedman, D. A. (2009). *Statistical models: Theory and practice*. New York City, NY: Cambridge University Press.

Gappa, J., Austin, A., & Trice, A. (2007). *Rethinking Faculty Work: Higher Education's Strategic Imperative*. San Francisco, CA: Jossey-Bass.

Gerdes, E. P. (2003). Do it your way: Advice from senior academic women. *Innovative Higher Education, 27*(4), 253–275.

Gibson, S. K. (2006). Mentoring of women faculty: The role of organizational politics and culture. *Innovative Higher Education, 31*(1), 63–79. doi:10.1007/s10755-006-9007-7

Gilljam, M. & Granberg, D. (1993); Should we take don't know for an answer? *The Public Opinion Quarterly, 57*(3), 348-357. Retrieved from http://www.jstor.org/stable/2749095

Glied, S & Ma, S.(2015). How will the affordable care act affect the use of health care services? *Issue Brief, The Commonwealth Fund*, February, 2015. Accessed December 15, 2015. http://www.commonwealthfund.org/~/media/files/publications/issue brief/2015/feb/1804_glied_how_will_aca_affect_use_hlt_care_svcs_ib_v2.pdf

Gorman, S. T., Durmowicz, M. C., Roskes, E. M., & Slattery, S. P. (2010). Women in the academy: Female leadership in STEM education and the evolution of a mentoring web. In *Forum on Public Policy*, 2, 1-21. Oxford Roundtable, Urbana, IL.

Greenberg, J. (1987). A taxonomy of organizational justice theories. *Academy of Management Review, 12*(1), 9–22. doi:10.5465/AMR.1987.4306437

Greenberg, J. (1990). Organizational justice: Yesterday, today, and tomorrow. *Journal of Management, 16*, 399-432. doi:10.1177/014920639001600208

Groothuis, P.A. & Whitehead, J.C. (2002); Does don't know mean no? Analysis of 'don't know' responses in contingent valuation questions, *Applied Economics, 34*(15): 935+ (Oct 2002). Published by Taylor & Francis (ISSN: 0003-6846).

Gruenert, S. (2008). School culture, school climate: They are not the same thing. *Principal*. *2*, 56-59.

Hall, R. M., & Sandler, B. R. (1984). *Out of the classroom: A chilly climate for women?* Washington, D.C. Retrieved from https://www.hws.edu/offices/provost/pdf/out_classroom.pdf

Haynes, R. K., & Petrosko, J. M. (2009). An investigation of mentoring and socialization among law faculty. *Mentoring & Tutoring: Partnership in Learning, 17*(1), 41–52. doi:10.1080/13611260802658520

Higgins, M. C., & Kram, K. E. (2001). Reconceptualizing mentoring at work: A developmental network perspective. *Academy of Management Review, 26*(2), 264-288. doi:10.5465/AMR.2001.4378023

Hnat, H. B., Mahony, D., Fitzgerald, S., & Crawford, F. (2014). Distributive justice and higher education resource allocation: Perceptions of fairness. *Innovative Higher Education, 40*(1-2), 79-93. doi:10.1007/s10755-014-9294-3

Huston, T. A., Norman, M., & Ambrose, S. A. (2007). Expanding the discussion of faculty vitality to include productive but disengaged senior faculty. *The Journal of Higher Education, 78*(5), 493–522. doi:10.1353/jhe.2007.0034

Jackson, V. A, Palepu, A., Szalacha, L., Caswell, C., Carr, P. L., & Inui, T. (2003). "Having the right chemistry": a qualitative study of mentoring in academic medicine. *Academic Medicine, 78*(3), 328–334.

Jagsi, R, Griffith, KA, Stewart A, Sambuxo D, DeCastro R, Ubel PA. Gender differences in salaries of physician researchers. *Journal of the American Medical Association, 307*:2410-2417.

Joliff L, Leadley J, Coakley E, Sloane RA (2012). Women in U.S. academic medicine and sciences: Statistics and benchmarking report 2011-2012. AAMC, 2012. www.aamc.org (accessed February 1, 2014).

Johnsrud, L. K. (1991). Mentoring between academic women: the capacity for interdependence. *Initiatives, 54*(3), 7–17.

Johnsrud, L. K., & Heck, R. H. (1998). Faculty worklife: Establishing benchmarks across groups. *Research in Higher Education, 39*(5), 539-555.

Johnsrud, L. K., & Rosser, V. J. (2002). Faculty members' morale and their intention to leave: A Multilevel Explanation. *The Journal of Higher Education, 73*(4), 518–542.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31–36.

Kaiser Foundation (2011). Summary of new health reform law. *Focus on Health Reform*. Retrieved from https://kaiserfamilyfoundation.files.wordpress.com/2013/01/7948-02.pdf

Kashiwagi, D. T., Varkey, P., & Cook, D. A. (2013). Mentoring programs for physicians in academic medicine. *Academic Medicine, 88*(7), 1029–1037. doi:10.1097/ACM.0b013e318294f368

Kram, K. E. (1988). Mentoring at work: Developmental relationships in organizational life. *Human Resource Management, 25*. doi:10.2307/2392687

Kulis, S., Sicotte, D., & Collins, S. (2002). More than a pipeline problem: Labor supply constraints and gender stratification across academic science disciplines. *Research in Higher Education, 43*(6), 657–691.

Laerd Statistics (2016). Retrieved from website, https://statistics.laerd.com/

Lawrence, J. H., Celis, S., & Ott, M. (2014). Is the tenure process fair?: What faculty think. *The Journal of Higher Education, 85*(2), 155–192. doi:10.1353/jhe.2014.0010

Levinson, D. J., Darrow, C. N. Klein, E. B., Levinson, M. H., & McKee, B. (1978). *Seasons of a man's life*. New York: Knopf.

Levinson, W., Kaufman, K., Clark, B., & Tolle, S. W. (1991). Mentors and role models for women in academic medicine. *The Western Journal of Medicine, 154*(4), 423–426.

Liaison Committee on Medical Education (LCME) (2014). Medical School Directory. 2016. Retrieved November 1, 2016, from http://www.lcme.org/directory.htm

Lowenstein, S.R., Fernandez, G., & Crane, L.A. (2007). Medical school faculty discontent: prevalence and predictors of intent to leave academic careers. *BMC Medical Education*, 7(37).

Lumpkin, A. (2011). A model for mentoring university faculty. *The Educational Forum, 75*, 357-368.

Maranto, C. L., & Griffin, a. E. (2011). The antecedents of a "chilly climate" for women faculty in higher education. *Human Relations, 64*(2), 139–159. doi:10.1177/0018726710377932

McDonald, J.H. 2014. *Handbook of biological statistics* (3rd ed.) (pp. 247-253). Baltimore, Maryland: Sparky House Publishing.

Morahan, P. S., Gleason, K. A., Richman, R. C., Dannels, S., and McDade, S. A. (2010). Advancing women faculty to senior leadership in U.S. academic health centers: Fifteen years of history in the making. NASPA *Journal About Women in Higher Education, 3* (1).

Morahan, P. S., Gold, J. S., & Bickel, J. (2002). Status of faculty affairs and faculty development offices in U.S. medical schools. *Academic Medicine, 77*(5), 398–401. doi:10.1097/00001888-200205000-00009

Morton, M. J., Bristol, M. B., Atherton, P. H., Schwab, C. W., & Sonnad, S. S. (2008). Improving the recruitment and hiring process for women faculty. *Journal of the American College of Surgeons, 206*(3), 1210–8. doi:10.1016/j.jamcollsurg.2007.12.051

Moskowitz, M.C. (2007). Academic health center CEOs say faculty shortages major problem. July, 2007. AAHC publication; retrieved from www.aahcdc.org/Portals/0/pdf/AAHCPressRelease07_09_07.pdf

National Science Foundation (NSF) (2013). ADVANCE program description. Retrieved on January 10, 2013 from http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383

Noe, R. (1988). Women and mentoring: A review and research agenda. *Academy of Management Review, 13*(1), 65–78. doi:10.5465/AMR.1988.4306784

Nonnemaker, L. (2000). Women physicians in academic medicine: New insights from cohort studies. *The New England Journal of Medicine, 342*(6), 399–405.

Nyquist, J. G., Hitchcock, M. a, & Teherani, A. (2000). Faculty satisfaction in academic medicine. *New Directions for Institutional Research, 2000*(105), 33–43. doi:10.1002/ir.10503

Olsen, D., Maple, S. A., & Stage, F. K. (1995). Women and minority faculty job satisfaction: Professional role interests, professional satisfactions, and institutional fit. *The Journal of Higher Education, 66*(3), 267–293.

Paglis, L. L., Green, S. G., & Bauer, T. N. (2006). Does adviser mentoring add value? A longitudinal study of mentoring and doctoral student outcomes. *Research in Higher Education, 47*(4), 451-476.

Palepu, A., Friedman, R. H., Barnett, R. C., Carr, P. L., Ash, A. S., Szalacha, L., & Moskowitz, M. A. (1998). Junior faculty members' mentoring and their professional development in U. S. medical schools. *Academic Medicine, 73*(3), 318-323.

Peluchette, J. V, & Jeanquart, S. (2000). Professionals' use of different mentor sources at various career stages: implications for career success. *The Journal of Social Psychology, 140*(5), 549–564. doi:10.1080/00224540009600495

Pingleton, S. K., McCann, J. (2011). Viewpoint: Women in medicine and science in 2020: beyond the glass ceiling. *AAMC Reporter*, Retrieved from https://www.aamc.org/download/182070/data/gwims_watch_april_2011.pdf

Pololi, L., Conrad, P., Knight, S., & Carr, P. (2009). A study of the relational aspects of the culture of academic medicine. *Academic Medicine, 84*(1), 106–114. doi:10.1097/ACM.0b013e3181900efc

Pololi, L & Knight, S. (2005). Mentoring faculty in academic medicine. A new paradigm? *J Gen Intern Med, 2005*(20), 866-870.

Pololi, L., Knight, S., Dennis, K., and Frankel, R. M. (2002). Helping medical school faculty realize their dreams: An innovative, collaborative mentoring program. *Academic Medicine, 77*(5), 377-384.

Pololi, L. H. (2010). *Changing the culture of academic medicine: Perspectives of women faculty*. Hanover, New Hampshire: Dartmouth College Press.

Pololi, L. H., Krupat, E., Civian, J. T., Ash, A. S., & Brennan, R. T. (2012). Why are a quarter of faculty considering leaving academic medicine? A study of their perceptions of institutional culture and intentions to leave at 26 representative U.S. medical schools. *Academic Medicine, 87*(7), 859–69. doi:10.1097/ACM.0b013e3182582b18

Pololi, Linda H., Dennis, Kay, Winn, Gloria M., Mitchell, J. (2003). A needs assessment of medical school faculty: Caring for the caretakers. *The Journal of Continuing Education in the Health Professions, 23*(1), 21–29.

Prime, J. L., Carter, N. M., & Welbourne, T. M. (2009). Women "take care," men "take charge": Managers' stereotypic perceptions of women and men leaders. *The Psychologist-Manager Journal, 12*(1), 25–49. doi:10.1080/10887150802371799

Probst, J. C., Baxley, E. G., Schell, B. J., Cleghorn, G. D., & Bogdewic, S. P. (1998). Organizational environment and perceptions of teaching quality in seven South Carolina family medicine residency programs. *Academic Medicine, 73*(8), 887–893. doi:10.1097/00001888-199808000-00014

Ragins, B. R., & Scandura, T. A. (1994). Gender differences in expected outcomes of mentoring relationships. *Academy of Management Journal, 37*(4), 957–971.

Ragins, Belle Rose, Cotton, J. L. (1999). Mentor functions and outcomes: A comparison of men and women in formal and informal mentoring relationships. *Journal of Applied Psychology, 84*(4), 529–550.

Richman, R., Morahan, P. S., Cohen, D. W., McDade, S. A., & Ed, D. (2001). Advancing Women and Closing the Leadership Gap: The Executive Leadership in Academic Medicine (ELAM) Program Experience, 10(3), 271–277. Retrieved from https://www.bu.edu/sph/files/2012/01/Richman_The-Executive-Leadership-in-Academic-Medicine.pdf.

Ries, A., Wingard, D., Gamst, A., Larsen, C., Farrell, E., & Reznik, V. (2012). Measuring faculty retention and success in academic medicine. *Academic Medicine, 87*(8), 1-6. doi:10.1097/ACM.0b013e31825d0d31

Robinson, J. D., & Cannon, D. L. (2005). Mentoring in the academic medical setting: The gender gap. *Journal of Clinical Psychology in Medical Settings, 12*(3), 265–270. doi:10.1007/s10880-005-5745-4

Rosser, V. J. (2004). Faculty member's intent to leave: A national study on their worklife and satisfaction. *Research in Higher Education, 45*(3), 285–309.

Ryan, J. F., Healy, R., & Sullivan, J. (2012). Oh, won't you stay? Predictors of faculty intent to leave a public research university. *Higher Education, 63*, 421–437. doi:10.1007/s10734-011-9448-5

Salkind, N. J. (2010). *Statistics for people who think they hate statistics*, 2nd Edition, Thousand Oaks, CA: Sage Publications, Inc.

Sambunjak, D., Straus, S. E., & Marusić, A. (2006). Mentoring in academic medicine: a systematic review. *The Journal of the American Medical Association, 296*(9), 1103–15. doi:10.1001/jama.296.9.1103

Sambunjak, D., Straus, S. E., & Marusic, A. (2010). A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. *Journal of General Internal Medicine, 25*(1), 72–8. doi:10.1007/s11606-009-1165-8

Sands, R. G., Parson, L. A., & Duane, J. (1991). Faculty mentoring faculty in a public university. *Journal of Higher Education, 62*(2), 174–193.

Savage, H. E., Karp, R. S., & Logue, R. (2004). Faculty mentorship at colleges and universities. *College Teaching, 52*(1), 21–24.

Schein, E. H. (1990). Organizational culture. *American Psychologist, 45*, 109–119.

Schloss, E. P., Flanagan, D. M., Culler, C. L., & Wright, A. L. (2009). Some hidden costs of faculty turnover in clinical departments in one academic medical center. *Academic Medicine, 84*(1), 32–36. doi:10.1097/ACM.0b013e3181906dff

Schrodt, P., Cawyer, C. S., & Sanders, R. (2003). An examination of academic mentoring behaviors and new faculty members' satisfaction with socialization and tenure and promotion processes. *Communication Education, 52*(1), 17–29. doi:10.1080/03634520302461

Schuster, J. & Finkelstein, M. (2006). The American faculty in perspective. *The American faculty: The restructuring of academic work and careers.* Baltimore: Johns Hopkins University Press.

Selhat, L. (2010). The goal is transformation. *Penn Medicine*, Winter, 2010-2011, 12-17.

Settles, I. H., Cortina, L. M., Malley, J., & Stewart, A. J. (2006). The climate for women in academic science: The good, the bad, and the changeable. *Psychology of Women Quarterly, 30*(1), 47–58. doi:10.1111/j.1471-6402.2006.00261.x

Sheridan, J. E. (1992). Organizational culture and employee retention. *Academy of Management Journal, 35*(5), 1036–1056.

Shollen, S. L., Bland, C. J., Finstad, D. a, & Taylor, A. L. (2009). Organizational climate and family life: how these factors affect the status of women faculty at one medical school. *Academic Medicine, 84*(1), 87–94. doi:10.1097/ACM.0b013e3181900edf

Smart, J. C. (1990). A causal model of faculty turnover intentions. *Research in Higher Education, 31*(5), 405–424. doi:10.1007/BF00992710

Smith, D.B., & Plant, W.T. (1982), Sex differences in the job satisfaction of university professors, *Journal of Applied Psychology 67*(2):249-51.

Sonnert, Gerhard and Holton, G. (1996). Career patterns of women and men in the sciences. *American Scientist, 84*(1), 63–71.

Sorcinelli, M. D., & Yun, J. (2007). From mentor to mentoring networks: Mentoring in the new academy. *Change: The Magazine of Higher Learning, 39*(6), 58–61. doi:10.3200/CHNG.39.6.58-C4

Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: Sage.

Swope, A. J. (2012). Under the influence: An examination of men's fears of women leaders. *Journal of Psychological Issues in Organizational Culture, 3*(2), 6–16.

Tabachnick, B. G. & Fidnell, L. S. (2006). *Using multivariate statistics* (5th Edition), Needham Heights, MA: Allyn & Bacon, Inc.; ISBN:0205459382.

Tracy, E., Jagsi, R., Starr, R., & Tarbell, N. (2004). Outcomes of a pilot faculty mentoring program. *Amer Journal of Obstetrics and Gynecology. 191*, 1846-50.

Trower, C. (2010). A new generation of faculty: Similar core values in a different world. *Peer Review, American Association of Colleges & Universities*, *12*(3).

Van Emmerik, I. J. H. (2004). The more you can get the better: Mentoring constellations and intrinsic career success. *Career Development International, 9*(6), 578–594. doi:10.1108/13620430410559160

Varkey, P., Jatoi, A., Williams, A., Mayer, A., Ko, M., Files, J., Hayes, S. (2012). The positive impact of a facilitated peer mentoring program on academic skills of women faculty. *BMC Medical Education, 12*(1), 14. doi:10.1186/1472-6920-12-14

Wanberg, C. R., Kammeyer-Mueller, J., & Marchese, M. (2006). Mentor and protégé predictors and outcomes of mentoring in a formal mentoring program. *Journal of Vocational Behavior, 69*(3), 410–423. doi:10.1016/j.jvb.2006.05.010

Wasburn, M. (2007). Mentoring women faculty: An instrumental case study of strategic collaboration. *Mentoring and Tutoring, 15*(1), 57–72. doi:10.1080/13611260601037389

Welch, J. L., Wiehe, S. E., Palmer-Smith, V., & Dankoski, M. E. (2011). Flexibility in faculty work-life policies at medical schools in the Big Ten conference. *Journal of Women's Health, 20*(5), 725–732. doi:10.1089/jwh.2010.2553

Williams, J. (2004). Job satisfaction and organizational commitment, a Sloan Work and Family Encyclopedia entry. Retrieved May 10, 2007, from the Sloan Work and Family Research Network website: http://wfnetwork.bc.edu/encyclopedia_entry.php?id=244&area=academics

Wingard, D.L, Garman, K.A., & Reznik, V. (2004). Facilitating faculty success: Outcomes and cost benefit of the UCSD national center of leadership in academic medicine. *Academic Medicine, 79*(10), S9-S11.

Workforce Planning for Wisconsin State Government. (2005). Employee retention. Retrieved January 10, 2012, from http://workforceplanning.wi.gov/category.asp?linkcatid=15&linkid=18

Xu, Y. J. (2008). Gender disparity in STEM disciplines: A study of faculty attrition and turnover intentions. *Research in Higher Education, 49*(7), 607–624. doi:10.1007/s11162-008-9097-4

Xu, Y. J., & Martin, C. L. (2011). Gender differences in STEM disciplines: From the aspects of informal professional networking and faculty career development. *Gender Issues, 28*(3), 134–154. doi:10.1007/s12147-011-9104-5

Zachary, L. J. (2009). Filling in the blanks. Informal mentoring is about being in the right place at the right time and fostering boundless professional support and guidance within organizations. *Development and Learning in Organizations: An International Journal, 23*(6), 62-66.

Zhou, Y., & Volkwein, J. F. (2004). Examining the influences on faculty departure intentions: A comparison of tenured versus nontenured faculty at research universities using NSOPF-99. *Research in Higher Education, 45*(2), 139–176. doi:10.1023/B:RIHE.0000015693.38603.4c

Appendix A: AAMC-COACHE Survey Instrument

The following pages provide a copy of the AAMC-COACHE survey instrument used to collect the data used in this study.

SURVEY INSTRUMENT

Appointment & Demographic Information

1. What is your current appointment status?
   - 1❑ Full-time faculty
   - 2❑ Part-time faculty
   - 3❑ Volunteer faculty
   - 4❑ Emeritus faculty
   - 5❑ Other (please specify: _____)

2. What is your current academic rank?
   - 1❑ Professor (including titles such as Research Professor, Clinical Professor, etc.)
   - 2❑ Associate Professor (including titles such as Research Associate Professor, Clinical Associate Professor, etc.)
   - 3❑ Assistant Professor (including titles such as Research Assistant Professor, Clinical Assistant Professor, etc.)
   - 4❑ Instructor or Lecturer
   - 5❑ Other (please specify: _____)

3a. In which department do you currently have your primary appointment?
   - 1❑ Basic science department in the medical school
     (Which department?_____)
   - 2❑ Clinical department in the medical school
     (Which department?_____)
     (Which division, if applicable?_____) 98=Not Applicable
   - 3❑ Other (please specify: _____)

3b. In what academic year did you receive your first faculty appointment at this medical school?

4. What is your current tenure status at this medical school?
   - 1❑ On tenure track but not tenured
   - 2❑ Tenured
   - 3❑ Not on tenure track, although medical school has tenure system
   - 4❑ No tenure at this medical school
   - 9❑ I'm not sure

5. Do you currently hold any of the following administrative titles?
   - 1❑ School of Medicine Dean, Associate Dean, Assistant Dean, Vice Dean
   - 2❑ Division Chief
   - 3❑ Department Chair
   - 4❑ Center Director
   - 9❑ None of these administrative titles

6. What is your highest earned academic degree? Check one only. (M.D. includes foreign equivalents.)
   - 1❑ M.D.
   - 2❑ Ph.D. or other health doctorate

3❑ M.D. and Ph.D. 4❑ M.D. and other degree (M.D./M.P.H.)
5❑ D.O. 6❑ Other (please specify: _____)

7. Sex: 0❑ Male 1❑ Female 9❑ Decline to answer

8. What is your race and/or ethnicity? (Check all applicable categories)
0❑ American Indian or Alaska Native 1❑ Asian
3❑ Black or African American 4❑ Hispanic
5❑ Native Hawaiian or other Pacific Islander 2❑ White
8❑ Other (please specify: _____) 9❑ Decline to answer

Nature of Work

9. In an average calendar week, how many total hours do you spend on all work activities?

_____ Total work hours per week

10. Please indicate your level of satisfaction or dissatisfaction with the number of hours you work in an average week.

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
○	○	○	○	○

11. In column A, please indicate the approximate percentage of your total work time you spend each week in the following activities. In column B, indicate the percentage of time that you would like to spend in each of the following activities (totals most equal 100%).

We realize that categories are not mutually exclusive (e.g., research may include teaching graduate students; clinical service may include teaching medical students). We ask, however, that you allocate your time spent in the discrete categories as best you can.

	COLUMN A % of time spent currently	COLUMN B % of time you would like to spend
A. **Teaching/ education** (include teaching; grading; course preparation; developing new curricula; advising or supervising students or residents; working with student or resident groups)	_____ %	_____ %
B **Research/ scholarship** (include research; reviewing or preparing articles or books; attending or preparing for professional meetings or conferences; reviewing or writing proposals; seeking outside funding)	_____ %	_____ %
C. **Patient care/ client services** (medical service; counseling patients or families; administrative tasks associated with clinical service)	_____ %	_____ %
D. **Administration** (include university, medical school, health system, faculty practice or department administrative duties, meetings, and committee work)	_____ %	_____ %
E. **Other Work Activities** not listed in a-d above (please specify)	_____ %	_____ %

12a. Please indicate your level of satisfaction or dissatisfaction with the percentage of time you currently spend on each activity:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. Teaching/ education (include teaching; grading; course preparation; developing new curricula; advising or supervising students or residents; working with student or resident groups)	○	○	○	○	○	○
B. Research/ scholarship (include research; reviewing or preparing articles or books; attending or preparing for professional meetings or conferences; reviewing or writing proposals; seeking outside funding)	○	○	○	○	○	○
C. Patient care/ client services (include medical service; counseling patients or families; administrative tasks associated with clinical service)	○	○	○	○	○	○
D. Administration (include university, medical school, health system, faculty practice or department administrative duties, meetings, and committee work)	○	○	○	○	○	○
E. Other work activities combined	○	○	○	○	○	○

[Only respondents who note dissatisfied or very dissatisfied with 12a. will see 12b.]

12b. In the previous question, you indicated that you are dissatisfied or very dissatisfied with the percentage of time you currently spend on the activities below. The percentage of time you currently devote to each of the following activities is:

	1	2	3	4	98

	Far too much	Too much	Too little	Far too little	Not applicable
A. Teaching/education	○	○	○	○	○
B. Research/scholarship	○	○	○	○	○
C. Patient care/client services	○	○	○	○	○
D. Administration	○	○	○	○	○
E. Other work activities combined	○	○	○	○	○

13a. Please indicate your level of satisfaction or dissatisfaction with the value your medical school places on each of the following mission areas:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. Teaching/ education	○	○	○	○	○	○
B. Research/ scholarship	○	○	○	○	○	○
C. Patient care/ client services	○	○	○	○	○	○
D. Community service	○	○	○	○	○	○

[Only respondents who note dissatisfied or very dissatisfied with 13a. will see 13b.]

13b. In the previous question, you indicated that you are dissatisfied or very dissatisfied with the value your medical school places on the mission areas listed below. Would you say the amount of emphasis your medical school places on each of the following mission areas is:

	1 Far too much	2 Too much	3 Too little	4 Far too little	98 Not applicable
A. Teaching/education	○	○	○	○	○
B. Research/scholarship	○	○	○	○	○
C. Patient care/client services	○	○	○	○	○
D. Community service	○	○	○	○	○

14a. Please indicate your level of satisfaction or dissatisfaction with the value your department places on each of the following mission areas:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. Teaching/ education	○	○	○	○	○	○
B. Research/ scholarship	○	○	○	○	○	○
C. Patient care/client services	○	○	○	○	○	○
D. Community service	○	○	○	○	○	○

[Only respondents who note dissatisfied or very dissatisfied with 14a. will see 14b.]

14b. In the previous question, you indicated that you are dissatisfied or very dissatisfied with the value your department places on the following mission areas. Would you say the amount of value your department places on each of the following mission areas is:

	1 Far too much	2 Too much	3 Too little	4 Far too little	98 Not applicable
A. Teaching/education	○	○	○	○	○
B Research/scholarship	○	○	○	○	○
C Patient care/client services	○	○	○	○	○
D. Community service	○	○	○	○	○

[Questions 15 and 16 are skipped if respondent has administrative appointment as indicated in q. 5]

15. Please indicate your level of satisfaction or dissatisfaction with how you feel your individual contributions in each area are valued by your Department Chair:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. **Teaching/ education** (include teaching; grading; course preparation; developing new curricula; advising or supervising students or residents; working with student or resident groups)	○	○	○	○	○	○
B. **Research/ scholarship** (include research; reviewing or preparing articles or books; attending or	○	○	○	○	○	○

preparing for professional meetings or conferences; reviewing or writing proposals; seeking outside funding)						
C. **Patient care/ client services** (include medical service; counseling patients or families; administrative tasks associated with clinical service)	○	○	○	○	○	○
D. **Administration** (include university, medical school, health system, faculty practice or department administrative duties, meetings, and committee work)	○	○	○	○	○	○

[Faculty who filled in an answer in the division name section of q. 3A see Q16]

16. Please indicate your level of satisfaction or dissatisfaction with how you feel your individual contributions in each area are valued by your Division Chief:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. **Teaching/ education** (include teaching; grading; course preparation; developing new curricula; advising or supervising students or residents; working with student or resident groups)	○	○	○	○	○	○
B. **Research/ scholarship** (include research; reviewing or preparing articles or books; attending or preparing for professional meetings or conferences; reviewing or writing proposals; seeking outside funding)	○	○	○	○	○	○

C. **Patient care/ client services** (include medical service; counseling patients or families; administrative tasks associated with clinical service)	○	○	○	○	○	○
D. **Administration** (include university, medical school, health system, faculty practice or department administrative duties, meetings, and committee work)	○	○	○	○	○	○

17. How satisfied or dissatisfied are you with:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
A. The control you have over your schedule	○	○	○	○	○
B. Your autonomy in your work	○	○	○	○	○

Climate, Culture, Collegiality

18. Please indicate your level of satisfaction or dissatisfaction with the following aspects of your workplace culture:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
A. How well you "fit" (i.e., your sense of belonging) in your department	○	○	○	○	○
B. The quality of professional interaction you have with departmental colleagues	○	○	○	○	○
C. The quality of personal interaction you have with departmental colleagues	○	○	○	○	○
D. The intellectual vitality in your department	○	○	○	○	○

19. Please indicate your level of agreement or disagreement with the following statements:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	98 Not Applicable

A. My departmental colleagues are respectful of my efforts to balance work and home responsibilities.	○	○	○	○	○	○
B. The faculty in my department usually get along well together.	○	○	○	○	○	○

20. I feel that my work is appreciated by:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know	98 Not applicable
A. Patients	○	○	○	○	○	○	○
B. Students/residents	○	○	○	○	○	○	○
C. Faculty	○	○	○	○	○	○	○
D. My immediate supervisor	○	○	○	○	○	○	○
E. The medical school dean's office	○	○	○	○	○	○	○

21. I feel that the workplace culture at this medical school cultivates:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. Collegiality	○	○	○	○	○	○
B. Interdisciplinary work	○	○	○	○	○	○
C. Entrepreneurialism	○	○	○	○	○	○
D. Excellence	○	○	○	○	○	○
E. A supportive climate for balancing work and home responsibility	○	○	○	○	○	○

22. My medical school offers equal opportunities to all faculty regardless of their:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. Gender	○	○	○	○	○	○
B. Race/Ethnicity	○	○	○	○	○	○
C. Sexual orientation	○	○	○	○	○	○

Collaboration

Please rate each of the following types of collaborative opportunities in terms of: (a) their importance or unimportance to you, and (b) your satisfaction or dissatisfaction with them.

23a. Opportunities to collaborate with faculty <u>in your department</u>

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant
○	○	○	○	○

23b. Opportunities to collaborate with faculty in your department

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
○	○	○	○	○

24a. Opportunities to collaborate with faculty in other departments in the medical school

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant
○	○	○	○	○

24b. Opportunities to collaborate with faculty in other departments in the medical school

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
○	○	○	○	○

25a. Opportunities to collaborate with faculty in other schools/colleges in your university

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant	98 Not applicable
○	○	○	○	○	○

25b. Opportunities to collaborate with faculty in other schools/colleges in your university

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
○	○	○	○	○	○

Mentoring

26. Do you receive formal mentoring (that is, have you been matched by the medical school or your department with a colleague to provide ongoing career guidance and advice)?

1○ Yes
0○ No [go to 27, then 29]
9○ I don't know [go to 27, then 29]

27. How important or unimportant to you is having a formal mentor at your institution?

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant
○	○	○	○	○

28. Please indicate your level of satisfaction or dissatisfaction with the quality of mentoring you receive:

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied

○	○	○	○	○

Feedback
In this section "unit head" refers to your department chair or division chief, whichever is more applicable to your situation.

[Questions 29-31 are skipped if respondent has administrative appointment as indicated in q. 5]

29. Do you receive feedback about your performance from your unit head?
1❑ Yes [If yes, go to 30a; then go to 31]
0❑ No [If no, go to 30b; then go to 32]

30a. How important or unimportant to you is receiving such feedback?

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant
○	○	○	○	○

30b. How important or unimportant would it be to you to receive feedback about your performance from your unit head?

5 Very Important	4 Important	3 Neither important nor unimportant	2 Unimportant	1 Very unimportant
○	○	○	○	○

31. Regarding the feedback on your career performance you receive from your unit head, how satisfied or dissatisfied are you with its:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
A. Usefulness?	○	○	○	○	○
B. Frequency?	○	○	○	○	○

Promotion
Please indicate your level of agreement or disagreement with each of the following statements.

32. To be promoted in rank, what I must do in each of the following mission areas is clear to me:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	98 Not applicable
A. Teaching/education	○	○	○	○	○	○
B. Research/scholarship	○	○	○	○	○	○
C. Patient care/client services	○	○	○	○	○	○
D. Institutional service	○	○	○	○	○	○

33. To be promoted in rank, what I must do in each of the following mission areas is reasonable to me:

	5 Strongly	4 Agree	3 Neither	2 Disagree	1 Strongly	98 Not

	agree		agree nor disagree		disagree	applicable
A. Teaching/education	○	○	○	○	○	○
B. Research/scholarship	○	○	○	○	○	○
C. Patient care/client services	○	○	○	○	○	○
D. Institutional service	○	○	○	○	○	○

34. Please indicate your level of agreement or disagreement with each of the following statements:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. At my medical school the criteria for promotion are consistently applied to faculty across comparable positions	○	○	○	○	○	○
B. At my medical school, female and male faculty members have equal opportunities to be promoted in rank.	○	○	○	○	○	○
C. At my medical school, minority and non-minority faculty members have equal opportunities to be promoted in rank.	○	○	○	○	○	○

35. Please indicate your level of satisfaction or dissatisfaction with each of the following items:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. The pace of your professional advancement at your medical school	○	○	○	○	○	○
B. The opportunities for professional development at your medical school	○	○	○	○	○	○

Pay and Compensation

36. Please indicate your level of satisfaction or dissatisfaction with each of the following aspects of pay and compensation:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	99 Not offered by my institution	9 I don't know
A. Your overall compensation	○	○	○	○	○	○	○

B. Incentive compensation, such as bonuses	○	○	○	○	○	○	○
C. Your salary compared to colleagues with similar qualifications in your department	○	○	○	○	○	○	○
D. Your salary compared to colleagues with similar qualifications in other departments	○	○	○	○	○	○	○

Benefits and Policies

37. Please indicate if you have used the following institutional benefits:

	1 Yes	0 No	99 Not offered by my institution
A. Housing benefits	○	○	○
B. Tuition benefits for dependents	○	○	○
C. Spousal/hiring assistance	○	○	○
D. Parental leave	○	○	○
E. Childcare	○	○	○
F. Institutional assistance in finding offsite childcare	○	○	○

38. Please indicate your level of satisfaction or dissatisfaction with each of the following benefits and policies:

[Skip logic will bring up Health benefits and Retirement benefits items for all respondents; Housing, Tuition, Hiring Assistance, Parental Leave, Childcare (both availability and quality items), and Institutional Assistance items will come up only if corresponding item in 37 is noted as "yes"]

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
A. Health benefits	○	○	○	○	○
B. Retirement benefits	○	○	○	○	○
C. **(ASK IF Q37A=YES)** Housing benefits	○	○	○	○	○
D. **(ASK IF Q37B=YES)** Tuition benefits for dependents	○	○	○	○	○
E. **(ASK IF Q37C=YES)** Spousal/	○	○	○	○	○

partner hiring assistance					
F. **(ASK IF Q37D=YES)** Parental leave	○	○	○	○	○
G. **(ASK IF Q37E=YES)** Availability of childcare offered by your medical school	○	○	○	○	○
H. **(ASK IF Q37E=YES)** Quality of childcare offered by your medical school	○	○	○	○	○
I. **(ASK IF Q37F=YES)** Institutional assistance in finding offsite childcare	○	○	○	○	○

Faculty Recruitment and Retention

39. Please indicate your level of agreement or disagreement with each of the following statements:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. My medical school is successful in hiring high quality faculty members.	○	○	○	○	○	○
B. My department is successful in hiring high quality faculty members.	○	○	○	○	○	○
C. My division is successful in hiring high quality faculty members.	○	○	○	○	○	○
D. My medical school is successful in retaining high quality faculty members.	○	○	○	○	○	○
E. My department is successful in retaining high quality faculty members.	○	○	○	○	○	○
F. My division is successful in retaining high quality faculty members.	○	○	○	○	○	○

40. Please indicate your level of agreement or disagreement with each of the following statements:
My department is successful in…

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. Recruiting female faculty members.	○	○	○	○	○	○
B. Recruiting racial/ethnic minority faculty members.	○	○	○	○	○	○
C. Retaining female faculty members.	○	○	○	○	○	○
D. Retaining racial/ethnic minority faculty members.	○	○	○	○	○	○

Institutional Decision-Making, Governance, and Operations

41. Please indicate your level of satisfaction or dissatisfaction with the following items:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	9 I don't know
A. The opportunities for faculty participation in the governance of your medical school	○	○	○	○	○	○
B. The communication from the dean's office to the faculty about the medical school	○	○	○	○	○	○
C. The dean's priorities for the medical school	○	○	○	○	○	○
D. The pace of decision-making in the dean's office	○	○	○	○	○	○
E. The opportunities for faculty participation in the governance of your department	○	○	○	○	○	○
F. The communication from your department chair to the faculty about the department	○	○	○	○	○	○
G. The department chair's priorities for the department	○	○	○	○	○	○
H. The pace of decision-making by your department chair	○	○	○	○	○	○
I. The availability of space for your research.	○	○	○	○	○	○
J. The condition of space for your research.	○	○	○	○	○	○
K. The equity in distribution of research space among faculty.	○	○	○	○	○	○

42. Please indicate your level of agreement or disagreement with each of the following statements:

	5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I don't know
A. Faculty can express their opinions about the medical school without fear of retribution.	○	○	○	○	○	○
B. This medical school does a good job explaining its overall finances to faculty.	○	○	○	○	○	○
C. My department does a good job explaining departmental finances to faculty.	○	○	○	○	○	○
D. I have the administrative support I need to do my job well.	○	○	○	○	○	○

Clinical Practice

43a. Are you actively engaged in the clinical care of patients?
1○ Yes [go to 43b]
0○ No [go to 45]

43b. Please identify the location where you spend the most time in your clinical practice. If you divide your time equally among locations, please choose one about which you would most like to comment. If your location is not listed, please choose "other."
[drop-down box with five (and "other") locations previously identified by institution]

[Respondent only sees item if "other" was selected in 43b]

43c. You identified "other": please identify the full name of the location where you spend the most time in your clinical practice_____

44. Please indicate your level of satisfaction or dissatisfaction with the following items at the clinical practice location to which you referred in the previous question:

	5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied	98 Not applicable
A. Support from administrative or office staff for your clinical care activities	○	○	○	○	○	○
B. Support from non-physician clinical staff for your clinical care activities	○	○	○	○	○	○
C. Opportunities for physician input in management decisions	○	○	○	○	○	○
D. Communication to physicians about this location's financial status	○	○	○	○	○	○
E. The teamwork between physicians and other clinical staff	○	○	○	○	○	○
F. Communication between physicians and senior administrators	○	○	○	○	○	○
G. Location's responsiveness in meeting your requests as a physician	○	○	○	○	○	○
H. Space available for your clinical practice	○	○	○	○	○	○
I. Availability of supplies for your clinical practice	○	○	○	○	○	○
J. Quality of equipment needed for your clinical practice	○	○	○	○	○	○
K. Your ability to provide a high quality of care	○	○	○	○	○	○
L. How well this clinical location functions overall as it relates to patient care	○	○	○	○	○	○

Global Satisfaction

Finally, we ask you to make some overall assessments about your department and your medical school as a place to work.

45. All things considered, how satisfied or dissatisfied are you with *your department* as a place to work?

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
○	○	○	○	○

46. All things considered, how satisfied or dissatisfied are you with *your medical school* as a place to work?

5 Very satisfied	4 Satisfied	3 Neither satisfied nor dissatisfied	2 Dissatisfied	1 Very dissatisfied
○	○	○	○	○

47. Do you plan to retire in the next 1-2 years?

1○ Yes [go to 49]
0○ No [go to 48]
9○ I don't know [go to 48]

48. Do you plan to leave the medical school in the next 1-2 years?

1○ Yes, I plan to leave in the next 1-2 years
0○ No, I plan on staying for at least that long
9○ I don't know

Please indicate your level of agreement or disagreement with the following statements:

49. If I had it to do all over, I would again choose to work at this medical school.

5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I 'm not sure
○	○	○	○	○	○

50. If I had it to do all over, I would again choose an academic career.

5 Strongly agree	4 Agree	3 Neither agree nor disagree	2 Disagree	1 Strongly disagree	9 I 'm not sure
○	○	○	○	○	○

51. Please use the space below to tell us the number one thing that you, personally, feel your medical school could do to improve the workplace.

Appendix B: Principal Components Analysis Worksheet (Job Satisfaction)

Job Satisfaction

Component Matrix[a]

	Component
	1
Q45. Your department as a place to work	.815
Q46. Your medical school as a place to work	.833
Q49. If I had it to do all over, I would again choose to work at this medical school.	.877
Q50. If I had it to do all over, I would again choose an academic career.	.566

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Q50 > 0.5 so will include.

Components – Job Satisfaction

JS1 – Job Satisfaction

Q45
Q46
Q49
Q50

Next Step

Find the average score by combining all four questions to develop a new variable, JS1. This new variable will be used for the remaining analysis to answer research questions 2, 3 and 4.

```
COMPUTE MeanJS1=MEAN(Q45,Q46,Q49,Q50).
EXECUTE.
```

Appendix C: Principal Components Analysis Worksheet (Culture)

Culture: Component 1

Rotated Component Matrix[a]

	Component	
	1	2
Q18A. How well you fit (i. e., your sense of belonging) in your department	.811	.210
Q18B. The quality of professional interaction you have with departmental colleagues	.839	.208
Q18C. The quality of personal interaction you have with departmental colleagues	.817	.169
Q18D. The intellectual vitality in your department	.695	.323
Q19A. My departmental colleagues are respectful of my efforts to balance work and home responsibilities	.688	.324
Q19B. The faculty in my department usually get along well together.	.774	.211
Q20C. My work is appreciated by: Faculty	.642	.351
Q20D. My work is appreciated by: My immediate supervisor	.605	.280

Culture: Component 2

Q20E. My work is appreciated by: The medical school dean's office	.240	.656
Q21A. The workplace culture at this medical school cultivates: Collegiality	.487	.651
Q21B. The workplace culture at this medical school cultivates: Interdisciplinary work	.254	.771
Q21C. The workplace culture at this medical school cultivates: Entrepreneurialism	.051	.762
Q21D. The workplace culture at this medical school cultivates: Excellence	.324	.751
Q21E. The workplace culture at this medical school cultivates: A supportive climate for balancing work and home responsibility	.352	.596

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Components – Culture

CultureFit – Fit/collegiality/interpersonal

Q18 A, B, C, D

Q19 A, B

Q20 C, D

CultureInst – Institutional environment

Q20 E

Q21 A, B, C, D, E

Next Step

Find the average score for each combination of questions that load on each new variable, also called CultureFit and CultureInst. These now become the variables that will be used for the remaining analysis to answer research questions 2, 3 and 4.

```
COMPUTE MeanCU1=MEAN(Q18_A,Q18_B,Q18_C,Q18_D,Q19_A,Q19_B,Q20_C,Q20_D).
EXECUTE.
COMPUTE MeanCU2=MEAN(Q20_E,Q21_A,Q21_B,Q21_C,Q21_D,Q21_E).
EXECUTE.
```

Appendix D: Principal Components Analysis Worksheet (Career Advancement)

Career Advancement: Component 1

Rotated Component Matrix[a]

	Component		
	1	2	3
Q22A. My medical school offers equal opportunities to all faculty regardless of their: Gender	.166	.876	.177
Q22B. My medical school offers equal opportunities to all faculty regardless of their: Race/Ethnicity	.160	.910	.112
Q22C. My medical school offers equal opportunities to all faculty regardless of their: Sexual orientation	.184	.885	.086
Q32A. What I must do is clear to me: Teaching/education	.833	.169	.217
Q32B. What I must do is clear to me: Research/scholarship	.623	.025	.407
Q32C. What I must do is clear to me: Patient care/client services	.823	.162	.148
Q32D. What I must do is clear to me: Institutional service	.796	.165	.262
Q33A. What I must do is reasonable to me: Teaching/education	.767	.263	.227
Q33B. What I must do is reasonable to me: Research/scholarship	.538	.066	.513
Q33C. What I must do is reasonable to me: Patient care/client services	.789	.226	.124
Q33D. What I must do is reasonable to me: Institutional service	.758	.191	.259
Q34A. Criteria for promotion are consistently applied to faculty across comparable positions	.308	.342	.653

Career Advancement: Component 2

Rotated Component Matrix[a]

	Component		
	1	2	3
Q22A. My medical school offers equal opportunities to all faculty regardless of their: Gender	.166	.876	.177
Q22B. My medical school offers equal opportunities to all faculty regardless of their: Race/Ethnicity	.160	.910	.112
Q22C. My medical school offers equal opportunities to all faculty regardless of their: Sexual orientation	.184	.885	.086
Q34B. Female and male faculty members have equal opportunities to be promoted in rank	.238	.673	.473
Q34C. Minority and non-minority faculty members have equal opportunities to be promoted in rank.	.197	.718	.421
Q35A. The pace of your professional advancement at your medical school	.245	.222	.797
Q35B. The opportunities for professional development at your medical school	.292	.231	.728

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Career Advancement: Component 3

Q33B. What I must do is reasonable to me: Research/scholarship	.538	.066	.513
Q33C. What I must do is reasonable to me: Patient care/client services	.789	.226	.124
Q33D. What I must do is reasonable to me: Institutional service	.758	.191	.259
Q34A. Criteria for promotion are consistently applied to faculty across comparable positions	.308	.342	.653
Q34B. Female and male faculty members have equal opportunities to be promoted in rank	.238	.673	.473
Q34C. Minority and non-minority faculty members have equal opportunities to be promoted in rank.	.197	.718	.421
Q35A. The pace of your professional advancement at your medical school	.245	.222	.797
Q35B. The opportunities for professional development at your medical school	.292	.231	.728

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Even though this is >0.5 I will include in CA1 since is it slightly more aligned and would not include the same question in two different components.

Components – Career Advancement

CAPromo – Expectations for Promotion

Q32 A, B, C, D

Q33 A, B, C, D

CAEqOp – Equal opportunity

Q22 A, B, C

Q34 B, C

CAAdv – Advancement opportunity

Q34A

Q35 A, B

Next Step

Find the average score for each combination of questions that load on each new variable, also called CA1, CA2 and CA3. These now become the variables that will be used for the remaining analysis to answer research questions 2, 3 and 4.

```
COMPUTE MeanCA1=MEAN(Q32_A,Q32_B,Q32_C,Q32_D,Q33_A,Q33_B,Q33_C,Q33_D).
EXECUTE.
COMPUTE MeanCA2=MEAN(Q22_A,Q22_B,Q22_C,Q34_B,Q34_C).
EXECUTE.
COMPUTE MeanCA3=MEAN(Q34_A,Q35_A,Q35_B).
EXECUTE.
```

Appendix E: Answers to Q51. Themes, Verbatims, and Organizational Justice Tenets

Theme	Responses	Organizational Justice
Resources Lack of or insufficient; inequitable distribution; inadequate facilities; lack of administrative support; salaries; support staff	"Provide more financial resources and administrative support; Better allocation of resources."	Distributive
	"A strong plan and the necessary resources for implementing proven policies that advance women faculty at all levels."	Procedural
	"Improved administrative, space and resource support for mid-level faculty who can all too easily have difficulty growing their programs due to limited access to these resources."	Distributive
	"Make pay and administrative resources more equitable with respect to women faculty."	Distributive
	"lack of adequate distribution of deserved research space/resources and facilities"	Distributive
	"Additional resources for quality, professional staff support to improve the organization, infrastructure, management of all missions, so that faculty can dedicate their time to research, teaching and service."	Distributive
Communication Between leadership and clinical faculty; between departments; lack of transparency; need more two-way dialog	"Improve communication between administrators and clinical faculty and allow physicians to be involved in decisions that may directly affect them."	Procedural
	"Provide a way for faculty to have input directly to decisions that affect them in the medical school and hospital. Right now people are intimidated."	Interpersonal
	"Better communication regarding strategies, finances, planning."	Informational
	"Improve respect and communication from our department chair towards the faculty with primary clinical responsibilities."	Interpersonal
	"Clarify and communicate priorities in order to streamline decision-making and speed change."	Informational
	"I would like to improve positive communication between physicians and administrators. I would sincerely like to understand the administrative process and would like an opportunity to offer ideas for discussion to give the patients the very best care."	Procedural
	"Respect for colleagues and their opinions."	Interpersonal

Work/Life Balance	"The number one thing this medical school could do would be to improve the work place is to support faculty in work life balance."	Procedural
	"Walk the walk regarding work life balance. There is a lot of talk, but expectations remain the same."	Procedural
	"I think that addressing the issue of balance of family life and academic success is paramount. The inability to have 'reduced duties' or part-time status for more than 6 years is very limiting, especially to women."	Procedural
	"Better administrative planning of teaching responsibilities to allow for work-family balance and juggling of research/teaching efforts."	Procedural
	"Policies that promote better balance between work and life. Be supportive of women who are trying to balance work and family."	Procedural
	There is too much emphasis on the financial productivity of the Division. As a physician, if salary was my primary concern, I could have gone into private practice. However, I enjoy patient care, research, and teaching, so I chose an academic career. However, now there is more pressure to produce more economic revenue, despite the fact that my promotion is based on research productivity and not on how many patients I see. This is especially difficult for women with young children, already trying to balance work and family.	Distributive
Culture Research vs. Teaching vs. Patient Care; lack of collegiality; lack of respect; need more trust and cooperation	"It needs to be more collegial - more respect needs to be given to all members of the community and value placed on all efforts."	Interpersonal
	"Recognize the immense amount and value of the non-direct patient care we provide for hours every single day of our work life."	
	"Foster a supportive and cooperative attitude among departments/faculty."	Interpersonal
	"The physicians in our department all work very hard at providing excellent care to patients and teaching to residents and medical student. We work a lot of extra-long hours for less pay compared to the community. Although I feel appreciated by my department, not at all by the medical school. The medical school is driven by a financial bottom line. All physicians should be given CME time and money to learn and improve their practice."	Interpersonal
	"I feel that 'University Physicians' is taking over and that money has become a much greater priority than teaching. I understand we need money to keep the doors open, but I feel that clinical education is suffering tremendously. I wanted this job to teach. If I have to worry this much about the bottom line, I might as well be in private practice without all the hassles of a university setting."	Distributive
	"As a clinician in [a] non-tenure track, I am penalized if I want to teach or do research because it takes away from my productivity/RVUs of patient care. Although it is a University mission it isn't valued for all of us to have some of each of these roles, and my pay & evaluations are based on # of patients seen. Because of this I cannot get promoted because I need to do these other things to be promoted. If I switch to tenure track and join research physicians, then my pay will be cut. This is a lose-lose situation for improving professional growth, without compromising financial incentive."	Interpersonal

Career Advancement/ Promotion Lack of or confusing guidelines; lack of transparency; lack of gender and race equality	"Give more credit for administrative and clinical service in promotion decisions and less emphasis on number of papers if someone has NO protected time to do academic work."	Procedural
	"Develop guidelines for promotion appropriate to faculty whose primary responsibilities are patient care with no dedicated time for teaching, research and scholarly activity."	Informational
	"I feel as though this medical school and its promotion structure discriminate against women."	Distributive
	"Define promotion criteria that span all departments."	Procedural
	"Equality in hiring, institutional support, promotion and leadership based on achievement regardless of gender and race with implementation of accountability for current (overwhelmingly white male) Directors, Chairs and Chiefs."	Distributive
	"There isn't a glass ceiling here; it is a cement ceiling."	Interpersonal
Faculty Development/ Mentoring Implement or improve formal mentoring opportunities; more emphasis on mentoring; mentoring tailored to, or in support of women	"Assigned mentoring by faculty members that are not part of my chain of command. As a new Assistant "Assigned mentoring by faculty members that are not part of my chain of command. As a new Assistant Professor, I feel lost and my supervisor is overbearing, highly critical, and borders on inappropriate nasty behavior to all faculty under his supervision."	Distributive
	"Improve mentorship so that every faculty member can have the support and guidance necessary to succeed in their chosen career and be promoted successfully. Currently, the quality of mentorship is inconsistent and in some cases, it delays progress and it others, it frankly fails resulting in faculty attrition."	Procedural
	"Focus on mentoring and developing faculty, and increasing diversity, including women in leadership positions."	Distributive
	"Provide a structured mentoring system."	Procedural
	"There should be a formal mandatory mentoring of junior faculty members. There should be a junior faculty club to promote communication, similar to the post-doc club."	Procedural
	"Too many of the truly good mentors have left. There are too few mentors to help the junior faculty."	Interpersonal
	"Increase the quality and quantity of professional and/or personal mentorship for faculty of varying levels to help them achieve their future academic aspirations."	Interpersonal

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