



8-2015

Factors Affecting Job Satisfaction of Radiologic Sciences Faculty: Implications for Recruitment and Retention

Lisa Marie Satterfield

University of Tennessee - Knoxville, lsatter3@vols.utk.edu

Follow this and additional works at: https://trace.tennessee.edu/utk_graddiss

 Part of the [Higher Education Commons](#)

Recommended Citation

Satterfield, Lisa Marie, "Factors Affecting Job Satisfaction of Radiologic Sciences Faculty: Implications for Recruitment and Retention. " PhD diss., University of Tennessee, 2015.
https://trace.tennessee.edu/utk_graddiss/3467

This Dissertation is brought to you for free and open access by the Graduate School at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

To the Graduate Council:

I am submitting herewith a dissertation written by Lisa Marie Satterfield entitled "Factors Affecting Job Satisfaction of Radiologic Sciences Faculty: Implications for Recruitment and Retention." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Higher Education Administration.

J. Patrick Biddix, Major Professor

We have read this dissertation and recommend its acceptance:

Karen D. Boyd, Bob Rider, Dennis Ciancio, Norma Mertz

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

**Factors Affecting Job Satisfaction of Radiologic Sciences Faculty:
Implications for Recruitment and Retention**

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Lisa Marie Satterfield
August 2015

DEDICATION

This dissertation is dedicated to my husband Kyle Kelly Satterfield, Sr. and my mother Willie Mae Woods. Without their support, prayers, and unwavering confidence in me, this would not be possible. I hope I have made both of you proud.

ACKNOWLEDGEMENTS

I want to first extend a sincere thank you to my committee – Dr. J. Patrick Biddix (Dr. B), Dr. Karen D. Boyd, Dr. Dennis Ciano, Dr. Bob Rider, and Dr. Norma Mertz. Their support, patience, expertise, and willingness to help me succeed have brought me this far. I feel honored to have worked with such a high caliber group of scholars. I would like to extend a special thank you to Dr. B. who served as my committee chair. He spent many days, nights, and weekends reading numerous edits of my work and keeping me focused.

I wish to say thank you to my family who evidently thinks there is nothing I cannot accomplish. They have been my biggest fans and cheerleaders. I wish to thank my friends Dr. Lisa Legg and Dr. Betsy Sparks who contributed greatly to this work. I will never be able to repay them for all they have done for me.

Lastly, and perhaps most importantly, I want to thank God for his faithfulness. When I was two years old and the doctors said I was permanently brain damaged, would never walk or talk and definitely would never attend school, God had other plans for me. He continues to help me succeed in everything I attempt to accomplish. He knew how important this was to me – it is a dream he has made reality for me.

ABSTRACT

The need to recruit and retain radiologic sciences faculty is essential to meet the increasing demand for radiologic technologists. Nevertheless, a faculty shortage is precluding radiologic sciences programs from admitting qualified students and it is predicted to only get worse. Seventy-five percent of the educative body of radiologic sciences is older than 52 years and will approach retirement age in the immediate future. While there is an extensive amount of research conducted on the role of faculty, faculty challenges, faculty recruitment, and job satisfaction, little is known about the indicators of job satisfaction among radiologic sciences faculty that motivate them to remain in the educator role. This study attempted to identify job satisfaction factors that influence radiologic sciences faculty retention. The study employed a survey design method and the population consisted of program directors and faculty in Joint Review on Education in Radiologic Technology (JRCERT) accredited programs. The implications of this study are related to identifying job satisfaction factors that would influence recruitment of appropriate individuals who would remain in education long term, and help alleviate the healthcare faculty shortage in the radiologic sciences.

TABLE OF CONTENTS

| | |
|---|----|
| CHAPTER 1. INTRODUCTION..... | 1 |
| Statement of the Problem..... | 3 |
| Purpose of the Study | 3 |
| Significance of the Study | 3 |
| Research Questions | 4 |
| Methodology | 5 |
| Population | 5 |
| Data Collection | 5 |
| Research Hypothesis | 7 |
| Theoretical Framework | 8 |
| Content Theories | 8 |
| Process Theories | 13 |
| Definition of Terms..... | 14 |
| Delimitations of the Study | 15 |
| CHAPTER 2. REVIEW OF THE LITERATURE | 17 |
| Faculty Shortages in Higher Education | 17 |
| Healthcare Faculty Shortages in Higher Education | 18 |
| Radiologic Sciences Faculty Shortages | 21 |
| Causal Factors Associated with Radiologic and Health Sciences Faculty Shortages | 21 |
| Job Satisfaction | 22 |
| Definition | 22 |
| Importance of Job Satisfaction | 23 |
| Job Satisfaction Measurement | 24 |
| Affective and Cognitive | 24 |
| Objective and Perceptual | 25 |
| Forms of Measurement | 25 |
| Global and Specific Job Facets | 26 |
| Single-Item vs. Multi-Facet Measures | 26 |
| Job Satisfaction Surveys | 27 |
| Job Satisfaction Survey | 28 |
| Job Descriptive Index | 29 |
| Minnesota Satisfaction Questionnaire | 30 |
| Job Satisfaction Variables | 31 |
| Demographic Characteristics | 32 |
| Age | 33 |
| Gender | 34 |
| Race | 35 |
| Colleague Interactions | 36 |
| Colleagues | 37 |
| Students | 38 |
| Leadership | 39 |
| Extrinsic Motivators | 40 |
| Salary | 41 |

| | |
|--|----|
| Personal Life | 42 |
| Job Satisfaction and Organizational Commitment | 44 |
| Job Satisfaction Similarities Between Higher Education and Radiologic Sciences | 45 |
| CHAPTER 3. METHODOLOGY | 50 |
| Research Design..... | 50 |
| Population | 50 |
| Instrumentation | 51 |
| Job Satisfaction Survey | 51 |
| Variables in the Study | 52 |
| Validity and Reliability of the Instrument | 52 |
| Methodology | 54 |
| Data Analysis | 54 |
| Limitations of the Study..... | 57 |
| CHAPTER 4. RESULTS | 59 |
| Population and Response Rate..... | 59 |
| Demographic Data Results | 60 |
| Age..... | 60 |
| Gender and Race | 60 |
| Years of Teaching | 60 |
| Primary Job Role..... | 60 |
| Salary Range | 62 |
| Geographical Region | 62 |
| Validity of the Instrument..... | 63 |
| Total Job Satisfaction Compared to U.S. Norms | 66 |
| Regression Analysis..... | 67 |
| Multicollinearity and Interaction Effects | 68 |
| Analysis 1. Job Satisfaction | 70 |
| Analysis 2. Pay..... | 72 |
| Analysis 3. Promotion..... | 74 |
| Analysis 4. Supervision | 74 |
| Analysis 5. Benefits | 75 |
| Analysis 6. Contingent Rewards..... | 76 |
| Analysis 7. Operating Procedures..... | 79 |
| Analysis 8. Coworkers | 79 |
| Analysis 9. Nature of Work | 80 |
| Analysis 10. Communications | 82 |
| CHAPTER 5. DISCUSSION OF FINDINGS | 84 |
| Research Question 1. | 85 |
| Demographic Characteristics Results | 85 |
| Research Question 2 | 88 |
| Total Job Satisfaction Results..... | 88 |
| Specific Facet Job Satisfaction Results..... | 89 |
| Job Satisfaction Predictors | 91 |

| | |
|---|-----|
| Important Findings..... | 97 |
| Recommendations for Policy and Practice | 99 |
| Recommendations for Future Research | 103 |
| Conclusion | 104 |
| REFERENCES | 106 |
| APPENDICES | 134 |
| A. On-line Survey Instrument..... | 135 |
| B. Invitation to Participate Email..... | 140 |
| C. Follow-Up Email to Participants..... | 142 |
| D. Correlation Results..... | 144 |
| E. Institutional Review Board Approval | 146 |
| VITA | 148 |

LIST OF TABLES

| | |
|---|----|
| 2.1 Comparison of Gappa's Essential Elements of The Faculty Work Experience | 47 |
| 2.2 Relationship Between Research Questions and Job Satisfaction Factors..... | 48 |
| 3.1 Research Question Variables and Items on the Job Satisfaction Survey | 52 |
| 3.2 Assumptions of the Regressions | 57 |
| 4.1 Demographic Characteristics | 61 |
| 4.2 Cronbach's Alpha Job Satisfaction Dimensions, Survey Items..... | 66 |
| 4.3 Job Satisfaction Survey (JSS) Scores Comparison | 67 |
| 4.4 Variable Collapsing | 70 |
| 4.5 Regression Analysis Summary for Evaluating Total Job Satisfaction | 72 |
| 4.6 Regression Analysis Summary for Pay..... | 73 |
| 4.7 Regression Analysis Summary for Promotion..... | 75 |
| 4.8 Regression Analysis Summary for Supervision | 76 |
| 4.9 Regression Analysis Summary for Benefits | 77 |
| 4.10 Regression Analysis Summary for Contingent Rewards..... | 78 |
| 4.11 Regression Analysis Summary for Operating Procedures..... | 80 |
| 4.12 Regression Analysis Summary for Coworkers | 81 |
| 4.13 Regression Analysis Summary for Nature of Work | 82 |
| 4.14 Regression Analysis Summary for Communications | 83 |

LIST OF FIGURES

| | |
|--|----|
| 1.1 Maslow's Hierarchy of Need | 10 |
| 1.2 Herzberg's Two-Factor Theory | 11 |
| 2.1 Gappa's Essential Elements of Faculty Work | 46 |
| 4.1 Geographical Region of Radiologic Sciences Faculty..... | 62 |
| 4.2 Job Satisfaction Structural Model for Radiologic Sciences Faculty..... | 64 |
| 5.1 US Norms Compared to Radiologic Sciences Faculty | 88 |

CHAPTER 1

Introduction

The aging population and advances in the treatment of active and chronic diseases are increasing the demand for radiographers to perform diagnostic imaging and therapeutic services. According to one survey of 254 hospital radiology departments, 45% of hospitals are understaffed in radiology. Fifty-six percent of hospital radiology department managers surveyed indicated that staffing shortages were diminishing the quality of care their departments are able to provide. Moreover, staffing shortages are occurring at a time when radiology volume generally is increasing (Hawkins, 2001). According to Rothenberg and Korn (2008) the total number of imaging procedures grew by 40% from 2000-2005 and another 26% by 2008 (Magnetic Resonance Imaging [MRI] 133%, Computed Tomography [CT] 122%, Ultrasonography [US] 57%, and Positron Emission Tomography [PET] 25%) resulting in nearly half a million procedures performed each year. As this number is expected to continue to grow, the Bureau of Labor Statistics ([BLS], 2014) projects that an estimated additional 72,000 radiographers will be needed by 2022 to perform imaging services. Thus, radiologic sciences programs must produce more graduates.

The increasing demand for graduates is complicated by an increasing demand for faculty. A faculty shortage is precluding radiologic sciences programs across the country from admitting qualified students (Association of Educators in Imaging and Radiologic Sciences [AEIRS], 2008; Beavers, 2010; Boeve, 2007; Hinshaw, 2001; Rahn & Wartman, 2007; Undie & Passmore, 2010). According to a recent nationwide survey, an estimated 53.5% of radiography programs are currently at capacity. The mean number of qualified students turned away by radiography programs was 36.3; radiation therapy programs turned away an average of 17.1 qualified

students, and nuclear medicine programs turned away an average of 7.8 qualified students. Thus, an estimated 4,391 qualified students were turned away by radiography programs, 877 by radiation therapy programs, and 239 by nuclear medicine. On average, program directors indicate they could accommodate an average of an additional seven students annually; this increase would produce an estimated additional 14,391 qualified students (American Society of Radiologic Technologists [ASRT], 2013a). The increasing demand for radiologic services and radiologic sciences graduates to perform those services combined with faculty shortages makes the focus on faculty retention a paramount precedence.

As a disproportion of faculty supply and demand is perpetuating a faculty shortage in general, colleges and university systems are presented with a difficult and challenging task (Gappa, Austin & Trice, 2007). They must create environments that attract and retain faculty and ensure that their employment policies address current faculty members' important priorities for work and life. Today's faculty job satisfaction is as critically important as it has ever been – and perhaps more so (Gappa & Austin, 2010). Researchers have shown job satisfaction is strongly and inversely associated with an employee's intention to leave an organization. If the level of job satisfaction is high, then the intent to leave an organization is low (Egan, Yang, & Bartlett, 2004; Lee, Gerhart, Weller & Trevor, 2008). Further, researchers contend job satisfaction reflects immediate affective reactions to the job while commitment to the profession develops more slowly after the individual forms more comprehensive valuations of the employing organization, its values and expectations, and one's own future. It is thus expected that highly satisfied workers will be more committed to the organization (Mannheim, Baruch & Tal, 1997).

Statement of the Problem

Retaining radiologic sciences faculty is essential to meet the increasing demand for radiologic sciences graduates. While there is an extensive amount of research published on the role of faculty (Blackburn & Lawrence, 1995; Fairweather, 2002; Umbach & Wawrzynski, n.d), faculty challenges (Bower, 2001; Clark & Waltzman, 1993; Kezar, 1999), faculty recruitment (Bickel & Brown, 2005; Hessler, 2006; Trotman, Bennett, Scheffler, & Tulloch, 2002), and job satisfaction (Gormley, 2003; Ryan and Deci, 2000, Gappa, Austin & Trice, 2007), little is known about the indicators of job satisfaction among current radiologic sciences faculty that motivate them to remain in the educator role. This could be a contributing factor to the faculty shortage resulting in radiography programs not admitting students and producing technologists to perform diagnostic and therapeutic services (Beavers, 2010; Swafford & Legg, 2009).

Purpose of the Study

The purpose of this study was to generalize from a sample of radiologic sciences faculty to the population of radiologic sciences faculty so that inferences can be made about the job satisfaction of this population. The participants' socio-demographic profiles enable differentiation between different sub-groups. This segmentation offers insights that could be missed by only looking at the aggregate data.

Significance of the Study

Academic institutions' success in retaining high-quality faculty members directly affects their ability to achieve their missions and goals and to satisfy their constituents. The challenge today is to provide an environment where, regardless of individual demographics, all faculty members have the opportunity to maximize their intellectual talents, to grow professionally, to have their work respected, and to be members of the academic community (Gappa, Austin &

Trice, 2007). Recognizing that job satisfaction and retention are significant and meeting the demand for radiologic sciences faculty is imperative, factors influencing job satisfaction and avenues that positively impact job satisfaction among radiologic sciences faculty need to be explored (Ferrell, James, & Holland, 2014; Medina, 2012).

Although current faculty members may find an academic career attractive and satisfying, they also cite sources of dissatisfaction and a willingness to change jobs (Gappa, Austin & Trice, 2007). Changes in American colleges and universities, work appointments, and in the nature of faculty work all mandate a consideration of today's faculty, their working conditions, and what they seek in their employment (Gappa & Austin, 2010).

This study attempted to identify job satisfaction factors that influence radiologic sciences faculty retention. Optimizing fulfillment of these needs in the faculty workplace should not only help institutions improve faculty retention but also help every faculty member be in a position to do his or her best work (Gappa, Austin & Trice, 2007).

Research Questions

The following research questions guided this study:

1. What are the demographic characteristics (age, gender, race, years of teaching, primary job role, demographic region, salary) of radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs?
2. To what extent are radiologic sciences faculty in JRCERT accredited programs satisfied with their jobs in terms of (a) colleague interactions (colleagues/coworkers, leadership/supervision); and (b) extrinsic motivators (pay, promotion, supervision, benefits, contingent rewards, operating procedures, nature of work, communication).

Methodology

The general intent of this study was to explore facet-specific and general levels of job satisfaction of radiologic sciences faculty in JRCERT accredited programs. Personal characteristics that might influence radiologic sciences faculty satisfaction were considered.

Population

The population for this study was comprised of radiologic sciences program directors and faculty in JRCERT accredited programs. The JRCERT accredits approximately 750 radiography, radiation therapy, medical dosimetry, and magnetic resonance imaging programs (JRCERT, 2014). The sampling frame for this research was program directors with valid email addresses. Email addresses were available for 715 of the program directors; therefore, no sampling technique was applied as all available email addresses were used.

As the intent of this study was to examine the job satisfaction of program directors and didactic and clinical faculty, the program directors were asked to forward the survey to other radiologic sciences faculty in their programs.

Data Collection

This study utilized web-based survey methods to collect empirical data on the demographic profile of radiologic sciences faculty and to examine a number of variables associated with the faculty's perceptions of job satisfaction. Most job satisfaction research data are collected utilizing survey methods (Isaac & Michael, 1990; Spector, 1997). Considerations for using surveys as the preferred type of data collection include economy of the design, rapid turnaround, and the advantage of identifying attributes for a large population from a small group of individuals (Babbie, 1990; Creswell, 2009; Fowler, 2002). The number of surveys being conducted over the internet has increased dramatically in the last 10 years, driven by a dramatic

rise in internet penetration and the relatively low cost of conducting web surveys in comparison with other methods. Web surveys are convenient for respondents to take on their own time and at their own pace and the lack of an interviewer means web surveys suffer from less social desirability bias than interviewer-administered modes (Pew Research Center, 2014).

The Job Satisfaction Survey (JSS) (Appendix A) developed by Spector (1985) was the instrument used for this study. The JSS was developed to assess job satisfaction in human service, nonprofit, and public organizations but Spector (1985) argued it could be used for other sectors as well. The instrument uses 36 items to describe nine job facets (four items per facet) and a total satisfaction score can be computed by combining all of the items. The job facets include pay, promotion, supervision, benefits, contingent rewards, operating procedures, co-workers, nature of work, and communication. Demographic information (age, gender, race, years of teaching in the radiologic sciences, primary job description, demographic region, and salary) was also collected from the participants.

This study was conducted with the population of radiologic sciences faculty in the U.S. In an effort to reach a broad segment of faculty the researcher acquired a listing of email addresses of the program directors in JRCERT accredited programs. The JRCERT accredits approximately 750 radiography, radiation therapy, medical dosimetry, and magnetic resonance imaging programs (JRCERT, 2014). The program directors were contacted via email. The email explained the purpose of the study, invited directors to participate, included an informed consent statement, and included a link to the survey (Appendix B). Additionally, program directors were asked to forward the email to other radiologic faculty within their departments/programs and encourage them to participate in the project.

The quantitative data analysis was conducted utilizing SPSS v. 21. Descriptive statistics were used to present the demographic data collected and inferential statistics were used to compare data collected between groups and to relate assorted variables. Demographic information was presented in frequencies and percentages.

Research Hypotheses

The null hypotheses for this study were:

1. There is no statistically significant difference in total job satisfaction between radiologic sciences faculty in JRCERT accredited programs based on independent demographic variables.
2. There is no statistically significant difference in the pay dimension of job satisfaction based on the independent demographic variables.
3. There is no statistically significant difference in the promotion dimension of job satisfaction based on the independent demographic variables.
4. There is no statistically significant difference in the supervision dimension of job satisfaction based on the independent demographic variables.
5. There is no statistically significant difference in the benefits dimension of job satisfaction based on the independent demographic variables.
6. There is no statistically significant difference in the contingent rewards dimension of job satisfaction based on the independent demographic variables.
7. There is no statistically significant difference in the operating procedures dimension of job satisfaction based on the independent demographic variables.
8. There is no statistically significant difference in the coworkers dimension of job satisfaction based on the based on the independent demographic variables.

9. There is no statistically significant difference in the nature of work dimension of job satisfaction based on the independent demographic variables.
10. There is no statistically significant difference in the communication dimension of job satisfaction based on the independent demographic variables.

Theoretical Framework

Frederick Taylor (1911) undertook some of the earliest research on worker satisfaction and motivation. In the context of mass production, he proposed workers first and foremost want high wages from employers. To motivate them to work efficiently and productively, he suggested paying them the highest possible wages. Nevertheless, as workers felt increasingly dehumanized and demotivated in large bureaucratic organizations and mass-production facilities, research interests shifted toward the role of interpersonal needs in motivating and satisfying workers. The so-named human relations movement emphasized the key roles that supervisors and work groups play in determining employees' satisfaction (Locke, 1976). In the ensuing years, a number of theories regarding satisfaction grew out of this increased focus on the social organization and the individual worker. These theories are generally classified into two categories: (1) content theories, which explain job satisfaction in terms of needs that must be met or values that must be present in work in order for workers to be satisfied, and (2) process or discrepancy theories, which focus on the actual process of motivation.

Content Theories

Content theories focus on the factors within a person that energize, direct, sustain and stop behavior. These theories focus on specific needs that motivate people and on individual needs in explaining job satisfaction, behavior, and reward systems. The basis of these theories is that individual need deficiencies activate tensions within a person that trigger a behavioral

response. When individuals do not receive what they perceive they need, they will attempt to satisfy that need (Stotz & Bolger, 2009). Content theorists include Maslow, Herzberg, Alderfer, Hackman and Oldham, and McClelland.

Maslow (1954) and Herzberg (1966) were content theorists that explained job satisfaction in terms of needs that must be met or values that must be present in work in order for workers to be satisfied. Their theories explained job satisfaction in terms of the level of similarity between an individual's work values or goals and what the individual receives and experiences in the workplace.

Maslow (1954) proposed that people are motivated by a desire to satisfy a variety of needs. With this idea, he created a hierarchy of needs that is most often displayed as a pyramid (Figure 1.1). The needs are arranged in a hierarchy of five levels: (1) basic physiological needs: the most basic needs that are vital to survival such as water, warmth, food, and rest; (2) safety and security needs: examples include desire for steady employment, healthcare, safe neighborhoods, and shelter from the environment; (3) social needs: the needs for belonging, love and affection, and acceptance; (4) esteem needs: receiving recognition for accomplishments and respect from peers; and (5) self-actualization needs: reaching one's highest potential and attaining a sense of fulfillment of potential through autonomy and opportunities for creativity. Maslow asserted that the lower level needs must be satisfied before an individual can move to the higher order needs.

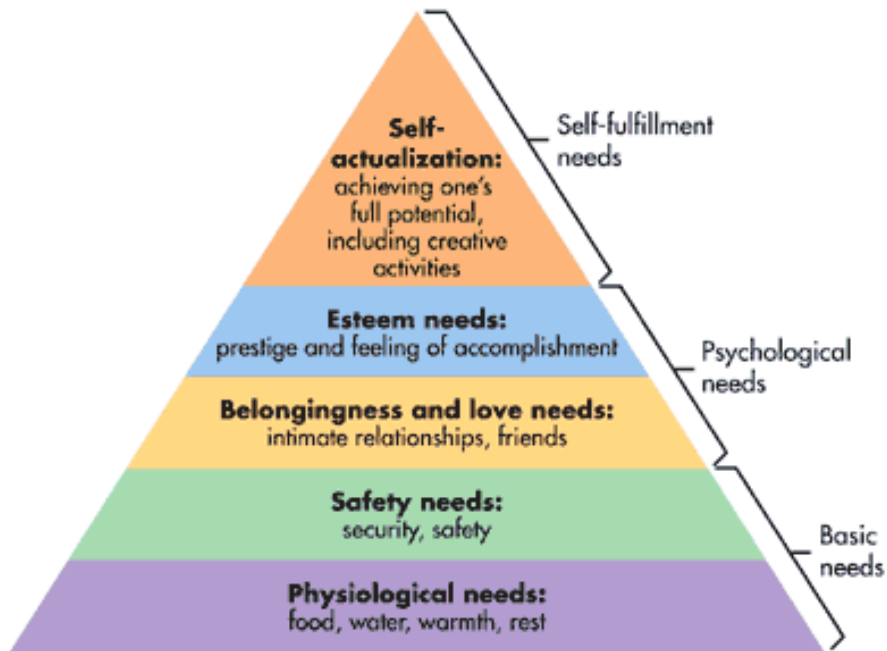


Figure 1.1 Maslow's Hierarchy of Need, Teachnology, Inc., www.teachnology.com/tutorials/teaching/understandmaslow.html.

Herzberg (1966) expanded the needs fulfillment school of thought by proposing the two-factor theory. According to Herzberg (1966), people are influenced by motivation factors and hygiene factors. He argued that job satisfaction and dissatisfaction are separate and independent dimensions. He considered satisfaction and psychological growth motivation factors and dissatisfaction the result of hygiene factors. According to Herzberg (1966), motivation factors are needed to motivate employees for higher performance. Hygiene factors are needed to ensure an employee does not become dissatisfied. They may not lead to higher levels of motivation, but without them employees are dissatisfied. Motivation factors include promotion opportunities, opportunities for personal growth, recognition, responsibility, and achievement. Typical hygiene factors are quality of supervision, pay, company policies, physical working conditions, relations with others, and job security (Figure 1.2).

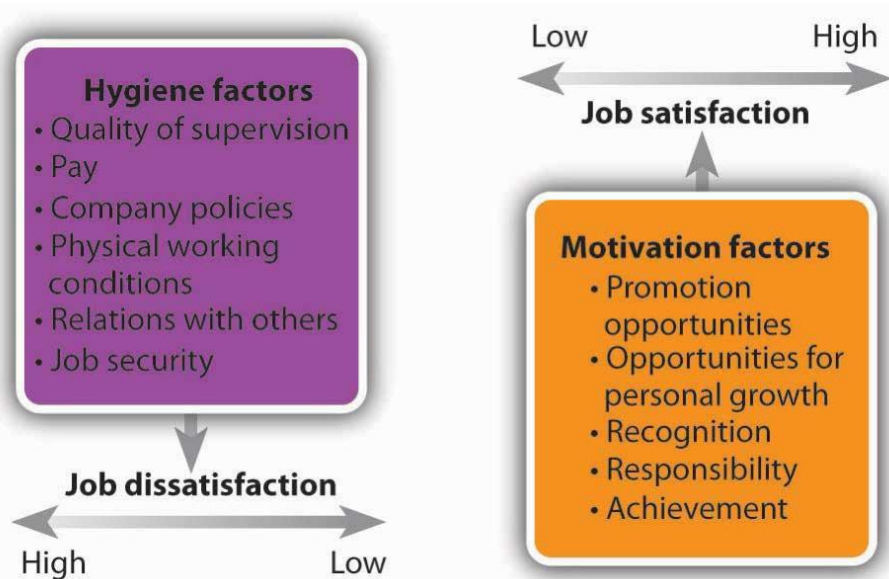


Figure 1.2 Herzberg's Two-Factor Theory. Adapted from "Motivating Employees", The Saylor Foundation, www.saylor.org.

Alderfer (1972) developed an alternative theory of human needs known as the ERG Theory. According to this theory, a set of core needs is used to explain behavior. From lowest to highest level they are existence needs (E) – the desire for physiological and materialistic well-being; relatedness needs (R) – the desire to have meaningful relationships with significant others; and growth needs (G) – the desire to grow as a human being and to use one's abilities to their fullest potential. ERG theory does not assume needs are related to each other in a stair-step hierarchy as does Maslow. Alder believed more than one need may be activated at a time. ERG theory also contains a frustration-regression component. Frustration of higher order needs can influence the desire for lower order needs. For example employees may demand higher pay or better benefits (existence needs) when they are frustrated or dissatisfied with the quality of their interpersonal relationships (relatedness needs) at work.

The Job Characteristics Theory, developed by Hackman and Oldham (1976), describes the relationship between job characteristics and individual responses to work. The theory

specifies the task condition in which individuals are predicted to prosper in their work.

According to the Job Characteristics Model, there are three psychological states that lead to some beneficial personal and work outcomes. Workers must feel their work is meaningful; they must feel a sense of responsibility in their jobs; and they must have knowledge of the results of their work. There are five dimensions prompting the three psychological states: (1) skill variety, the degree to which a job requires a variety of different activities in carrying out the work; (2) task identity, the degree to which the job requires completion of a whole, identifiable piece of work; (3) task significance, a worker's perception of the extent to which his work has a significant impact on people outside the organization; (4) autonomy, the degree to which the job provides substantial freedom, independence, and ability to choose how to schedule and perform job assignments; and (5) feedback, the worker's ability to receive direct and clear evaluation of his performance. According to Hackman and Oldham (1976), these five characteristics do not play equally important roles in determining whether a job will provide satisfaction.

McClelland (1975) proposed the Acquired-Needs Theory. According to McClelland (1975), an individual's specific needs are acquired over time and are shaped by one's life experiences. He classified the needs as: achievement, affiliation, and power. People with a need for achievement seek to excel and thus tend to avoid both low-risk and high-risk situations. Those with a high need for affiliation need harmonious relationships with others and need to feel accepted by others. They prefer to work that provides interpersonal interactions. A person with a need for power wants to manage or lead subordinates. They desire to have control and power to direct others.

Process Theories

Process theories differ from content theories in that they focus on the process of motivation that leads to job satisfaction. Such theories assume job satisfaction can be explained by investigating the interaction of variables such as expectancies, values, and needs (Gruneberg, 1979). Vroom's (1982) Expectancy Theory suggests people are not only driven by needs but also make choices about what they will or will not do. The theory proposed that individuals make work-related decisions on the basis of their perceived abilities to perform tasks and receive rewards.

Adams (1963) Equity Theory proposed that workers compare their own outcome/input ratio (the ratio of the outcomes they receive from their jobs and from the organization to the inputs they contribute) to the outcome/input ratio of another person. Adams called this other person "referent". The referent is simply another worker or group of workers perceived to be similar to oneself. Unequal ratios create job dissatisfaction and motive the worker to restore equity. When ratios are equal, workers experience job satisfaction and are motivated to maintain their current ratio of outcomes and inputs or raise their inputs if they want their outcomes to increase. Outcomes include pay, fringe benefits, status, opportunities for advancement, job security and anything else that workers desire and receive from an organization. Inputs include special skills, training, education, work experience, efforts on the job, time and anything else that workers perceive that they contribute to an organization.

Locke (1976) suggested a motivational idea that emphasizes the important relationship between goals and performance. According to Locke (1976), people have a desire to meet behavior goals and that need motivates the drive to complete the task. The harder the goal, the more a person will work to reach it. Thus, specific goals that are hard to reach are linearly and

positively connected to performance. Accomplishing the goals can lead to satisfaction and further motivation or frustration and lower motivation if the goal is not accomplished.

Summary

The literature clearly indicates that needs fulfillment leads to overall job satisfaction. Unless individuals feel that their needs are met in a manner that provides them the opportunity to reach their highest potential, they will experience varying levels of dissatisfaction. The theory that needs fulfillment leads to overall job satisfaction assisted in selecting an instrument to identify the extent to which radiologic sciences faculty in JRCERT accredited programs are satisfied with their jobs. A comparison of the theory and the study findings facilitated the interpretation of the findings and aided the discussion of the results. Results may offer a resource to faculty and administrators for incorporating the identified job satisfaction factors into the academic workplace thus maximizing faculty job satisfaction and retention.

Definition of Terms

For the purpose of this paper, the following terms are defined.

Computed Tomography (CT). An imaging method that uses x-rays to create images of cross-sections of the body.

Job Retention. The ability of an organization to retain its employees.

Job Satisfaction. The extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs.

Magnetic Resonance Imaging (MRI). A test that uses a magnetic field and pulses of radiowave energy to make pictures of organs and structures inside the body.

Nuclear Medicine (NM). A medical specialty that uses radioactive nuclides to diagnose and treat diseases.

Positron Emission Tomography (PET). An imaging test that uses radioactive substance to create cross-sectional images of the body.

Radiation Therapy. A treatment that affects cancer cells only in the treated area. Radiation can come from a machine (external radiation) or from a small container of radioactive material implanted directly into or near a tumor (internal radiation).

Radiologic Sciences. The branch of medical science dealing with the use of x-rays, radioactive substances, and other forms of radiant energy in diagnosis and treatment of disease.

Ultrasonography (US). An imaging technique that uses echoes of ultrasound pulses to delineate objects or areas of different densities in the body.

Delimitations of the Study

Delimitations of the study include: (a) the study was limited to currently employed faculty members of JRCERT accredited programs; therefore, insights of reasons for faculty members' dissatisfaction and departures were not gained; (b) the study design may have limited the ability to generalize as findings may be generalizable only to radiologic sciences faculty represented in the in the sample; (c) only radiologic sciences faculty with valid email addresses were invited to participate, and (d) not all radiologic sciences faculty may be comfortable responding to electronic surveys.

Summary

This chapter introduced this study and gave a description of the issues regarding the lack of literature surrounding job satisfaction among radiologic sciences faculty in JRCERT accredited programs. Chapter two will provide an in depth discussion of the demand for faculty, focusing on the importance of faculty retention. Chapter three will describe the research design, population, instrumentation, reliability and validity of the instrument, the methodology, data

analysis procedures and limitations of the study. Chapter four will describe the population and response rate, present the results of the demographic data analyses, and discuss the validity of the instrument. Regression results for total job satisfaction and the nine job satisfaction dimensions in the JSS will be presented. Chapter five will present a discussion of the findings, implications for practice and policy, and recommendations for further research.

CHAPTER 2

Review of the Literature

The literature relating to the job satisfaction of radiologic sciences faculty is somewhat limited. This chapter offers background information important to the study with regard to (a) faculty shortages, (b) causative factors associated with faculty shortages, (c) job satisfaction, (d) factors affecting job satisfaction, and (e) cause similarities of job satisfaction of higher education and radiologic sciences faculty.

Faculty Shortages in Higher Education

Growth in college enrollments, an increase in retirements, and lower retention rates for faculty who are not at retirement age are resulting in an emergent demand for faculty at large. The Bureau of Labor Statistics projected that between 2000 and 2010 a higher than average proportion of faculty was needed to replace those employed who left their positions permanently. Eighteen percent of faculty respondents to a Higher Education Research Institution ([HERI], 2005) survey implied they were considering early retirement within the next two years. Twenty-three percent who said they were likely to leave their institutions in the next three years, and who did not expect to retire, stated that they were likely to accept nonacademic positions. Forty percent stated that they were likely to accept full-time faculty positions at different institutions and 27% indicated they had received at least one firm offer (Gappa & Austin, 2010).

The imbalance of faculty supply and demand is affecting several areas in higher education. For example, demand for special education faculty is a national concern. While the number of earned doctoral degrees awarded in special education in the U.S. has remained steady since 1992, at approximately 250 per year, fewer than half of recent graduates chose to pursue careers in higher education (Evans, Eliot, Hood, Driggs, Mori, , & Johnson, 2005).

A shortage of business faculty with doctoral degrees has troubled academia for more than a decade, and although universities have deftly adjusted to keep teaching and research alive, the dearth of Ph.D.s in the marketplace eventually could undermine businesses' ability to compete. The number of business doctorates awarded in 1994-95 was 1,327. According to the 2002 "Management Education at Risk" report by the Association to Advance Collegiate Schools of Business (AACSB International), that number declined 19.3 percent, to 1,071 in 1999-2000. The AACSB report predicted that the U.S. shortage of business Ph.D.s would reach 2,419 by the end of this decade (Carey, 2007).

Similar concerns resonate with various other higher education disciplines including Science, Technology, Engineering and Mathematics (STEM). STEM is one of the biggest and fastest growing career clusters, but there is an increasing shortage of STEM teachers and faculty. Recent data surrounding the issue suggests that the U.S. share of the world's scientists and engineers is projected to fall from 40 percent in 1975 to 15 percent in 2010. The mismatch created by the faculty shortage and economic demand identifies a need to incentivize professionals to leave industry for the classroom to prepare the next generation of scientists, engineers and mathematicians (National Association of State Directors of Career Technical Education Consortium, 2010).

Healthcare Faculty Shortages in Higher Education

A survey of 33,785 faculty in 378 colleges and universities found nearly one-third were 55 or older, compared with one-quarter a decade ago. Over the same period, the proportion of faculty under 45 has fallen from 41% to 34% (Magner, 1999; Lindholm, Szelenyi, Hurtado & Korn, 2005). Faculty project that they will retire around the age of 65; if these plans are accurate, there will be a significant stream of faculty retirements in the next decade which will

result in an imbalance of supply and demand for faculty (Leslie & Janson, 2005). Thus, retirements among Baby Boomers have become a major concern for retention of healthcare faculty.

The declining number of healthcare faculty has received considerable attention in recent years (Brady, 2007; Dyson, Greene & Fraher, 2004; Elwood, 2007; Falk, 2007; Giordano, 2004; Hilton, 2003; Lyons, 2007; Lyons, Lapin, & Young, 2003; MacKinnon & Leighton, 2002; Majeski, 2004; Morris, 2006; Starnes-Ott & Kremer, 2007; Trossman, 2002; United States Department of Health and Human Services, 2005). According to Rahn and Wartman (2007), the U.S. faces worsening shortages of faculty members in health sciences as faculty shortages are manifesting as visible crises across the health professions schools. Ninety-four percent of CEOs at academic-health centers deemed faculty shortages a problem in at least one health-professions school and 69% thought those shortages were a problem for the entire institutions. As demonstrated by widespread institutional responses to faculty shortages, such as cutting programs, or limiting enrollment, the educational infrastructure for health professions is being threatened. By hampering the ability of academic health centers to train a workforce that serves the country's health needs, faculty shortages threaten to further perpetuate shortages throughout the health workforce, in both the private and public sectors (Moskowitz, 2007).

In colleges of nursing, the mean age of faculty members is 48.5. Retirement projections show that from 2004-2012, 200 to 300 nursing faculty members became eligible for retirement each year (American Association of Colleges of Nursing ([ACCN], 2012). In addition, Gourley et al. (2006) report that 61% of current pharmacy faculty members are 50 years or older and 24% of the deans in colleges of pharmacy are 60 years or older and will be retiring soon.

As a result of the faculty shortage, health related programs across the country are not able to admit all of the qualified students. U.S. nursing schools, for example, turned away 75,587 qualified applicants from baccalaureate and graduate nursing programs in 2011 due to an insufficient number of faculty (American Association of Colleges of Nursing ([ACCN], 2014). Moreover, the Southern Regional Education Board ([SREB], 2003) reported that a combination of faculty vacancies and newly budgeted positions points to a 12% shortfall in the number of nurse educators needed.

Similar concerns resonate in the dentistry education community, as dental schools continue to face an ongoing difficulty in hiring full-time tenure-track faculty members. Of faculty members accepting positions in 2004–05, only 24% were in full-time postings, a drop from 29% the previous year. Estimates indicate dental schools have fewer than half the faculty needed and it is projected that if this trend continues there will be approximately 900 unfilled academic positions in the next decade (Gironda, Bibb, Lefever, Law & Messadi, 2013).

Likewise, there is a faculty shortage among pharmacy educational programs. A survey conducted by the American Association of Colleges of Pharmacy (AACP) found that there were 417 vacant full-time faculty positions, which is an average of more than six vacancies per college or school of pharmacy in the U.S. (Gourley et al., 2006). Of the open faculty positions, 30% had been vacant for at least a year. Most important, 92% of those vacancies represented teaching positions that directly affect the number of pharmacy students a school can enroll.

Finally, Boeve (2007) reported Physician Assistant (PA) programs were also suffering from a shortage of qualified faculty. In addition to rapid growth in the profession, PA leaders reported turnover among faculty was related to increasing faculty shortages and the Physician

Assistant Education Association [PAEA] (2006) maintained one aspect of PA turnover was the lack of job satisfaction.

Radiologic Sciences Faculty Shortages

In radiologic sciences, aging of the Baby Boomer generation is producing the perfect storm as surging demand for healthcare services coincide with a wave of retirements among radiologic sciences faculty, posing a major threat to the capacity of the U.S. health system overall and health professions education in particular (Moskowitz, 2007). The Baby Boomer Generation, those born between 1946 and 1964, accounts for 78 million Americans. By 2030, the population aged 65 and older will double and the population aged 85 and older will triple. As the population ages, demand for health care services will rise and have a dramatic impact on the radiologic sciences. Researchers predict a 140% increase in annual radiologic procedures by the year 2020 (American Society of Radiologic Technologists [ASRT], 2013b).

Large numbers of workers will be required to provide radiologic services for aging Baby Boomers. However, it is anticipated in the near future, 27% of full-time and 80% of part-time positions will be vacant, in large part because of retirements (Rahn & Wartman, 2007). The average full-time radiologic science educator is 63 years of age. This group is already at the stage at which it is plausible that they will be retiring soon and taking years of experience, both classroom and clinical, with them when they leave academic setting (American Educators in Radiologic and Imaging Sciences [AEIRS], 2008).

Causal Factors Associated with Radiologic and Health Sciences Faculty Shortages

In addition to retirements, several factors account for the widespread healthcare faculty shortages. After conducting an extensive review of the literature, Legg (2011) concluded there were four dominate causal factors associated with health sciences faculty shortages: (1)

economics: healthcare professionals can earn \$20,000 more per year in the clinical setting as compared to an academic position and graduates often begin working in the clinical setting at much higher salaries than their instructors who have several years of experience and additional degrees, (2) preparation standards: in addition to professional licenses, many healthcare training programs mandate faculty to hold degrees beyond their initial training and, unfortunately, few healthcare professionals have met those educational criteria, (3) attrition: many healthcare training programs document difficulty in retaining qualified healthcare faculty relating back to the fact that many healthcare educators entered the academic setting with little formal training in educational theories and strategies, and (4) benefits of healthcare education: salary disparities, excessive workload, work hours, unfamiliarity with institutional traditions and lack of support were also linked to healthcare educator burnout and a desire to leave academia. Several of these themes are particularly relevant to faculty satisfaction and directly related to a faculty member's intention to leave his or her current position or to leave academia altogether. As such, higher education leaders need to recognize the importance of constructing work environments where every faculty member has the opportunity to create meaningful work and in turn, be satisfied with the job (Gappa, Austin, Trice, 2010).

Job Satisfaction

Definition

The concept of job satisfaction has been described in various ways by a number of researchers. Hoppock (1935) offered one of the earliest definitions of job satisfaction when he described the construct as being any number of psychological, physiological, and environmental circumstances which leads a person to express satisfaction with his or her job. According to this perspective, although job satisfaction is influenced by many external factors, internal factors also

contribute to how the employee feels about a job. Vroom (1963) focused on the role of the employee in the workplace and defined job satisfaction as affective orientations on the part of individual toward work roles they are presently occupying. Locke (1976) suggested job satisfaction is a positive or pleasurable emotional state resulting from the appraisal of one's job or job experiences. According to Howard and Frick (1992), job satisfaction is a complex and multifaceted concept that can mean different things to different people. Lastly, Cranny, Smith and Stone (1992) defined job satisfaction as an employee's affective reactions to a job based on comparing desired outcomes with actual outcomes. While the definitions vary, a commonality among them seems to be that job satisfaction is an emotional (affective) response to work. Job satisfaction reflects positive work-related emotions and job dissatisfaction reflects negative emotions (Green, 2000).

Importance of Job Satisfaction

Faculty members are an institution's intellectual capital. This intellectual capital is an institution's primary and only appreciable asset. Other assets – building, libraries, classrooms, technology infrastructure – begin to depreciate the day they are acquired; but the competence and commitment of faculty can increase steadily over time. Ensuring that faculty members are satisfied and motivated by their work and work environment is critically important (Gappa, Austin & Trice, 2007, p. 4-5).

Investigated by several disciplines such as psychology, sociology, economics and management sciences, job satisfaction is a frequently studied subject in work and organizational literature. This is mainly due to the fact that many experts believe job satisfaction trends can affect labor market behavior and influence work productivity, work effort, employee absenteeism and staff turnover. Moreover, job satisfaction is considered a strong predictor of

overall individual well-being (Diaz-Serrano & Cabral Vieira, 2005). Beyond the research literature and studies, job satisfaction is also important in everyday life. Organizations have significant effects on the people who work for them and some of those effects are reflected in how people feel about their work (Spector, 1997). This makes job satisfaction an issue of substantial importance for both employers and employees. As many researchers have suggested, employers benefit from satisfied employees as they are more likely to profit from lower staff turnover and higher productivity if their employees experience a high level of job satisfaction. However, employees should also be happy in their work, given the amount of time they have to devote to it throughout their working lives (Nguyen, Taylor & Bradley, 2003).

Job Satisfaction Measurement

Since there is no single agreed upon definition of job satisfaction, job satisfaction is an abstract personal cognition that exists only in an individual's mind, one must have a conceptual understanding of the construct in order to decide what factors to measure (Hackman & Lawler, 1971). The user must examine the face validity of a measure, consider its appropriateness for the objectives of the research or consulting endeavor to be undertaken, evaluate its suitability for the work environment to be investigated, and make choices based on the theoretical underpinnings of the study or diagnostic project (Fields, 2002).

Affective and Cognitive

Some researchers have suggested job satisfaction measures may differ in the extent to which they tap affective satisfaction or cognitive satisfaction. Affective satisfaction is based on overall positive emotional appraisal of the job and focuses on whether the job evokes a good mood and positive feelings. Cognitive satisfaction is based on logical and rational evaluation of the job, such as conditions, opportunities, or outcomes (Moorman, 1993, Vroom, 1963).

Objective and Perceptual

Attempts to measure job satisfaction have also been divided into objective and perceptual measurement techniques. In the perceptual method, difficulty may arise from error induced in the measurement by characteristics which are attributes of the individual, rather than attributes of the job. In effect, different people may tend to perceive the same object in a different manner. It has been noted, however, that it is not the objective characteristic of the job but how the individual perceives his job that is the important determinant of the influence of the job on the individual's satisfaction (Fields, 2002; Sims, Szilagyi, & Keller, 1976). As Hackman and Lawler (1971) implied, it should be emphasized that, it is not their objective state that affects employee attitude and behavior, but rather how they are experienced by the employees. Regardless of the amount of feedback (or variety or autonomy or task identity) a worker really has in his work, it is how much he perceives that he has which affect his reactions to the job (p. 264).

Forms of Measurement

According to Van Saane, Verbeek, Sluiter and Frings-Dresen (2003), not all of the instruments used to gauge job satisfaction are reliable and valid for that purpose and there is no unique instrument to measure job satisfaction. One may assess job satisfaction using different numbers of items and different answer scales. The most basic forms of measurement might include an interview, a single-item measure, or a workplace observation; however, most researchers opt for a more objective and in-depth survey instrument (Spector, 1997). Questionnaires are easily distributed, have less room for bias, have increased likelihood of confidentiality, and require much less time and money than one-on-one interviews (Pedhazur &

Schmelkin, 1991). Using questionnaires, job satisfaction can be measured using either global (or general), job facet, or single- item measures.

Global and Specific Job Facet

Some studies have examined antecedents of job satisfaction, specific dimensions of job satisfaction, and the relationship between job satisfaction and outcomes such as job performance and job turnover (Fields, 2002). There are several generic types of job satisfaction measures. One basic distinction is between a measure of overall job satisfaction and a measure of job facet satisfaction; both kinds of measures have their uses. For example, policy makers may focus on an overall measure because they may be interested in the overall level of satisfaction in certain segments of the labor force or in the change in overall satisfaction over time. Also, individuals may employ a general assessment of some kind to make a summary judgment about their own job satisfaction when deciding whether to quit a job or stay. On the other hand, a facet measure may be called for when an organization is interested in improving the job satisfaction of its employees by measuring several key aspects (or facets) of the job such as pay, supervision, promotion, co-worker, the job itself or in trying to explain *why* individuals are leaving the organization (Scarpeilo & Campbell, 1983). Facet scales are intended to cover separately the principal areas within a more general domain. Each is intended to be relatively similar and recognizable from the others. Some facet measures are averaged together for an overall measure of satisfaction (Wright & Bonnett, 1992).

Single-Item vs. Multi-Facet Measures

In a review of overall measures of job satisfaction, Scarpeilo and Campbell (1983) concluded that the best global rating of job satisfaction is a one-item, 5-point scale that simply asks, "Overall, how satisfied are you with your job?" They, as well as others, believe that a

single item measuring overall satisfaction is superior to summing up facet scales because multiple-item facet scales may neglect some components of a job that are important to an employee (Ironson, Smith, Brannick, Gibson & Paul, 1989; Scarpeilo & Campbell, 1983; Wanous, Reichers & Hudy, 1997). Additionally, Nagy (2002) concluded that based on several non-psychometric properties, the single-item measure appears to be preferable to multiple-item measures of facet satisfaction in that it is more efficient, is more cost-effective, contains more face validity, and is better able to measure changes in job satisfaction.

On the contrary, there appears to be a consensus that multi-item questions that categorize job satisfaction into various facets are more thorough - and richer in analytical terms - than single-item job satisfaction questions (European Foundation for Improvement of Living and Working Conditions, 2007). Rose (2001) pointed to the inadequacy of single-item overall job satisfaction measures compared with a composite measure of overall job satisfaction using several job facets. Based on this perspective, it is essential to collect data for a minimum of two job facets for two reasons. A fundamental reason is the logical difference between the financial and other material rewards of a job (the extrinsic factors) and those that are qualitative (the intrinsic factors). Another more subtle reason pointed out by Rose (2001) is that intrinsic facets of a job appear to be subjected by job holders to less stringent evaluation than those applied to extrinsic job facets; thus, levels of satisfaction with extrinsic facets such as pay, promotion or security will, in any representative sample of employees, always be lower than satisfaction with intrinsic facets such as relations with supervisors or the work actually performed.

Job Satisfaction Surveys

As previously stated, job satisfaction is generally defined as an employee's affective reactions to a job based on comparing actual outcomes with desired outcomes (Cranny, Smith &

Stone, 1992). It is generally recognized as a multifaceted construct that includes employee feelings about a variety of both intrinsic and extrinsic job elements (Howard and Frink, 1996). Worrell (2004) concluded that the three most widely cited valid and reliable facet-specific job satisfaction measures found in the literature include the (JSS), the Job Descriptive Index (JDI) and the Minnesota Satisfaction Questionnaire (MSQ).

Job Satisfaction Survey. The JSS, developed by Spector (1985), uses 36 items to describe nine job facets (four items per facet). The job facets include pay, promotion, supervision, benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. Responses are obtained on a 6-point Likert-type scale where 1 = disagree very much, 2 = disagree moderately, 3 = disagree slightly, 4 = agree slightly, 5 = agree moderately, and 6 = agree very much. It was originally developed to assess job satisfaction in human service, nonprofit, and public organizations but Spector (1985) argued it could be used for other sectors as well.

Younes (2012) examined which factors affect the job satisfaction of staff members working at the American University in Cairo (AUC) and tested the relationship between overall job satisfaction and work performance using an on-line survey. The first section included six demographic variables about gender, age, years of experience, educational level, occupational area, and employment level. The second section was based on the JSS developed by Spector (1985). Around 277 (19% response rate) surveys were distributed and collected. The conducted statistical test included descriptive statistics, frequency distribution, and Spearman's rho test (significant at 0.01 level) to explore the correlation between the variables. The results showed a strong and positive correlation between overall job satisfaction and the variables of contingent rewards (significant at coefficient equal to 0.835), promotion (significant at coefficient equal to

0.751), supervision (significant at coefficient equal to 0.746) and communication (significant at coefficient equal to 0.733). The results also revealed a moderate and positive correlation with coworkers, pay, nature of work, and fringe benefits but showed a weak correlation with the variable of operating procedures. In addition, the results indicated no correlation existed between the overall job satisfaction and the demographic variables except showing a moderate positive correlation with the years of experience variable.

Job Descriptive Index (JDI). The Job Descriptive Index (JDI) was originally developed by Smith, Kendall and Hulin (1969). It uses 72 items to assess five facets of job satisfaction. The five facets are the work itself, pay, promotions, supervision, and co-workers. The ratings of satisfaction can be combined into a composite measure of job satisfaction. The benefits of an instrument with the impressive psychometric credentials of the JDI are: (a) reliable and valid assessments; (b) general applicability; (c) comparability of results across studies, manipulations, and organizational contexts; and (d) longitudinal comparisons. The instrument is viewed by many investigators as one of the most thoroughly researched and developed measures of its kind (Roznowski, 1989; Vroom, 1964). The JDI was updated by Roznowski (1989) to recognize changes in work atmospheres, job content, and work technologies. The items for the updated version of the JDI showed somewhat higher alpha reliabilities than the scales composed of the original items. Respondents are asked to put “Y” beside each item if it describes the feature in question, “N” if the item does not describe the feature, or “?” if they cannot decide.

Utilizing the Job Descriptive Index (JDI) survey, Bozeman and Gaughan (2011) tested the effects of three components on job satisfaction: individual attributes, institutional work context, and characteristics of faculty and determined that their study’s participants, tenured and tenure-track faculty members in STEM research extensive universities, are more satisfied with their jobs

when they perceive that their colleagues respect their research work and they are paid what they are worth. Women tend to be less satisfied and the tenured are more satisfied. Industry and university research center affiliations do not predict job satisfaction. Approximately 32% of the variance in job satisfaction could be explained in a comprehensive model trimmed to include only significant effects from an alternative model of specifications. Professors being paid what they are worth reflected the highest level of satisfaction. One of the limitations of research on job satisfaction is its failure to account for the unique characteristics that make up the job of faculty. Bozeman and Gaughan (2011) believe the strength of their study was its ability to operationalize and test hypotheses directly related to the production function of professors.

Minnesota Satisfaction Questionnaire (MSQ). The Minnesota Satisfaction Questionnaire (MSQ) “long form” consists of 100 questions that make up 20 subscales measuring satisfaction with ability utilization, achievement, activity, advancement, authority, company policies and practices, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, supervision-human relations, supervision-technical, variety and working conditions. Responses are obtained on a 5-point Likert-type scale where 1 = very dissatisfied with this aspect of my job, 2 = dissatisfied with this aspect of my job, 3 = can’t decide if I am satisfied or not with this aspect of my job, 4 = satisfied with this aspect of my job, and 5 = very satisfied with this aspect of my job (Weiss, Dawis, England, & Lofquist, 1967).

In an effort to determine the job satisfaction level of Virginia Soil and Water Conservation District (SWCD) employees during fiscal year 2007-2008, White (2008), collected 185 (80% response rate) Minnesota Satisfaction Questionnaires. Results indicated respondents were generally and intrinsically satisfied. Greater satisfaction was expressed for variety and

social services. Overall respondents were undecided about extrinsic job aspects and advancement was an area of dissatisfaction. A one-way ANOVA and Tukey's post-hoc test were utilized. Since the population violated Levene's Test of Homogeneity of Variances (p-value .27; $p > .05$), the ANOVA could not be performed for age, intrinsic, and general job satisfaction. The ANOVA was performed for all other variables. The researcher found that there were no significant differences in intrinsic, extrinsic, or general job satisfaction for any of the variables.

Job Satisfaction Variables

Higher education institutions require exemplary faculty to provide high quality education to college-level students and the literature concludes job satisfaction can affect retention of quality postsecondary personnel (Mueller, 2012). While the majority of previous job satisfaction studies have focused on industrial and organizational settings, there is much less literature on job satisfaction levels of academic faculty members. This area has not received attention because a high level of job satisfaction generally has been presumed to exist in the university setting. However, higher education is not immune to the problem of low job satisfaction. As such, researchers have used a combination of variables such as gender, ethnicity, job achievement, nature of work, salary, collegial relationships and rank and tenure to study their impact on faculty job satisfaction (Sabharwal & Corley, 2009). Studies determined that faculty job satisfaction fell into three major categories: (1) demographic characteristics (i.e., age, gender, race, years of teaching, and faculty rank); (2) colleague interactions (colleagues, students, and leadership); and (3) extrinsic motivators (salary and personal life) (Bozeman and Gaughan, 2011).

Demographic Characteristics

Job satisfaction initially was studied as a predictor of behaviors, such as performance, absenteeism, and turnover. However, researchers including Locke (1976) and Spector (1997) considered personal and work-related characteristics that also could influence job satisfaction.

Today's faculty members are diverse in gender, race, and age. Since 1969, when 20% of new faculty members were women, the presence of women has more than doubled. Forty-four percent of faculty members in their first six years are now women, and the percentage of women who are senior faculty members has increased from 15% to 34% (Finkelstein & Schuster, 2001; U.S. Department of Education, 2004). This rise in the percentage of women faculty members is typical of all disciplines, and is likely to continue because women now earn more than half of all doctorate degrees awarded to U.S. citizens (Hoffer, Welch, Williams, Hess, Webber, Lisek & Lowew, 2004).

Similarly, the percentage of people of color receiving doctorates has grown substantially in the past 20 years. Individuals of color now constitute 20% of U.S. citizens who earn doctoral degrees. In 2003, they represented 17% of tenured faculty, 26% of tenure-track faculty, and 16% of non-tenure-track faculty. Likewise, increases in the number of international students who earned doctoral degrees in the U.S. (33% of all doctorates awarded in 2003) also increases the diversity of the pool of potential faculty (Hoffer et al., 2005).

The continuing aging of faculty – the highest average ever – means huge numbers of retirements looming. The average faculty age was 41.7 in 1967, 44.7 in 1987, and 48.5 in 2007. The percentage of all faculty over 55 years old was 9% in 1967, 19% in 1987, and 29% in 2007. In addition, despite an almost seven-fold increase in the total number of faculty, recruited faculty have not been young enough to offset the overall aging. The average age of all first-time faculty,

regardless of entering rank, increased from 35.3 years old in 1987 to 37.8 years old in 2007 (Association of American Medical Colleges [AAMC], 2009).

These changes in faculty demographics have several major effects on what faculty members seek in their working environments (Gappa & Austin, 2010). As such, demographic characteristics such as age, gender, and race are often included in job satisfaction studies to describe the participants and to determine relationship among variables.

Age. It is generally believed that job satisfaction increases linearly with age (Clark, Oswald & Warr, 2011). Results indicate that some relationships with job satisfaction vary with age. Understanding how age can impact job satisfaction may be particularly important since greater job satisfaction is linked to a number of important outcomes for both employees and employers, including better job performance, lower absenteeism and turnover, as well as better physical and mental health (Cranny et al., 1992; Fields, 2002; Nandan & Krishna, 2013).

Workers of diverse ages may have different needs at work even if they have the same job. For younger adults, providing jobs that allow workers to use a wide range of skills, to develop friendships at work, and to have control over their work may promote job satisfaction. Variety, friendship, and autonomy seemed to be more important to job satisfaction at younger ages than older ages (Besen, Matz-Costa, Brown, Smyer & Pitt-Catsoupes, 2013). In comparison, given well-known relationships between job satisfaction and other work-related outcomes, such as organizational commitment, performance, and turnover, older workers often have higher levels of job satisfaction (Fields, 2002; Huang & Hsiao, 2007; Lambert, Hogan, & Barton, 2001; Ricketta, 2008). There are, however, persuasive arguments and some empirical evidence that the relationship is U-shaped. Initially satisfaction is high, then decreases, and eventually, after

hitting a low point, increases with age again (Clark, Oswald, & Warr, 2011; Herzberg, Mausner & Snyderman, 1959).

Gender. The study of gender differences in job satisfaction of academics is important as it can provide institutional leaders with information that will enable them to recruit and retain faculty, improve happiness of academic staff, improve organizational commitment and decrease turnover and absenteeism (Gaziogly & Tansel, 2006). August and Waltman (2004) proposed that retention of female faculty is critical for higher education institutions aiming for excellence and diversity, and that a crucial first step in understanding retention is to study what contributes to career satisfaction for academic women.

Although gender has received a great deal of attention in job satisfaction studies, the findings are inconsistent. Results show that, with few exceptions, male faculty members in all disciplines have generally higher levels of job satisfaction than female faculty members (Callister, 2006; Hult, Callister, & Sullivan, 2005; Sabharwal & Corley, 2012; Settles, Cortina, Malley & Stewart, 2006). Lindholm et al. (2005) found that women in full-time faculty positions are less satisfied than men with their teaching loads (51.7% vs. 56.8%), salaries and benefits (44.3% vs. 49.4%), opportunities for advancement (49.1% vs. 54.8%), and opportunities for scholarly pursuits (46.8% vs. 57.2%). Trower and Bleak (2004) also found that women tenure-track faculty were less satisfied than their male counterparts on a number of different measures. Women rated their institutions as workplaces significantly lower than did men and were significantly less satisfied with their salaries and the balance between their personal and professions lives. They were also significantly less satisfied with the commitment of their department chairs to their success and with the interactions they had with the senior faculty in their departments.

In comparison, men faculty in healthcare had significantly lower levels of satisfaction than women (Sabharwal & Corley, 2012). Based on data from a study of graduates for PhD programs at Australia's Group of Eight (Go8) universities, males are more satisfied with intrinsic dimensions of job satisfaction while females are more satisfied with extrinsic aspect of job satisfaction (Kifle & Desta, 2012). In contrast, Oshagbemi (2000) found that gender did not affect job satisfaction of faculty directly and faculty job satisfaction studies published in the *Educational Administration Quarterly* over a six year period indicated no significant difference between male and female satisfaction levels.

The inconsistencies are believed to be closely linked to differences among expectations, respect, promotional prospects, salary, social interactions, coping strategies of males and females, the jobs they hold, and unequal treatments in the workplace (Gruenberg, 1979; Long, 2005; Sabharwal & Corley, 2009; Sloan & Williams, 2000; Sousa-Posa & Sousa-Posa, 2003). Another issue is selectivity bias. The argument for selectivity bias is that dissatisfied female employees find it easier to leave the job market than equally dissatisfied male employees and thus the remaining female employees have average job satisfaction (Sanz de Galdeano, 2002). However, Clark's (1997) findings show that neither gender differences in personal and work related characteristics nor selectivity bias account for the gender job gap. This is also supported by Sanz de Galdeano (2002) who concluded that neither the presence of systematic difference in terms of personal and job characteristics nor a sample selection problem explain female employees' higher job satisfaction.

Race. With an increasingly diverse faculty come varying levels of satisfaction across subpopulations. Several researchers examined race variation in job satisfaction and organizational commitment among faculty; however, they offer mixed findings. According to

Rosser (2004), faculty at all career stages who were members of ethnic and racial minority groups were significantly more likely to leave their careers or institutions than were Caucasians. Sabharwal and Corley (2009) found that Asians were more dissatisfied than Whites, but African Americans were equally or more satisfied than Whites. Among 8,500 pre-tenured faculty members interviewed at 96 four-year colleges and universities, white and Latino faculty members had similar levels of job satisfaction. However, there were gaps among other groups as compared to white faculty members, African American, Asian, and Native American faculty were less satisfied on a series of questions related to climate, culture and collegiality at their institutions (Jaschik, 2008).

A study at Cornell University (CUPACFWL, 2006), however, found faculty job satisfaction overall did not vary by race. This was supported by Watanabe (2010) who found that organizational commitment between white and nonwhite faculty did not vary by race. Campbell (2011) concluded that in some instances, a legitimate correlation between race or ethnicity and job satisfaction or the degree of satisfaction with a particular job element may be found within a specific workplace or organization when there is a perceived inequality or injustice attributed to race or ethnicity. Overall within the U.S., race or ethnicity is not a reliable indicator or predictor of worker's degree of satisfaction with any specific element of a job.

Colleague Interactions

Faculty work relies on interactions with colleagues in important ways. At research universities for example, overall faculty members spend one-quarter of their research time working alone, and in their collaborative time have an average of 11 collaborators. Untenured faculty members spend more than 27% of their research time working alone, in contrast with 23% by tenured faculty. Whites spend significantly less time working alone than those in other

racial and ethnic groups. Finally, engineers spend significantly less time working alone compared to the social and natural scientists (Bozeman & Gaughan, 2011). Consequently, employees are likely to assess elements of job satisfaction, especially intrinsic elements, more precisely when the workplace culture is harmonious and supportive. In this way, the components of culture among colleagues, such as respectful treatment at work, are viewed by some researchers as antecedents to job satisfaction (Johnson & McIntyre, 1998; Knudsen, Johnson & Roman, 2003).

Colleagues. Social interaction with colleagues is a highly valuable job aspect for many workers. Marston and Brunetti (2001) found that, although time and expectations were constraints, relationships with other faculty were among the most powerful motivators of job satisfaction. Research in psychology, sociology, and management shows that receiving affective support from colleagues and having good interpersonal relationships at work are positively associated with job satisfaction, job involvement, and organizational commitment, and negatively with employee stress and absenteeism. Turnover intentions and actual turnover tend to be lower when workers experience social support from co-workers (Dur & Sol, 2009). Furthermore, Sias (2012) found co-workers share work-related information more quickly and more accurately the more collegial their relationships, whether they were talking with peers, supervisors or subordinates. In addition, the better the workplace relationships, the better informed people are about workplace issues and the more satisfied they are with their jobs.

Schulze (2006) conducted a research study among higher education faculty and found academics generally are satisfied with their co-workers and their behavior. Satisfaction was especially implied with personal relationships with colleagues, personal friendships with

colleagues and quality of colleagues. The researcher also noted communication among colleagues ranked lowest on the satisfaction scale and highest on the dissatisfaction scale.

Schulze (2006) further reported no significant differences between male and female groups for satisfaction with co-workers. Conversely, a previous study by Hemmasi, Graf, and Lust (1992) found female academics to derive significantly more satisfaction than males from relations with co-workers. Hargreaves (2001) maintained that regardless of gender, when teachers work together, they value appreciation and acknowledgement as well as personal support and acceptance, but tend to avoid disagreement and conflict, whether they regard themselves as close friends or as more distant colleagues.

Students. Marston and Brunetti (2001) focused on experienced professors, which had been teaching in higher education for at least 15 years and had been at Saint Mary's College of California for two years. The study was conducted using a mixed methods approach: the Experienced Teacher Survey (43.5% return rate; N=74) and 25 extended interviews with select experienced college professors. Experienced professors in this study identified Professional Satisfactors (e.g. satisfaction in working with students and seeing them learn, joy in teaching one's subject, freedom and flexibility in the classroom) as the most powerful motivators that induced them to remain in the classroom. Vito (2007) concluded the impact of connecting with students outside of the classroom through student services programs played a significant role in faculty satisfaction and their intentions to remain in academe. Additionally, Vito (2007) reported that when faculty included other colleagues in the faculty-student interaction programs and events, they build collegial relationships in terms of engagement and satisfaction.

Veldman, Tartwijk, Brekelmans and Wubbels (2013) conducted a study that focused on the development of teacher-student relationships and teachers' job satisfaction throughout the

careers of veteran teachers who retained high job satisfaction. Teacher data gathered with the narrative-biographical method were compared with students' perceptions of the teacher-student relationships. Teachers' job satisfaction appeared positively related to the self-reported quality of the teacher-student relationships. Positive retrospective teacher perceptions did not always coincide with positive student perceptions. It indicated that teachers may have positive job satisfaction despite, in the eyes of the students, a poor teacher-student relationship.

Leadership. Azadi, Farsani, Rizi, and Aroufzad (2013) asserted that the fundamental factors influencing the effectiveness of an organization were leadership and employee job satisfaction. Leadership is defined as a process of interaction between leaders and followers where the leader attempts to influence followers to achieve a common goal (Northouse, 2007, Northouse, 2010; Yukl, 2005). A capable leader provides direction for the organization and leads followers towards achieving desired goals. In similar vein, employees with high job satisfaction are likely to exert more effort in their assigned tasks and pursue organizational interests. An organization that fosters high employee job satisfaction is also more capable of retaining and attracting employees with the skills that it needs (Mosadegh Rad & Yarmohammadian, 2006).

By adopting the appropriate leadership styles, leaders can affect employee job satisfaction, commitment and productivity (Voon, Lo, Ngui, Ayob, (2011). Previous studies on leadership have identified different types of leadership styles which leaders adopt in managing organizations (e.g., Chen & Chen, 2008; Davis, 2003; Hirtz, Murray, & Riordam, 2007; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Spears & Lawrence, 2003) and found among the more prominent leadership styles are Burn's (1978) transactional and transformational leadership styles.

Transformational leaders emphasize followers' intrinsic motivation and personal development. They seek to align followers' aspirations and needs with desired organizational outcomes. In so doing, transformational leaders are able to foster followers' commitment to the organizations and inspire them to exceed their expected performance (Bass, 1985, 1998; Bass & Riggio, 2006; Miia, Nichole, Karlos, Jaakko, & Ali, 2006; Sivanathan & Fekken, 2002). With regard to today's complex organizations and dynamic business environment, transformational leaders are often seen as ideal agents of change who could lead followers in times of uncertainties and high risk-taking. In contrast, transactional leaders gain legitimacy through the use of rewards, praises and promises that would satisfy followers' immediate needs (Northouse, 2010). They engage followers by offering rewards in exchange for the achievement of desired goals (Burns, 1978). Although transformational leadership is generally regarded as more desirable than transactional, Locke, Kirkpatrick, Wheeler, Schneider, Niles, Goldstein, Welsh, & Chah (1999) pointed out that such contention is misleading. They argued that all leadership is in fact transactional, even though such transactions are not confined to only short-term rewards. An effective leader must appeal to the self-interest of followers and use a mixture of short-term and long-term rewards in order to lead followers towards achieving organizational goals (Voon, Lo, Ngui, Ayob, 2011).

Extrinsic Motivators

As new faculty members become more diverse in their backgrounds and lifestyles, they bring to the academy complex individual priorities and circumstances that require an institutional focus on work-life balance. By and large, today's employees work outside the home and manage their academic careers and their domestic responsibilities as dual-career couples or single-parent

families. Salary, balance, and flexibility in their careers are critical to them (Gappa & Austin, 2010; Saari & Judge, 2004).

Salary. Although research indicates the motivational aspects of pay are well-documented, the notion that high pay leads to high levels of satisfaction is not without debate. Upon review, the literature indicated that job satisfaction is not increased by a single factor and there might be other factors that contribute more powerfully to job satisfaction. Additionally, salary does not have a continuous linear relationship with job satisfaction.

Historically researchers suggested pay level was only marginally related to satisfaction (Hoppock, 1935; Herzberg 1966; Judge, Piccolo, Podsakoff, Shaw, & Rich, 2010) and the relationship seemed to be linked more to perceptions of equity and fairness than actual salary amount (Smith, Kendall, & Hulin 1969; Spector, 1997; Vroom, 1982).

Other studies indicated that salary amount is not important for job satisfaction but it is rather the comparison income that the employee is setting up as referential point. Clark and Oswald's (1996) study supported this notion and indicated that job satisfaction depends on income relative to a "comparison" or reference level but not the salary amount. This suggests that even if the salary of the employee is high compared with the level of salaries in the organization he or she works in, he or she will feel dissatisfied if he/she believed that others in other institutions who have similar qualifications and specifications have a higher salary amount than them.

In a study by Clarke, Oswald and Warr (1996) on the relationship between age and salary and job satisfaction, the researchers found a direct correlation between job satisfaction and salary after controlling the age variable. This is believed to indicate that job satisfaction for the salary increases with age due to the low financial responsibilities with the growth of age.

Brown, Gardner, Oswald, and Qian (2007) supported the notion that the level of the salary is a secondary variable that cannot stand alone and its influence may be limited when the work quality is unsatisfactory. The researchers surveyed 16,266 workers and employees who work in more than 800 institutions to determine the factors of job satisfaction. The results indicated that the level of salary minimally influenced job satisfaction. Yet, when the researchers looked at an employee's worker's position in a company, they found a strong link with job satisfaction and concluded that rank increased happiness to a great extent when compared with higher salaries. The researchers explained this relationship and indicate that rank influenced how proud employees were with their professional achievements. In a similar study conducted on nurses, Shields and Ward (2001) found that the lack of opportunities for career advancement or the possibility of promotion affect the job satisfaction of employees more than the size of the salary.

Finally, studies indicated that raising salaries can only influence jobs with low-level income but not the high level ones and in some cases might have a negative effect on job satisfaction. Therefore, there might be some evidence to suggest that the relationship is not linear, but is rather a curvilinear one. For example, Bender and Heywood (2006) found that university professors who receive high income –in comparison with other jobs- have low job satisfaction because they think that PhD holders who work in industry earn more than them. Such comparison may affect job satisfaction because of the feelings of injustice.

Personal Life. Researchers have speculated that there are three possible forms of the relationship between job satisfaction and life satisfaction: (1) spillover, where job experiences spill over into non-work life and vice versa; (2) segmentation, where job and life experiences are separated and have little to do with one another; and (3) compensation, where an individual seeks

to compensate for a dissatisfying job by seeking fulfillment and happiness in his or her non-work life and vice versa (Saari & Judge, 2004).

As organizations struggle to survive and to become more efficient, an accrued interest has evolved into the concept of work-personal life relationships. Researchers examine why people behave the way they do, how these behaviors effect their health and performance, and how to manage these behaviors so that the organization can achieve better economic results and survive in an increasingly competitive environment. These interests gave rise to many organizational innovations of which an individual's life outside of work became an important concern for the organization; it gave rise to organizations sponsoring such programs as Employee Assistant, Recreational Activities, and many more (Dolan & Gosselin, 2000).

With two adults working outside the home and sharing responsibility for raising children, maintaining a home, and sometimes caring for older dependents, many workers need flexibility in their work and more control over their time, including the option to work fewer hours. Because of these factors and their implications for colleges and universities, college administrators have been called to strategize new ways to organize academic work to achieve both institutional and individual goals, recruit and retain excellent faculty, and maximize the intellectual capital represented by all faculty (Gappa, Austin, & Trice, 2007). Studies (e.g., Hagedorn, 2002) have shown that married faculty expressed higher levels of job satisfaction than their unmarried colleagues and this satisfaction is promoted through such dynamics as spousal encouragement and psychological support, specialization of task and division of labor, and reduced feelings of isolation.

Job Satisfaction and Organizational Commitment

Researchers contend that job satisfaction reflects immediate affective reactions linked to the job while commitment to the profession develops more slowly after an individual forms more comprehensive valuations of the employing organization, its values, its expectations and one's own future in it. It is thus expected that highly satisfied workers will be more committed to the organization. As such, job satisfaction is seen as a determinant of organizational commitment (Mannheim, Baruch & Tal, 1997).

Organizational commitment as a result of job satisfaction is vital to preserve and attract a well-qualified talent pool in any organization. It has gained prominence in management discourse since it plays an essential role in the goal achievement, innovation and stability of an organization. It improves trust between employees, managers, owners, units and other concerned parties of any organization and fosters better superior/subordinate relationships that improves organizational climate. Satisfied employees tend to be more productive, creative and committed to their employers (Syptak, Marsland, & Ulmer, 1999). Stronger and more generalized commitment may enhance the organizational development, growth and survival (Awamleh, 1996; Cranny, Smith & Stone, 1992). As a result, analysis at the organizational level has shown that organizations with higher average levels of job satisfaction outperform other organizations (Spector, 1997).

Elangovan's (2001) extensive research suggested job satisfaction predicts both turnover intentions and commitment and in return commitment predicts only turnover intentions. Schneider and Reichers (1983) argue that employees are attracted to organizations that satisfy their needs and desires and long-term and short-term goals. In such cases where there is a good fit, low levels of attrition can be expected. In cases of mismatches, however, high attrition rates

should be expected. Thus, job retention is expected to correlate with climate perceptions, job satisfaction, organizational commitment, and turnover intentions (Mitchell & Larson, 1987; Spector, 1997; Wright & Bonnett, 1992).

Findings from the Human Resource Council's 2008 survey of nonprofit sector employees indicated that overall job satisfaction is reflected in three indicators of employee retention: whether employees expect to resign from their jobs in the coming year; whether or not they are currently looking for a new job; and their commitment to the organization for which they work. According to the survey, nearly 40% of employees who expect to resign from their jobs within 12 months are *less than satisfied* with their jobs. More than 30% of employees who are currently looking for a new job are *less than satisfied* with their current job while this is true of only 6% employees who are not looking for a new job. Sixty percent of employees who said they are *not very committed* to their organization are *less than satisfied* with their jobs. This is true of very few employees (less than 1%) who say they are *very committed*.

Job Satisfaction Similarities Between Higher Education and Radiologic Sciences Faculty

Grounded in empirical research and based upon a foundation of respect, Gappa, Austin, and Trice's (2007) conceptual framework of essential elements of the faculty work experience (Figure 2.1) is a useful tool to sort, categorize, and measure the factors that compose and contribute to faculty work experience and corresponding job satisfaction. The framework highlights the importance of key elements of faculty work: equity, academic freedom and autonomy, flexibility, professional growth, and collegiality in every appointment type. Each of the essential elements stands as a separate attribute of faculty work, but the elements also interact with each other. Taken together, the essential elements provide a road map for strategic actions administrators and faculty can take to improve their academic work environments, enhance

meaningfulness and satisfaction for faculty members, and strengthen institutional excellence. When these components of job satisfaction are expressed in institutional policies and practices, the probability of attracting and retaining faculty who are committed to the mission of the university, their students, and the surrounding community is significant (Romig, Maillet & Denmark, 2010).

While radiologic sciences was not identified specifically in Gappa , Austin, and Trice's (2007) literature review, their higher education framework parallels many important factors identified in the radiologic science faculty job satisfaction literature. For example, some of the elements that radiologic sciences faculty identified as influencing job satisfaction included degree of autonomy, financial rewards, institutional support, opportunity for creativity and growth, respect, decision-making, recognition of professional status and compensation (Association of Educators in Imaging and Radiologic Sciences [AEIRS], 2008; Undie & Passmore, 2010).

ESSENTIAL ELEMENTS OF FACULTY WORK



Source: Rethinking Academic Work and Workplaces, 2006

Figure 2.1 Gappa, J. M., Austin, A. E., & Trice, A. G. (2007)

Table 2.1 shows a comparison of the characteristics contributing to job satisfaction identified in Gappa's higher education model with existing characteristics identified in radiologic sciences faculty job satisfaction literature. However, it is important to recognize that the majority of research in the radiologic sciences has investigated the scope and reasons for the faculty shortage. Thus, there is a finite number of references and limited research specific to radiologic sciences faculty job satisfaction in the U.S. (Romig, Maillet, & Denmark, 2010). This could possibly hinder the comparison.

Table 2.1

Comparison of Gappa's Essential Elements of the Faculty Work Experience and Job Satisfaction Factors Present in Radiologic Sciences

| Gappa's Essential Elements of the Faculty | Trends Reported in Radiologic Sciences* |
|---|--|
| Work Experience | |
| Professional Growth | Opportunity for Creativity and Growth |
| Academic Freedom and Autonomy | Degree of Autonomy |
| Flexibility | Degree of Decision Making |
| Employment Equality | Compensation Financial Rewards Institutional Support for Advancement |
| Collegiality | Recognition of Professional Status |

Note. Adapted from "Gappa's Essential Elements of the Faculty Work Experience and Job Satisfaction Factors", by Gappa, J. M., Austin, A. E., & Trice, A. G. (2005, Nov/Dec). Rethinking academic work and workplaces. *Change*, 37.6, p. 32.

*Trends reported in the radiologic sciences are derived from the synthesis of imaging sciences faculty job satisfaction references discussed in this literature review.

Conclusion

The purpose of this review of the literature was to discuss the challenges associated with the shortage of higher education faculty, specifically in the radiologic sciences. The review focused on the implications of job satisfaction in relation to retention of faculty. Although various studies are available that address the challenges of recruitment, job satisfaction, and retention, many of them were not directly related to radiologic sciences faculty. Therefore, the research questions and methodology were designed to elicit data to enhance the existing literature and impact efforts to retain radiologic sciences faculty. The relationship of the factors that affect job satisfaction of faculty to the research questions is summarized in Table 2.2.

Table 2.2

Relationship Between Research Questions and Job Satisfaction Factors

| Research Question | Job Satisfaction Factor(s) |
|---|---|
| Research Question 1: What are the descriptive characteristics of radiologic sciences faculty in JRCERT accredited programs? | Age, Gender, Race, Years of Teaching in Radiologic Sciences, Job Position, Geographical Region, Salary |
| Research Question 2: To what extent are radiologic sciences faculty satisfied with their jobs? | Colleague Interactions (Colleagues, Leadership) Extrinsic Motivators (Salary & Personal Life, Opportunity for Creativity, Advancement) |

Note: Job satisfaction factors are derived from the synthesis of faculty job satisfaction references discussed in this literature review.

Summary

This chapter provide an in depth discussion of the demand for faculty, focusing on the importance of faculty retention. Chapter three will describe the research design, population, instrumentation, reliability and validity of the instrument, the methodology, data analysis procedures and limitations of the study. Chapter four will describe the population and response rate, present the results of the demographic data analyses, and discuss the validity of the instrument. Regression results for total job satisfaction and the nine job satisfaction dimensions in the JSS will be presented. Chapter five will present a discussion of the findings, implications for practice and policy, and recommendations for further research.

CHAPTER 3

Methodology

The general intent of this study was two-fold. First, the study explored facet-specific and general levels of job satisfaction of radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs. Second, personal characteristics that might influence radiologic sciences faculty satisfaction were considered. This chapter describes the research design, population, instrumentation, reliability and validity, data analysis procedures, and limitations of the study.

Research Design

Survey methods were utilized to collect empirical data on the demographic profile of radiologic sciences faculty and examined a number of variables associated with their perceptions of job satisfaction. In an effort to reach a broad segment of faculty, the researcher acquired a listing of email addresses for the program directors in JRCERT accredited programs. After final approved from the Institutional Review Board (IRB), the program directors with valid email addresses were contacted. The email (Appendix A) explained the purpose of the study, invited directors to participate, included an informed consent statement, and a link to the Job Satisfaction Survey (JSS) (Appendix B). Additionally, the program directors were asked to forward the email to other radiologic faculty within their programs and encourage them to participate in the study. Five days after the initial invitation was sent, a reminder email (Appendix C) was sent to encourage participation.

Population

The population for this study was comprised of radiologic sciences program directors and faculty in JRCERT accredited programs. The JRCERT accredits approximately 750 radiography,

radiation therapy, medical dosimetry, and magnetic resonance imaging programs (JRCERT, 2014). The sampling frame for this research was program directors with valid email addresses. No sampling technique was applied as all available email addresses were included.

Instrumentation

Job Satisfaction Survey. The JSS (Appendix A) developed by Spector (1985) was the instrument used for this study. The instrument was developed to assess job satisfaction in human service, nonprofit, and public organizations but Spector (1985) argued it could be used for other sectors as well. The purchaser of the Spector's book, *Job Satisfaction: Application, Assessment, Cause and Consequence* (1997), is given license to use and modify the JSS for noncommercial academic and research purposes (p. 74).

As research results have indicated, many different aspects of the job are associated with expressed levels of satisfaction. It is important therefore, not only to know whether or not employees are satisfied, but also to learn with what aspects of the job they are dissatisfied. The *facet* approach, measuring satisfaction with various aspects of the job as well as overall satisfaction, allows researchers and organizations to find out not only whether people are satisfied with their jobs but also which parts of the job are related to satisfaction or dissatisfaction (Hackman & Oldham, 1975; Smith, Kendall & Hulin, 1969; Spector, 1985).

The JSS uses 36 items to describe nine job facets (four items per facet) and a total satisfaction score can be computed by combining all of the items. The job facets include pay, promotion, supervision, benefits, contingent rewards, operating procedures, co-workers, nature of work, and communication. Responses are obtained on a 6-point Likert-type scale where 1 = disagree very much, 2 = disagree moderately, 3 = disagree slightly, 4 = agree slightly, 5 = agree moderately, and 6 = agree very much.

Variables in the Study

The dependent variables in this study were the nine facets of job satisfaction. The independent variables were age, gender, race, number of years teaching in the radiologic sciences, primary job role, geographical region, and salary. Table 3.1 cross-references the variables, research questions and specific survey items.

Table 3.1

Research Question Variables and Items on the Job Satisfaction Survey (JSS)

| Research Question | Variable Type (Independent/Dependent) | Variable | Item on Survey |
|---|--|---|---|
| Research Question 1: What are the demographic characteristics of radiologic sciences faculty in JRCERT accredited programs? | IV 1 IV 2 IV 3 IV 4 IV 5 IV 6 IV 7 | Age Gender Race Years of teaching in RS Primary job role Geographical region Salary | 37 38 39 40 41 42 43 |
| Research Question 2: To what extent are radiologic sciences faculty satisfied with their jobs? | DV 1 DV 2 DV 3 DV 4 DV 5 DV 6 DV 7 DV 8 DV 9 | Pay Promotion Supervision Benefits Contingent rewards Operating conditions Coworkers Nature of work Communication | 1, 10, 19, 28 2, 11, 20, 33 3, 12, 21, 30 4, 13, 22, 29 5, 14, 23, 32 6, 15, 24, 31 7, 16, 25, 34 8, 17, 26, 35 9, 18, 27, 36 |

Note. Adapted from Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, consequences*. Thousand Oaks, California: Sage Publications.

Validity and Reliability of the Instrument

The JSS has been repeatedly investigated for validity and reliability. A correlation of 0.61 for coworker to 0.80 for supervision was calculated between five of the Job Satisfaction

sub-scales and some of the Job Description Index (JDI) (Spector, 1985). The JSS also has been shown to correlate with a number of scales and variables as assessed with the Job Descriptive Survey (JDS) (Hackman & Oldham, 1975), such as age, organizational level, absence, organizational commitment, leadership practices, intention to quit the job and turnover (Spector, 1985). In a longitudinal study, job satisfaction correlated positively with expected job utility and professional commitment in the previous year, and the extent of downsizing, shift assignment and professional commitment in the current year (Blau, 1999). Spector (1997) found that the nine facets of the Job Satisfaction Survey were all positively correlated.

Two types of reliability estimates are important for evaluating a scale. First, internal consistency reliability estimates refer to how well items of a scale relate to one another. The nine sub-scales of the JSS related moderately to well between each other in terms of internal consistency. From a sample of 2,870 individuals who completed the JSS, coefficient alphas ranged from .60 for the coworker subscale, to .91 for the total scale. The widely accepted minimum standard for internal consistency is .70, meaning that the coworker subscale is somewhat lower than researchers like to see. Second, test-retest reliability reflects the stability of a scale over time. Over an 18 month time period, reliability data of 0.37-0.74 was calculated for a smaller sample of 43 workers. The relative stability of satisfaction is remarkable in that within the 18 months several major changes occurred. These included reorganization, layoffs, and change of top administration (Spector, 1997). Additionally, van Saane, Sluiter, Verbeek, and Frings-Dresen (2003) reported the reliability of the JSS, assessed by means of the internal consistency and the test-retest coefficient, met the quality criteria for both reliability and validity.

Methodology

Program directors with valid email addresses were sent an email. The email (Appendix A) explained the purpose of the study, invited the directors to participate, included an informed consent statement, and a link to the JSS (Appendix B). In addition, the program directors were asked to forward the survey to other radiologic sciences faculty in their programs. One week later a reminder email (Appendix C) was sent to encourage participation.

Data Analysis

The statistical software Statistical Package for the Social Sciences (SPSS) v. 21 was used for analyzing the data. Descriptive statistics were calculated to present the demographic data collected; inferential statistics were used to compare data between groups and to relate assorted variables. Analysis Of a Moment Structures (AMOS) software was used to conduct a second order confirmatory factor analysis (CFA) to test the validity of scores from the JSS. The research questions of this study were addressed as described in the following paragraphs.

Research Question 1: What are the demographic characteristics (age, gender, race, years of teaching, primary job role, demographic region, salary) of radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs? Frequencies, percentages, measures of central tendency, and dispersion were computed and reported.

Research Question 2: To what extent are radiologic sciences faculty in JRCERT accredited programs satisfied with their jobs in terms of (a) colleague interactions (colleagues/coworkers, leadership/supervision); and (b) extrinsic motivators (pay, promotion, supervision, benefits, contingent rewards, operating conditions, nature of work,

communication)? The mean and standard deviation were computed for each of the nine job facet scales. Results were presented in descending order of means to observe facets reflecting relatively greater and relatively lesser satisfactions levels. A total satisfaction mean score was also reported. The radiologic sciences faculty scores were compared to the norms for the JSS (Spector, 1985; 1997).

A series of ordinary least squares (OLS) multiple regressions was used to determine the relationship between selected demographic characteristics and total job satisfaction. The demographic characteristics were age, gender, race, years of teaching, primary job role, geographical region, and salary. The demographic variables for age, years of teaching, and salary range were collapsed to three categories. Demographic variables containing more than two categories were coded using dummy variables. The dummy variables were used to compute the interaction variables for the analysis. The initial regression was conducted on the summative job satisfaction score for the nine dimensions of job satisfaction on the survey. Nine additional regressions were conducted for each of the job satisfaction dimensions.

As with all statistical procedures, multiple regression analysis rests on basic assumptions about the population from where the data have been derived. The results of the analysis are only reliable when these assumptions are satisfied (Huck, 2012). As summarized in Table 3.2, these assumptions are: (1) variable types must be quantitative or categorical. The variable types for this study were categorical. With categorical data the typical characteristic is “count” such as demographics of a population; (2) predictors must have some variation in value. The predictors in this study have some variation in value as they do not have variances of 0; (3) no perfect multicollinearity (no perfect linear relationship between two or more of the predictors – predictor variables cannot correlate too highly). Analysis of the VIF factors from the variables

in this study (see chapter 4) revealed that multicollinearity was not a concern in regards to the data with values ranging from 1.86 to 2.08; (4) homoscedasticity – at each level of the predictor variable, the variance of the residual terms should be constant. Evaluation of the scatter diagram of the sample data in this study appeared to conform to the linearity, equal variance, and normality assumptions. Therefore the researcher had good reason to suspect that the population is not characterized by curvilinearity or heteroscedasticity (Huck, 2012); (5) independent errors – residual terms should be uncorrelated or independent. Results of Durbin-Watson tests ranging from 1.85 to 2.01 indicated non-autocorrelation (Montgomery, 2001) in this study; (6) normally distributed errors – residuals in the model must be random, normally distributed variables with a mean of 0. To compensate for the cases where the distributions were not normal, bootstrapping was used in SPSS. Bootstrapping in SPSS takes the survey data and makes multiple samples of the data for use in the ANOVA analysis so that the increased samples follow a normal distribution (Fields, 2013); (7) independence – all values of the outcome variable are independent and not dependent upon the other variables; and (8) linearity – mean values of the outcome variable for each increment of the predictors lie along a straight line. Regression model analyses indicate linearity in this study.

Table 3.2

Assumptions of the Regressions

| Assumptions | How Assumptions Were Met in This Study |
|--|---|
| Variable types must be quantitative or categorical | Variables were categorical; counts |
| Predictors must have variation in value | Predictors had no variances of 0 |
| No perfect multicollinearity | VIF factors ranged from 1.86 – 2.08 |
| Homoscedasticity | Scatter diagram conformed to linearity, equal variance, and normality assumptions |
| Independent errors | Durbin-Watson tests range 1.85-2.01 |
| Normally distributed errors | Bootstrapping was used to compensate for abnormally distributed variables |
| Independence | All values of the outcome variable were not dependent upon other variables |
| Linearity | Regression model analyses indicated linearity |

Limitations of the Study

Limitations of the study include: (a) the data for the study were gathered using a survey instrument and research based on surveys depends on the voluntary cooperation of the participants; (b) participants can differ from non-participants, compromising the interpretation and generalizability of the results (Isaac & Michael, 1990); (c) the measure of job satisfaction was limited by nature of the instrument; (d) since the survey was distributed electronically, email addresses gathered for the study participants had to be valid; (e) the program directors were relied upon to forward the survey to other faculty; (f) the embedded link to the survey had to

work properly; (g) as questionnaires are structured instruments, there was the inability to probe responses; (h) gestures and other visual cues were not available; (i) it was assumed that the respondent were the same person to whom the questionnaire was sent; (j) there was potential for a low response rate based on participation being voluntary; (k) lack of consensus of the definition of job satisfaction had potential to hinder comparison and interpretation of empirical results (Giese & Cote, 2000); (l) it was a cross-sectional design; (m) when using the criteria of 0.70 loadings for the measurement model, items 2, 8, 10, and 34 did not meet the 0.70 loading criteria; and (n) each Cronbach's alpha value, used to measure the internal consistency of each set of survey items for the nine dimensions of job satisfaction, was greater than the recommended 0.70 except for operating procedures which was 0.65 and communications which was .68.

Summary

This chapter described the research design, population, instrumentation, reliability and validity of the instrument, the methodology, data analysis procedures and limitations of the study. Chapter four will describe the population and response rate, present the results of the demographic data analyses, and discuss the validity of the instrument. Regression results for total job satisfaction and the nine job satisfaction dimensions in the JSS will be presented. Chapter five will present a discussion of the findings, implications for practice and policy, and recommendations for further research.

CHAPTER 4

Results

The purpose of this study was to identify the demographic characteristics and to determine the factors influencing job satisfaction of radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs.

Specifically, the study examined the extent to which faculty were satisfied with their jobs in terms of (a) colleague interactions (colleagues/coworkers, leadership/supervision); and (b) extrinsic motivators (pay, promotion, benefits, contingent rewards, operating conditions, nature of work, communication). This chapter will describe the population and response rate, present the results of the demographic data analyses, and discuss the validity of the instrument.

Regression results for total job satisfaction and the nine job satisfaction dimensions in the JSS will be presented. Chapter five will present a discussion of the findings, implications for practice and policy, and recommendations for further research.

Population and Response Rate

The population for this study was comprised of radiologic sciences program directors and faculty in JRCERT accredited programs. The sampling frame for this research was program directors with valid email addresses. Email addresses were available for 715 of the program directors. No sampling technique was applied as all available email addresses were included. After receiving Institutional Review Board (IRB) approval, each of the 715 program directors was sent an email (Appendix A) that explained the purpose of the study, invited directors to participate, included an informed consent statement, and a link to the Job Satisfaction Survey (JSS)(Appendix B). The invitation resulted in 212 responses for a response rate of 29.65%. In addition, the program directors were asked to forward the survey to other radiologic sciences

faculty in their programs. As a result, an additional 66 responses were received. One case was eliminated because the respondent only completed approximately 30% of the survey. The sample of 212 responses from the program directors with the additional 65 responses from faculty resulted in 277 responses which was greater than the required sample size of 269 for an 80% power with .10 effect size.

Demographic Data Results

Table 4.1 presents the frequencies and percentages of the demographic data.

Age

The majority (74.9%) of participants was older than age 45 and 39.3% was older than age 55. Assuming a retirement age of 65, these data indicate that approximately three-fourths of the current radiologic science faculty will have to be replaced in the next 20 years.

Gender and Race

Seventy-five percent of the participants were female and 23.6% were male. The majority (94.5%) of participants were white. The remaining 4% of those who responded were Black, Hispanic or of another undifferentiated race.

Years of Teaching in Radiologic Sciences

An overwhelming 52.4% of participants indicated they had been teaching in the radiologic sciences for more than 15 years and another 21.1% had been teaching for a minimum of 11 years.

Primary Job Role

The majority (77.1%) of participants indicated they were program directors. Additionally, 23.8% of participants indicated that they were affiliated with a radiologic sciences program either

as a clinical coordinator or didactic and/or clinical faculty. Nine percent indicated they were clinical coordinators and 12.7% indicated they were didactic/ clinical faculty.

Table 4.1

Demographic Characteristics

| Category | | Frequency | Percentage | Mean | SD |
|-------------------|---------------------------|-----------|------------|------|------|
| Faculty Role | | | | 1.35 | .697 |
| | Program Director | 212 | 77.1 | | |
| | Clinical Coordinator | 25 | 9.1 | | |
| | Didactic/Clinical Faculty | 35 | 12.7 | | |
| Age | | | | 4.12 | .980 |
| | Under 25 | 0 | 0 | | |
| | 25-35 | 18 | 6.5 | | |
| | 36-45 | 51 | 18.5 | | |
| | 46-55 | 98 | 35.6 | | |
| | 56-65 | 96 | 34.9 | | |
| | >65 | 12 | 4.4 | | |
| Gender | | | | 1.24 | .428 |
| | Female | 206 | 74.9 | | |
| | Male | 65 | 23.6 | | |
| Race | | | | 1.08 | .452 |
| | White | 260 | 94.5 | | |
| | Black | 4 | 1.5 | | |
| | Hispanic | 2 | 0.7 | | |
| | Other | 5 | 1.8 | | |
| Years of Teaching | | | | 3.18 | 1.01 |
| | 1-5 | 23 | 8.4 | | |
| | 6-10 | 48 | 17.5 | | |
| | 11-15 | 58 | 21.1 | | |
| | More than 15 | 144 | 52.4 | | |
| Salary Range | | | | 6.02 | 2.15 |
| | \$20,000-\$30,000 | 6 | 2.2 | | |
| | \$31,000-\$40,000 | 4 | 1.5 | | |
| | \$41,000-\$50,000 | 18 | 6.5 | | |
| | \$51,000-\$75,000 | 118 | 42.9 | | |
| | More than \$75,000 | 129 | 46.9 | | |

Salary Range

Approximately 43% of participants fell within the \$51,000-\$75,000 salary range and approximately 47% were in the “more than \$75,000” range. A very small percentage (3.7%) indicated an annual salary below \$40,000.

Geographical Region

The various geographic regions represented in this study are tabulated in Figure 4.1. There were participants from all nine regions, which indicate representation of programs across the U.S. The percentage of responses from each region was as follows: (1) Region 1 (AZ, CA, HI, NV) = 4%; (2) Region 2 (AK, ID, MT, OR, UT, WA) = 1%; (3) Region 3 (CO, NM, OK, TX, WY) = 11%; (4) Region 4 (IL, MN, ND, SD, WI) = 11%; (5) Region 5 (AR, IA, KS, NE, MO) = 8%; (6) Region 6 (IN, KY, MI, OH, WV) = 17%; (7) Region 7 (AL, FL, GA, TN, LA, MS, PR) = 20%; (8) Region 8 (DC, MD, NC, NJ, SC, VA) = 15%; (9) Region 9 (CT, DE, MA, ME, NH, NY, PA, RI, VT) = 13%.

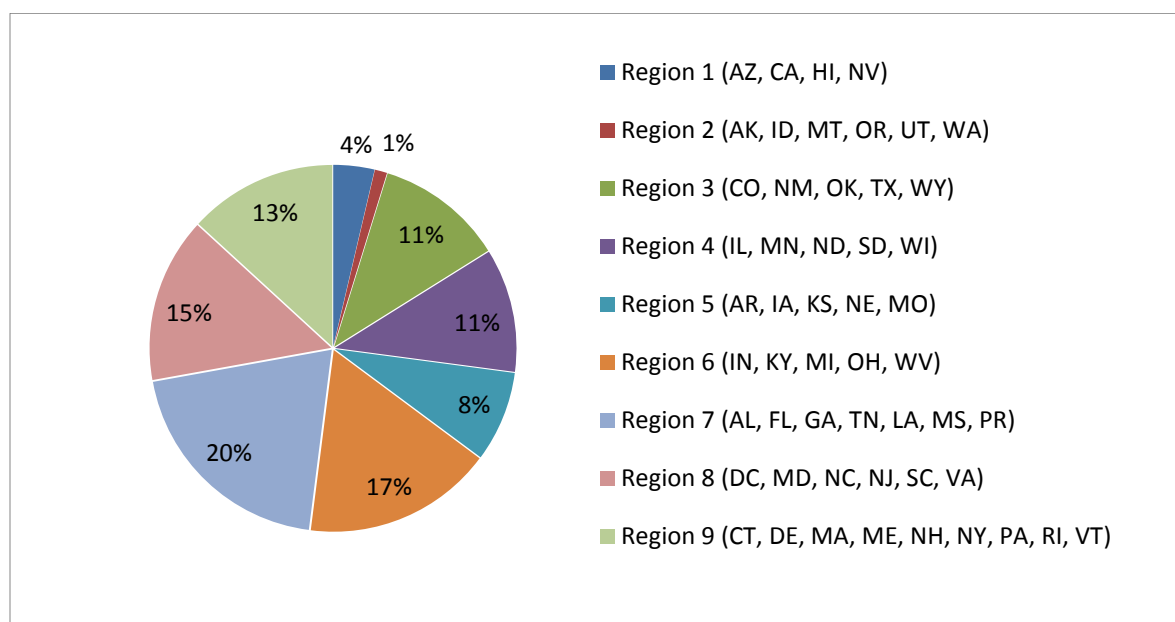


Figure 4.1 Geographical Region of Radiologic Sciences Faculty

Validity of the Instrument

Since no evidence of the Job Satisfaction Survey (JSS) being used on radiologic sciences faculty was found in the literature, a second order confirmatory factor analysis (CFA) was conducted to test the validity of JSS construct scores. The second order factor was job satisfaction, and the first order factors were the nine dimensions of job satisfaction used in the survey. SPSS v. 21 and AMOS were used for the measurement and structural model. Figure 4.2 shows the graphical model input into the AMOS software for this analysis.

The ellipses represent the latent variables for total job satisfaction and the nine dimensions of measures for job satisfaction. Latent variables are those variables that are not measured directly, but measured by surveys items intended to represent the variables. The rectangles represent the survey questions. The arrows indicate the paths in AMOS and the numbers represent the standardized regression weights in the CFA. The small circles represent the residuals and error terms required for the CFA.

For the measurement model, all Likert scale items loaded on the appropriate dimension of job satisfaction with at least a 0.60, except for items 15, 16, 26, 27, and 36 which were appropriate for exploratory research. When using the criteria of 0.70 loadings, items 2, 8, 10, and 34 did not meet the loading criteria. However, when these items were removed from the analysis, the reliability did not substantially increase. These items were left in the analysis and deemed as fitting for the dimension they were measuring. However, this was included as a limitation of the study.

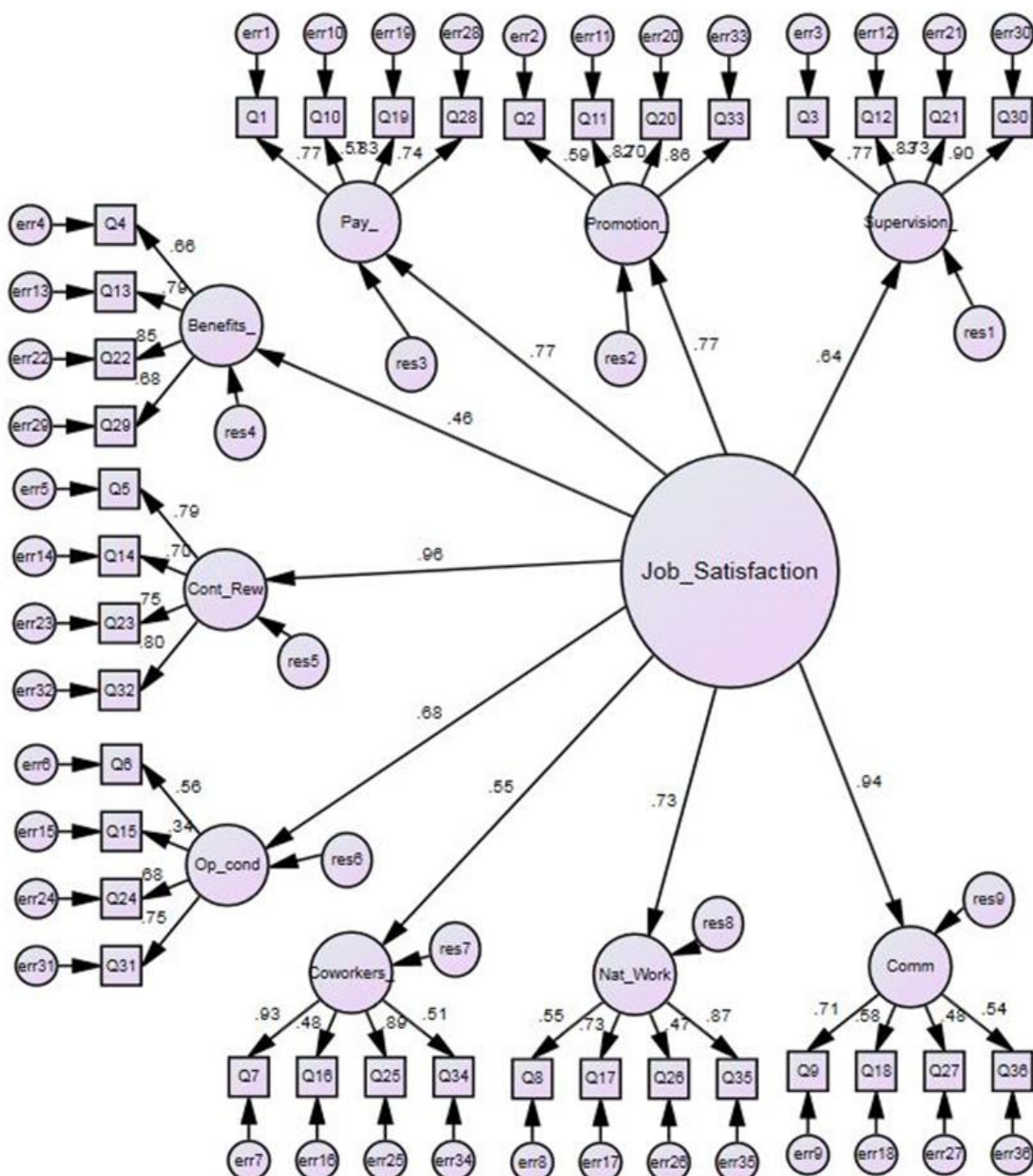


Figure 4.2 Job Satisfaction Structural Model for Radiologic Sciences Faculty

Each of the paths from the dimension to job satisfaction were significant ($p < .01$), indicating that pay, promotion, supervision, benefits, contingent rewards, operating conditions, coworkers, nature of work, and communications were dimensions relating to job satisfaction for radiologic sciences faculty.

Comparative Fit Index (CFI) was used as recommended by Bentler (1990) to determine how well the model fits the data. In this case the CFI was 0.83 on a scale of 0 to 1. While this value does not constitute an exceptional fit ($CFI > 0.90$), it is in the moderate range for fit, indicating that the JSS was a moderate assessment for radiologic sciences faculty. The root mean square error of approximation (RMSEA) was used to account for the error of approximation in the population, or to determine how well the model would fit the population covariance matrix. Values less than 0.05 represent a good fit, and values less than 0.08 represent a reasonable fit. For the job satisfaction model, the RMSEA was 0.07, which meant the model was a reasonable fit (Browne & Cudeck, 1993).

Cronbach's alpha was used to evaluate the internal consistency of each set of survey items used for the nine dimensions of job satisfaction in this study. Table 4.2 shows the Cronbach's alpha for each latent variable and the survey items corresponding to the latent variable in this study compared to Spector's (1977) findings. Each value was greater than the recommended 0.70 except for operating conditions which was 0.65. Most values of Cronbach's alpha for the job satisfaction dimensions were close to or greater than .70. Since these values were so close, there was no evidence of problems with the validity and reliability of the survey instrument.

Table 4.2

Cronbach's Alpha Job Satisfaction Dimensions, Survey Items

| Job Satisfaction Dimensions | Survey Items | Spector | RS Faculty |
|-----------------------------|-------------------|---------|------------|
| Pay | Q1, Q10, Q19, Q28 | .75 | .82 |
| Promotion | Q2, Q11, Q20, Q33 | .73 | .82 |
| Supervision | Q3, Q12, Q21, Q30 | .82 | .88 |
| Benefits | Q4, Q13, Q22, Q29 | .73 | .83 |
| Contingent Rewards | Q5, Q14, Q23, Q32 | .76 | .85 |
| Operating Conditions | Q6, Q15, Q24, Q31 | .62 | .65 |
| Coworkers | Q7, Q16, Q25, Q34 | .60 | .79 |
| Nature of work | Q8, Q17, Q26, Q35 | .78 | .73 |
| Communications | Q9, Q18, Q27, Q36 | .71 | .68 |

Note. Spector norms based on 2870 sample size (Spector, 1997).

Total Job Satisfaction Compared to U.S. Norms

Given the JSS uses 6-point agree-disagree response choices, it was assumed that agreement with positively-worded items and disagreement with negatively-worded items represented satisfaction, whereas disagreement with positive-worded items and agreement with negative-worded items represented dissatisfaction. Translated into the total mean scores, for the 36-item total where possible total mean scores range from 36 to 216, the ranges are 36 to 108 for dissatisfaction, 144 to 216 for satisfaction, and between 108 and 144 for ambivalent. The total mean score for the radiologic sciences faculty was 149.5 which falls within the satisfaction range. The radiologic sciences faculty scores are compared to the norms for the JSS (Spector, 1985; 1997) as shown in Table 4.3.

Table 4.3

Job Satisfaction Survey (JSS) Scores Comparison

| Facet | Norms for U.S. | | Radiologic Sciences Faculty | |
|----------------------|----------------|------|-----------------------------|------|
| | Mean | SD | Mean | SD |
| Supervision | 18.3 | 2.1 | 20.59 | 2.25 |
| Coworkers | 17.6 | 1.9 | 19.77 | 2.01 |
| Nature of Work | 19.2 | 2.0 | 19.04 | 1.79 |
| Communication | 15.1 | 2.2 | 18.47 | 1.99 |
| Benefits | 14.4 | 2.6 | 17.45 | 2.38 |
| Contingent Rewards | 13.7 | 2.3 | 15.21 | 2.73 |
| Promotion | 12.0 | 2.0 | 13.42 | 2.48 |
| Salary | 12.6 | 2.5 | 13.32 | 2.70 |
| Operating Conditions | 13.4 | 2.3 | 12.32 | 2.13 |
| Total | 136.3 | 19.9 | 149.5 | 20.4 |

Note: Adapted from the Paul Spector website: Job Satisfaction Survey Norms at <http://shell.cas.usf.edu/~pspector/scales/jssnorms.html>.

Regression Analyses

Ordinary least squares (OLS) (multiple) regression was used to evaluate the relationship between specified demographic variables and total job satisfaction. Vogt (2005) stated that multiple regression analysis answers two main questions: (1) What is the effect (as measured by a regression coefficient) on a dependent variable (DV) of a one-unit change in an independent variable (IV), while controlling for the effects of all other independent variables? and (2) What is the total effect (as measured by the R^2) on the DV of all the IVs taken together?

As with all statistical procedures, multiple regression analysis rests on basic assumptions about the population from where the data have been derived. The results of the

analysis are only reliable when these assumptions are satisfied (Huck, 2012). A description of the model assumptions was included in Chapter 3.

A series of ordinary least squares (OLS) multiple regressions was used to determine the relationship between selected demographic characteristics and total job satisfaction. The demographic characteristics were age, gender, race, years of teaching, primary job role, and salary. The demographic variables for age, years of teaching, and salary range were collapsed to three categories. Demographic variables containing more than two categories were coded using dummy variables. The dummy variables were used to compute the interaction variables for the analysis. The initial regression was conducted on the summative job satisfaction score for the nine dimensions of job satisfaction on the survey. Nine additional regressions were conducted for each of the job satisfaction dimensions ($p < .05$). Derived interaction effects from the correlation analysis are described below.

Multicollinearity and Interaction Effects

Prior to the multiple regression analyses a correlation analysis (Appendix D) was completed in SPSS. The purpose of this preliminary step was to test for multicollinearity and to determine whether any demographic pairs should be included as interaction variables in the regression models. The results indicated that the demographic variable age was significantly correlated with years of teaching ($r = .62, p < .01$), job role ($r = -.30, p < .01$), and salary ($r = .32, p < .01$). Years of teaching was significantly correlated with age ($r = .62, p < .01$), job role ($r = -.27, p < .01$), and salary ($r = .41, p < .01$).

Multicollinearity can be an issue when there are strong significant correlations among the independent variables. Howell (2007) defined multicollinearity as a statistical condition in which the values of β are unstable from sample to sample due to high correlations between them

although R^2 may change very little. Vogt (2005) added that in multiple regression analysis, multicollinearity exists when two or more independent variables are highly correlated; this makes it difficult if not impossible to determine their separate effects on the dependent variable (p. 198). To measure for the effect of collinearity, variance inflation factors (VIF) were examined following a preliminary multiple regression analysis of the variables. Vogt (2005) calculated the VIF as 1 divided by the tolerance. Therefore, low tolerances result in high VIFs and vice versa. The lowest possible VIF is 1.0 when there is no collinearity. A value of 10 has been recommended as the maximum level of VIF. Furthermore, Vogt (2005) defined tolerance as the proportion of one independent variable not explained by other independent variables in the regression equation. Analysis of the VIF factors from the variables in this study revealed multicollinearity was not a concern, with all values ranging from 1.86 to 2.08.

Based on the correlation analysis, the two-way interactions for age, years of teaching, job role, and salary were included in the regression analyses. The interactions between the demographic dummy variables examined in the multiple regression models were Age * Years of Teaching, Age * Job Role, Age * Salary Range, Years of Teaching * Job Role, Years of Teaching * Salary Range, and Job Role * Salary Range. The dummy variables were used to compute the interaction variables for the analysis. As shown in table 4.4, the demographic variables for age, years of teaching, and salary range were collapsed to three categories. The categories for the demographic variables gender, race, and primary job role were retained as in the original survey. The regional variable was only retained for descriptive analysis.

Table 4.4

| <i>Variable Collapsing</i> | | | |
|----------------------------|------------------------------|-----------------------------|------------------------------|
| Variable | Categories before Collapsing | Categories after Collapsing | Percentages after Collapsing |
| Age | Under 25 | Under 35 | 6.5 |
| | 25-35 | 36-55 | 54.1 |
| | 36-45 | >56 | 39.3 |
| | 46-55 | | |
| | 56-65 | | |
| | >65 | | |
| Years of Teaching | 1-5 | Less than 5 | 8.4 |
| | 6-10 | 6-15 | 38.6 |
| | 11-15 | >15 | 52.4 |
| | >15 | | |
| Salary Range | \$20,000-30,000 | \$20,000-40,000 | 3.7 |
| | 31,000-40,000 | 41,000-75,000 | 49.4 |
| | 41,000-50,000 | More than 75,000 | 46.9 |
| | 51,000-75,000 | | |
| | More than 75,000 | | |

Analysis 1: Total Job Satisfaction

A multiple regression analysis was conducted to evaluate the total job satisfaction among respondents. The final model included age, gender, race, years of teaching, job role, and salary. The interaction variables were not statistically significant and were not retained in final model. The results indicated that 14% of the variation in job satisfaction as a total score was explained by variables in the model. Based on the ANOVA analysis in the regression output, the model containing age, race, years of teaching, job role, and salary was the best model and significantly

different than using the mean as a best estimate of total job satisfaction, $F = (11,226) = 1.98, p < .05$.

As indicated in Table 4.5, the regression analysis revealed that job role and salary were significant predictors of the dependent variable job satisfaction. The magnitude of contribution for each significant predictor was determined by its associated standardized regression coefficient. Regression coefficients, also known as beta coefficients (β), are expressed in standard deviation units indicating what a one standard deviation increase in the independent variable would have on the standard deviation of the dependent variable while holding all other variables constant (Vogt, 2005). In this study, there was an increase in faculty compared to program directors ($\beta = .17, p < .05$). There was also an increase in the more than \$75,000 salary dimension compared to the \$20,000-\$40,000 salary dimension ($\beta = .23, p < .01$).

Nine additional multiple regressions were conducted for each of the job satisfaction dimensions: pay, promotion, supervision, benefits, contingent rewards, operating procedures, co-workers, nature of work, and communication. To compensate for the cases where the distributions were not normal, bootstrapping was used in SPSS. Bootstrapping in SPSS takes the survey data and makes multiple samples of the data for use in the ANOVA analysis so that the increased samples follow a normal distribution (Fields, 2013). For the variables not normally distributed 500 subsamples of the data were used in SPSS by checking bootstrap within the software (Confidence Interval Level = 95%). No significant outliers were observed.

Table 4.5

Regression Analysis Summary for Evaluating Total Job Satisfaction

| | B | Std. Error | β | Sig. |
|----------------------|---------|------------|---------|--------|
| Constant | 152.89 | 9.143 | | .000 |
| Age (<35) | -.288 | 8.60 | -.005 | .973 |
| Age (>55) | 4.456 | 9.434 | .073 | .637 |
| Race (White) | 5.784 | 5.024 | .025 | .701 |
| Race (Black) | 19.776 | 21.052 | .111 | .349 |
| Race (Other) | -20.290 | 24.895 | -.097 | .416 |
| YOT (<5) | 2.801 | 8.220 | -.207 | .121 |
| YOT (>15) | 7.371 | 9.055 | -.288 | .056 |
| Job Role (Director) | .953 | 7.377 | .009 | .897 |
| Job Role (Faculty) | 15.670 | 6.162 | .173 | .012* |
| Salary (\$20K-\$40K) | -5.521 | 8.991 | -.043 | .540 |
| Salary (>\$75K) | 14.237 | 4.285 | .236 | .001** |

Note: Dependent Variable: Total Job Satisfaction (* $p < .05$; ** $p < .01$); $R^2 = .138$

Analysis 2: Pay

A multiple regression analysis was conducted to evaluate the total job satisfaction among respondents. The final model included age, gender, race, years of teaching, job role, and salary. The interaction variables were not statistically significant and were not retained in final model. Results of the multiple regression indicated that 22% of variation in pay was explained by variables in the model. Based on ANOVA analysis in the regression output, the model containing age, race, years of teaching, job role and salary ($F(11, 248) = 5.41, p < .01$) was the best model and significantly different than using the mean as a predictor of the outcome.

As indicated in Table 4.6, the regression analysis indicated that years of teaching and salary were significant predictors. The pay dimension of job satisfaction increased for greater than 15 years of teaching compared to less than 5 years ($\beta = .28, p < .05$) and for those making more than \$75, 000 compared to those making \$20,000-\$40,000 ($\beta = .38, p < .01$).

Table 4.6

Regression Analysis Summary for Pay

| | B | Std. Error | β | Sig. |
|----------------------|--------|------------|---------|--------|
| Constant | 14.226 | 1.472 | | .000 |
| Age (<35) | -1.574 | 1.385 | -.143 | .257 |
| Age (>55) | -.011 | 1.519 | -.001 | .994 |
| Race (White) | -1.048 | 2.556 | -.024 | .682 |
| Race (Black) | 5.500 | 3.586 | .163 | .126 |
| Race (Other) | -4.943 | 4.241 | -.124 | .245 |
| YOT (<5) | -1.451 | 1.262 | -.129 | .252 |
| YOT (>15) | -3.035 | 1.377 | -.277 | .028* |
| Job Role (Director) | -.245 | 1.170 | -.013 | .835 |
| Job Role (Faculty) | 1.135 | 0.996 | .069 | .256 |
| Salary (\$20K-\$40K) | -3.070 | 1.379 | -.139 | .027* |
| Salary (>\$75K) | 4.203 | .702 | .384 | .000** |

Note: Dependent Variable: Job Satisfaction (* $p = < .05$; ** $p = < .001$)

$$R^2 = .220$$

Analysis 3: Promotion

The next multiple regression revealed that approximately 13% of variation in the promotion dimension was explained by variables in the model. Based on ANOVA analysis in the regression output, the model containing age, race, years of teaching, job role and salary ($F(14, 243) = 2.04, p < .05$), was the best model. The final regression model did not contain interactions as these dropped out and were not significant. As indicated in Table 4.7, the regression analysis indicated that age, years of teaching, and salary were significant predictors of the dependent variable. The promotion dimension increased for ages greater than 55 years compared to ages less than 35 years ($\beta = .99, p < .05$); greater than 15 years of teaching compared to less than 5 years of teaching ($\beta = .79, p < .05$); and salary greater than \$75,000 compared to \$20,000-\$40,000 ($\beta = .200, p < .05$).

Analysis 4: Supervision

A multiple regression analysis was conducted to evaluate the total job satisfaction among respondents. The final model included age, gender, race, years of teaching, job role, and salary. The interaction variables were not statistically significant and were not retained in final model. Analysis of the multiple regression indicated that 8% of variation in the supervision dimension was explained by variables in the model. Based on ANOVA analysis in the regression output, none of the models were significantly better at predicting the supervision outcome than using the mean. Table 4.8 shows that the job role and salary dimensions were significant predictors of the outcome. The supervision dimension of job satisfaction increased for faculty compared to program directors ($\beta = .12, p < .05$) and salary greater than \$75,000 compared to \$20,000-\$40,000 ($\beta = .14, p < .05$).

Table 4.7

Regression Analysis Summary for Promotion

| | B | Std. Error | β | Sig. |
|----------------------|---------|------------|---------|-------|
| Constant | 14.641 | 1.747 | | .000 |
| Age (<35) | .351 | 2.195 | .035 | .873 |
| Age (>55) | -10.111 | 3.853 | -.996 | .009* |
| Race (White) | 3.462 | 2.472 | .086 | .163 |
| Race (Black) | .615 | 3.456 | .053 | .641 |
| Race (Other) | 11.869 | 4.092 | .052 | .648 |
| YOT (<5) | -2.225 | 2.324 | -.218 | .339 |
| YOT (>15) | 7.815 | 3.540 | .785 | .028* |
| Job Role (Director) | .613 | 1.134 | .037 | .589 |
| Job Role (Faculty) | 1.786 | .979 | .118 | .069 |
| Salary (\$20K-\$40K) | -.047 | 1.445 | -.002 | .974 |
| Salary (>\$75K) | 1.987 | .683 | .200 | .004* |

Note: Dependent Variable: Job Satisfaction (* $p = <.05$); $R^2 = .131$

Analysis 5: Benefits

A multiple regression analysis was conducted to evaluate the total job satisfaction among respondents. The final model included age, gender, race, years of teaching, job role, and salary. The interaction variables were not statistically significant and were not retained in final model. Approximately 12% of the variation in the benefits dimension was explained by variables in the model. ANOVA analysis indicated that none of the models were significantly better at predicting outcome than using the mean as an estimate. The regression analysis, as shown in

Table 4.9, indicated that the salary dimension of job satisfaction increased for those with salaries greater than \$75,000 compared to \$20,000-\$40,000 ($\beta = .16$, $p < .05$).

Table 4.8

Regression Analysis Summary for Supervision

| | B | Std. Error | β | Sig. |
|----------------------|--------|------------|---------|-------|
| Constant | 20.340 | 1.312 | | .000 |
| Age (<35) | -.036 | 1.233 | -.004 | .977 |
| Age (>55) | .383 | 1.362 | .042 | .779 |
| Race (White) | 1.902 | 3.174 | .069 | .309 |
| Race (Black) | -3.112 | 3.754 | -.095 | .550 |
| Race (Other) | -.617 | 1.150 | -.067 | .408 |
| YOT (<5) | -1.548 | 1.273 | -.172 | .592 |
| YOT (>15) | 1.229 | 1.039 | .079 | .225 |
| Job Role (Director) | 2.204 | .893 | .162 | .238 |
| Job Role (Faculty) | 1.786 | .979 | .118 | .014* |
| Salary (\$20K-\$40K) | 1.623 | .222 | .090 | .185 |
| Salary (>\$75K) | 1.265 | .625 | .141 | .044* |

Note: Dependent Variable: Job Satisfaction (* $p = < .05$); $R^2 = .081$

Analysis 6: Contingent Rewards

As indicated in Table 4.10, the multiple regression analysis revealed that approximately 9% of the variation in the contingent reward dimension was explained by variables in the model. According to ANOVA analysis results, none of the models were significantly better at predicting outcome than using the mean as an estimate. The multiple regression analysis showed that age,

job role, years of teaching, and salary were significant predictors of changes in the contingent rewards dimension. The final regression model did not contain interactions as these dropped out and were not significant. The multiple regression analysis results indicated that the contingent rewards dimension of job satisfaction increased with the salary greater than \$ 75,000 compare to salary \$20,000-\$40,000 ($\beta = .23$, $p < .05$). In addition, there was an increase in faculty with age greater than 55 years compared to faculty age less than 35 years, program directors age less than 35 years, program directors greater than age 55 years, and program directors age less than 35 years ($\beta = .19$, $p < .05$).

Table 4.9

Regression Analysis Summary for Benefits

| | B | Std. Error | β | Sig. |
|----------------------|-------|------------|---------|-------|
| Constant | 16.00 | 1.41 | | .000 |
| Age (<35) | -.394 | 1.312 | -.041 | .764 |
| Age (>55) | .285 | 1.433 | .029 | .843 |
| Race (White) | 1.057 | 2.402 | .027 | .660 |
| Race (Black) | 2.847 | 3.368 | -.097 | .399 |
| Race (Other) | 4.326 | 3.983 | .125 | .279 |
| YOT (<5) | 1.811 | 1.220 | .184 | .139 |
| YOT (>15) | .123 | 1.325 | .013 | .926 |
| Job Role (Director) | 1.947 | 1.085 | -.120 | .074 |
| Job Role (Faculty) | .765 | .949 | .053 | .421 |
| Salary (\$20K-\$40K) | .995 | 1.337 | .050 | .457 |
| Salary (>\$75K) | 1.549 | .660 | .162 | .020* |

Note: Dependent Variable: Job Satisfaction (* $p < .05$); $R^2 = .124$

Table 4.10

Regression Analysis Summary for Contingent Rewards

| | B | Std. Error | β | Sig. |
|----------------------|--------|------------|---------|-------|
| Constant | 17.77 | 2.63 | | .000 |
| Age (<35) | -2.334 | 3.087 | -.214 | .450 |
| Age (>55) | -3.067 | 4.655 | -.277 | .511 |
| Race (White) | -1.776 | 2.751 | -.041 | .519 |
| Race (Black) | 3.286 | 3.844 | .099 | .393 |
| Race (Other) | -3.794 | 4.552 | -.097 | .405 |
| YOT (<5) | -1.637 | 2.861 | -.147 | .568 |
| YOT (>15) | -1.207 | 3.935 | -.111 | .759 |
| Job Role (Director) | -1.848 | 4.635 | -.097 | .690 |
| Job Role (Faculty) | -1.175 | 2.850 | -.072 | .681 |
| Salary (\$20K-\$40K) | .158 | 1.535 | .007 | .918 |
| Salary (>\$75K) | 2.438 | .768 | .225 | .002* |
| Age (<35)(YOT <5) | .135 | 3.311 | .011 | .968 |
| Age (<35)(YOT>15) | -1.733 | 4.315 | -.127 | .688 |
| Age (>55)(YOT<5) | .801 | 4.981 | .036 | .872 |
| Age (<35)(Director) | 2.646 | 4.845 | .121 | .585 |
| Age (<35)(Faculty) | 2.051 | 3.153 | .101 | .516 |
| Age (>55)(Director) | 2.112 | 5.382 | .048 | .695 |
| Age (>55)(Faculty) | 7.530 | 3.783 | .192 | .048* |

Note: Dependent Variable: Job Satisfaction (* $p = < .01$); $R^2 = .091$

Analysis 7: Operating Procedures

As indicated in Table 4.11, the multiple regression analysis indicated that approximately 13% of the variation in the operating procedures dimension of job satisfaction was explained by variables in the model. Based on ANOVA analysis none of the models were significantly better at predicting outcome than using the mean as an estimate. No interactions were included in the final regression model as none were significant. Analysis of the multiple regression indicated that the significance is .000; therefore, the null hypothesis that the operating procedures dimension does not influence job satisfaction is rejected (Fields, 2013). Results of the multiple regression show that there was an increase in the less than 35 years age dimension compared to the greater than 55 years age dimension ($\beta = -.19, p < .001$). The black race dimension increased when compared to white race ($\beta = -.09, p < .001$). The less than 5 years of teaching dimension increased compared to greater than 15 years of teaching ($\beta = .02, p < .001$). Lastly, the faculty dimension increased compared to program directors ($\beta = .24, p < .001$).

Analysis 8: Coworkers

Multiple regression analysis revealed that approximately 8% of the variance in the coworker dimension was explained by variables in the model. According to ANOVA analysis results, none of the models were significantly better at predicting the outcome than using the mean as an estimate. No interactions were included in the final regression model as none were significant. Analysis of the multiple regression indicated that the faculty dimension increased when compared to the program director dimension ($\beta = .174, p < .05$). Table 4.12 displays the results.

Table 4.11

Regression Analysis Summary for Operating Procedures

| | B | Std. Error | β | Sig. |
|---------------------|--------|------------|---------|-------|
| Constant | 12.859 | .051 | | .000 |
| Age (<35) | -1.592 | .049 | -.190 | .000* |
| Age (>55) | -1.187 | .054 | -.139 | .000* |
| Race (White) | 2.750 | .091 | .081 | .000* |
| Race (Black) | 2.472 | .128 | .095 | .000* |
| Race (Other) | -1.737 | .151 | -.057 | .000* |
| YOT (<5) | .156 | .044 | .018 | .000* |
| YOT (>15) | .059 | .047 | .007 | .000* |
| Job Role (Director) | .863 | .039 | .061 | .000* |
| Job Role (Faculty) | 3.059 | .035 | .243 | .000* |

Note: Dependent Variable: Job Satisfaction (* $p = < .001$); $R^2 = .127$

Analysis 9: Nature of Work

Multiple regression analysis concerning nature of work revealed that 7% of the variance was explained by variables in the model. ANOVA analysis results indicated that none of the models were significantly better at predicting the outcome than using the mean as an estimate. No interactions were included in the final regression model as none were significant. As seen in Table 4.13, analysis of the multiple regression indicated that the significance is .000 in all models. Therefore, the null hypothesis that the nature of work dimension does not influence job satisfaction is rejected (Fields, 2013). Further, the multiple regression analysis results indicate that the greater than 55 age dimension increased compared to the less than 35 years age dimension. The black race dimension increased compare to the white and other race. The less

than 5 years of teaching dimension increased compared to the greater than 55 years of teaching and the greater than \$75,000 salary dimension increased compared to the \$20,000-\$40,000 salary range.

Table 4.12

Regression Analysis Summary for Coworkers

| | B | Std. Error | β | Sig. |
|----------------------|-------|------------|---------|-------|
| Constant | 19.18 | 1.181 | 16.25 | .000 |
| Age (<35) | 1.254 | 1.112 | .155 | .260 |
| Age (>55) | 1.561 | 1.219 | .189 | .201 |
| Race (White) | .627 | 2.051 | .019 | .760 |
| Race (Black) | 3.537 | 2.876 | .141 | .220 |
| Race (Other) | -5.77 | 3.401 | -.196 | .091 |
| YOT (<5) | -.946 | 1.012 | -.114 | .351 |
| YOT (>15) | -.928 | 1.105 | -.115 | .402 |
| Job Role (Director) | .300 | .922 | .022 | .745 |
| Job Role (Faculty) | 2.116 | .799 | .174 | .009* |
| Salary (\$20K-\$40K) | -.151 | 1.103 | -.009 | .892 |
| Salary (>\$75K) | -.401 | .563 | -.050 | .476 |

Note: Dependent Variable: Job Satisfaction (* $p = < .05$); $R^2 = .077$

Table 4.13

Regression Analysis Summary for Nature of Work

| | B | Std. Error | β | Sig. |
|----------------------|--------|------------|---------|-------|
| Constant | 18.561 | .047 | | .000* |
| Age (<35) | .805 | .044 | .111 | .000* |
| Age (>55) | .879 | .048 | .119 | .000* |
| Race (White) | -.549 | .081 | -.019 | .000* |
| Race (Black) | 1.496 | .113 | .067 | .000* |
| Race (Other) | -2.645 | .134 | -.100 | .000* |
| YOT (<5) | -1.175 | .041 | -.158 | .000* |
| YOT (>15) | -.926 | .044 | -.128 | .000* |
| Job Role (Director) | .138 | .036 | .011 | .000* |
| Job Role (Faculty) | 1.066 | .031 | .098 | .000* |
| Salary (\$20K-\$40K) | -.369 | .043 | -.025 | .000* |
| Salary (>\$75K) | 1.055 | .022 | .146 | .000* |

Note: Dependent Variable: Job Satisfaction (* $p < .001$); $R^2 = .069$

Analysis: 10 Communications

Multiple regression analysis revealed that approximately 8% of the variance in the communications dimension was explained by variables in the model. According to ANOVA analysis results, none of the models were significantly better at predicting the outcome than using the mean as an estimate. No interactions were included in the final regression model as none were significant. As indicated in Table 4.14, the salary dimension of job satisfaction increased with greater than \$75,000 compared to \$20,000-\$40,000 range.

Table 4.14

Regression Analysis Summary for Communications

| | B | Std. Error | β | Sig. |
|----------------------|--------|------------|---------|-------|
| Constant | 18.860 | 1.174 | | .000 |
| Age (<35) | -.204 | 1.100 | -.025 | .853 |
| Age (>55) | -.453 | 1.206 | -.055 | .707 |
| Race (White) | -.709 | 2.024 | -.022 | .726 |
| Race (Black) | 3.108 | 2.839 | .126 | .275 |
| Race (Other) | -4.566 | 3.357 | -.158 | .175 |
| YOT (<5) | -1.112 | 1.002 | -.135 | .268 |
| YOT (>15) | -.785 | 1.093 | -.098 | .473 |
| Job Role (Director) | -.011 | .913 | -.001 | .990 |
| Job Role (Faculty) | 1.436 | .798 | .119 | .073 |
| Salary (\$20K-\$40K) | -1.165 | 1.125 | -.070 | .301 |
| Salary (>\$75K) | 1.292 | .558 | .161 | .021* |

Note: Dependent Variable: Job Satisfaction (* $p < .05$); $R^2 = .081$

Summary

This chapter described the population and response rate, presented the results of the demographic data analyses, and discussed the validity of the instrument. Regression results for total job satisfaction and the nine job satisfaction dimensions in the JSS were presented. Chapter five will present a discussion of the findings, implications for practice and policy, and recommendations for further research.

CHAPTER 5

Discussion of Findings

Many healthcare programs have difficulties recruiting, developing, and retaining qualified healthcare educators. As reported in recent literature, these challenges, along with a number of other factors, have created a faculty shortage expected to worsen in the near future (Legg, 2011). Leslie and Janson (2005) predicted that there would be a significant stream of faculty retirements in the next decade that will result in an imbalance of supply and demand for programs. In 2008, the Association of Educators in Radiologic and Imaging Sciences (AEIRS) stated that the majority of healthcare workers were Baby Boomers and already at a stage at which they would be retiring soon, taking significant years of classroom and clinical experience with them when they leave the academy. As retirements among healthcare faculty continue to increase, the supply of new faculty is decreasing (Berlin & Sechrist, 2002). The traditional methods of retention will be critically important as the shortage of qualified faculty increases in tandem with increased demand.

As indicated in the literature, the most effective way to retain faculty is to create work environments where faculty are satisfied with their work (Johnson, 2011). Theorists Maslow (1954) and Herzberg (1966) explained job satisfaction in terms of needs that must be met or values that must be present at work in order for employees to be satisfied. Their theories explained job satisfaction in terms of the level of similarity between an individual's work values or goals and what the individual receives and experiences in the workplace. Unless individuals feel that their needs are met in a manner that provides them the opportunity to reach their highest potential, they will experience varying levels of dissatisfaction. Although job satisfaction initially was studied as a predictor of behaviors, such as performance, absenteeism, and turnover,

researchers including Locke (1976) and Spector (1997) contended there was a relationship between job satisfaction and a number of demographic variables.

Guided by these theories, this study attempted first to determine the demographic characteristics of current radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs. Second, this study examined the extent to which the current faculty were satisfied with their jobs in terms of (a) colleague interactions (colleagues/coworkers, leadership/supervision); and (b) extrinsic motivators (pay, promotion, benefits, contingent rewards, operating procedures, nature of work, communication). This chapter presents a discussion of the findings, implications for practice and policy, and recommendations for further research.

Research Question 1

What are the demographic characteristics (age, gender, race, years of teaching, primary job role, demographic region, salary) of radiologic sciences faculty in Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited programs? The following is a description of the demographic characteristics most cited in the faculty satisfaction literature, which were subsequently considered in this study.

Demographic Characteristics Results

Age and Years of Teaching – In 2010, Undie and Passmore predicted that the radiologic sciences would face the challenge of a faculty shortage due to a large number of retirements. This concept was based on 42% of radiologic sciences faculty indicating they would retire in 10 years. In 2011, the American Society of Radiologic Technologists (ASRT) supported the notion that there was a looming faculty shortage in the radiological sciences. According to the report, the mean age of current radiologic sciences faculty was 47 years and the faculty had been

teaching for an average of 14 years. Fifty-percent of respondents indicated that they planned to leave the profession over the next 10 years.

This study had similar findings. Seventy-five percent of the respondents indicated they were older than age 45 and 40% were older than age 55. Additionally, 52% indicated they had been teaching in the radiologic sciences for more than 15 years. Supposing these faculty retire at age 65, a large portion of the faculty will have to be replaced within the next 10-15 years. When these individuals retire, the radiological sciences field will be losing faculty who not only teach in their disciplines with expertise, insight, and dedication, but advise, serve on committees, participate in research, coordinate on-campus and off-campus events, facilitate internships, mentor students before, during, and after office hours, and generally provide experience and wisdom to students year after year (Dante's Woods, 2014).

Gender – Previous research indicated that with few exceptions, male faculty members in all disciplines have generally higher levels of job satisfaction than female faculty members (Callister, 2006; Hult, Callister, & Sullivan, 2005; Sabharwal & Corley, 2012; Settles, Cortina, Malley & Stewart, 2006). According to Sabharwal and Corley (2012), male faculty in healthcare fields have significantly lower levels of satisfaction than females. Yet, Oshagbemi (2000) found that gender did not affect job satisfaction of faculty directly and faculty job satisfaction studies published over a six year period indicated no significant difference between male and female satisfaction levels. Results from this study are consistent with Oshagbemi's (2002) findings, suggesting gender was not a significant predictor of job satisfaction among current radiological sciences faculty.

Race – Isaac and Boyer (2007) stressed that a diverse faculty is needed to provide role models, a support system, and advocates for minority students as well as to expose majority

students to new ideas. But concern has been expressed for the future of minority faculty based on their lower level of satisfaction as compared with their Caucasian peers (Tack & Patitu, 1992). No prior studies were identified that evaluated the job satisfaction of radiologic sciences faculty based on race. As such, a comparison with this study was not available. However, present findings showed race was not a significant factor in job satisfaction. It should be considered though, that the majority (95%) of the respondents was white and the remaining 5% were Black, Hispanic or of another undifferentiated race. As such, the smaller percentage of minority of faculty in the radiologic sciences may impact the findings of any study due to a lower sample size.

Job Role – Researchers contend that job role is a highly significant predictor of job satisfaction among academics (Adkins, Werbel & Farh, 2001; Bender & Heywood, 2006; Herzberg, Mausner & Snyderman, 1959; Oshagbemi, 2000; Tack & Patitu, 1992). Eyupoglu and Saner (2009) found job satisfaction did not progressively increase with academic rank as might be expected. Yet Aronson, Laurenceau, Sieveking and Bellet (2005) found job satisfaction did increase as job level increased. This study found that job role was a significant predictor of job satisfaction among radiologic sciences faculty.

Salary – Historically, researchers have suggested salary amount is not important for job satisfaction and that salary has not had a continuous linear relationship with job satisfaction (Hoppock, 1935; Herzberg 1966; Judge, Piccolo, Podsakoff, Shaw, & Rich, 2010). However, Undie and Passmore (2010) cited that salary disparity between academia and clinical practice as one of the major hindrances to hiring and retaining faculty in radiologic sciences programs. Consistent with those findings, this study found that salary was a significant predictor of total job satisfaction among radiologic sciences faculty.

Research Question 2

To what extent are radiologic sciences faculty in JRCERT accredited programs satisfied with their jobs in terms of (a) colleague interactions (colleagues/coworkers, leadership/supervision); and (b) extrinsic motivators (pay, promotion, benefits, contingent rewards, operating procedures, nature of work, communication).

Total Job Satisfaction Results

The findings of this study suggest radiologic sciences faculty are generally satisfied with their jobs. This result is congruent with previous research on this population (Undie & Passmore, 2010). As shown in Figure 5.1, the overall job satisfaction ranked equivalently with the U.S. Norms for the JSS. The total mean score for the radiologic sciences faculty was 149.6, which falls within the satisfaction range for national JSS norms (Spector, 1997). Possible total mean scores range on the JSS range from 36 to 216. The classification ranges are 36 to 108 for

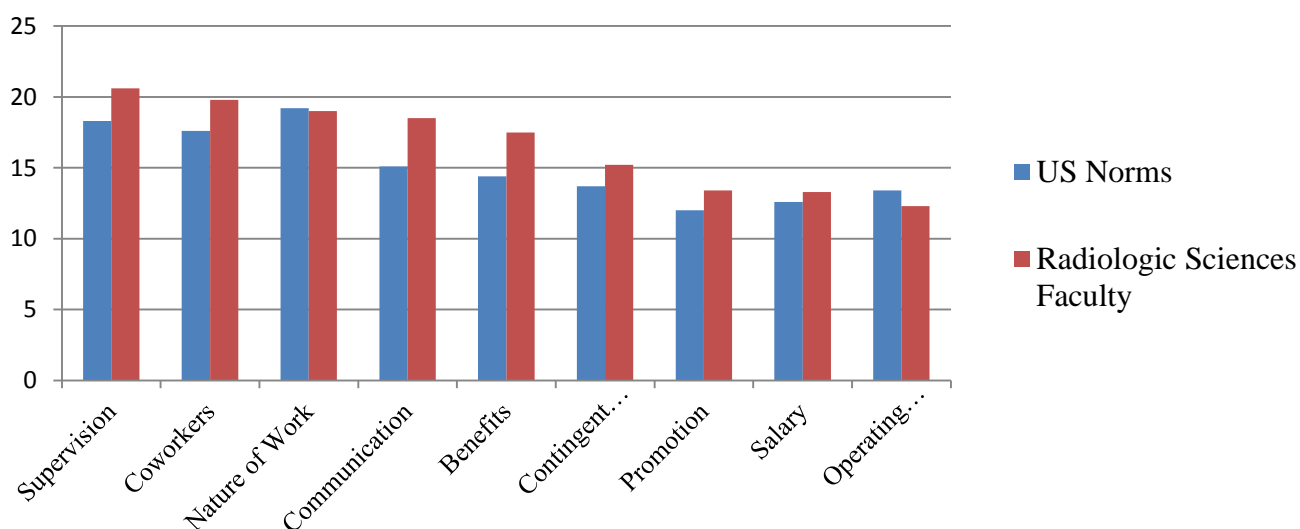


Figure 5.1 U.S Norms and Radiologic Sciences Job Satisfaction

dissatisfaction, 108 and 144 for ambivalent, and 144 to 216 for satisfaction (Spector, 1997).

Specific Facet Job Satisfaction Results

The radiologic sciences faculty in this study indicated they were satisfied in eight of the facets, as measured by the JSS (4 to 12 = dissatisfaction; 16-24 = satisfied; 12-16 = ambivalent) and the findings indicated ambivalence in the operating conditions facet. Satisfaction among the facets ranked in the following order (highest to lowest):

Supervision ($M = 20.6$, $SD = 2.3$). As previously discussed, Azadi, Farsani, Rizi, and Aroufzad (2013) asserted that the fundamental factors influencing the effectiveness of an organization were supervision/leadership and employee job satisfaction. Beavers (2010) concluded that that effective supervision was the most powerful predictor of overall job satisfaction. This study confirmed that supervision has a strong impact in job satisfaction among the radiologic sciences faculty as it ranked highest among the job satisfaction facets.

Coworkers ($M = 19.8$; $SD = 2.0$). Schulze (2006) conducted a study among higher education faculty and found academics generally were satisfied with their coworkers. Findings of this study support that claim. The coworker facet ranked second only to supervision. Compared to the U.S. norm ($M = 17.6$, $SD = 1.9$), the coworker variable ranked higher among the radiologic sciences faculty.

Nature of Work ($M = 19.0$, $SD = 1.8$). Results from a study conducted with healthcare educators employed in regionally accredited colleges through the U.S. found the majority of the health care faculty remained in academic positions due to the nature of work and their love of teaching (Legg, 2011). The nature of work facet ranked third among the satisfaction facets in this study and was consistent with the U.S. norm ($M = 19.2$, $SD = 2.0$). This suggests that since

radiologic sciences faculty are satisfied with the nature of their work, they are likely to remain in their faculty positions.

Communication ($M = 18.5$, $SD = 2.0$). Schulze (2006) reported that although higher education faculty were generally satisfied with their coworkers, communication among the coworkers ranked lowest on the satisfaction scale and highest on the dissatisfaction scale. Conversely, this study found that the communication facet ranked number 4 out of 9 on the satisfaction scale. Compared to the U.S. norm ($M = 15.1$, $SD = 2.2$) the satisfaction among radiologic sciences faculty ranked higher.

Benefits ($M = 17.5$, $SD = 2.4$). According to Spector (1997), the U.S. norm scores for satisfaction with benefits ($M = 14.4$, $SD = 2.6$) indicated ambivalence or inconsistency. Undie and Passmore (2010) found radiologic sciences faculty were somewhat satisfied with their benefits package. In comparison, findings of this study indicate radiologic sciences faculty are satisfied with their benefits.

Contingent Rewards ($M = 15.2$, $SD = 2.7$). Brewer and Landers (2003) compared contingent rewards satisfaction among higher education faculty in industrial and technical fields to the U.S. norm and found both groups were satisfied. This study concluded that radiologic sciences faculty were also satisfied but ranked contingent rewards higher than the U.S. norm ($M = 13.7$, $SD = 2.3$).

Promotion ($M = 13.4$, $SD = 2.5$). Shields and Ward (2001) found that dissatisfaction with promotion opportunities had a stronger impact than workload or pay. According to Kostea (2010), having received a promotion in the past two years leads to increased job satisfaction, even when controlling for salary. In addition, workers who believe a promotion is possible in the next two years also report higher job satisfaction. This study found that radiologic sciences

faculty are satisfied with promotion opportunities and ranked satisfaction with promotion higher than the U.S. Norm ($M = 12.0$, $SD = 2.0$).

Pay ($M = 13.3$, $SD = 2.7$). Salary disparity between academia and clinical practice has been cited as one of the major hindrances to hiring and retaining faculty in the radiologic sciences (Undie & Passmore, 2010). Findings of this study were consistent with a 2010 study conducted by Undie and Passmore. Radiologic sciences faculty were satisfied with their pay; however, pay ranked much lower than benefits package. Radiologic sciences faculty also ranked pay higher than the U.S. norm ($M = 12.6$, $SD = 2.5$).

Operating Procedures ($M = 12.3$, $SD = 2.1$). Undie and Passmore (2010) reported that radiologic science faculty were somewhat satisfied with operating procedures. The findings of this study also indicated that radiologic sciences faculty were somewhat satisfied with operating procedures. However, they indicated less satisfaction with operating procedures when compared to the U.S. norm. .

Job Satisfaction Predictors

A multiple regression was conducted for total job satisfaction as well as an additional nine regressions for each of the job satisfaction dimensions. The null hypotheses for this study appear below, followed by discussion of each result.

1. There is no statistically significant difference in total job satisfaction between radiologic sciences faculty in JRCERT accredited programs based on the demographic variables.

Based on the regression results, only faculty job role ($\beta = .17$, $p < .05$) and salary greater than \$75,000 ($\beta = .24$, $p < .01$) were significant predictors of job satisfaction explaining 14% of the variation in overall job satisfaction. Therefore the null hypothesis was rejected. As discussed earlier, the literature indicates that job role is a highly significant predictor of job

satisfaction among academics and that job satisfaction increases as the job level increases.

Therefore, it was expected that job role would be significant in this study. Additionally, it was expected that salary would be a predictor of job satisfaction since Undie and Passmore (2010) cited that salary disparity between academia and clinical practice as one of the major hindrances to hiring and retaining faculty in radiologic sciences programs.

2. There is no statistically significant difference in the pay dimension of job satisfaction based on the demographic variables.

Based on the regression results, 22% of variation in pay was explained by those having greater than 15 years of teaching ($\beta = -.28, p < .05$), salaries of \$20,000-\$40,000 ($\beta = -.14, p < .05$), and salaries of greater than \$75,000 ($\beta = .38, p < .001$). Thus, the null hypothesis was rejected. Pay has an expressive meaning in that it is used by many as a major indicator of worth and status. Therefore, as years of experience adds to the value of an employee, the pay to retain the employee increases (Schmidt, 2003). As such, longevity and higher salaries explaining 22% of the variation in the pay dimension in this study is not remarkable. Fifty-two percent indicated they had been teaching in the radiologic sciences for more than 15 years and 47% earned salaries more than \$75,000.

3. There is no statistically significant difference in the promotion dimension of job satisfaction based on the demographic variables.

Based on the regression results age greater than 55 ($\beta = -.99, p < .01$), greater than 15 years of teaching ($\beta = .79, p < .05$), and salary greater than \$75,000 ($\beta = .20, p < .05$) were predictors of job satisfaction explaining 13% of variation in the promotion dimension. As such, the null hypothesis was rejected. As previously discussed, 77% of participants in this study indicated they were program directors, 52% indicated they had been teaching in the radiologic

sciences for more than 15 years and 47% earned salaries more than \$75,000. According to Legg (2011), those in program director job roles were typically promoted after being in the clinical/didactic faculty job role for a number of years. Thus, it is expected that these variables would be predictors of job satisfaction particularly in the promotion dimension.

4. There is no statistically significant difference in the supervision dimension of job satisfaction based on the demographic variables.

Based on the regression results, 9% of variation in the supervision dimension was explained by faculty job role ($\beta = .12, p < .05$), and salary greater than \$75,000 ($\beta = .14, p < .05$). Therefore, the null was rejected. In a study conducted with nuclear medicine, radiology and radiation therapy faculty, Beaver (2010) found supervision to be the highest contributor to job satisfaction. While incentives can play a role in motivation, when the costs of the incentives are not feasible, employers start to investigate non-financial and non-status motivational strategies such as leadership behavior. Leadership behavior, or supervision, can be the key to understanding employee motivation and job satisfaction. It is believed this is the mere fact that most employees deal with their leaders on a daily basis, while the potential rewards of pay systems are usually uncertain and long-term in nature (Schmidt, 2003). This could explain why when the supervision dimension of job satisfaction is considered, as in this study, job role and salary become important factors. Those in certain job roles may deal more with their leaders on a daily basis. In addition, salary may no longer be a motivator for those in the higher salary ranges. As such, these two demographic variables can have a significant effect on the supervision dimension of job satisfaction.

5. There is no statistically significant difference in the benefits dimension of job satisfaction based on the demographic variables.

Based on the regression results, approximately 12% of the variation in the benefits dimension was explained by salary greater than \$75,000 ($\beta = .16, p < .05$). As such, the null hypothesis was rejected. In 2007, just prior to the economic downturn, Smerek and Peterson did not find satisfaction with benefits to be a significant predictor of overall job satisfaction at a large university. However, it is possible that the recent economic downturn has increased the importance of the satisfaction with benefits facet in comparison to when Smerek and Peterson (2007) performed their research. From a practical standpoint, it is common for those with higher salaries to have better benefit packages as well. As such, it makes sense that the variation in the benefits dimension in this study was explained by the higher salary range.

6. There is no statistically significant difference in the contingent rewards dimension of job satisfaction based on the demographic variables.

Based on the regression results, approximately 10% of the variation in the contingent reward dimension was explained by salaries greater than \$75,000 ($\beta = .23, p < .01$) and faculty age greater than 55 ($\beta = .19, p < .05$). Therefore, the null hypothesis was rejected. It has been shown that there is a positive relation between contingent rewards and job satisfaction. The perception and expectation of opportunities to obtain performance based rewards leads to more committed and satisfied faculty. It has also been found that individuals who perceive a lack of procedural equity with the reward system are more likely to exhibit feelings of dissatisfaction and lack of commitment (Haak & Tachiki, 2004). According to Clark & Ma (2005), the perceptions and expectations of younger faculty are likely to vary dramatically from that of senior faculty. Based on the differences in perceptions and expectations, it was not surprising to find that there was significance found in the contingent rewards dimension of job satisfaction in this study explained by age greater than 55 and salary greater than \$75,000.

7. There is no statistically significant difference in the operating procedures dimension of job satisfaction based on the demographic variables.

Based on the regression results, age less than 35 years ($\beta = -.19, p < .001$), age greater than 55 years ($\beta = -.14, p < .001$), white race ($\beta = .19, p < .05$), black race ($\beta = .10, p < .001$), other race ($\beta = -.06, p < .001$), less than 5 years of teaching ($\beta = .02, p < .001$), more than 15 years of teaching ($\beta = .01, p < .001$), program director job role ($\beta = .06, p < .001$), and faculty job role ($\beta = .24, p < .001$) were predictors of job satisfaction explaining approximately 13% of variation in the operating procedures dimension of job satisfaction. Therefore, the null hypothesis was rejected. Research findings indicate that there is significant potential for institutions to plan for the expected faculty generational turnover especially if institutions realize what operating conditions promote job satisfaction (Clark & Ma, 2005). As previously discussed however, faculty expectations can vary dramatically. Therefore, it is not unusual that the findings of this study show that there are a number of demographic variables that account for the difference in the operating conditions dimension of job satisfaction.

8. There is no statistically significant difference in the coworkers dimension of job satisfaction based on the based on the demographic variables.

Based on the regression results, approximately 8% of the variance in the coworker dimension was explained by the faculty job role ($\beta = .17, p < .05$). Therefore, the null hypothesis was rejected. Research supports the importance of coworkers relations as an antecedent of job satisfaction. Experts say that healthy relationships at work are key to job satisfaction. Many people spend more time with their coworkers than with their spouses or families making getting to know colleagues as an important aspect of the job (Wicker, 2011). Coworkers can often be an important source of information for employees seeking advice, instruction or help when they are

unsure of what to do. Coworkers can often provide information to support or discourage certain activities. This can be particularly useful for reducing uncertainty about one's expected role within the organization. Additionally, coworker support can reduce both role conflict (directly conflicting tasks) and role overload (excessive demands given the amount of resources) (Allen, 2014). As such, it is not surprising that the faculty job role accounts for a variance in the coworker dimension of job satisfaction in this study.

9. *There is no statistically significant difference in the nature of work dimension of job satisfaction based on the demographic variables.*

Based on the regression results, age less than 35 years ($\beta = .11, p < .001$), age greater than 55 years ($\beta = .12, p < .001$), white race ($\beta = -.02, p < .001$), black race ($\beta = .07, p < .001$), other race ($\beta = -.10, p < .001$), less than 5 years of teaching ($\beta = -.158, p < .001$), more than 15 years of teaching ($\beta = -.13, p < .001$), program director job role ($\beta = .011, p < .001$), faculty job role ($\beta = .01, p < .001$), salary \$20,000 - \$40,000 ($\beta = -.03, p < .001$), and salary greater than \$75,000 ($\beta = .15, p < .001$) were predictors of job satisfaction, explaining approximately 7% of the variation in the nature of job dimension of job satisfaction. Therefore, the null hypothesis was rejected. According to Locke (1976), there should be clear policies and strategies in the organization which makes it easy for employees to understand their tasks and objectives because otherwise it may lead toward dissatisfaction. Multiple demographic factors accounted for the variance in the nature of job dimension of job satisfaction in this study validating Locke's ideology that the nature of the job is important to employees regardless of the different age, race, years of teaching, job role and salary groups.

10. *There is no statistically significant difference in the communication dimension of job satisfaction based on the demographic variables.*

Based on the regression results the greater than \$75,000 salary dimension ($\beta = .16, p < .05$) of job satisfaction explained 8% of variation in the communications dimension of job satisfaction. As such, the null hypothesis was rejected. Studies have shown that the connection between communication satisfaction and job satisfaction to be fairly strong. Particularly, those in leadership roles have been shown to experience both increased job satisfaction and work motivation through quality communication (Kusluvan, 2003). According to Else (2014), those in academic leadership roles, particularly, department heads/directors, earned higher salaries than lecturers/didactic faculty. Therefore, it makes sense that 8% of the variance in the communications dimension of job satisfactions was explained by those earning greater than \$75,000.

Important Findings

The purpose of this study was to generalize from a representative sample of radiologic sciences faculty to the population so that inferences could be made about their job satisfaction. Findings indicated that radiologic sciences faculty across the U.S. are generally satisfied with their jobs. It is important to note that a large portion of faculty were greater than 55 years old, had been teaching for more than 15 years, and earned a salary greater than \$75,000. These findings could indicate that job satisfaction increases with age, years of teaching, and increased salary; signifying that longevity in the workplace is associated with increased job satisfaction.

Because job satisfaction is inversely associated with turnover (Medina, 2012), this study validated the need to understand the factors that influence job satisfaction among radiologic sciences faculty. There were two important findings from this research. First, the demographic data supported the concern that there is a looming shortage of radiologic sciences faculty. In 2006, AEIRS found that 75% of educators were older than 45 years and 42% expressed interest

in retiring. However, no current studies were identified for comparison that demonstrated whether faculty eligible for retirement over the past nine years did indeed retire. Also, job satisfaction of this group had not been recently evaluated.

Job satisfaction factors specific to the younger faculty should also be carefully considered. The largest most comprehensive global generational study ever conducted into the attitudes of “Millennial” employees found that in order to foster a greater sense of commitment among Millennials (those born between 1980 and 1995 and currently under 33 years of age) it will be necessary to transform the core dynamics of the workplace. These include: workplace culture, communication and work styles, compensation and career structure, career development, and opportunities and work/life balance. The study revealed that work/life balance is one of the most significant drivers of employee retention and a primary reason this generation of employees may choose a non-traditional professional career track. In addition, Millennials value greater flexibility, appreciation, team collaboration and global opportunities. Just as notable, however, are the widespread similarities between Millennials and their non-Millennial counterparts all of whom aspire to a new workplace paradigm that places higher priority on work/life balance and workplace flexibility (PwC, 2013).

Second, of all nine job satisfaction facets considered, the faculty job role and salary greater than \$75,000 were the only consistent significant predictors of overall job satisfaction. Legg (2011) found faculty who are placed in job roles without proper training to be one of the biggest factors contributing to job dissatisfaction. Simon and Media (2015) also asserted that those placed in job roles that lack adequate challenges trigger morale issues. When such conditions go unresolved, job dissatisfaction affects retention. As such, cross-training should be considered as one way to stimulate job satisfaction. Cross-training increases the knowledge base

and helps faculty become more efficient. Teamwork also increases as faculty work together mentoring coworkers involved in the training process. It is also important to note that placing faculty in positions that match their skills, abilities and interest is critical. Those who do not find work intellectually challenging are often bored and disengaged. Screening faculty based not only on their qualifications, but on their interest level in performing the work aids in job satisfaction.

Due to a number of factors, (budget constraints, etc.) increasing job satisfaction by increasing salary may not be possible. As such, alternative methods of compensation may warrant attention. Although the radiologic sciences faculty indicated satisfaction with their salary, the group with the highest salary satisfaction are the most likely to retire soon.

Recommendations for Policy and Practice

This study provided information about the total and facet-specific job satisfaction among radiologic sciences faculty. The results from this research can provide insight and inform the practice of college and university officials regarding factors that contribute to faculty job satisfaction. Communication of the findings of this research could have far-reaching implications for the radiologic sciences profession. Recommendations for policy and practice include the following:

Succession planning. The literature indicates that colleges and universities have been slow to embrace corporate America's approach to formal succession planning. Officials at some institutions have challenged the idea that succession planning is not needed in higher education. They consider the high costs of employee turnover and lost productivity as new faculty get oriented to the organization's culture, processes, and people. Why not offer staff and faculty opportunities to advance their own skills and knowledge to assume leadership positions across campus (Patton, 2013)? As discussed earlier, Shields and Ward (2001) found dissatisfaction

with promotion opportunities have a stronger impact than workload or pay. Therefore, leadership development programs and assigned mentors who encourage the faculty to explore opportunities should be made part of the culture of academia, particularly in the radiologic sciences (Legg, 2011; Patton, 2013).

Identifying potential educators. Findings of this study indicate radiography programs need technologists in the pipeline to fill faculty positions that will soon be vacated due to retirements. Current faculty should pay attention to students and technologists who show potential for academia. Students who are tutor other classmates, serve as class officers, arrive early, stay late, try the hardest and volunteer as lab assistants may be good candidates. Technologists who are interested in teaching students in the clinical setting and may volunteer to be the clinical instructor may also be viable choices. In any case, program directors and/or faculty should be having conversations with these students and technologists and encouraging them to pursue careers in education.

Guest lecturer opportunities. Providing opportunities for guest lecturing is one way to involve potential faculty members. Students and/or technologists may be invited to do a one hour lecture to a current group of students. They can develop a presentation on a topic they feel comfortable discussing or a topic they want to research and know more about. Presentation opportunities are also available through the radiologic sciences professional organizations. This could also be a preparatory option for potential faculty candidates.

Adjunct teaching opportunities. One of the best ways for potential faculty to “test the waters” in education is to teach a class as an adjunct instructor. This provides experience as an educator with low risk as courses can be taught on-line or in the evening without interfering with

their current employment. Additionally, they can try different areas of expertise to determine which courses best fit their knowledge, skills, abilities, and experience.

Faculty incentives. Due to the looming faculty shortage, colleges and universities may need to consider offering incentives for potential new faculty. The incentives can be financial or non-financial. Financial incentives can take many forms including salary, one-time lump-sum payments, teaching/research assist support, funding to attend meetings, professional development opportunities. Non-financial incentives can also have many forms including leave of absence, team teaching and group projects, interdisciplinary research opportunities, and recognition (Levine & Bell, 2008).

Transitional mentoring. Legg (2011) suggested that if better efforts were made, initially, to prepare new healthcare educators through orientation, and mentoring, they could be better prepared for their new academic career. They could then be in better positions to provide effective education and thus, produce stronger, more competent healthcare graduates. These graduates, in turn, could provide a higher quality of care to patients in the clinical setting.

Tuition and degree cost assistance. New accreditation standards require minimum degree levels for faculty (JRCERT, 2014). Didactic faculty must have a minimum of a bachelor degree and program directors are now required to hold a Master's degree. This has put an added strain financially on faculty who were interested in advancement but were not financially able to afford the college expense. Many faculty chose to leave the profession rather than pursue higher degrees. In addition, potential new educators were deterred for the same reason. In addition to being a job satisfaction promoter, tuition assistance could be used as an effective recruitment and retention tool.

Periodic surveys. Faculty surveys should be administered periodically. Analysis of the feedback could identify areas of satisfaction and dissatisfaction. Areas of satisfaction are reasons for celebration and can be communicated to all stakeholders with pride and ultimately enhance the reputation of the institution. Areas of dissatisfaction are signals for change. Committees can be formed with the assignment to develop action plans that will resolve problem areas if at all possible.

Young recruits. Radiologic sciences programs should purposely look to hire some young diverse faculty. Recent graduates should be considered as they are already familiar with the program culture, policies and procedures, and other faculty. In addition, they may already have ideas how to make program improvements.

Flexibility. As previously discussed, flexibility is a major job satisfaction driver, particularly for the younger workforce. As younger faculty have, or intend to have, young families, being flexible with work schedules, on-line classes, and working from home are just a few ways to cater to their needs.

Leadership styles. This study provides some insights for leaders, who should realize the importance of the job facets used in this study, which can enhance their faculty's level of job satisfaction. Leaders should consider ways to enhance job facets such as supervision, coworkers, nature of work, communication, benefits, contingent rewards and promotion. As well they should improve the other job facets that lead to the lowest levels of job satisfaction such as salary and operating conditions. Recognizing where the lowest levels of job satisfaction lie can help to direct improvement.

In order to direct improvement, leaders need to obtain more knowledge about leadership styles that can help them to develop their personal approach. Two types of leadership styles,

namely, transactional and transformational have been found to have direct relationships with employees' job satisfaction. Research study findings indicate that a transactional leadership style provides high satisfaction compared to transformational leadership style (Wu, 2009; Epitropaki & Martin, 2005). On the contrary, another study showed that the impact of transformational leadership style on followers' performance and innovation was more than transactional leadership style (Boerner, Eisenbeiss & Griesser, 2007). In any case, these leadership styles have been found to correlate positively with overall job satisfaction (Felfe & Schyns, 2006).

Recommendations for Future Research

This study was conducted using the JSS developed by Spector (1997) to identify job satisfaction factors of radiologic sciences faculty. As surveys are structured instruments, there was an inability to probe responses which might be insightful and could be gained through a qualitative study. It is recommended that a qualitative study be conducted using Gappa, Austin, and Trice's (2007) conceptual framework of essential elements of the faculty work experience.

As previously discussed, it is a useful tool to sort, categorize, and measure the factors that compose and contribute to faculty work experience and corresponding job satisfaction. The framework highlights the importance of key elements of faculty work: equity, academic freedom and autonomy, flexibility, professional growth, and collegiality in every appointment type. Each of the essential elements stands as a separate attribute of faculty work, but the elements also interact with each other. Taken together, the essential elements provide a road map for strategic actions administrators and faculty can take to improve their academic work environments, enhance meaningfulness and satisfaction for faculty members, and strengthen institutional excellence. When these components of job satisfaction are expressed in institutional policies and

practices, the probability of attracting and retaining faculty who are committed to the mission of the university, their students, and the surrounding community is significant (Romig, Maillet & Denmark, 2010).

While radiologic sciences was not identified specifically in Gappa, Austin, and Trice's (2007) literature review, their higher education framework parallels many important factors identified in the radiologic science faculty job satisfaction literature. For example, some of the elements that radiologic sciences faculty identified as influencing job satisfaction included degree of autonomy, financial rewards, institutional support, opportunity for creativity and growth, respect, decision-making, recognition of professional status and compensation (Association of Educators in Imaging and Radiologic Sciences [AEIRS], 2008; Undie & Passmore, 2010).

This study identified only two job satisfaction factors that were significant in predicting overall job satisfaction –job role and salary. As such, it is recommended that these areas be further studied. Salary may not be easily addressed, but other areas of compensation may be plausible for consideration. Finally, based on the findings that the majority of radiologic sciences faculty are Baby Boomers, it is recommended that future studies be conducted to determine if a difference exists with respect to job satisfaction between the Baby Boomers and the Generation Xers.

Conclusion

The findings of this study show that radiologic sciences faculty are generally satisfied with their jobs. A close view of specific job facets indicates the highest satisfaction levels occur in supervision, coworkers, nature of work and communication. The lowest level of satisfaction occurs with operating conditions and salary.

With the current shortage of radiologic sciences faculty predicted to increase in the near future, identifying factors that promote faculty retention are of utmost significance. College and university administrators should focus their efforts on ensuring they provide the necessary conditions to encourage recruitment of those who will remain in academia long term and help alleviate the healthcare faculty shortage in the radiologic sciences.

References

- Adams, J.S. (1963). Toward and understanding of inequity. *Journal of Abnormal and Social Psychology*, 67 (5), 422-436.
- Adkins, C.L., Werbel, J.D., & Farh, J. (2001). A field study of job insecurity during a financial crisis. *Group & Organization Management*, 26 (4), 463-483.
- Alderfer, C.P. (1972). *Existence, relatedness and growth; Human needs in organizational settings*. New York: Free Press.
- Allen, E. (2014). How does coworker support influence organization outcomes? *The DeGarmo Group*. Retrieved from <http://www.degarmogroup.com/index.php/how-does-coworker-support-influence-organizational-outcomes/>
- American Association of Colleges of Nursing. (2012, August 6). Nursing shortage. Retrieved from <http://www.aacn.nche.edu/media-relations/fact-sheets/nursing-shortage>
- American Association of Colleges of Nursing. (2014, January 21). Nursing shortage fact sheet. *American Association of Colleges of Nursing*. Retrieved from <http://www.aacn.nche.edu/media-relations/NrsgShortageFS.pdf>
- American Society of Radiologic Technologists. (2005). *Enrollment snapshot of radiography, radiation therapy and nuclear medicine technology programs – 2005*. Retrieved from <http://www.asrt.org/docs/default-source/research/2005.pdf>
- American Society of Radiologic Technologists. (2013a). *Enrollment snapshot of radiography, radiation therapy and nuclear medicine technology programs – 2013*. Retrieved from <http://www.asrt.org/docs/default-source/research/2013.pdf?sfvrsn=0>
- American Society of Radiologic Technologists. (2013b). *Radiologic technologist wage and salary survey 2013*. Retrieved from http://www.asrt.org/docs/default-source/research/r13_wagesalarysurvey.pdf?sfvrsn=2

- Aronson, K.R., Laurenceau, J., Sieveking, N., & Bellet, W. (2005). Job satisfaction as a function of job level. *Administration and Policy in Mental Health*, 32(3). Retrieved from DOI: 10.1007/s10488-004-0845-2
- Association of American Medical Colleges. (2009). The aging of full-time U.S. medical school faculty: 1967-2007. *Analysis* 9, (4). Retrieved from aamc.org
- August, L. & Waltman, J. (2004). Culture, climate, and contribution: Career satisfaction among female faculty. *Research in Higher Education* 45 (2), 177-192
- Awamleh, N. (1996). Organizational commitment of civil service managers in Jordan: A field study. *Journal of Management Development*, 15(5), 65-74.
- Azadi, A., Farsani, E., Rizi, R., Aroufzad, S. (2013). *Relationship between organizational culture and organizational learning among employees in physical education organizations*. European Journal of Sports and Exercise Science. 2(1). Retrieved from <http://scholarsresearchlibrary.com/EJSES-vol2-iss1/EJSES-2013-2-1-12-16.pdf>
- Babbie, E. (1990). *Survey research methods* (2nd ed.), Belmont, CA: Wadsworth
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press: New York.
- Bass, B. M. (1998). *Transformational leadership: Industry, military, and educational impact*. Mahwah, NJ: Erlbaum.
- Bass, B., & Riggio, R.E. (2006). *Transformational Leadership* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Beavers, G. S. (2010). *The predictive value of selected extrinsic and intrinsic indicators of overall job satisfaction in diagnostic radiological technology, radiation therapy, and nuclear medicine technology allied health faculty* (Doctoral dissertation, The University

- of North Carolina at Greensboro). Retrieved from
http://libres.uncg.edu/ir/uncg/f/Beavers_uncg_0154D_10519.pdf
- Beazley, H., Boenisch, J. & Harden, D. (2002). *Continuity management: Preserving corporate knowledge and productivity when employees leave*. Hoboken, NJ: Wiley Publishers.
- Bender, K. & Heywood, J. (2006). Job satisfaction of the highly educated: The role of gender, academic tenure, and comparison income. *Scottish Journal of Political Economy*. 53 (2), 253-279.
- Bentler, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246. doi: 10.1037//0033-2909.107.2.238
- Berlin, L.E. & Sechrist, K.R. (2002). The shortage of doctorally prepared nursing faculty: A dire situation. *Nursing Outlook*, 50 (2), 50-56.
- Besen, E., Matz-Costa, C., Brown, M., Smyer, M., & Pitt-Catsoupes, M. (2013). Job characteristics, core self-evaluations, and job satisfaction“ What’s age got to do with it? *Journal of Aging and Human Development*, 76(4), 269-295.
<http://dx.doi.org/http://dx.doi.org/10.2190/AG.76.4.a>
- Bickel, J., & Brown, A. (2005, March). Generation X: Implications for faculty recruitment and development in academic health center. *Journal of the Association of American Medical Colleges*, 80(3), 205-210. Retrieved from
http://journals.lww.com/academicmedicine/Abstract/2005/03000/Generation_X__Implications_for_Faculty_Recruitment.3.aspx
- Blackburn, R., & Lawrence, J. (1995). *Faculty at work: motivation, expectation, satisfaction*. Baltimore: The Johns Hopkins University Press.

- Boerner, S., Eisenbeiss, S., & Griesser, D. (2007). Follower behavior and organizational performance: The impact of transformational leaders. *Journal of Leadership and Organizational Studies*, 13(3), 15-26.
- Boeve, W. D. (2007). *A national study of job satisfaction factors among faculty in physician assistant education* (Doctoral dissertation). Retrieved from <http://commonc.emich.edu/theses>
- Bower, B. L. (2001, Summer). Distance education: Facing the faculty challenge. *Online Journal of Distance Learning Administration*, IV(11). Retrieved from <http://www.westga.edu/~distance/ojdla/summer42/bower42.html>
- Bozeman, B., & Gaughan, M. (2011, March/April). Job satisfaction among university faculty; Individual, work, and institutional determinants. *Journal of Higher Education*, 82(2). Retrieved from https://muse.jhu.edu/journals/journal_of_higher_education/v082/82.2.bozeman.html
- Brady, M. S. (2007). Recruitment and retention of associate degree nursing faculty. *Journal of Nursing Education*, 46(4), 190-192.
- Brown, G.; Gardner, J.; Oswald, A.; & Qian, J. (2007). Does wage rank affect employees'
- Brewer, E.W. & Landers, J. (2003). Job satisfaction among industrial and technical teacher educators. *Journal of Industrial Teacher Education*, 40 (2). Retrieved from <http://scholar.lib.vt.edu/ejournals/JITE/v40n2/brewer.html#isaac>
- Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In: Bollen, K. A. & Long, J. S. (Eds.) *Testing Structural Equation Models*. pp. 136–162. Beverly Hills, CA: Sage

- Bureau of Labor Statistics. (2014). *Occupational Outlook Handbook*. Retrieved from <http://www.bls.gov/ooh/healthcare/radiologic-technologists.htm#tab-6>
- Burns, J. M. (1978). *Leadership*. New York: Harper & Row.
- Callister, R.R. (2006). The impact of gender and department climate on job satisfaction and intentions to quit for faculty in science and engineering fields. *Journal of Technology Transfer*. 31,367-375.
- Campbell, D. (2011). Diversity and job satisfaction: Reconciling conflicting theories and findings. *International Journal of Applied Management and Technology*, 10 (1) 1-15. Retrieved at doi: 10.5590/IJAMT.2011.10.1.01
- Carey, W.P. (2007). *A few good professors: U.S. business schools suffer a dearth of doctorates*. Arizona State University School of Business. Retrieved from <http://knowledge.wpcarey.asu.edu/pdf.cfm?aid=627>
- Chen, K. J. & Chen, S. I. 2008. Personal traits and leadership styles of Taiwan's higher educational institution in innovative operations. *Journal of American Academy of Business*, Cambridge, 12 (2), 145-150.
- Clark A., Oswald, J. & Warr, P. (1996, 2011). Is job satisfaction is U-shaped in age ? *Journal of occupational Psychology*. 69, 57-81. doi: 10.1111/j.2044-8325.1996.tb00600.x
- Clark, L. W., & Waltzman, D. E. (1993). *Faculty and student challenges in facing cultural and linguistic diversity*. Washington, DC: ERIC Clearinghouse on Higher Education.
- Clark, A.E. (1997). Job satisfaction and gender: Why are women so happy at work? *Labor Economics*, 4, 341-372.
- Clark, R.L., & Ma, J. (2005). *Recruitment, retention, and retirement in higher education: Building and managing the faculty of the future*. Northampton, Massachusetts: Edward

- Elgar Publishing, Inc. Retrieved from
<https://books.google.com/books?id=7i7S9mzM2EAC&pg=PA94&dq=perceptions+of+younger+faculty+vs+older+faculty&hl=en&sa=X&ei=j2UuVYfUFsmIsQS5lYHoDA&ved=0CD8Q6AEwBg#v=onepage&q=perceptions%20of%20younger%20faculty%20vs%20older%20faculty&f=false>
- Cornell University Provost's Advisory Committee on Faculty Work Life. (2006).
 Understanding faculty satisfaction. *Cornell University, Institutional Research and Planning*. Retrieved from www.dpb.cornell.edu/documents/1000369.pdf
- Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). *Job satisfaction: How people feel about their jobs and how it affects their performance*. New York: Lexington Books.
- Creswell, J.W. (2009). *Research design qualitative, quantitative and mixed methods approaches*. Thousand Oaks, CA: Sage
- Dante's Woods, (2014). *Why adjuncts can't replace full-time faculty*. Retrieved from <http://danteswoods.com/2014/05/29/why-adjuncts-cant-replace-full-time-faculty/>
- Davis, J. (2003). *Learning to lead*. Westport, CT: American Council on Education/Praeger.
- Diaz-Serrano, L. & Cabral Vieira, J.A. (2005). *Low pay, higher pay and job satisfaction within the European Union: Empirical evidence from fourteen countries*. IZA Discussion Papers No. 1558, Institute for the Study of Labour (IZA). Retrieved from <http://ideas.repec.org/p/iza/izadps/dp1558.html>
- Dolan, S. & Gosselin E. (2000). Job satisfaction and life satisfaction: Analysis of a reciprocal model with social demographic moderators. *Journal of Economics Literature Classification*. D23, J20, J28. Retrieved from <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0>

CCwQFjAB&url=http%3A%2F%2Fwww.researchgate.net%2Fpublication%2F37762794_Job_Satisfaction_and_Life_Satisfaction_Analysis_of_a_Reciprocal_Model_with_Social_Demographic_Moderators%2Ffile%2F9c9605283d93876d7a.pdf&ei=KsEyVN7nPNekyASAlOKAAG&usg=AFQjCNEHv3Y-AsfwYbsxzrrLEykRRQIxbg&sig2=9xzh7tk-RYXolavRfdBtQ&bvm=bv.76802529,d.aWw

- Dur, R. & Sol, J. (2009). Social interaction, co-worker altruism, and incentives. *Discussion Paper No. 4532. Institute for the Study of Labor*. Retrieved from [www. repec.iza.org](http://www.repec.iza.org)
- Dyson, S. L., Greene, S. B., & Fraher, E. P. (2004). A shortage of health information management professionals: How would we know?. *Journal of Allied Health*, 33(3), 167-174.
- Elwood, T. W. (2007). The future of healthcare in the United States. *Journal of Allied Health*, 36(1), 3-11.
- Egan, T. M., Yang, B., & Bartlett, K. R. (2004, Fall). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly*, 15(3). Retrieved from <http://search.proquest.com/docview/234904324?accountid=30659>
- Elangovan, A. R. (2001). Causal ordering of stress, satisfaction and commitment, and intention to quit: A structural equations analysis. *Leadership & Organization Development Journal*, 22 (4), 159-166.
- Epitropaki, O., & Martin, T. (2005). The moderating role of individual differences in the relation between transformational/transactional leader-ship perceptions and organizational identification. *Leadership Quarterly Journal*, 16(4), 569-589.

European Foundation for the Improvement of Living and Working Conditions. (2007).

Measuring job satisfaction in surveys -Comparative analytical report. Retrieved from

<http://www.eurofound.europa.eu/ewco/reports/TN0608TR01/TN0608TR01.pdf>

Evans, S., Eliot, M., Hood, J., Driggs, M, Mori, A., and Johnson, T. (2005, Fall). *Assessing the*

special education faculty shortage: The crisis in California – A statewide study of the

professoriate. Teachers and Teacher Education Research: A Publication of the

California Council on Teacher Education, 32.

Fairweather, J. (2002). The mythologies of faculty productivity: Implications for institutional

policy and decision making. *The Journal of Higher Education*, 73, 26-48. Retrieved from

<http://www.questia.com/library/journal/1G1-83314414/the-mythologies-of-faculty-productivity-implications>

Falk, N. L. (2007). Strategies to enhance retention and effective utilization of aging

nursing faculty. *Journal of Nursing Education*, 46(4), 165-169.

Felfe, J. & Schyns, B. 2006. Personality and the perception of transformational leadership: The

impact of extraversion, neuroticism, personal need for structure, and occupational self-efficacy.

Journal of Applied Social Psychology, 36, 708–41.

Ferrell, N., James, D., & Holland, C. (2014). The nursing shortage: exploring the situation and

solutions. Retrieved from <http://www.minoritynurse.com/article/nursing-shortage-exploring-situation-and-solutions>

Fields, A. (2013). *Discovering statistics using IBM SPSS statistics.* Thousand Oaks, California:

Sage Publications.

Fields, D. L. (2002). *Taking the measure of work: A guide to validated scales for organizational*

research and diagnosis. Thousand Oaks, California: Sage Publications.

- Finkelstein, M.J. & Schuster, J.H. (2001). Assessing the silent revolution: How changing demographics are reshaping the academic profession. *AAHE Bulletin*, 54 (2), 3-7.
- Fowler, F.J. (2002). *Survey research methods* (3rd ed.). Thousand Oaks, CA: Sage
- Gappa, J.M. & Austin, A.E. (2010). Rethinking academic traditions for twenty-first-century faculty. *AAUP Journal of Academic Freedom*. Retrieved from <http://www.aaup.org/sites/default/files/files/JAF/2010%20JAF/Gappa.pdf>
- Gappa, J. M., Austin, A. E., & Trice, A. G. (2005, Nov/Dec). Rethinking academic work and workplaces. *Change*, 37.6, 32-29. Retrieved from <http://search.proquest.com.proxy.southcollegetn.edu:2048/docview/208049135?accountid=30659>
- Gappa, J.M., Austin, A.E., & Trice A.G. (2007). *Rethinking faculty work: Higher education's strategic imperative*. San Francisco, CA: Jossey-Bass.
- Gaziogly, S. & Tansel, A. (2006). Job satisfaction in Britain: individual and job related factors. *Applied Economics* 38, 1163-1171.
- Giese, J. & Cote, J. (2000). Defining consumer satisfaction. *Department of Marketing, Washington State University*. Retrieved at <http://www.amsreview.org/articles/giese01-2000.pdf>
- Giordano, S. (2004). Remedying an educator shortage. *Radiologic Technology*. 75 (6), 471-472.
- Gironda, M. W., Bibb, C. A., Lefever, K., Law, C., & Messadi, D. (2013, March 1). A program to recruit and mentor future academic dentists: Successes and challenges. *Journal of Dental Education*, 77, 292-299. Retrieved from <http://www.jdentaled.org/content/77/3/292.full?sid=c5527ecf-a8a8-44a9-8552-1a73171c70dd>

Gormley, D. K. (2003). Factors affecting job satisfaction in nursing faculty; A meta-analysis.

Journal of Nursing Education, 42(4), 174-178.

Gourley, D. R., Rowell, C., Wingate, L., Yates, C. R., Gourley, G. K., Miller, D. D., & Vleet, V.

(2006, April 15). Status of PharmD/PhD programs in colleges of pharmacy: The

University of Tennessee dual PharmD/PhD program. *American Journal of*

Pharmaceutical Education, 70(2), 44. Retrieved from

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1636914/>

Green, J. (2000). *Job satisfaction of community college chairpersons* (Doctoral dissertation,

Virginia Polytechnic Institute and State University). Retrieved from

<http://scholar.lib.vt.edu/theses/available/etd-12072000-130914/unrestricted/JGreen.pdf>

Gruenberg, M. M. (1979). *Understanding job satisfaction*. New York: Macmillan.

Haak, R., & Tachiki, D.S. (2004). *Regional strategies in a global economy*. Druck: Kessler

Verlagsdruckerei, Bobingen: Germany. Retrieved from

[https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+](https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroGQAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent%20rewards&f=false)

[satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-](https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroGQAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent%20rewards&f=false)

[&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroG](https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroGQAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent%20rewards&f=false)

[QAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent](https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroGQAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent%20rewards&f=false)

[%20rewards&f=false](https://books.google.com/books?id=qcBT98hOi40C&pg=PA257&lpg=PA257&dq=job+satisfaction+and+contingent+rewards&source=bl&ots=3NopldotD-&sig=l3LqkS7bDGyCLaFMNZ7jObHT4zQ&hl=en&sa=X&ei=j1ouVbiXAU7jsATTroGQAQ&ved=0CFUQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20contingent%20rewards&f=false)

Hackman, J.R. & Oldham, G.R. (1975). *Development of the Job Diagnostic Survey*. Journal of

Applied Psychology, 60.

Hackman, J.R. & Oldham, G.R. (1976). Motivation through the design of work: Test of a

theory. *Organizational Behavior and Human Performance*, 16, 250-279.

Hagedorn, L. S. (2000). Conceptualizing faculty job satisfaction: Components, theories, and

- outcomes. *New Directions for Institutional Research*, 2000(105), 5-20.
- Hanover Research, (2012). *Assessing faculty and staff satisfaction*. Retrieved from <http://www.uaa.alaska.edu/institutionaleffectiveness/upload/Assessing-Faculty-and-Staff-Satisfaction-University-of-Alaska-Anchorage-2.pdf>
- Hargreaves, A. (2001). The emotional geographies of teachers' relations with colleagues. *International Journal of Educational Research*, 35(5), 503-527. [http://dx.doi.org/10.1016/S0883-0355\(02\)00006-X](http://dx.doi.org/10.1016/S0883-0355(02)00006-X)
- Hawkins, J. (2001). Addressing the shortage of radiologists. *Radiology Management*, Jul-Aug; 23(4), 26-28
- Hemmasi, M., Graf, L. A., & Lust, J. A. (1992). Correlates of pay and benefit satisfaction: The unique case of public university faculty. *Public Personnel Management*, 21(4), 429-443.
- Herzberg, F. (1966). *Work and the nature of man*. New York, NY: Thomas Y. Crowell Publishers.
- Herzberg, F., Mausner, B., & Snyderman, B. (1959). *The motivation to work*. New York, NY: Wiley & Sons.
- Hessler, K. & Ritchie, H. (2006). Recruitment and retention of novice faculty. . *Journal of Nursing Education*, 45(5), 150-154. Retrieved from <http://europepmc.org/abstract/MED/16722496/reload=0;jsessionid=o4MjDbK9xjCZc7NxxzgM.10>
- Higher Education Research Institute (2005). *Assessment report: HERI faculty survey 2004-2005*. Retrieved from <http://www.scranton.edu/pir/institutional-research/institutional-survey-reports/2005-faculty-survey-report-heri.pdf>

Hilton, L. (2003). Eye on educators: Now you see 'em... ASRT Scanner, 36(2), 8-

11.

Hinshaw, S. (2001). A continuing challenge: The shortage of educationally prepared nursing

faculty. *The Online Journal of Issues in Nursing*, 6. Retrieved from

<http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume62001/No1Jan01/ShortageofEducationalFaculty.aspx>

Hirtz, P. D., Murray, S. L., & Riordan, C. A. (2007). The effects of leadership on quality.

Engineering Management Journal, 19 (1), 22-27.

Hoppock, R. (1935). *Job satisfaction*. New York: Harper Brothers.

House, R., Hanges, P., Javidan, M., Dorfman, P., & Gupta, V. (2004). *Culture, leadership and organizations*. Beverly hills, CL: Sage Publications Inc.

Howard, J. L., & Frick, D. D. (1992). The effects of organizational restructure on employee satisfaction. *Group and Organizational Management*, 21(3), 278.

Howell, D.C., (2007). *Statistical methods for psychology* (6th ed.). Belmont, CA: Thomson Wadsworth Publishers.

Huang, T., & Hsiao, W. (2007). The casual relationship between job satisfaction and job organizational commitment. *Social Behavior and Personality*, 35(9), 1265-1276.

<http://dx.doi.org/10.2224/sbp.2007.35.9.1265>

Huberts, L. W., Kaptein, M., & Lasthuizen, K. (2007). A study of the impact of three leadership styles on integrity violations committed by police officers. *Policing: An International Journal of Police Strategies & Management*, 30 (4), 587-607.

Huck, S. (2012). *Reading statistics and research* (6th ed.). Boston, MA: Pearson

- Hult, C, Callister, R.R., & Sullivan, K. (2005). Is there a global warming toward women in academia? *Liberal Education*, 91, 50-57
- Human Resource Council, (2008). Job satisfaction and employee retention: What's the connection? *Trends and Issues*. Retrieved from http://www.hrcouncil.ca/documents/LMI_satisfaction_retention.pdf.
- Isaac, S., & Michael, W.B. (1990). *Handbook in research evaluation* (2nd ed.). San Diego, CA: EdITS Publishers.
- Ironson, G., Smith, P., Brannick, M., Gibson, M., & Paul, K. (1989). Construction of a job in general scale: A comparison of global, composite, and specific measures. *Journal of Applied Science*, 74, 193-200. Retrieved from http://www.academia.edu/3281274/Construction_of_a_job_in_general_scale_A_comparison_of_global_composite_and_specific_measures
- Jaschik, S. (2008). Racial gaps in faculty job satisfaction. *Inside Higher Ed*. December 5. Retrieved at www.highered.com.
- Johnson, J. J., & McIntye, C. L. (1998). Organizational culture and climate correlates of job satisfaction. *Psychological Reports*, 82(3), 843-850. <http://dx.doi.org/10.2466/pr0.1998.82.3.843>
- Johnson, Gina Marie. (2011). A consideration of issues related to the confirmatory factor analysis of the evaluation use and evaluation involvement scales. Retrieved from the University of Minnesota Digital Conservancy, <http://purl.umn.edu/108011>.
- Joint Review Committee on Education in Radiologic Technology (JRCERT). (2014). Retrieved from www.jrcert.org

- Judge, T. A., Piccolo, R. F., Podsakoff, N. P., Shaw, J. C., & Rich, B. L. (2010, October). The relationship between pay and job satisfaction: A meta-analysis of the literature. *Journal of Vocational Behavior*, 77(2), 157-167. <http://dx.doi.org/10.1016/j.jvb/2010.04.002>
- Kezar, A. (1999). *Higher education trends (1997-1999): Faculty*. Washington, DC: ERIC Clearinghouse on Higher Education.
- Kifle, T. & Desta, I. (2012). Gender differences in domains of job satisfaction: Evidence from doctoral graduates from Australian universities. *Economic Analysis & Policy*. 42 (3). Retrieved at www.eap-journal.com
- Knudsen, H. K., Johnson, J. A., & Roman, P. M. (2003). Retaining counseling staff substance abuse treatment centers; effects of management practices. *Journal of Substance Abuse Treatment*, 24(2), 129-135. [http://dx.doi.org/10.1016/S0740-5472\(02\)00357-4](http://dx.doi.org/10.1016/S0740-5472(02)00357-4)
- Kosteas, V. (2010). Job satisfaction and promotions. *Journal of Economy and Society*. 50 (1). Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-232X.2010.00630.x/abstract>
- Kuslivan, S. (2003). *Managing employee attitudes and behaviors in the tourism and hospitality industry*. Hauppauge, NY: Nova Science Publishers, Inc. Retrieved from https://books.google.com/books?id=eQp1t_IHgzwC&pg=PA360&dq=the+connection+of+job+satisfaction+and+communication&hl=en&sa=X&ei=wf8uVe_YEsfvsAXBjIG4CQ&ved=0CCcQ6AEwAA#v=onepage&q=the%20connection%20of%20job%20satisfaction%20and%20communication&f=false
- Lambert, E. G., Hogan, N. L., & Barton, S. M. (2001). The impact of job satisfaction on turnover intent: A test of a structural measurement model using a national sample of workers. *The*

Social Science Journal, 38(2), 233-250. [http://dx.doi.org/10.1016/S0362-3319\(01\)00110-0](http://dx.doi.org/10.1016/S0362-3319(01)00110-0)

- Lee, T., Gerhart, B., Weller, I., & Trevor, C. (2008). Understanding voluntary turnover: Path specific job satisfaction effects and the importance of unsolicited job offers. *Academy of Management Journal*, 51(4), 651-671. Retrieved from <http://content.ebscohost.com/pdf9/pdf/2008/AMJ/01Aug08/33665124.pdf?T=P&P=AN&K=33665124&S=R&D=buh&EbscoContent=dGJyMMv17ESeprE4y9fwOLCmr0yep69Sr624TbOWxWXS&ContentCustomer=dGJyMPGqtkmxqrFNuePfgex43zx>
- Legg, L. D. (2011). *From healthcare provider to healthcare educator: Strategies for effective transition* (Doctoral dissertation, University of Tennessee Chattanooga). Retrieved from <http://scholar.utc.edu/cgi/viewcontent.cgi?article=1045&context=theses>
- Leslie, D.W. & Janson, N. (2005). *Phasing away: How phased retirement works for college faculty and their institutions*. Report for the Alfred P. Sloan Foundation.
- Levine, A. & Bell, J. (2008). *Faculty incentives pilot*. University of Minnesota President's Excellence in Leadership Program. Retrieved at <http://www1.umn.edu/ohr/pel/projects/facinent/index.html>
- Lindholm, J.A., Szelenyi, K., Hurtado, S., & Korn, W.S. (2005). *The American college teacher; National norms for the 2004-2005 HERI faculty survey*. Los Angeles: Higher Education Research Institute, UCLA.
- Locke, E. (1976). *The nature and causes of job satisfaction*. Chicago: Rand McNally.
- Locke, E.A., Kirkpatrick, S., Wheeler, J.K., Schneider, J., Niles, K., Goldstein, H., Welsh, K. & Chah, D. (1999). *The essence of leadership: the four keys to leading successfully*. New York: Lexington Books.

- Long, A. (2005). Happily ever after? A study of job satisfaction in Australia. *The Economic Record*, 81, 303-321.
- Lyons, K. J. (2007). Building allied health research. *Journal of Allied Health*, 36(2), 61-62.
- Lyons, K. J., Lapin, J., & Young, B. (2003). A study of job satisfaction of nursing and allied health graduates from a mid-Atlantic university. *Journal of Allied Health*, 32(1), 10-18.
- Magner, D. K. (1999, September 3). The graying professoriate. *Chronicle of Higher Education*, 46, A18-A19. Retrieved from <http://eric.ed.gov/?id=EJ593350>
- Majeski, J. (2004). The educator shortage. *Access*, 18(9), 16-22.
- Mannheim, B., Baruch, Y. and Tal, J.: (1997). Alternative models for antecedents and outcomes of work centrality and job satisfaction of high-tech personnel. *Human Relations*, 50(2), 1537-1562.
- MacKinnon, J. L. & Leighton, R. D. (2002). Physical therapist student interest in fulltime faculty positions. *Journal of Allied Health*, 31(2), 70-77.
- Marston, S. H., & Brunetti, G. J. (2001). Job satisfaction of experienced professors at a liberal arts college. *Education*, 130(2). Retrieved from http://web.wilkes.edu/jennifer.edmonds/MBA_513/job%20satisfaction.pdf
- Maslow, A. H. (1954). *Motivation and Personality*. New York, New York: Harper & Row Publishers.
- McClelland, D.C. (1987). *Human Motivation*. New York, New York: Cambridge University Press.

- Medina, E. (2012). *Job satisfaction and employee turnover intention: What does organizational culture have to do with it?* (Doctoral dissertation, Columbia University). Retrieved from <http://qmss.columbia.edu/storage/Medina%20Elizabeth.pdf>
- Miia, M., Nicole, H., Karlos, A., Jaakko, K., & Ali, J. (2006). Project-based management as an organizational innovation: Drivers, changes and benefits of adopting project-based management. *Project Management Journal*, 37 (3), 87-96.
- Mitchell, T., & Larson, J. R. (1987). *People in organizations: An introduction to organizational behavior* (3rd ed.). New York, New York: McGraw- Hill.
- Montgomery, D. C., Peck, E. A. and Vining, G. G. (2001). *Introduction to Linear Regression Analysis*. 3rd Edition, New York, New York: John Wiley & Sons.
- Moorman, R. H. (1993, June). The influence of cognitive and affective based job satisfaction measures on the relationship between satisfaction and organizational citizenship behavior. *Human Relations*, 46, 759-778. Retrieved from <http://search.proquest.com.proxy.southcollegetn.edu:2048/docview/231418045?accountid=30659>
- Morris, B. J. (2006). Radiation therapy program directors' salaries. *Radiation Therapist*, 15(2), 107-112.
- Mosadegh Rad, A. M., & Yarmohammadian, M. H. 2006. A study of relationship between managers' leadership style and employees' job satisfaction. *Leadership in Health Services*, Vol. 19, No. 2, pp. xi-xxviii.
- Moskowitz, M. (2007). Academic health center CEOs say faculty shortages major problem. *Association of Academic Health Centers*. Retrieved from http://www.aahcdc.org/policy/reddot/aahc_faculty_shortages.pdf

- Mueller, C. (2012). *A multidimensional perspective of faculty mentoring and job satisfaction during the first year of teaching at Lindenwood University* (Doctoral dissertation, Lindenwood University). Retrieved from <http://www.lindenwood.edu/r2p/docs/Mueller.pdfintl.com/227-3-responsibilities-of-strategic-leadership/>
- Nagy, M. (2002). Using a single-item approach to measure facet job satisfaction. *Journal of Occupational and Organizational Psychology*, 75, 77-86.
<http://dx.doi.org/10.1348/096317902167658>
- Nandan, D. R., & Krishna, K. S. (2013, July 1). Determinants of job satisfaction of faculty in higher education. *The Indian Journal of Industrial Relations*, 49(1). Retrieved from http://content.ebscohost.com.proxy.southcollegetn.edu:2048/pdf29_30/pdf/2013/H0N/01Jul13/91555252.pdf?T=P&P=AN&K=91555252&S=R&D=buh&EbscoContent=dGJyMNHX8kSeprY4y9fwOLCmr0yep7JJSay4SLKWxWXS&ContentCustomer=dGJyMPGqtkmxqrFNuePfgeyx43zx
- National Association of State Directors of Career Technical Education Consortium. (2010). *A look inside: A synopsis of CTE trends*. Retrieved from <http://www.ode.state.or.us/wma/teachlearn/cte/cte-stem-teacher-shortage.pdf>
- Northouse, G. (2007). *Leadership theory and practice*. (3rd ed.), 65-66. Sage, Thousand Oaks, CA.
- Northouse, P. G. (2010). *Leadership, theory and practice* (5th ed.). Sage, Thousand Oaks, CA.
- Nguyen, A.N., Taylor, J. and Bradley, S. (2003). *Relative pay and job satisfaction: Some new*

- evidence*. Working Paper 045, Department of Economics, Lancaster University Management School, Retrieved from <http://www.lums.lancs.ac.uk/publications/viewpdf/000187/>
- Obiwuru Timothy C., Okwu, Andy T and Akpa, Victoria O. (2011). Effects of leadership style on organizational performance: A survey of selected small scale enterprises in IKOSI-IKETU council development area of Lagos State, Nigeria. *Australian Journal of Business and Management Research*. 1 (1), 100-111.
- Oshagbemi, T. (2000). Correlates of pay satisfaction in higher education. *The International Journal of Educational Management*. 14, 31-39.
- Patton, C. (2013). Higher ed succession planning: Who will follow the leader? *University Business*. Retrieved from <http://www.universitybusiness.com/article/higher-ed>.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Pew Research Center. (2014). Methodology. Retrieved from <http://www.people-press.org/methodology/>
- Physician Assistant Education Association. (2006). An educator in the PA profession: A good place to be. PAEA Networker. Retrieved May 18, 2006, from <http://www.paeonline.org/networker/0506Networker/0506Glick.html>
- PwC. (2013). *The nextgen: A global generational study*. Retrieved from http://www.pwc.com/en_GX/gx/hr-management-services/pdf/pwc-nextgen-study-2013.pdf
- Rahn, D. W., & Wartman, S. A. (2007, November 2). For the health-care work force, a critical prognosis. *The Chronicle of Higher Education*. Retrieved from

http://www.aahcdc.org/policy/For_the_Health-Care_Work_Force_a_Critical_Prognosis.pdf

Ricketta, M. (2008). The casual relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology*, 93(2), 472-481.

<http://dx.doi.org/10.1037/0021-9010.93.2.472>

Romig, B., Maillet, J., & Denmark, R. (2010). *Factors affecting allied health faculty job satisfaction*. Retrieved from

<http://search.proquest.com.proxy.southcollegetn.edu:2048/docview/887255400/fulltextPDF/D9EBD05A18634D70PQ/1?accountid=30659>

Rose, M. (2001). *Disparate measures in the workplace; Quantifying overall job satisfaction*.

Paper presented at the BHPS Research Conference, Colchester. Retrieved from

<http://www.iser.essex.ac.uk/bhps/2001/docs/pdf/papers/rose.pdf>

Rosser, V. J. (2004). Faculty members' intentions to leave: A national study on their work-life and satisfaction. *Research in Higher Education*, 45(3), 285-309.

Rothenberg, B. & Korn, A. (2008). The opportunities and challenges posed by the rapid growth of diagnostic imaging. *Journal of American College of Radiology*. 2, 407-410. Retrieved from http://www.medsolutions.com/clinical_quality/facts/PIIS154614400500058X.pdf

Roznowski, M. (1989). Examination of the measurement properties of the job descriptive index with experimental items. *Journal of Applied Psychology*, 74, 805-814. Retrieved from http://content.ebscohost.com.proxy.southcollegetn.edu:2048/pdf14_16/pdf/1989/JAY/01Oct89/6239473.pdf?T=P&P=AN&K=6239473&S=R&D=buh&EbscoContent=dGJyMNHX8kSeprY4y9fwOLCmr0yep7BSs6y4TLsWxWXS&ContentCustomer=dGJyMPGqtkmxqrFNuePfgeyx43zx

- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54-67.
<http://dx.doi.org/10.1006/ceps.1999.1020>
- Saari, L. & Judge, T. (2004). Employee attitudes and job satisfaction. *Human Resources Management*. 43 (4), 395-407. Retrieved at
<http://www.utm.edu/staff/mikem/documents/jobsatisfaction.pdf>
- Sabharwal, M. & Corley, E. (2009). *Faculty job satisfaction across gender and discipline*. The Social Science Journal (46), 539-556.
- Sanz de Galdeano, A. (2002). Gender differences in job satisfaction in labour market participation: UK evidence from propensity score estimates. Mimeo; European University Institute, Florence.
- Scarpello, V., & Campbell, J. P. (1983, August). Job satisfaction: Are all the parts there? . *Personnel Psychology*, 36(3), 577-600. Retrieved from <http://eric.ed.gov/?id=EJ291076>
- Schmidt, C. (2003). *Schmidt Labor Research Center*. University of Rhode Island. Retrieved from <http://www.uri.edu/research/lrc/scholl/webnotes/Satisfaction.htm>
- Schneider, B., & Reichers, A. (1983, March). On the etiology of climates. *Personal Psychology*, 36(1), 19-39. [http://dx.doi.org/DOI: 10.1111/j.1744-6570.1983.tb00500.x](http://dx.doi.org/DOI:10.1111/j.1744-6570.1983.tb00500.x)
- Schulze, S. (2006). Factors influencing the job satisfaction of academics in higher education. *SAJHE*, 20(2), 318-335. Retrieved from
http://uir.unisa.ac.za/bitstream/handle/10500/190/ar_schulze_factorsinfluencing.pdf
- Seagren, A. T., Wheeler, D.W., Creswell, A. T., Miller, M. T., & Van-Horn Grassmeyer, K. (1994). Academic leadership in community colleges. Lincoln, NE: University of Nebraska Press.

- Eyupoglu, S.Z. & Saner, T. (2009). The relationship between job satisfaction and academic rank: a study of academicians in Northern Cyprus. *Procedia – Social and Behavioral Sciences*, (1)1, 686-691. Retrieved from doi: 10.1016/j.sbspro.2009.01.120
- Settles, I. H., Cortina, L. M., Stewart, A. J. & Malley, J. (2007, April). The role of voice in buffering the impact of a negative climate for academic women scientists. In K. Miner-Rubino, & L. M. Cortina, L. M. (Chairs), *Organizations behaving badly: Factors affecting women's well-being at work*. Symposium presented at the 2007 meeting of the Society for Industrial and Organizational Psychology, New York, NY.
- Sias, P. (2012, April). Maintaining workplace friendships: Perceived politeness and predictors of maintenance tactic choice. *Communication Research*, 39, 239-268.
<http://dx.doi.org/10.1177/0093650210396869>
- Shields, M. and Ward, M. (2001). Improving nurse retention in the National Health Service in England: The impact of job satisfaction on intentions to quit. *Journal of Health Economics*, 20, 677-701.
- Simon, J. & Media, D. (2015). What is the role of job satisfaction on retention? *Houston Chronicle*. Retrieved from <http://work.chron.com/role-job-satisfaction-retention-10376.html>
- Sims, H. P., Szilagyi, A. D., & Keller, R. T. (1976, June 1). The measurement of job characteristics. *Academy of Management Journal*. Retrieved from <http://eds.b.ebscohost.com.proxy.southcollegetn.edu:2048/eds/pdfviewer/pdfviewer?vid=11&sid=c205bb1b-e875-457b-a350-87db52a2248a%40sessionmgr110&hid=107>
- Sivanathan, N., & Fekken, G. C. (2002). Emotional intelligence, moral reasoning and transformational leadership. *Leadership and Organization Development Journal*, 23 (3/4), 198-204.

- Sloane, P.J. & Williams, H. (2000). Job satisfaction, comparison earning and gender. *Labour*, 14, 473-502.
- Smerek, R.E., & Peterson, M. (2007). Examining Herzberz's theory: Improving job satisfaction among non-academic employees at a university. *Research I higher Education*, 48 (2), 229-250.
- Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement: A strategy for the study of attitudes*. Chicago: Rand-McNally.
- Society of Human Resource Management. (2008). *Employee Benefits*. Retrieved from <http://www.shrm.org>
- Sousa-Posa, A. & Sousa-Posa, A.A. (2003). Gender differences in job satisfaction Great Britain 1991-2000: Permanent or transitory? *Applied Economic Letters*. 10, 691-694.
- Southern Regional Education Board. (2003). *SREB Study indicates serious shortage of nursing faculty*. Retrieved from http://publications.sreb.org/2003/02N03-Nursing_Faculty.pdf
- Spears, L. C., & Lawrence, M. (2003). *Focus on Leadership: Servant-leadership for the Twenty first Century*. San Francisco: Jossey Bass.
- Spector, P. E. (1985, December 13). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. *American Journal of Community Psychology*, 13, 693-713. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/4083275>
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, consequences*. Thousand Oaks, California: Sage Publications.
- Starnes-Ott, K. & Kremer, M. J. (2007). Recruitment and retention of nurse anesthesia faculty: Issues and strategies. *AANA Journal*, 75(1), 13-16.

- Stotz, R. & Bolger, B. (2009). Content and process theories of motivation. *The Incentive Marketing Association*. Retrieved from <http://c.ymcdn.com/sites/www.incentivemarketing.org/resource/resmgr/imported/Sec%201.4.pdf>.
- Swafford, L. G., & Legg, J. S. (2009). Determinants of job satisfaction among radiation therapy faculty. *Journal of Allied Health*, 38(3). Retrieved from <http://www.questia.com/library/journal/1P3-1878252481/determinants-of-job-satisfaction-among-radiation-therapy>
- Syptak, M. J., Marsland, D. W., & Ulmer, D. (1999, Oct 6). Job satisfaction: Putting theory into practice. *Family Practice Management*, 9, 26-30. Retrieved from <http://www.aafp.org/fpm/1999/1000/p26.html>
- Tack, M.W., Patitu, C.L. (1992). *Faculty job satisfaction: Women and minorities in peril*. ASHE-ERIC higher education report no. 4. Washington, DC: Association for the study of higher education.
- Taylor, F. (1911). *The Principles of Scientific Management*. New York and London: Harper and Brothers.
- Trossman, S. (2002). Who will be there to teach? Shortage of nursing faculty a growing problem. *The American Nurse*, 21-23
- Trotman, C., Bennett, E., Scheffler, N., & Tulloch, J. (2002, March). Faculty recruitment, retention, and success in dental academia. *American Journal of Orthodontics & Dentofacial Orthopedics*, 122(1), 2-8. Retrieved from [http://www.ajodo.org/article/S0889-5406\(02\)00028-8/abstract](http://www.ajodo.org/article/S0889-5406(02)00028-8/abstract)

- Trower, C.A., & Bleak, J.L. (2004). Study of new scholars. *Gender: Statistical Report [Universities]*. Cambridge MA: Harvard Graduate School of Education. Retrieved from <http://www.gse.harvard.edu/news/features/trower04122004.pdf>
- Umbach, P. D., & Wawrzynski, M. R. (n.d.). *Faculty do matter: the role of college faculty in student learning and engagement*. Retrieved from http://nsse.iub.edu/pdf/research_papers/faculty_do_matter.pdf
- Undie, W., & Passmore, G. (2010, April). The educational challenge of faculty workforce shortage in radiologic sciences: an empirical finding. *Radiologic Science and Education*, 15, 3 - 11.
- U.S. Department of Education. (2004). *Digest of educational statistics*. NCES Publication No. 2004-331. Washington, D.C.
- U.S. Department of Health and Human Services. (2005). *2005 Fifth annual report to the secretary of the U.S. department of health and human services and to the congress*. Washington, D.C.
- Van Saane, N., Verbeek, M., Sluiter, J., & Frings-Dresen, W. (2003). Reliability and validity of instruments measuring job satisfaction - a systematic review. *Occupational Medicine*, 53, 191-200. <http://dx.doi.org/10.1093/occmed/kqg038>
- Veldman, I., Tartwijk, J., Brekelmans, M., & Wubbels, T. (2013). Job satisfaction and teacher student relationships across the teaching career: Four case studies. *Teaching and Teacher Education*. 32, 55-56. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0742051X13000085>
- Vogt, W.P. (2005). *Dictionary of statistics & methodology: a nontechnical guide for the social sciences* (third edition). Thousand Oaks, California: Sage Publishing.

- Vito, M. (2007). *The impact of faculty -student interaction outside of the classroom on faculty satisfaction, engagement, and retention* (Doctoral dissertation, Northern Arizona University). Retrieved from <http://studentaffairs.arizona.edu/faculty/fellows/files/MelissaVitoDissertation.pdf>
- Voon, M.L, Lo, M.C, Ngui, K.S. & Ayob, N.B. (2011). The influence of leadership styles on employees' job satisfaction in public sector organizations in Malaysia. *International Journal of Business, Management, Social Services*, 2 (1), 24-32.
- Vroom, V. H. (1963). *Work and motivation*. San Francisco, CA: Jossey-Bass.
- Vroom, V.H. (1982). *The productivity of work groups*. Ann Arbor, MI: Institute for social Research Publishing Company.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82, 247-252. <http://dx.doi.org/doi:10.1037/0021-9010.82.2.247>
- Watanabe, M. (2010). *Gender and race differences in job satisfaction and commitment among STEM faculty: The influence of network integration and work-family balance*. (Doctoral dissertation, University of Nebraska-Lincoln. Retrieved from www.digitalcommons.unl.edu
- Weiss, D., Dawis, R., England, G., & Lofquist, L. (1967). *Manual for the Minnesota Satisfaction Questionnaire*. Minneapolis: University of Minnesota: Industrial Relations Center.
- White, A. (2008). *An examination of Virginia Soil and Water Conservation District employee satisfaction*. (Doctoral dissertation, Virginia Polytechnical Institute and State University. Retrieved from <http://scholar.lob.vt.edu/theses/available/etd004102008-083411/unrestricted/WhiteADissertation.pdf>

Ladder to Retention July 2004 Imaging Economics.htm

Wicker, D. (2011). *Are you satisfied with your job? Job satisfaction: fact or fiction.*

Bloomington, IN: AuthorHouse. Retrieved from

<https://books.google.com/books?id=NKMSa->

[G0FzMC&pg=PA49&dq=job+satisfaction+and+coworkers&hl=en&sa=X&ei=v-](https://books.google.com/books?id=NKMSa-G0FzMC&pg=PA49&dq=job+satisfaction+and+coworkers&hl=en&sa=X&ei=v-wuVc_fMLK1sASz_YD4Cw&ved=0CEYQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20coworkers&f=false)

[wuVc_fMLK1sASz_YD4Cw&ved=0CEYQ6AEwBg#v=onepage&q=job%20satisfactio](https://books.google.com/books?id=NKMSa-G0FzMC&pg=PA49&dq=job+satisfaction+and+coworkers&hl=en&sa=X&ei=v-wuVc_fMLK1sASz_YD4Cw&ved=0CEYQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20coworkers&f=false)

[n%20and%20coworkers&f=false](https://books.google.com/books?id=NKMSa-G0FzMC&pg=PA49&dq=job+satisfaction+and+coworkers&hl=en&sa=X&ei=v-wuVc_fMLK1sASz_YD4Cw&ved=0CEYQ6AEwBg#v=onepage&q=job%20satisfaction%20and%20coworkers&f=false)

Worrell, T. G. (2004). *School psychologists' job satisfaction: ten years later* (Doctoral dissertation, Virginia Polytechnic Institute and State University). Retrieved from

[http://scholar.lib.vt.edu/theses/available/etd-05252004-](http://scholar.lib.vt.edu/theses/available/etd-05252004-122551/unrestricted/Travisdiss.pdf)

[122551/unrestricted/Travisdiss.pdf](http://scholar.lib.vt.edu/theses/available/etd-05252004-122551/unrestricted/Travisdiss.pdf)

Wright, T. A., & Bonnett, D. G. (1992, November). The effect of turnover on work satisfaction and mental health: Support for a situational perspective. *Journal of Organizational Behavior*, 13(6).

Wu, F. (2009). The Relationship between leadership styles and foreign English teachers job satisfaction in adult English cram schools: Evidences in Taiwan. *The Journal of American Academy of Business*, 14(2), 75-82.

Younes, M. (2012). *Job satisfaction and work performance: A case study of the American University in Cairo*. (Doctoral dissertation, American University in Cairo School of Global Affairs and Public Policy. Retrieved from

http://dar.aucegypt.edu/bitstream/handle/10526/3129/May_Ramy_Thesis%20.....

Yukl, G. A. (2005). *Leadership in organizations* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

APPENDICES

APPENDIX A
ON-LINE SURVEY INSTRUMENT

| JOB SATISFACTION SURVEY Paul E. Spector University of South Florida Copyright Paul E. Spector 1994, All rights reserved. | | | | | | | |
|--|---|-----------------------|------------------------|-------------------|----------------|---|---|
| PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT. | | Disagree very much | Disagree moderately | Disagree slightly | Agree slightly | | |
| 1 | I feel I am being paid a fair amount for the work I do. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2 | There is really too little chance for promotion on my job. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3 | My supervisor is quite competent in doing his/her job. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4 | I am not satisfied with the benefits I receive. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5 | When I do a good job, I receive the recognition for it that I should receive. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6 | Many of our rules and procedures make doing a good job difficult. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | I like the people I work with. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | I sometimes feel my job is meaningless. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9 | Communications seem good within this organization. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10 | Raises are too few and far between. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11 | Those who do well on the job stand a fair chance of being promoted. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | My supervisor is unfair to me. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13 | The benefits we receive are as good as most other organizations offer. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14 | I do not feel that the work I do is appreciated. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15 | My efforts to do a good job are seldom blocked by red tape. | 1 | 2 | 3 | 4 | 5 | 6 |
| 16 | I find I have to work harder at my job because of the incompetence of people I work with. | 1 | 2 | 3 | 4 | 5 | 6 |

| | | |
|----|---|---|
| 17 | I like doing the things I do at work. | 1 2 3 4 5 6 |
| 18 | The goals of this organization are not clear to me. | 1 2 3 4 5 6 |
| | <p>PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT.</p> <p>Copyright Paul E. Spector 1994, All rights reserved.</p> | <p>Disagree very much Disagree moderately Disagree slightly Agree slightly Agree moderately Agree very much</p> |
| 19 | I feel unappreciated by the organization when I think about what they pay me. | 1 2 3 4 5 6 |
| 20 | People get ahead as fast here as they do in other places. | 1 2 3 4 5 6 |
| 21 | My supervisor shows too little interest in the feelings of subordinates. | 1 2 3 4 5 6 |
| 22 | The benefit package we have is equitable. | 1 2 3 4 5 6 |
| 23 | There are few rewards for those who work here. | 1 2 3 4 5 6 |
| 24 | I have too much to do at work. | 1 2 3 4 5 6 |
| 25 | I enjoy my coworkers. | 1 2 3 4 5 6 |
| 26 | I often feel that I do not know what is going on with the organization. | 1 2 3 4 5 6 |
| 27 | I feel a sense of pride in doing my job. | 1 2 3 4 5 6 |
| 28 | I feel satisfied with my chances for salary increases. | 1 2 3 4 5 6 |
| 29 | There are benefits we do not have which we should have. | 1 2 3 4 5 6 |
| 30 | I like my supervisor. | 1 2 3 4 5 6 |
| 31 | I have too much paperwork. | 1 2 3 4 5 6 |
| 32 | I don't feel my efforts are rewarded the way they should be. | 1 2 3 4 5 6 |
| 33 | I am satisfied with my chances for promotion. | 1 2 3 4 5 6 |

| | PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT. Copyright Paul E. Spector 1994, All rights reserved. | Disagree very much 1 | Disagree moderately 2 | Disagree slightly 3 | Agree slightly 4 | Agree moderately 5 | Agree very much 6 |
|----|--|---------------------------|--------------------------|------------------------|---------------------|--------------------------|--------------------------|
| 34 | There is too much bickering and fighting at work. | 1 | 2 | 3 | 4 | 5 | 6 |
| 35 | My job is enjoyable. | 1 | 2 | 3 | 4 | 5 | 6 |
| 36 | Work assignments are not fully explained. | 1 | 2 | 3 | 4 | 5 | 6 |
| 37 | Please indicate your age. | Under 25 | | | | | <input type="checkbox"/> |
| | | 25-35 | | | | | <input type="checkbox"/> |
| | | 36-45 | | | | | <input type="checkbox"/> |
| | | 46-55 | | | | | <input type="checkbox"/> |
| | | 56-65 | | | | | <input type="checkbox"/> |
| | | >65 | | | | | <input type="checkbox"/> |
| 38 | Please indicate your gender. | Female | <input type="checkbox"/> | | Male | <input type="checkbox"/> | |
| 39 | Please indicate your race. | White | <input type="checkbox"/> | | Black | <input type="checkbox"/> | |
| | | Hispanic | <input type="checkbox"/> | | Other | <input type="checkbox"/> | |
| 40 | Please indicate the number of years of teaching in the radiologic sciences. | 1-5 | <input type="checkbox"/> | | | | |
| | | 6-10 | <input type="checkbox"/> | | | | |
| | | 11-15 | <input type="checkbox"/> | | | | |
| | | >15 | <input type="checkbox"/> | | | | |
| 41 | Please indicate your primary job role. | Program Director | | | | | <input type="checkbox"/> |
| | | Clinical Coordinator | | | | | <input type="checkbox"/> |
| | | Didactic/Clinical Faculty | | | | | <input type="checkbox"/> |

| | | |
|-----|--|---|
| 42. | Please select the region in which you are employed. | East North Central (WI, MI, IL, IN, OH) <input type="checkbox"/> South Atlantic (DE, MD, DC, VA, WV, NC, SC, GA, FL, PR) <input type="checkbox"/> Mid-Atlantic (NY, PA, NJ) <input type="checkbox"/> West North Central (ND, SD, NE, KS, NM, IA, MO) <input type="checkbox"/> West South Central (OK, TX, AR, LA) <input type="checkbox"/> Pacific (AK, WA, OR, CA, HI) <input type="checkbox"/> Mountain (ID, MT, WY, NV, UT, CO, AZ, NM) <input type="checkbox"/> |
| 43. | Please indicate your salary range. | \$20,000 - \$30,000 <input type="checkbox"/> \$31,000 - \$40,000 <input type="checkbox"/> \$41,000 - \$50,000 <input type="checkbox"/> \$51,000 - \$75,000 <input type="checkbox"/> More than \$75,000 <input type="checkbox"/> |
| 44. | In your opinion, what contributes most to the retention of faculty in the radiologic sciences? | |
| 45. | In your opinion, what would contribute most to the recruitment of technologists into academia? | |

APPENDIX B

INVITATION TO PARTICIPATE EMAIL

Dear Radiologic Sciences Faculty:

My name is Lisa Satterfield and I am engaged in the dissertation process of the Higher Education Administration Doctoral program at the University of Tennessee, Knoxville. I am writing to invite you to participate in a research study by completing a Job Satisfaction Survey. The purpose of this research study is to identify factors that influence job satisfaction among radiologic sciences faculty.

Below is a link to the survey that asks you questions about your level of job satisfaction as an educator. The survey should take 10-15 minutes to complete.

The information in the study records will be kept confidential and your identity will not be linked to your responses. Data will be stored securely and will be made available only to persons conducting the study. No reference will be made in oral or written reports which could link participants to the study.

The benefit of this research is that it will identify factors that will aide in recruitment and retention of radiologic sciences faculty.

If you have questions at any time about the study or the procedures, you may contact the researcher, Lisa Satterfield, at 3904 Lonas Drive, Knoxville, TN 37909 or by telephone at 865.251.1887. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at (865) 974-3466.

Your participation in this research study is voluntary; you may decline to participate without penalty. If you withdraw from the study before data collection is completed your data will be destroyed. Return of the completed survey constitutes your consent to participate.

I ask that you complete the survey within the next two weeks and **PLEASE** forward this email to all faculty members in your department so they have the opportunity to participate as well.

Thank you in advance for your willingness to participate – I really appreciate it!

You may click on the link below to start the survey.

<http://survey.southcollegetn.edu/TakeSurvey.aspx?SurveyID=l4K1mp32>

Lisa Satterfield

Doctoral Candidate

University of Tennessee, Knoxville

APPENDIX C
FOLLOW-UP EMAIL TO PARTICIPANTS

Dear Radiologic Sciences Faculty,

My name is Lisa Satterfield and I am engaged in the dissertation process of the Higher Education Administration Doctoral program at the University of Tennessee, Knoxville. Last week I sent you a request to participate in my research study regarding Radiologic Sciences Faculty Job Satisfaction. Thank you to all of you who have taken the time to complete the survey. I REALLY appreciate your time and participation!!

For those who have not yet had the opportunity to complete the survey, I am sending a reminder and the link to the survey. The survey asks you questions about your level of job satisfaction as an educator. The survey should take 10-15 minutes to complete. The information in the study records will be kept confidential and your identity will not be linked to your responses. No reference will be made in oral or written reports which could link participants to the study.

If you have questions at any time about the study or the procedures, you may contact the researcher, Lisa Satterfield, at 3904 Lonas Drive, Knoxville, TN 37909 or by telephone at 865.251.1887. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at (865) 974-3466.

Your participation in this research study is voluntary; you may decline to participate without penalty. Return of the completed survey constitutes your consent to participate.

Please forward this email to all faculty members in your department so they have the opportunity to participate as well.

Thank you in advance for your willingness to participate – I really appreciate it!

You may click on the link below to start the survey.

<http://survey.southcollegetn.edu/TakeSurvey.aspx?SurveyID=l4K1mp32>

Lisa Satterfield

Doctoral Candidate

University of Tennessee, Knoxville

APPENDIX D

CORRELATION RESULTS

Correlations

| | | Age | Gender | Race | Years_of_Teaching | Job_Role | Region | Salary |
|-------------------|---------------------|---------|--------|-------|-------------------|----------|--------|---------|
| Age | Pearson Correlation | 1 | .107 | -.008 | .623** | -.302** | .042 | .318** |
| | Sig. (2-tailed) | | .078 | .894 | .000 | .000 | .487 | .000 |
| | N | 275 | 271 | 271 | 273 | 272 | 273 | 269 |
| Gender | Pearson Correlation | .107 | 1 | .031 | .030 | -.049 | -.029 | .086 |
| | Sig. (2-tailed) | .078 | | .619 | .629 | .428 | .634 | .159 |
| | N | 271 | 271 | 267 | 269 | 268 | 269 | 267 |
| Race | Pearson Correlation | -.008 | .031 | 1 | .023 | -.096 | .011 | .013 |
| | Sig. (2-tailed) | .894 | .619 | | .706 | .118 | .856 | .828 |
| | N | 271 | 267 | 271 | 270 | 269 | 270 | 266 |
| Years_of_Teaching | Pearson Correlation | .623** | .030 | .023 | 1 | -.269** | .063 | .405** |
| | Sig. (2-tailed) | .000 | .629 | .706 | | .000 | .303 | .000 |
| | N | 273 | 269 | 270 | 273 | 271 | 272 | 268 |
| Job_Role | Pearson Correlation | -.302** | -.049 | -.096 | -.269** | 1 | -.005 | -.271** |
| | Sig. (2-tailed) | .000 | .428 | .118 | .000 | | .934 | .000 |
| | N | 272 | 268 | 269 | 271 | 272 | 271 | 267 |
| Region | Pearson Correlation | .042 | -.029 | .011 | .063 | -.005 | 1 | .016 |
| | Sig. (2-tailed) | .487 | .634 | .856 | .303 | .934 | | .799 |
| | N | 273 | 269 | 270 | 272 | 271 | 273 | 268 |
| Salary | Pearson Correlation | .318** | .086 | .013 | .405** | -.271** | .016 | 1 |
| | Sig. (2-tailed) | .000 | .159 | .828 | .000 | .000 | .799 | |
| | N | 269 | 267 | 266 | 268 | 267 | 268 | 269 |

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

APPENDIX E
INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

January 28, 2015

Lisa Marie Satterfield

UTK - College of Education, Health & Human Sciences

Re: UTK IRB-14-02038-XM

Study Title: Factors Affecting Job Satisfaction of Radiologic Sciences Faculty: Implications for Recruitment and Retention

Dear Ms. Satterfield:

The Administrative Section of the UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. The IRB determined that your application is eligible for **exempt** review under 45 CFR 46.101(b)(4). In accord with 45 CFR 46.116(d), informed consent may be altered, with the cover statement used in lieu of an informed consent interview. The requirement to secure a signed consent form is waived under 45 CFR 46.117(c)(2). Willingness of the subject to participate will constitute adequate documentation of consent. Your application has been determined to comply with proper consideration for the rights and welfare of human subjects and the regulatory requirements for the protection of human subjects. This letter constitutes full approval of your application version 1.6 for the above referenced study.

In the event that volunteers are to be recruited using solicitation materials, such as brochures, posters, web- based advertisements, etc., these materials must receive prior approval of the IRB.

Any alterations (revisions) in the protocol must be promptly submitted to and approved by the UTK Institutional Review Board prior to implementation of these revisions. You have individual responsibility for reporting to the Board in the event of unanticipated or serious adverse events and subject deaths.

Sincerely,



Colleen P. Gilrane, PhD

Chair

UTK Institutional Review Board

VITA

Lisa Marie Satterfield was born in Maryville, Tennessee to the parents of Willie Mae and Joe Lee Woods. She had one brother: Ronald Lee Woods. She attended Greenback High School in Greenback, Tennessee. After graduation, she attended Roane State Community College and graduated with an Associate of Science degree in Radiologic Technology. She began working in the radiologic sciences profession and became certified in radiography, mammography, nuclear medicine, and radiology administration. She later earned a Bachelor of Science Degree in Organizational Management from Tusculum College and began working in healthcare management. She continued her education and earned a Master of Arts degree in Adult Education from Tusculum College and began working in higher education as an imaging sciences educator at South College in Knoxville, Tennessee. Ten years later, she pursued a career in higher education administration at South College. After working in healthcare and higher education for 27 years, she is currently pursuing a Doctor of Philosophy degree in Higher Education Administration from the University of Tennessee Knoxville.