

EXPLORING THE RELATIONSHIP BETWEEN CONTINUING PROFESSIONAL
EDUCATION AND JOB SATISFACTION FOR INFORMATION TECHNOLOGY
PROFESSIONALS IN HIGHER EDUCATION.

Sandra M. Bennett, B.S. E.E., M. A. Ed

A Dissertation Prepared for the Degree of
DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

2005

Approved:

Jeff Allen, Major Professor and Program Coordinator
of Applied Technology, Training and
Development

Donna Ledgerwood, Minor Professor

Roger Ditzenberger, Committee Member

Bill Elieson, Interim Chair of Department of
Technology and Cognition

M. Jean Keller, Dean of the College of Education

Sandra L. Terrell, Dean of the Robert B. Toulouse
School of Graduate Studies

Running Head: JOB SATISFACTION

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF ILLUSTRATIONS.....	viii
Chapter	
1. INTRODUCTION.....	1
Need for the Study	
Theoretical Framework	
Purpose of Study	
Research Hypotheses	
Delimitations	
Limitations	
Summary	
2. REVIEW OF LITERATURE	13
Continuing Professional Education (CPE)	
Studies Using the Participation Reason Scale (PRS)	
Job Satisfaction	
Studies Using the Job Descriptive Index (JDI) and Job in General Scale (JIG)	
Contribution of This Study	
Summary	
3. METHODOLOGY	28
Research Hypotheses	
Research Design	
Population	
Sample	
Instrumentation	
Data Collection Procedures	
Pilot Study	
Data Analysis	
Summary	

RESULTS	41
Purpose of Study	
Participants in the Study	
Instrumentation	
Data Assessment	
Data Analysis	
Further Assessment	
Summary	
4. DISCUSSION AND CONCLUSIONS	59
Introduction	
Summary of Study	
Discussion of Results	
Limitations of Results	
Implications for Higher Education IT Managers	
Suggestions for Further Research	
Conclusions	
APPENDIX	75
REFERENCES	95

LIST OF TABLES

Table	Page
1. Factors Associated With Herzberg’s Two-Factor Motivation Theory	6
2. The Five Factors of Continuing Professional Education.....	18
3. Definitions of Job Satisfaction	21
4. The Five Facets of Job Satisfaction.....	25
5. Coefficient Alpha (α) Values for the JDI and JIG	35
6. Demographic Frequencies of Participant’s Gender, Education Level, Residential Region, and Institution Type	42
7. Basic Participant Demographics Associated to Age, Time Working Professionally, and Time on Current Job.....	42
8. Summary Data of Main Variables.....	44
9. Rank Order of PRS Reasons (N=215)	46
10. Correlation Between Number of CPE Hours and Overall Job Satisfaction for Managers	47
11. Correlation Between Number of CPE Hours and Overall Job Satisfaction for Non-Managers.....	48
12. Mean Rank Comparison of Managers and Non-Managers to the JIG scale.....	49
13. Mean Rank Comparison of Reason for Attending CPE for Managers and Non-Managers.....	49
14. Correlation Between Number of CPE Hours and JDI Subscales for Managers	51

15. Correlation Between Number of CPE Hours and JDI Subscales for Non-Managers.....	52
16. Rotated Component Matrix for Two Factors With the Means and Standard Deviations for IT Managers.....	53
17. Rotated Component Matrix for Three Factors With the Means and Standard Deviations for IT managers	54
18. Rotated Component Matrix for Two Factors With the Means and Standard Deviations for Non-Managers	55
19. Power Analysis and Post Hoc Sample Size Calculation for Each Variable	58

LIST OF ILLUSTRATIONS

Figure	Page
1. Scree Plot for IT Managers.....	54
2. Scree Plot for IT Non-Managers	56

CHAPTER 1

INTRODUCTION

This study examines the relationship between training and job satisfaction. The concepts of training and job satisfaction have been widely studied with only an occasional reference to a connection between the two constructs.

The benefits and effectiveness of training are widely discussed in current business literature. Many journals, both academic and popular, contribute to the concepts of training. Examples of popular journals include *Training*, *Industrial and Commercial Training*, *Learning & Training Innovations*, and *Training & Management Development Methods*; and examples of academic journals include *Human Resource Development Quarterly*, *International Journal of Training and Development*, *Journal of Instructional Psychology*, *Performance Improvement Quarterly*, and *Workforce Education Forum*. This is not an exhaustive listing of journals related to training and development. For the purpose of this study, the term *continuing professional education* relates to both the concepts of training and development.

Training and professional development are major investments in today's working environments. According to the *American Society for Training & Development (ASTD) 2002-2003 State of the Industry Report*, companies spent, on average, \$826 per employee for professional development during the year 2002. This equated to 1.9% of businesses' payrolls dedicated to professional development (Thompson, 2003). Galvin, Johnson, and Johnson (2004) stated that the top 100 training companies in the year 2003 spent \$6.6 billion on training. Additionally, the Council of Hotel and Restaurant Trainers (CHART) reported that its membership spent \$182,000 per year on equipment, supplies, software, hardware, videos, and

outside training materials for its individual companies. The overall amount spent during 2003 for CHART members totaled \$17.8 million for training materials (Berta, 2004). As can be seen by the amount of money spent by these organizations, training is an important facet in today's business environment and one that is worth further study.

Beyond the monetary investment that organizations have provided for the professional development of their employees, it is important to understand the benefits gained both by the organization and by the employee participating in professional development. Some benefits held in common by employees and organizations include increased job productivity, increased number of certified employees, increased competency, better motivation (Guest, Conway, & Dewe, 2004), higher retention (Numerof, Abrams, & Ott, 2004), and improved job satisfaction (Bukowitz, Williams, & Mactas, 2004). The types of training commonly offered to employees include new employee orientation, in-house training, continuing education experiences (Spears & Parker, 2002), mentoring programs, and on-the-job or off-the-job training (Guest et al., 2004).

Job satisfaction is a concept that also has been widely researched, both academically and professionally. This is due to the importance of job satisfaction in the work environment and its connections to employment issues such as surviving downsizing (Amundson, Borgen, Jordan, & Erlebach, 2004); improving job performance, higher retention, lower turnover (Blood, Swavely Ridenour, Thomas, Dean-Qualls, & Scheffner Hammer, 2002; Johnson & Johnson, 2000; Lopopolo, 2002; Spears & Parker, 2002); and even life satisfaction (P. C. Smith, 1992). The importance and complexity of these linkages and their impact on the work environment continue to demand further investigation into the many facets and diverse relationships associated with job satisfaction.

Researchers can examine job satisfaction from the perspective of factors that affect it such as supervision, pay, and co-workers or job satisfaction can be examined from the perspective of factors that it influences such as job performance, retention, and turnover. This study examines the relationship between the perceived benefits of employees' continuing professional development (training) and job satisfaction.

Need for the Study

This study supplements the existing job satisfaction literature by considering the relationship between managers and professional employees' perceived reasons for pursuing continuing professional education and job satisfaction. The population used for this study is information technology (IT) professionals in higher education. Information technology professionals have not been widely represented as a population in the existing research literature with IT professionals in higher education having less representation. Therefore, this study is useful to both IT non-management employees and IT managers in higher education as these individuals attempt to determine the best options for continuing professional education. Additionally, this research will support the need for training and continuing professional education as it extends the linkage of improved job satisfaction to the reasons for pursuing continuing professional development activities.

With IT professionals being among of the fastest growing labor categories identified by the Bureau of Labor Statistics (2004-2005), institutions of higher education have more difficulty attracting and retaining these employees. According to BLS,

Computer systems analysts, database administrators, and computer scientists are expected to be among the fastest growing occupations through 2012. Employment of these computer specialists is expected to grow much faster than the average for

all occupations as organizations continue to adopt and integrate increasingly sophisticated technologies. (p. 4)

Barron (1999) noted that "training is also leveraging effectively to keep top-flight technical talent from jumping ship in face of aggressive recruiting tactics and lucrative signing bonuses" (p. 21). Therefore, one possible incentive for retention that higher education can offer these employees is continuing professional development and educational opportunities.

Theoretical Framework

The theoretical framework for this study combines theories from business management, psychology, and education. The job satisfaction and motivational theoretical works of P. C. Smith, Kendall, and Hulin (1969), Herzberg, Mausner, and Snyderman (1959); and Maslow (1954) influenced this study. The works discussed start with the most recent and move to the oldest frameworks while showing connections from the preceding work. Houle's (1961) theory on continuing professional education additionally influenced this study from the training and development perspective.

Job Satisfaction

Although many definitions exist for the construct of job satisfaction, the definition presented by P. C. Smith et al. (1969) are used as the theoretical basis for job satisfaction because Smith's Job in General (JIG) and Job Descriptive Index (JDI) instruments are used in this study to measure job satisfaction. Smith et al. defined job satisfaction as "an affective (that is, emotional) reaction to a job that results from the incumbent's comparison of actual outcomes with those that are desired (expected, deserved, and so on)" (p. 1). Additionally, in the JDI user's manual, Smith defined global satisfaction as an overall, integrative feeling of satisfaction when all aspects of the job are considered (Balzer et al., 2000).

Job satisfaction has been associated with many behaviors in the workplace and has been associated with many theories of work motivation. As described in the *Users' Manual for the Job Descriptive Index (JDI; 1997 version) and the Job in General Scales* (Balzer et al., 2000), many theorists have found job satisfaction to be a direct cause of behavior such as attending work, maintaining quality standards, seeking improved work methods, and cooperating with other employees. Additionally, other theorists have viewed job satisfaction as a consequence of such behavior because these behaviors lead to rewards from the supervisor or the work itself and therefore lead to enhanced job satisfaction. Others theorists have seen job satisfaction as merely a symptom or a byproduct of a work process such as inadequate job design, leading to both job dissatisfaction and uncooperative employee behavior (Balzer et al., 2000). In any case, job satisfaction, if carefully measured and defined, is a useful and readily available guide for understanding behaviors in the workplace.

Motivation Needs Theory

The motivation theories that drive this study are Herzberg's (1965) motivation-hygiene theory and Maslow's (1954) hierarchy of needs. Herzberg's theory on motivation and its connections to job satisfaction contribute to the concepts investigated in this study. Additionally, because Herzberg acknowledged that Maslow's hierarchy of needs theory influenced his motivation-hygiene theory, a discussion of Maslow's theory is included for completeness.

The motivation-hygiene theory of Herzberg et al. (1959) is a commonly used motivation theory in the investigation of the construct of job satisfaction. Herzberg et al. suggested that employees could be motivated on the job by the work itself. This theory divides motivation into the two components of satisfiers or motivators and dissatisfiers or hygiene factors. Satisfiers are factors that motivate a person to want to work, yet the absence of a satisfier does not demotivate

the worker or cause dissatisfaction. A dissatisfier, on the other hand, serves only to prevent job satisfaction and has little impact on the happiness of the worker. A dissatisfier does not demotivate the worker, and its presence does not cause dissatisfaction. However, a dissatisfier has the characteristics of being preventative and environmental and therefore is hygienic in nature. Additionally, when a dissatisfier is absent, dissatisfaction can still occur (Herzberg, 1965). Table 1 shows several work environment factors categorized as satisfiers or dissatisfiers.

Table 1

Factors Associated With Herzberg's Two-Factor Motivation Theory

Satisfiers	Dissatisfiers
Recognition of achievement	Supervision
Work itself	Company policy and administration
Responsibility	Positive working condition
Advancement	Interpersonal relations with peers, subordinates and superiors
Possibility of Growth	Status
	Job Security
	Salary
	Personal Life

Note. From *The Manager's Motivation Desk Book* (p. 11) by T. L. Quick, 1985, New York: Wiley. Copyright 1985 by T. L. Quick. Adapted with permission.

Herzberg et al. (1959) conducted their original research with engineers and accountants. Similarly, this study examines a technically oriented population, using a population of information technology professionals.

In *Motivation and Personality*, Maslow (1954) presented his influential theory on motivation called the hierarchy of needs, which was derived primarily from clinical observations. The hierarchy of needs theory states that people are motivated to satisfy certain needs, beginning with basic and bodily needs and advancing to complex and psychological needs. A corollary to this theory is that, once a need is largely satisfied, it no longer acts as a motivator. Described below is the hierarchy of needs from least complex need to most complex need:

1. Physiological Needs – These are the bodily needs that include conditions such as food, drink, and sleep.
2. Safety Needs – These needs describe a person’s desire to be safe and secure. This can include the desire to have stability and protection.
3. Belongingness and Love – This is the desire for family, friends, and intimacy.
4. Esteem Needs – These needs include self-esteem and the desire for respect from others. Esteem needs also can include feelings of competence, importance, and usefulness.
5. Self-actualization – The final level of the need hierarchy is the need to strive for personal potential (Maslow, 1954; Quick, 1985).

Motivation theory is an important concept, especially in terms of its relationship to job satisfaction. While the debate about the relationship between job satisfaction and motivation continues (Quick, 1985), the current study has drawn upon this relationship as a basis to correlate why IT professionals seek continuing professional education (a motivator) with job satisfaction. Maslow’s hierarchy of needs theory has been described as being difficult to apply to the work environment from a manager’s perspective, and Herzberg’s two-factor theory does not completely explain how employees are motivated to become satisfied with their jobs (Quick, 1985). These two theories together provide an understanding of the relationship between what motivates an employee to work and his or her job satisfaction.

Continuing Professional Education

Cyril O. Houle (1964) was interested in professional learning and education. From his inquiry, Houle developed a way to classify adult learners according to a motivation scheme (Morstain & Smart, 1977). Houle’s (1961) theory proposed three orientations to explain why adults are motivated to continue learning. His orientations include the following:

1. Goal-oriented individuals are adults, who use education as a means to accomplish definite objectives.
2. Activity-oriented individuals are adults who take part in education because they find in the circumstances of the learning a meaning which has no necessary connection to the content or the announced purpose of the activity.
3. Learning-oriented individuals are adults who seek knowledge for the sake of learning.

Based on Houle's (1980) theory of continuing professional education, Grotelueschen (1985) created the Participation Reason Scale (PRS). The PRS instrument classifies the reasons for participation in continuing professional education into five factors: (a) professional improvement and development, (b) professional service, (c) collegial learning and interaction, (d) professional commitment and reflection, and (e) personal benefits and job security.

Purpose of Study

The purpose of this quantitative study is to determine whether the perceived reasons for pursuing continuing professional educational activities correlates with improved job satisfaction for information technology employees in institutions of higher education. The study also examines the relationship between the number of hours of professional development attended and the degree of job satisfaction and whether the position level held by an employee impacts his or her perceived benefits of training as related to overall job satisfaction. The population of this study is information technology employees from higher education.

Research Hypotheses

The specific hypotheses examined by this study as related to perceived benefits of professional development and job satisfaction are as follows:

Hypothesis 1

H₀1a: There will be no statistically significant relationship between the number of continuing professional education (CPE) hours that information technology (IT) managers attend and their overall job satisfaction as measured by the Job In General (JIG) scale summary.

H₀1b: There will be no statistically significant relationship between the number of CPE hours that IT non-managers attend and their overall job satisfaction as measured by the JIG scale summary.

H₀1c: There will be no statistically significant difference between IT managers' and non-managers' degree of overall job satisfaction as measured by the JIG scale summary.

Hypothesis 2

H₀2: There will be no statistically significant difference between the mean reasons why IT managers and non-managers pursue CPE as determined by summarizing the five factors of PRS.

Hypothesis 3

H₀3a: There is no statistically significant relationship between the number of CPE hours that IT managers attend and their job satisfaction as measured by the summary of each subscale of the Job Descriptive Index (JDI) scale.

H₀3b: There is no statistically significant relationship between the number of CPE hours that IT non-managers attend and their job satisfaction as measured by the summary of each subscale of the JDI scale.

Hypothesis 4

H₀4a: For IT managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS

and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

H₀4b: For IT non-managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

Delimitations

Restrictions imposed upon this study by the researcher include the following:

1. The population of this study was employees working in information technology positions in their respective institutions. However, the employees may not necessarily hold degrees directly related to information technology.

2. The researcher solicited the population of the study by e-mail from e-mail discussion lists that cater to information technology employees working in institutions of higher education. This method of sampling is a convenience population; members self-selected membership in the list, and members also chose to respond to the survey and therefore the sample was not a random.

3. The IT professionals participating in this study were employed, holding professional positions from entry-level to management positions at their respective institutions.

4. The researcher took advantage of modern electronic survey techniques using e-mail to contact the population and distributed the survey over the World Wide Web. These techniques were convenient for the population under study.

Limitations

Restrictions outside the control of the researcher include the following:

1. The researcher did not control for the quality of the training received by the participants.
2. This study did not account for the general personality construct of happiness. P. C. Smith (1992) concluded that “the happy person not only tends to be more satisfied with everything, including his or her experiences and behaviors, but also views events differently” (p. 13). The impact of happiness could be that, in all probability, people who are generally happy have greater job satisfaction.
3. This study recognizes that self-reporting instruments have inherent errors and biases in assuming that the subjects will provide honest responses to instruments.
4. The researcher did not control the type of training or continuing professional education received by the population. The researcher was interested only in knowing that the individuals within the population have pursued some type of training.
5. The researcher did not control for the duration of the training received by the participants. The researcher did not consider whether the participants attended an hour-long training session or a weeklong workshop. The researcher was interested only in the total number of training hours the participants attended during a 6-month period.
6. The researcher did not control for the number of managers versus non-managers participating in the study.

Summary

This dissertation is organized into five chapters. Chapter 1 provides the framework, describing how and why this study contributes to the existing body of research on job satisfaction and professional development. The sections Background, Significance of Study, Theoretical Framework, and Purpose of Study describe the importance and significance of this study to the

body of literature. Additionally, this chapter clarifies the study's focus through the Research Hypotheses, Delimitations, Limitations, and Definitions of Terms sections.

Chapter 2 provides an overview of the relevant literature related to job satisfaction and continuing professional education. Chapter 3 discusses the methodology used to study the problems, including relevant information about the study's population and sample, the instruments used in the study, and the data collection and data analysis methodologies. Chapter 4 presents the data collected during the study of the problem, and chapter 5 presents the conclusions drawn from the collected data. It also describes possible improvements and future directions that this researcher and other researchers may choose to use.

CHAPTER 2

LITERATURE REVIEW

This study examines the relationship between the perceived benefits of attending continuing professional development and job satisfaction for information technology (IT) professionals in higher education. The relationship between continuing professional education (CPE) and job satisfaction is assessed using the five reasons identified by Grotelueschen (1985), as measured by the Participation Reason Scale (PRS) for CPE with the five factors for job satisfaction identified by P. C. Smith et al. (1969), as measured by the Job Descriptive Index (JDI) and Job in General Scale (JIG).

This chapter includes a review of the literature related to the importance of and reasons for pursuing continuing professional education and studies that have used the PRS instrument to determine the reasons for attending continuing professional education. Additionally, this literature review examines the importance of job satisfaction to the work environment and includes studies that have used the JDI and JIG instruments to measure job satisfaction. The examination of past studies is necessary to discover possible relationships between continuing professional education (CPE) and job satisfaction as related to the amount of CPE attended and the job level of IT professionals.

Continuing Professional Education

In today's society, individuals base their self-worth on their work and increasingly find that their identity and satisfaction come from their profession (Mott, 2000). According to Mott, education is becoming an increasingly important factor in people's lives, especially in the workplace. Professional employee educational participation was described by Grotelueschen (1985) as the involvement in formal education activities that are typically short-term, part-time,

or both. Educational institutions, professional associations and societies, professional service agencies, the government, and other organizations provide continuing professional activities. Additionally Grotelueschen made the distinction between continuing education in general and continuing professional education. The distinctions between the two types of education are the characteristics of the referent population, the nature of the participation, and the benefits received from the educational experience. Continuing education is described as learning experiences that prepare employees for future positions (Spears & Parker, 2002). Spears and Parker also defined training as the preparation an employee receives to improve performance on his or her present job. Training expense is necessary in order for the organization to become more effective and to increase productivity. Mott (2000) expanded the definition of continuing professional education as “improving professional competence and practice” (p. 23). However it is defined, continuing professional education and training for many professions is growing in size, coherence, and stature (Cervero, 2000).

Reason for and Benefits of CPE

Houle (1961), regarded as one of the leading theorists in adult learning, identified a difference between continuing professional education and general education. He also predicted that professional education would grow in size and stature and compete with pre-service education. Houle postulated three orientations to explain why adult learners choose to pursue continuing professional education, describing the learners as having one of the following orientations:

1. Goal-oriented individuals are adults who take part in educational activities as a means to accomplish definite objectives.

2. Activity-oriented individuals are adults who take part in educational experiences because they find the circumstances of the learning meaningful. These individuals do not need to have a compulsory connection to the content or an announced purpose for the learning activity.

3. Learning-oriented individuals are adults who seek knowledge for the sake of learning (Houle, 1961).

Additional explanations for why continuing professional education (CPE) has become an important aspect of the workplace environment include rapid societal changes, the increase of research-based knowledge, and spiraling technological innovations (Cervero, 2000). Grotelueschen (1985) added that employees seek CPE due to a need for personal fulfillment, collegiality, professional advancement, or skill development. Mott (2000) explained that the goal of CPE is the development of professional expertise for the improvement of workplace practice.

Cervero (2000) predicted that if professions required certification and licensure then CPE use would be more frequent. Information technology professionals do not typically have a mandated certification or licensure path; therefore, continuing professional education is viewed mainly as a valuable commodity for recruitment and retention (Barron, 1999). According to Barron, professional development provides a way to maintain job satisfaction.

CPE Studies

Researchers have studied the concepts of continuing professional education from many different perspectives. To reveal the breadth of different CPE studies, this section discusses the populations and factors that have been associated with CPE

Studying social-work care managers, Gorman (2003) examined the difference between the skills and competency needed for continuing professional education. Gorman's study identified particular skills necessary for a care manager to pursue during continuing education.

Additionally, the study verified that continuing professional education improves the professional skills of care managers. Gorman also found that an investment in continuing professional education is a necessary investment for care managers to enable strategies for planned care to succeed.

The relationship between the reasons for participating in continuing professional education and leadership effectiveness was studied by McCamey (2003) for first-line supervisors in the nuclear power industry. Using regression analysis, McCamey concluded that a relationship exists between the reasons for participating in continuing professional education and the perceived leadership effectiveness of first-line supervisors. However, the study did not find a relationship between motivation to participate and leadership effectiveness.

Bolten (2002) studied chiropractors' attitudes and perceptions of CPE in relationship to clinical practice. Bolton concluded that chiropractic professionals perceived CPE as enhancing knowledge and skills, increasing confidence, stimulating enthusiasm, and motivation to continue to learn. Thus, he declared that CPE created a more reflective attitude and provided an opportunity for meeting other professionals to exchange ideas. However, this study did not find that CPE actually contributed to changes in professional practice or improved care for patients.

Other studies have focused on the barriers against participation in continuing professional education. Cullen (1998) conducted a study on a population of registered nurses in the state of Delaware. This study found three major reasons for nonparticipation in continuing professional education: disengagement; the conditional effect of indifference, apathy, boredom, and insecurity; and alienation toward CPE. Additional reasons for nonparticipation were cost and quality of the training programs.

As these studies show, much of the recent work focuses on participation in CPE. The research varies in both the conclusions drawn and the populations studied. The present study contributes to the body of literature on continuing professional education through its examination of the reasons IT managers and IT non-managers from higher education pursue CPE. Additionally, this study examines the relationship between CPE and job satisfaction for IT managers and non-managers.

Studies Using the Participation Reason Scale (PRS)

This study explores the relationships between the reasons why IT managers and non-managers choose to pursue continuing professional education and their job satisfaction. Many studies use the PRS instrument to identify the reasons for seeking continuing professional education. The PRS created by Grotelueschen (1985) is a self-reporting instrument used to discover the reasons why professionals participate in continuing professional education. The author of the PRS was seeking an instrument that would help to explain the reasons for participation that focused less on adult learning in general and more on the subgroup of working adult professional learning. Because an instrument did not exist that measured the subgroup of adult professional learning, Grotelueschen had to create an instrument (Kenny & Harnisch, 1982). As a framework for the instrument, Grotelueschen expanded Houle's (1964) theoretical learner orientations by creating five operational constructs to further detail the reasons adults seek continuing professional education. Grotelueschen identified the following five factors to explain why adults participate in continuing professional education: (a) professional improvement and development, (b) professional service, (c) collegial learning and interaction, (d) professional commitment and reflection, and (e) personal benefits and job security. Table 2 describes Grotelueschen's five factors in more detail.

The PRS is a versatile instrument. Populations that have been measured using the PRS include managers in nuclear power plants (McCamey, 2003), army engineers (Grzyb, Graham, & Donaldson, 1998), registered nurses (DeSilets, 1990), physicians (Cervero, 1981), and veterinarians (Harnisch, 1980).

Table 2

The Five Factors of Continuing Professional Education

Factor	Description
Professional Improvement and Development	relates to reasons that are clearly associated with the day-to-day practices. The PRS items in this factor include such key words as "knowledge or skill", and/or references to a concern for "competent", "quality performance". The concepts in this factor relate to the need to keep up with rapid changes in technology.
Professional Service	relates to participation reasons that are associated with the service aspects. Key words in this factor are "effective", "proficient", and "better service".
Collegial Learning and Interaction	includes participation reasons related to learning through an interchange with professional colleagues. Key words in this factor include "exchange thoughts", "relate ideas", and learn from "interaction. The concepts in this factor however, are learning oriented rather than socially oriented.
Personal Benefits and Job Security	includes participation reasons related to job security, financial gain, or professional advancement. Words that are illustrative of these reasons include "increase...benefits, "change the emphasis of", "professional advancement", and "individual security". This concept is descriptive of the establishment of a professional role that provides longevity and rewards accomplishment.
Professional Commitment and Reflection	includes participation reasons related to a membership within a larger professional body, and to reasons which are external to the technical aspects. Key words such as "maintain identity", "enhance the image", "reflect on the value", and "review my commitment to my profession", illustrate concepts in this factor.

Note. From *Motivational Reasons Which Influence the Participation of Registered Nurses in Continuing Professional Education Program* (pp. 83-84) by L. D. DeSilets, 1990, unpublished doctoral dissertation, Temple University, Philadelphia. Copyright 1990 by L. D. DeSilets. Adapted with permission.

Grzyb et al. (1998) used the PRS to measure the effects of academic preparation, leadership, functional roles, and occupational specialty on reasons for becoming involved in training and education with army engineers. The authors contended that the world of work has changed and that employees no longer can expect lifetime employment with one company. Rather,

employees must become continuous learners who respond to the needs of their organizations and the organization's clients. Therefore, effective training programs need to be based on the needs of the learner. Understanding the needs of the learner requires an understanding of the reasons people participate, the instructional methods selected, the content covered in the training, and the evaluation procedures used. Additionally, the motives for involvement in education and training can vary significantly according to characteristics related to a profession, organizational roles, and previous educational preparation (Grotelueschen, 1985; Houle, 1980). The Grzyb et al. study observed that educational background had no significant impact among leadership, functional role, specialty areas, and reasons for involvement in education or training. The implications from the Grzyb et al. study are that organizational context has a powerful influence on training participation and the reasons for attendance. Grzyb et al. also found that linking training specifically to the employee's role within the organization enhances the training.

DeSilets (1990) examined the reasons nurses seek to participate in continuing professional education in relationship to job function and demographic characteristics. The author found that nurses are concerned with professional competence and participate in continuing professional education for reasons related to acquiring new skills and knowledge. DeSilets also conducted a factor analysis on the PRS and found that five factors contribute to the reasons: professional improvement and development, professional service, collegial learning and interaction, personal benefits and job security, and professional commitment and reflection. These factors accounted for 60.5% of the variance. This current study used the factors identified by DeSilets' research.

Cevero (1981) used the PRS to study physicians' reasons for seeking continuing professional education. Findings indicated that physicians' reasons for participation clustered into

four main areas: (a) to maintain and improve professional competence and service to patients, (b) to enhance personal and professional position, (c) to understand themselves as a professional, and (d) to interact with colleagues.

Harnisch's (1980) research is included in this review because as a researcher, Harnisch continued to develop the PRS instrument. Harnisch's original work reported that veterinarians participated in continuing professional education for reasons of (a) professional improvement and development, (b) professional reflection, (c) personal benefits and job security, and (d) collegial learning and interaction.

Understanding the reasons why professionals voluntarily pursue continuing professional education will help the creators of professional development programs to concentrate on learner interests, needs, and logistical considerations when designing educational programs (Grzyb et al., 1998). This study will add to the existing literature by providing a relationship between the reasons an individual participates in continuing professional education and job satisfaction.

Job Satisfaction

After Herzberg's published work in the 1950s, job satisfaction has been one of the most studied constructs in social science, with an estimated 3,000 articles and dissertations dealing with the construct (Wolford, 2003). With this amount of research regarding job satisfaction, it is not surprising to find that job satisfaction has several variations of definitions. P. C. Smith et al. (1969) defined job satisfaction as "an affective (that is, emotional) reaction to a job that results from the incumbent's comparison of actual outcomes with those that are desired (expected, deserved, and so on)"(p. 1). The researcher used this definition for job satisfaction because it was the basis of the instrument used to collect data for this study. Table 3 shows several variations of the definitions for job satisfaction, taken from Wolford's (2003) work on job satisfaction.

Table 3

Definitions of Job Satisfaction

Researcher	Definition
Vroom (1964)	Job satisfaction is the basis of an employee's evaluation of whether one gets what he/she wants from a job.
Herzberg (1968)	Job satisfaction is the basis of human-relations theory, which posits that employees develop positive job attitudes if their jobs allow them to fulfill their needs.
Locke (1976)	Job satisfaction refers to employees' affective relations to their work role and is a function of the perceived relationship between what one wants from one's job and what one perceives it is offering.
Ulrich and Lake (1991)	Job satisfaction is a positive emotional state produced from a person's experience associated with his or her job.
Weissman, Alexander, and Chase (1980)	Job satisfaction is the degree of positive affect toward the overall job or its components.
Brooke, Russell, and Price (1988)	Job satisfaction is an individual's general attitude toward one's job.
Scarpello and Vandenberg (1992)	Job satisfaction is the disparity between what the employee desires from a job and what he or she actually receives from the work.
DeLeon and Taher (1996)	Job satisfaction is a function of its intrinsic and extrinsic rewards, as well as the employee's needs, expectations, and characteristics.
Comm and Mathaisel (2000)	Job satisfaction is the difference between perception of work and expectations and importance of work.
Johnson and Johnson (2000)	Job satisfaction is the employee's response to the conditions of the workplace.

Note. From *A Study of Worker Demographics and Workplace Job Satisfaction for Employees in a Global Engineering and Construction Organization* (pp. 17-19) by T. D. Wolford, 2003, unpublished doctoral dissertation, Nova Southeastern University, Fort Lauderdale. Copyright 1985 by T. D. Wolford. Adapted with permission.

Reasons for and Benefits of Job Satisfaction

Researchers attribute many workplace behaviors to job satisfaction. These behaviors include voluntary turnover (Trevor, 2001), commitment to the organization (Lopopolo, 2002), pay satisfaction for university faculty (Terpstra & Honoree, 2004), work performance (Gibbons, Corrigan, & Newton, 2000; Petty, McGee, & Cavendar, 1984), absenteeism (Scott & Taylor, 1985), job relocation (Geyer & Daly, 1998), intent to leave (Hellman, 1997), employee turnover

(Williams & Cockrell-Skinner, 2003), and retention (Campbell, Fowles, & Weber, 2004).

According to P. C. Smith et al. (1969), theorists who are interested in human motivation are also concerned with job satisfaction as it relates to the theories of human behavior and attitudes.

The construct of job satisfaction is also important to practicing managers in a variety of occupational settings (Cranny, Smith, & Stone, 1992). It has been studied with many populations, including public health nurses (Campbell et al., 2004), dental therapists (Gibbons et al., 2000), elementary school teachers (Woods & Weasmer, 2004), college professors (Bellamy, Morley, & Watty, 2003), information technology professionals (Compton, 2002), and municipal government employees (Ellickson, 2002). Additionally, job satisfaction has been studied over various position levels, from line employees to upper-level management (F. J. Smith, Scott, & Hulin, 1977).

Campbell et al. (2004) researched the construct of job satisfaction and found that job satisfaction was critical to retaining and attracting a well-qualified, public health nursing workforce. The authors' findings suggest that the work environment in which supervisors and subordinates all consult concerning job tasks and decisions and individuals are involved with peers in decision-making and task definition relates positively to job satisfaction. The research of Campbell et al. helps support the idea that job satisfaction has a relationship to employee retention.

Other research supports the present study in the connections drawn between the population of IT employees and job satisfaction. Brown's (2002) research on job satisfaction and work motivation with IT professionals in the Delaware Valley concluded that training and development are necessary components for retention and recruitment.

Spears and Parker (2002) studied the relationship of specific training to employees' satisfaction with the performance appraisal process. The authors found that employees have greater

job satisfaction when they have new employee training, in-house training, and support for continuing education. This particular study is relevant to the present literature review because it establishes a connection between job satisfaction and continuing professional education. However, Spears and Parker focused on only one training event related to the employee appraisal process.

Demographic Factors Influencing Job Satisfaction

The last section examines studies that focus on the factors influenced by job satisfaction. This section examines the demographic factors that influence job satisfaction. Some of the factors that contribute to changes in job satisfaction include age, gender, work roles, and organizational structure (Rowden, 2002; P. C. Smith et al., 1969).

Rowden (2002) studied the impact of company size and workplace learning. The author found that workplace learning contributes significantly to the aspect of job satisfaction, especially in small to midsize businesses. Rowden's study is valuable because it directly connects workplace learning to job satisfaction.

Ellickson (2002) recently examined municipal government employees' job satisfaction. The author used regression analysis to determine what environmental factors and demographic factors influence job satisfaction, finding that demographic factors such as age and gender are poor predictors of job satisfaction

As a demographic factor, age has received much research interest. In the 1950s and the 1960s, studies on satisfaction and age showed a definite U-shape pattern (Clark, Oswald, & Warr, 1996). The authors described the U-shape pattern as beginning with a moderate level of job satisfaction in the early years of employment, declining through the middle stages of employment, and increasing steadily as the employee moves to retirement. Clark et al. recently reconfirmed the U-shape relationship between age and job satisfaction.

Studies Using the Job Descriptive Index (JDI) and Job in General (JIG) Scale

Studies researching job satisfaction are numerous, as seen from the sections above. Yet this review scarcely takes into consideration the body of research on job satisfaction. Therefore, this section focuses only on a small sample of job satisfaction studies that have used the JDI and/or JIG instruments.

P. C. Smith et al. (1969), the authors of the JDI and JIG, were interested in the connection of job satisfaction to the employees' past productivity, with the assumption that a happy worker was a productive worker. However, the simplicity of this construct was not adequate to explain the relationship between job satisfaction and productivity. Additionally, no reliable or substantial evidence supported this relationship. Smith et al. therefore created a series of instruments to measure the factors associated with the workplace. The instruments of interest for the present study are the JDI and the JIG scale. The JDI measures five characteristics: the work itself, pay, promotion, supervision and coworkers. Table 4 displays the five facets of job satisfaction as defined by Balzer et al. (2000) in the JDI user manual.

The JDI and JIG are versatile instruments used to measure job satisfaction. These instruments have recently been used to evaluate the relationship between organizational communication (Goris, Pettit, & Vaught, 2002), absenteeism and job turnover (Compton, 2002), and trust (Morris, Marshall, & Rainer, 2002). A review of studies that use the JIG is also included in this section because the JIG is often used in conjunction with the JDI.

Table 4

The Five Facets of Job Satisfaction

Facet	Definition
Satisfaction with Work	This facet concerns the employee's satisfaction with the work itself. The satisfaction literature has identified various attributes of work related to satisfaction: including opportunities for creativity and task variety; allowing an individual to increase his or her knowledge; and changes in responsibility, amount of work, autonomy, job enrichment, and job complexity. Based on these attributes, satisfying work appears to be work that can be accomplished and is intrinsically rewarding.
Satisfaction with Pay	Pay satisfaction addresses attitude toward pay and is the basis for the perceived difference between actual and expected pay. Expected pay is based both on the value of perceived inputs and outputs of the job and the pay of other employees holding similar jobs and possessing similar qualifications. Employee's satisfaction with pay is influenced by the personal financial situation of the employee, the economy, and the amount of pay an employee has received previously.
Satisfaction with Promotion	Satisfaction with promotion measures the employee's satisfaction with the company's promotion policy and the administration of that policy. Employee's satisfaction with promotion is thought to be a function of the frequency of promotions, the importance of promotions, and the desirability of promotions.
Satisfaction with Supervision	The supervision facet reflects an employee's satisfaction with his or her supervisor(s). Employees have the greater the levels of satisfaction with supervisors if the supervisor is more considerate and employee-centered (e.g., praising good performance, taking personal interest in employees, providing feedback, and listening to subordinates' opinions). Furthermore, the greater the supervisor's perceived competence on the job, the greater the levels of satisfaction with supervision.
Satisfaction with People on the Present Job (Co workers)	The facet concerning people on the present job assesses the level of employee satisfaction with his or her fellow employees. The degree of satisfaction with coworkers is thought to be determined by the work-related interaction among coworkers and the mutual liking or admiration of fellow employees.

Note. From *Users' Manual for the Job Descriptive Index (JDI; 1997 Version) and the Job In General Scales.* (pp. 36-37) by W. K. Balzer, J. A. Kihm, P. C. Smith, J. L. Irwin, P. D. Bachiochi, C. Robie et al., 2000, Bowling Green KY: Bowling Green State University. Copyright 2000 by W. K. Balzer. Adapted with permission.

Compton (2002) used the JDI and JIG to measure the level of job satisfaction for members of the Association of Information Technology Professionals (AITP.) The author was examining

job satisfaction as it related to absenteeism and job turnover. Additionally, Compton found that the degree of satisfaction that an employee derives from the work environment corresponds directly to the employee's needs and work-related problems. Compton's study found that AITP members possessed a high degree of job satisfaction within the subscales of work, pay, promotion, supervision, and coworkers and also had a high degree of satisfaction in general as measured by the JIG.

Goris et al. (2002) assessed the influence of organizational communication on the association between an individual's job congruence and job satisfaction. The authors found a weak relationship between communication overload (receiving too much information) and communication underload (processing too little information) to job satisfaction and job performance.

Morris et al. (2002) examined the relationship of trust and job satisfaction within virtual teams. Virtual teams are employees who work together cooperatively from different locations supported by information technology systems to overcome the limitations of time and location. When researchers used the JDI to measure job satisfaction, they found a significant positive impact between user satisfaction and trust on job satisfaction.

Contribution of This Study

The studies reviewed in this chapter are only a few from the body of research that exists about job satisfaction and continuing professional education separately. The review of literature demonstrates that the breadth of the research is wide; however, there is little research connecting continuing professional education and job satisfaction. Therefore, the present study will contribute to the body of literature because it connects the two constructs of continuing professional education and job satisfaction. Additionally, this study complements the research of Bruce and Blackburn

(1992), who concluded that training is critical to an employee's job satisfaction and job performance. This study also will show that the reasons why IT professionals seek continuing professional development could influence IT training and retraining programs.

Additionally, the literature underrepresents the population of IT professionals working in higher education. IT professionals are essential and critical to business initiatives and are a highly specialized workforce. Because this workforce typically has higher costs associated with it than some other types of employee-employer relationships, employers want to safeguard their employee investment (Schafer, 2005).

Summary

Chapter 2 reviews the existing literature related to the study. The literature review for this chapter includes research related to continuing professional education and job satisfaction. Additionally, this literature review considered research that used the instruments used for the present study. The chapter included a review of journal articles relevant to continuing professional education and studies that used the PRS. The chapter then examined literature related to job satisfaction, with subsections describing studies related to reasons and benefits of job satisfaction and demographic factors influencing job satisfaction. Specifically examined were studies that have used the JDI and JIG instruments. The chapter concluded with a section describing how this study contributes to the existing body of literature. Chapter 3 discusses the methodology used to execute this study.

CHAPTER 3

METHODOLOGY

The purpose of this study is to investigate the relationship between continuing professional education and job satisfaction. The study used a variety of statistical techniques depending on the data and the hypotheses. This study assesses the relationships between the five reasons for participation in continuing professional education identified by Grotelueschen (1985), as measured by the Participation Reasons Scale (PRS), and the five constructs of job satisfaction as identified by P. C. Smith et al. (1969), as measured by the Job in General (JIG) and the Job Descriptive Index (JDI). The chapter includes descriptions of the design used for the study, the study's population, and the sampling methodology used for the study. Additionally, the instruments used in the study and statistical analysis methods used to assess the hypotheses are discussed.

Research Hypotheses

Data collected from survey questionnaires addressed the following hypotheses:

Hypothesis 1

H₀1a: There will be no statistically significant relationship between the number of CPE hours that IT managers attend and their overall job satisfaction as measured by the JIG scale summary.

H₀1b: There will be no statistically significant relationship between the number of CPE hours that IT non-managers attend and their overall job satisfaction as measured by the JIG scale summary.

H₀1c: There will be no statistically significant difference between IT managers' and non-managers' degree of overall job satisfaction as measured by the JIG scale summary.

Hypothesis 2

H₀2: There will be no statistically significant difference between the mean reasons why IT managers and non-managers pursue CPE as determined by summarizing the five factors of PRS.

Hypothesis 3

H₀3a: There is no statistically significant relationship between the number of CPE hours that IT managers attend and their job satisfaction as measured by the summary of each subscale of the Job Descriptive Index (JDI) scale.

H₀3b: There is no statistically significant relationship between the number of CPE hours that IT non-managers attend and their job satisfaction as measured by the summary of each subscale of the JDI scale.

Hypothesis 4

H₀4a: For IT managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

H₀4b: For IT non-managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

Research Design

The purpose of this ex post facto design research is to provide results that may identify the importance of continuing education as it relates to job satisfaction for IT professionals in higher education. Examining the relationship between the reasons for attending continuing professional education and job satisfaction required the use of a variety of statistical analysis methods. The statistics used in this study include the Spearman *rho*, Mann Whitney *U*, and exploratory factor analysis.

The researcher collected data for this study using an Internet-based survey. Although the traditional survey methods have some distinct advantages and disadvantages, Web-based surveys include many of the same advantages and disadvantages of the traditional survey process while also introducing some new benefits and concerns (Umbach, 2004). The Web-based survey offers the advantages of costing less to administer than a mail survey, and the response and turnaround times for the data are often quicker (Dominelli, 2003). Additionally a Web-based survey can have a more interactive format that allows for such options as immediate feedback to the participants with survey summaries, an opportunity not possible with the traditional paper and pencil survey. The Web-based survey also has an advantage for the researcher when considering the data. With a Web-based survey, there is less opportunity for coding transcription errors, and it is easier to manipulate the data because they are already in a form usable by most statistical software packages (Dominelli, 2003; Umbach, 2004). Finally, the Web-based survey can allow a researcher to ask and receive responses to socially threatening questions that a participant perhaps would not have responded to with other survey modes (Umbach, 2004).

However, the Web-based survey does create concerns that a researcher must be aware of when making the decision to use this method. These concerns include security of the data,

participation issues related to Web-based surveys, the burden of responding (Dominelli, 2003), the introduction of measurement errors such as coverage errors and sampling errors, and measurement errors related to inaccurate responses introduced by the survey mode (Umbach, 2004). Additionally the Web-based survey requires that the researcher have technical expertise in order to administer the survey.

The researcher contacted the participants for this study through e-mail solicitations to multiple email discussion lists. To increase the response rate for participation, the researcher took careful consideration in composing the initial message as well as follow-up reminder e-mail notifications. Umbach (2004) gave the following suggestions for notifying the survey population via electronic methods:

1. Use multiple e-mail contacts, at a minimum use two messages, an initial message and a reminder.
2. Keep the message format simple.
3. Keep the content of the e-mail message similar to a paper survey. Be sure to include a deadline and inform the respondent how long it may take to complete the survey. Also, indicate that the recipient is one of a small group selected for the study.
4. If possible, personalize the e-mail message. The research on the effect of personalization is mixed; however, current software packages can make it relatively easy to personalize the message.
5. Again, if possible, keep the survey short. Pilot test the survey in order to provide concise directions on how long it may take to complete.

6. Do not feel pressure to offer an incentive to survey respondents. The effects of incentives with Web-based surveys are mixed, and most researchers cannot afford to offer incentives.

In the case of this study, the e-mail notifications included sending an initial message and two reminder messages, a simple format that included directions and an indication about how long it would take to complete the survey. Additionally, the researcher offered the incentives of an IPOD shuffle or \$100 to increase the response rate from the participants.

Population

The population for this study was professionals employed in IT jobs in institutions of higher education. The researcher chose the population because of easy access through the use of e-mail discussion lists, since e-mail is a commonly used form of communication by this group, and because the population of IT professions in higher education has not been well researched. Educause (2002) estimated that over 100,000 people hold similar IT positions worldwide.

Sample

The numbers of individuals ($n = 215$) who responded to the survey determined the size of the sample. The researcher used a convenience sample drawn from four e-mail discussion lists commonly used by IT professionals in higher education. The target sample selected for this study was a cross-section of employees holding jobs in higher education information technology. The participants in the study represented employees working at both public and private institutions worldwide. With a diverse sample, the researcher could draw generalized conclusion for the results.

Initial contact with participants for this study used an e-mail notification sent to four discussion e-mail lists. The e-mail discussion lists used for this study included the Association of

Computing Machines Special Interest Group for University and College Computing Services (SIGUCCS) membership-only e-mail list and open e-mail list; the Higher Education and Resource Technologies of Texas (HEARTT) peer group, a community of IT user service professional in Texas; and the lab manager (LABMGR) e-mail discussion list associated with employees who are responsible for college computing centers. Permissions to use the SIGUCCS and LABMGR lists appear in Appendix B.

In correlation studies, traditional sample methodologies recommend that a minimum sample size should be 30 subjects to approximate a normal distribution (Gall, Borg, & Gall, 1996). However, some statistical methodologies assist in calculating a more precise sample size (Hinkle, Wiersma, & Jurs, 1998). When determining an appropriate sample size, the researcher considered the factors of alpha of .05, with 2-tailed directionality and a power of .80. Using the sample size tables in Hinkle et al. (1998) the sample was estimated to be at least 197.

Instrumentation

The researcher used the Job Descriptive Index (JDI) and the Job in General (JIG) instruments to measure job satisfaction. A sample of the JDI/JIG format appears in Appendix E. Additionally, the researcher used the Participation Reason Scale (PRS) survey instrument to collect data about the perceived reasons for pursuing continuing professional education. The PRS instrument appears in Appendix F. The researcher also gathered the demographic data about the individual participants with the Demographic Questionnaire shown in Appendix G. Permissions to use the JDI/JIG and PRS appears in Appendixes B and C, respectively.

Job Descriptive Index

The JDI is a survey instrument designed to measure job satisfaction in the five subfactors of the work itself, pay, promotions, supervision, and coworkers. The JDI consists of five sections that contain 9 to 18 yes/no statements related to each measured factor.

P. C. Smith et al. (1969), having conducted considerable research on job satisfaction, concluded that job satisfaction was a multidimensional construct containing five facets. The conclusion comprised a number of early studies of job satisfaction, with factor analyses revealing at least four facets of satisfaction that were clearly distinguishable from one another. The research also showed a general satisfaction factor. The four facets found were the work itself, pay and promotions, supervision, and coworkers. During further research, Smith et al. found that satisfaction with pay and promotion could be very different, and therefore, the authors divided pay and promotion into two individual facets. From their work, Smith et al. also found that it was possible to break the other facets into smaller subgroups. However, the designers of the JDI believed that most investigators would want to identify broad areas of strength and weakness and then follow up with more detailed investigations where necessary. Thus, they decided to stay with a simple five-scale formulation for the JDI as a reasonable compromise.

Reliability data for JDI and JIG. A revision of the JDI in 1987 reflected the changing workforce. The authors also reanalyzed the scales. With the new revisions to the JDI, the reliabilities remained relatively high, with an average internal consistency (alpha) of .88 across six samples (Balzer et al., 2000). In 1997 the authors calculated revised JDI and JIG internal reliability estimates for each subscale using data from approximately 1,600 cases of the national norm data. Table 5 presents the coefficient alpha estimates of reliability for each scale.

Validity of JDI. P. C. Smith et al. (1969) began the validation process of the JDI in 1959. For a period of 5 years, the authors conducted the validation process using a series of four studies

with four unique samples. From the results of the validation studies, the authors drew the following about the validity of the JDI instrument:

1. The JDI possessed high levels of discriminant and convergent validity based on the results of both cluster analysis and factor analyses.
2. The authors of the JDI/JIG found that the direct scoring procedure used by the instrument is the best response format.
3. The use of negatively phrased items with scoring reversed and positively phrased items were found to have closely similar loadings and therefore both types of items could be used (Balzer et al., 2000).

Table 5

Coefficient Alpha (α) Values for the JDI and JIG

JDI subscale	α	N
Work	.90	1623
Pay	.86	1603
Opportunities for Promotion	.87	1611
Supervision	.91	1613
Co-workers	.91	1615
Job in General	.92	1629

Note. From *Users' Manual for the Job Descriptive Index (JDI; 1997 Version) and the Job In General Scales.* (pp. 43-44) by W. K. Balzer, J. A. Kihm, P. C. Smith, J. L. Irwin, P. D. Bachiochi, & C. Robie et al., 2000, Bowling Green KY: Bowling Green State University. Copyright 2000 by W. K. Balzer. Adapted with permission.

Job in General Scale

The authors developed the JIG to complement the JDI and give an indication of overall job satisfaction. Simply summing across JDI facets does not produce an overall job satisfaction score because it excludes important components and therefore does not provide an accurate measure of overall satisfaction (Balzer et al., 2000).

Validity of JIG. The authors used several methods of validation for the overall general satisfaction scale. These methods include convergent validity using three correlation methods

and construct validity with pattern of correlations, along with 18 other tests for a sample of 670 employees. The convergent validity correlations ranged from 0.66 to 0.80 from a simple numerical rating scale of -100 to +100 (Balzer et al., 2000). Although reliability and validity estimates of the JDI and JIG look strong, reliability and validity are properties of data and not tests. Chapter 4 presents reliability and validity estimates for this study.

Scoring the JDI and JIG. The five facets of the JDI and JIG are scored separately, but the scoring process is the same for both scales (Balzer et al., 2000). Scales are scored by assigning numeric values to each “Y,” “N,” and “?” response. Approximately half the items in the scale are positively worded, with a “Y” response indicating satisfaction. For those items, “Y” responses are assigned a point value of 3, “N” responses receive a point value of zero, and the “?” is assigned 1 point. For the remaining items, which are negatively worded, a “Y” response indicates dissatisfaction. The unfavorable items are reverse scored, with “N” receiving 3 points, a “Y” receiving 0 points, and the “?” receiving 1 point. The “?” response tends to be closer to an unfavorable response than to a favorable response.

A researcher computes the scores of the JDI work, supervision, coworkers’ scales, and the JIG scales by summing the points obtained from an individual’s responses to the item in each scale. Scores on the JDI pay and promotions scales are also computed by adding up the total points, but these totals are doubled to create the scale score because these two scales include only half as many items as the other three scales (Balzer et al., 2000).

Missing responses for the JDI work, supervision, coworkers, and JIG with three or fewer missing responses should be treated as “?” responses and given the point value of 1. Missing responses for two or fewer responses on the JDI pay and promotions facets should be treated as a

“?” response given the value of 1 point. If a greater number of items is missing, the authors of the JDI recommend not scoring those scales (Balzer et al., 2000).

Participation Response Scale

The PRS is a 30-item self-reporting instrument using a 7-point likert scale (see Appendix F). To complete the PRS, participants indicate the importance of each of 30 items. The scale of importance is the following: 1-2 (*not important*); 3-5 (*moderately important*); 6-7 (*very important*).

This instrument has been refined over time as more data have been collected and analyzed. The scale has had several iterations, differing by number of items and applicability to different professions. The original PRS began as a 19-item scale, evolved into a 35-item scale, and then changed into its final form of 30 items. The authors of this scale were concerned with keeping the instruments concise while still maintaining reliability and validity (Grotelueschen, 1985).

The authors of the PRS used the analyses of several professional groups to compute reliability with internal consistency statistics. The author of the PRS has tracked the administration of the instrument to several studies that have included veterinarians, judges, and public health administrators. Data taken from these studies yielded satisfactory levels of reliability, with coefficients ranging from a low of .78 to a high of .92 (Grotelueschen, 1985). Although reliability and validity estimates of the PRS look strong, reliability and validity are properties of data and not tests. Chapter 4 presents reliability and validity estimates for this study.

Factor analysis is a statistical tool used to reduce large sets of data into manageable factors. The factor structure of the PRS created by DeSilets (1990) was used in this study to

cluster the reasons for continuing professional education into the factors of (a) professional improvement and development, (b) professional service, (c) collegial learning and interaction, (d) professional commitment and reflection, and (e) personal benefit and job security.

Data Collection Procedures

The data collection method used for this study was a computerized, Web-based, self-administered questionnaire technique. The Web-based, self-administered instruments consisted of the 9 to 18 yes/no questions for five topic areas taken from the JDI, 18 yes/no questions from the JIG, 30 lickert scale items from the PRS, and 10 short answer and multiple choice items from a personal demographic characteristic questionnaire. The researcher used a Web-based survey/assessment tool called Perception to administer the instruments. The Perception tool provided confidentiality and anonymity of the data. The Perception Web server recorded and stored the participants' survey responses. The Perception server provided data security because computer security techniques such as password protection allowed only the researcher to have access to the questionnaire data.

The researcher sent an e-mail notification describing the purpose and statement of consent to the target population through the e-mail lists. The e-mail contained two hot links, the Web address of the survey and the e-mail address of the researcher to allow participants to ask questions or report technical problems. The researcher offered each participant completing the survey entry into a random drawing, with the incentive of an iPod Shuffle or \$100 cash. E-mail notification is a feasible approach to contacting the sample population because the participants use e-mail messages to communicate with the discussion list.

Over the span of 3 months, the participants' received a total of three e-mail reminders about the survey through the e-mail lists. Participation was voluntary, and participants could complete and submit the survey only one time.

Pilot Study

The researcher conducted a pilot study using IT professionals from the researcher's place of employment. This institution's data were included in the study. The pilot study assisted the researcher in proofreading the survey instrument and refining the data collection and data analysis steps of the methodology.

Data Analysis

The researcher used a variety of statistical methods to analyze the data for this study. The statistical software Statistical Package for the Social Sciences (SPSS) version 11.5 was used to analyze the survey data. The reliability of the data collected for this study was analyzed with Chronbach's alpha and was compared to the reliability of other studies. The data also were analyzed for normality and for missing data. However, if the participant chose not to complete the survey, the record was not included in the final data analysis.

The statistical methods chosen for this study were dependent on the research hypotheses being considered. Additionally, the means of the PRS were ranked from highest to lowest to indicate the preferences of the reasons why managers and non-managers participate in CPE.

To address hypotheses 1a, 1b, 3a, and 3b a Spearman rank order coefficient was computed to determine the association between variables. The Spearman rank order coefficient indicates the direction and magnitude of association between the variables. Hypotheses 1c and 2 were analyzed using a Mann Whitney *U*. The Mann Whitney *U* is a nonparametric test used to test the null hypothesis that populations are identical. An exploratory factor analysis was used to

evaluate hypotheses 4a and 4b to determine whether any correlations existed among the variables associated with the reasons for participating in continuing professional education and the constructs of job satisfaction for each group of managers and non-managers.

Summary

The purpose of this study is to investigate the relationship between continuing professional education and job satisfaction by examining the hours of training attended for IT managers and non-managers. Chapter 3 detailed the methodology used for this study. This chapter began by discussing the research hypotheses examined in this study. Additionally, the chapter described the ex post facto design used for this research project. The population included members of four e-mail lists used primarily by higher education information technology employees. Participants who chose to respond to the e-mail notification determined the sample. This chapter details the JDI/JIG and PRS instruments used in this study. The Web-based data collection process used by the researcher also was detailed in this chapter. The chapter concluded with a discussion explaining how the data were analyzed for each hypothesis. Chapter 4 presents the results of the study's collected data.

CHAPTER 4

RESULTS

Purpose of Study

The purpose of this quantitative study is to determine whether the perceived reasons for pursuing continuing professional educational activities correlates with improved job satisfaction for information technology employees in institutions of higher education. The study also examines the relationship between the hours of continuing professional education attended and the degree of job satisfaction and whether the position level held by an employee influences his or her perceived benefits of training as related to overall job satisfaction. The population of this study is IT employees from higher education.

Participants in the Study

The researcher conducted a pilot study to determine the accuracy of the Web-based questionnaire and the instructions. The pilot study consisted of eight IT professionals who provided initial data input and feedback. The feedback from the pilot participants resulted in minor typographical corrections and a more accurate estimate of the survey timing. The pilot group also tested the notification process and delivery methodology of the survey. The pilot study data points were not included in the survey results.

The researcher solicited participants through a series of e-mail messages posted to four e-mail lists frequently used by IT professionals in higher education. Two e-mail lists were moderated message lists, and two lists were open lists where individuals freely post messages. The list included the Association of Computing Machines Special Interest Group for University and College Computing Services (SIGUCCS) ($n = 1190$); Lab Manager (LABMGR) ($n = 548$); and the members of Higher Education and Resource Technologies of Texas (HEARTT) ($n = 120$) peer

group, a community of IT user service professionals in Texas. Of the 227 surveys attempted, 11 were not to completed. These partial attempts were not included in the analysis. Tables 6 and 7 summarize the demographic data collected for this study.

Table 6

Demographic Frequencies of Participant's Gender, Education Level, Residential Region, and Institution Type

	Count	Percentage	Management level			
			Managers		Non-managers	
			Count	Percentage	Count	Percentage
Gender						
Male	117	54.4%	65	56.0%	52	52.5%
Female	98	45.6%	51	44.0%	47	47.5%
Education Level						
HS Diploma	14	6.5%	5	4.3%	9	9.1%
Associate's	25	11.6%	11	9.4%	14	14.1%
Bachelor's	91	42.3%	46	39.7%	45	45.5%
Master's	76	35.4%	48	41.4%	28	28.3%
Doctorate	9	4.2%	6	5.2%	3	3.0%
Region						
Mid-Atlantic	27	12.6%	15	12.9%	12	12.1%
Midwest	41	19.0%	20	17.2%	21	21.2%
New England	27	12.6%	18	15.5%	9	9.1%
Outside US	14	6.5%	6	5.2%	8	8.1%
South	47	21.9%	21	18.1%	26	26.3%
Southwest	39	18.1%	26	22.4%	13	13.1%
Western	20	9.3%	10	8.6%	10	10.1%
Institution Type						
Public	153	71.2%	80	69%	73	73.7%
Private	62	28.8%	36	31%	26	26.3%

N = 255, *n* = 116 for managers, *n* = 99 for non-managers.

Table 7

Basic Participant Demographics Associated to Age, Time Working Professionally, and Time on Current Job.

	Managers		Non-managers	
	Mean	<i>SD</i>	Mean	<i>SD</i>
Age	43.82	9.95	39.35	10.44
Years Working Professionally	19.54	9.25	14.12	8.53
Years on current job	9.25	6.17	7.96	6.62

N = 255, *n* = 116 for managers, *n* = 99 for non-managers.

Instrumentation

The researcher computed reliability of the data for each instrument used in this study with Chronbach's alpha, which is a measure of internal consistency. A coefficient alpha ranges in value from 0 to 1. A high coefficient alpha indicates more reliability for the data processed with that instrument. Nunnally (1978) indicated that an alpha of 0.7 is an acceptable reliability coefficient.

The reliability of the JIG data collected during this study for all cases of the 18 items was 0.896. Coefficient alphas for each subscale of the JDI were 0.907 (Work itself), 0.864 (Pay), 0.853 (Opportunities for Promotion), 0.983 (Supervision), and 0.839 (Coworkers).

The PRS data reliability was computed for all cases of the 30 items together (i.e., data from the entire instrument) for a coefficient alpha of 0.943. Coefficient alphas for each reason were 0.911 (Professional Improvement and Development), 0.911 (Professional Service), 0.863 (Collegial Learning and Interaction), 0.789 (Personal Benefits and Job Security), and 0.845 (Professional Commitment and Reflection).

Additionally, the researcher used a split-half analysis validating the data of the study. Good and Hardin (2003) described three main approaches for validation as independent verification, splitting the sample, and resampling. Sample splitting divides the sample into two parts, with one part estimating the model's parameters and the other half of the data used for verification. SPSS calculated a Spearman-Brown split-half reliability coefficient of 0.189. Coefficient alpha for the first half was 0.733 and for the second half, 0.842.

Data Assessment

Prior to the analysis, the researcher examined each independent variable to determine how closely the data corresponded to a normal distribution. The more normally distributed the data, the fewer biases and distortions that are likely to occur in data analysis. The most common checks for

normality include histograms and measurement of kurtosis and skewness. The histogram offers a visual inspection of the data to determine whether the data approximates a normal distribution. Kurtosis indicates the peakness or flatness of the distribution in comparison to the normal curve. Skewness indicates the degree of symmetry around the means for the data distribution (Hinkle et al., 1998). Histograms for each variable indicated that all the variables had a high negative skew.

Table 8 shows the results of the descriptive analysis of the independent and dependent variables. Kurtosis and skewness values of zero indicate normal distributions. For the skewness measure, large derivations from zero are indicative of non-normally distributed data. A negative value indicates that the distribution is negatively skewed. From the values shown in Table 8, the data were very skewed. Therefore, nonparametric tests were used to analyze the data, because these tests are not affected by non-normal and heterogeneity of variance (Hinkle et al., 1998).

Table 8

Summary Data of Main Variables

Variables	<i>N</i>	Mean	<i>SD</i>	Skewness	Kurtosis
Full Data Set					
Coworkers	215	39.93	10.82	-1.000	.534
Promotion	215	18.45	15.13	.774	-.474
Pay	215	31.94	16.46	-.235	-1.121
Supervision	215	39.06	13.40	-.940	.071
Work	215	41.34	13.22	-1.281	.830
Job In General	215	125.27	34.93	-1.310	1.155
Professional Development	215	52.19	9.86	-1.905	5.972
Professional Service	215	26.78	6.77	-.910	1.103
Collegial Learning	215	21.43	5.21	-.989	1.470
Personal Benefits	215	27.12	7.66	-.482	.409
Professional Commitment	215	26.80	8.04	-.296	.046
Managers					
Coworkers	116	40.09	10.87	-1.214	1.219
Promotion	116	20.24	15.66	.619	-.834
Pay	116	34.76	15.68	-.441	-.831
Supervision	116	38.59	13.93	-.864	-.148
Work	116	42.73	13.48	-1.541	1.551
Job In General	116	128.66	36.24	-1.587	1.958
Professional Development	116	53.34	8.47	-1.860	5.806

(table continues)

Variables	<i>N</i>	Mean	<i>SD</i>	Skewness	Kurtosis
Professional Service	116	27.52	5.79	-.769	.863
Collegial Learning	116	21.79	5.19	-.991	1.081
Personal Benefits	116	27.64	7.04	-.393	.479
Professional Commitment	116	27.59	7.36	-.164	.000
Non Managers					
Coworkers	99	39.75	10.82	-.761	-.167
Promotion	99	16.34	14.29	.983	.188
Pay	99	28.65	16.82	.014	-1.250
Supervision	99	39.61	12.79	-1.046	.442
Work	99	39.71	12.79	-1.047	.332
Job In General	99	121.29	33.08	-1.024	.450
Professional Development	99	50.83	11.16	-1.783	5.171
Professional Service	99	25.91	7.71	-.828	.638
Collegial Learning	99	21.01	5.23	-1.016	2.075
Personal Benefits	99	26.52	8.32	-.488	.211
Professional Commitment	99	25.86	8.72	-.301	-.111

Additionally, the researcher used scatterplots to visual inspect the data to check for a linear association between the variables in this study. The scatterplots indicated that the data tended to clump together for the variables, therefore violating the assumption of linearity needed for computing a Pearson product-moment coefficient. Therefore, the researcher used the nonparametric Spearman rank order coefficient because the data violated the assumptions of linearity and normal distribution.

Data Analysis

Ranking the results of the PRS from highest to lowest showed that IT professionals' ranked professional development as the most important reason to attend continuing professional education, while collegial learning was ranked lowest. Comparing the reasons between the groups showed that both managers and non-managers ranked professional development as the highest and collegial learning as the lowest. As seen in Table 9, IT professionals placed a high importance on skills, knowledge, and ability when considering their choices for CPE. The rank order also indicated that IT professionals do not consider collegial learning, learning from their peers, as a

high priority when choosing CPE. A comparison of the two groups revealed that managers and non-managers agreed on the rank order, with the exception of professional commitment and professional service, which the two groups reversed.

The findings of this study are consistent with other studies using the PRS that found professional development to be the most important reason for attending CPE (DeSilets, 1990; Grotelueschen, 1985; Harnisch, 1980).

Table 9

Rank Order of PRS Reasons (N=215)

Reason	Rank	Mean	SD
Full Data Set			
Professional Development	1	52.19	9.86
Personal Benefits	2	27.12	7.66
Professional Commitment	3	26.80	8.04
Professional Service	4	26.78	6.77
Collegial Learning	5	21.43	5.21
Managers			
Professional Development	1	53.34	8.47
Personal Benefits	2	27.64	7.04
Professional Commitment	3	27.59	7.36
Professional Service	4	27.52	5.79
Collegial Learning	5	21.79	5.19
Non Managers			
Professional Development	1	50.83	11.16
Personal Benefits	2	26.52	8.32
Professional Service	3	25.91	7.71
Professional Commitment	4	25.86	8.72
Collegial Learning	5	21.01	5.23

The remainder of this section presents the results of the data analysis for each hypothesis.

Hypothesis 1

H₀1a: There will be no statistically significant relationship between the number of CPE hours that IT managers attend and their overall job satisfaction as measured by the JIG scale summary.

A Spearman rank order correlation was used to determine whether a relationship existed between an IT manager’s total number of hours of attendance in continuing professional education and his or her overall job satisfaction. The Spearman *rho* was not statistically significant ($r_s = 0.053, p = 0.569$). Therefore, the null hypothesis was not rejected.

Expanding the hypothesis from just evaluating total hours of CPE, the correlation coefficients between overall job satisfaction and each type of contributing CPE activities were computed to see whether a significant correlation existed (shown in Table 10). A statistically significant negatively Spearman *rho* coefficient ($r_s = -0.196, p = 0.035$) was found for the activity hours of attending college courses and job satisfaction. However, the correlation coefficient was negligible.

Table 10

Correlation Between Number of CPE Hours and Overall Job Satisfaction for Managers

	Discuss	College	Selfst	Disted	Worksp	Confer	TotCPE
JIG	.130	-.196*	.036	-.017	.062	.167	.053
<i>Sig</i>	.163	.035	.703	.860	.511	.073	.569

Note. Discuss = discussion groups; College = college courses; Selfst = studying on own; Disted = distance education, Worksp = Workshops and seminars, Confer = conferences, TotCPE = Total CPE hours; JIG = overall job satisfaction. *Alpha is significant at the .05 level (2-tailed).

H₀1b: There will be no statistically significant relationship between the number of CPE hours that IT non-managers attend and their overall job satisfaction as measured by the JIG scale summary.

A Spearman rank order correlation was used to determine whether a relationship existed between an IT non-manager’s total number of hours of attendance in continuing professional education and his or her overall job satisfaction. The Spearman *rho* was not statistically significant ($r_s = -0.109, p = 0.284$). Therefore, the null hypothesis was not rejected.

Expanding the hypothesis from just evaluating total hours of CPE, the correlation coefficients between overall job satisfaction and each type of contributing CPE activities were computed to see whether a significant correlation existed (shown in Table 11). A statistically significant positive Spearman *rho* ($r_s = 0.249$, $p = 0.013$) was found for the activity hours of attending workshops and seminars and job satisfaction. However, the correlation was negligible.

Table 11

Correlation Between Number of CPE Hours and Overall Job Satisfaction for Non-Managers

	Discuss	College	Selfst	Disted	Worksp	Confer	TotCPE
JIG	-.028	-.144	-.132	.126	.249*	.037	-.109
<i>sig</i>	.780	.154	.192	.213	.013	.713	.284

Note. Discuss = discussion groups; College = college courses; Selfst = studying on own; Disted = distance education, Worksp = workshops and seminars, Confer = conferences, TotCPE = Total CPE hours; JIG = overall job satisfaction. *Alpha is significant at the .05 level (2-tailed).

H₀1c: There will be no statistically significant difference between IT managers’ and non-managers’ degree of overall job satisfaction as measured by the JIG scale summary.

When comparing the rank means for overall job satisfaction for managers and non-managers, the Mann-Whitney *U* test did provide statistically significant results for overall job satisfaction. The *z* score ($z = -2.529$, $p = .011$) indicates that a statistically significant difference exists between IT managers’ and non-managers’ mean rank for overall job satisfaction, and therefore the null hypothesis was rejected. Table 12 shows the mean rank comparison between managers’ and non-managers’ overall job satisfaction as determined by the JIG scale.

Table 12

Mean Rank Comparison of Managers and Non-managers to the JIG scale

Variable	<i>U</i>	<i>Z</i>	<i>p</i>	Mean rank	<i>N</i>
JIG	4593.00	-2.53	.011*		
Managers				117.91	116
Non-managers				96.39	99

* $p < .05$ level (2-tailed).

Hypothesis 2

H₀2: There will be no statistically significant difference between the mean reasons why IT managers and non-managers pursue CPE as determined by summarizing the five factors of PRS.

Using the Mann-Whitney *U* test to examine the differences between managers' and non-managers' reasons for attending CPE failed to provide statistically significant results (Professional development: $z = -1.725, p = .084$; Professional Service: $z = -1.231, p = .218$; Collegial Learning: $z = -1.320, p = .187$; Personal Benefits: $z = -.842, p = .400$; Professional Commitment: $z = -1.372, p = .170$). Therefore, the null hypothesis was not rejected. Table 13 shows the mean rank comparison between managers' and non-managers' reasons for attending CPE.

Table 13

Mean Rank Comparison of Reason for Attending CPE for Managers and Non-Managers

Variable	<i>U</i>	<i>Z</i>	<i>p</i>	Mean rank	<i>N</i>
Professional Development	4959.00	- 1.73	.084		
Managers				114.75	116
Non-managers				100.09	99
Professional Service	5184.50	- 1.23	.218		
Managers				112.81	116
Non-managers				102.37	99
Collegial Learning	5144.00	- 1.32	.187		
Managers				113.16	116
Non-managers				101.96	99
Personal Benefits	5359.50	- .84	.400		
Managers				111.30	116
Non-managers				104.14	99
Professional Commitment	5119.00	- 1.37	.170		
Managers				113.37	116
Non-managers				101.71	99

*Alpha is significant at the .05 level (2-tailed).

Hypothesis 3

H₀3a: There is no statistically significant relationship between the number of CPE hours that IT managers attend and their job satisfaction as measured by the summary of each subscale of the Job Descriptive Index (JDI) scale.

A Spearman rank order correlation was used to compute relationships between a manager's total number of hours of attendance in continuing professional education and the constructs of job satisfaction. For managers, a statistically significant correlation for the construct of supervision was found ($r_s = -.335, p < .001$). Additionally, none of the other constructs were found to be statistically significant, as shown in Table 14, and therefore, the null hypothesis was not rejected for those correlations. However, the null hypothesis was rejected for the condition of supervision.

To see whether if other correlations exist, each type of CPE activity was examined to see if a statistically significant relationship existed for the individual CPE activity hours and the subscales of job satisfaction. The Spearman *rho* test yielded statistically significant correlations between self-study and coworker ($r_s = -.184, p = .048$) and self-study and supervision ($r_s = -.373, p < .001$). The correlations in both instances were negative, and although there is a statistical significance, the correlation coefficient between self-study and coworkers indicated a low correlation. In the instance of self-study and supervision, the correlation is negligible. Another statistically significant correlation was found between attending college courses and the work itself ($r_s = -.214, p = .021$). This correlation was also negligible.

Table 14

Correlation Between Number of CPE Hours and JDI Subscales for Managers

	Coworkers	Promotion	Pay	Supervision	Work
Discussion groups	-.060	.024	-.073	-.080	.116
College courses	-.149	-.095	-.113	-.087	-.214*
Self study	-.184*	-.136	-.072	-.373*	-.068
Distance Education	-.130	.101	.045	-.024	-.029
Workshop and seminars	.070	.114	-.148	.084	.060
Conferences	.098	.121	.007	-.010	.158
Total CPE hours	-.119	-.076	-.074	-.335*	.062

*Alpha is significant at the .05 level (2-tailed).

H₀3b: There is no statistically significant relationship between the number of CPE hours that IT non-managers attend and their job satisfaction as measured by the summary of each subscale of the JDI scale.

For this hypothesis, a Spearman rank order correlation was used to compute relationships between a non-manager's total number of hours of attendance in continuing professional education and the constructs of job satisfaction. For non-managers no statistically significant correlations existed between the constructs of job satisfaction and the total hours of CPE attended as shown in Table 15. Therefore, the null hypothesis was not rejected.

To see if other correlations exist, each type of CPE activity was examined to see whether a statistically significant relationship existed for the individual CPE activity hours and the subscales of job satisfaction. The Spearman *rho* test did yield statistically significant correlations for workshop attendance in relationship to pay ($r_s = -.210, p = .037$) and the work itself ($r_s = -.240, p = .017$). The correlations in both instances were positive. Although there was statistical significance, the correlation between attending workshops and pay and attending workshops and supervision indicated that the results were negligible.

Table 15

Correlation Between Number of CPE Hours and JDI Subscales for Non-Managers

	Coworkers	Promotion	Pay	Supervision	Work
Discussion groups	– .045	.057	.051	– .061	– .008
College Courses	– .022	.164	– .226	.094	– .157
Self study	– .132	.019	.013	– .103	– .110
Distance Education	– .041	.128	– .003	– .052	.154
Workshop and seminars	.151	.175	.210*	.147	.240*
Conferences	– .064	– .070	.112	– .114	.039
Total CPE hours	– .122	.042	.006	– .090	– .080

*Alpha is significant at the .05 level (2-tailed).

Hypothesis 4

H₀4a: For IT managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

The researcher used exploratory factor analysis to uncover any underlying structure among the 10 variables of reasons for attending CPE and job satisfaction for IT managers. The researcher's à priori assumption was that any indicator may be related with any factor. Using the extraction method of principle component analysis and a varimax orthogonal rotation, it was determined that only two factors were present, which explained 57.52% of the component variance. The decision criteria for determining the factors were simple structure and the root criterion. The root criterion method stops the extraction process when the eigenvalues are > 1 . Hair, Anderson, and Tatham (1987) stated that the root criterion method is the best, most accurate approach to use when the number of variables is small and the communalities are high. Simple structure is a criterion for the “goodness” of a factor solution (Hair et al., 1987).

Table 16 shows the components of the rotated matrix. From the factor analysis, IT non-managers' reasons for attending CPE only correlated with reasons for attending CPE and

constructs of job satisfaction only correlated with job satisfaction indicating that the variables were not intercorrelated. Therefore, the null hypothesis was not rejected.

Table 16

Rotated Component Matrix for Two Factors With the Means and Standard Deviations for IT Managers

Variable	Component 1 Job satisfaction	Component 2 CPE reason	Mean	SD
Co workers	.714*	.075	40.09	10.869
Promotion	.561*	-.004	20.24	15.655
Pay	.679*	-.183	34.76	15.679
Supervision	.727*	-.048	38.59	13.929
Work	.647*	.120	42.73	13.475
Professional Development	.039	.825*	53.34	8.472
Professional Service	.055	.793*	27.52	5.787
Collegial Learning	.201	.754*	21.79	5.186
Personal Benefits	-.300*	.691*	27.64	7.044
Professional Commitment	-.082	.823*	27.59	7.356

Note. * Factor is significant at $> .3$. Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization.

Another approach for determining factors involves using a scree plot. Hair (1987) recommends using a combination of approaches for determining the number of factors to extract and that use of the root criterion and scree test provides an effective means for determining the number of factors.

Upon examination of the scree plot (shown in Figure 1) the root criterion was examined for eigenvalues $> .8$ to ensure that too few or too many factors were not extracted. With eigenvalues $> .8$, three possible components were produced for IT managers. Hair et al. (1987) indicated that the criteria for choosing the significance of factor loading are related to the size of the sample, the number of variables being analyzed, and the number of factors. A rule of thumb for preliminary evaluation is to use factor loading of $> \pm .3$ when the sample is greater than 50. Examination of the factor matrix, showed that the two- factor solution had stronger factor loadings for the simple structure than the three-factor solution (shown in Table 17). The three-factor solution also had

crossing factoring and therefore did not provide any further explanation for the relationships between the variables other than increasing the accounted for percentage of variance.

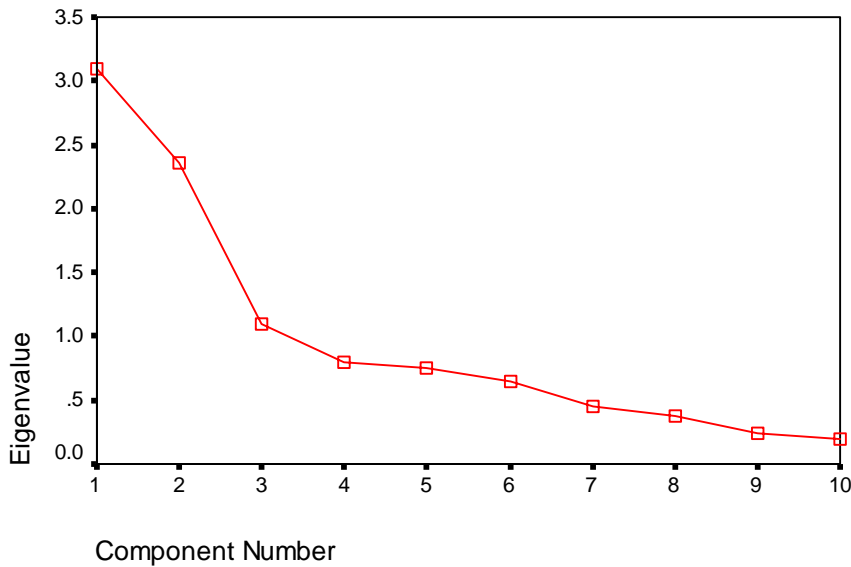


Figure 1. Scree plot for IT managers.

Table 17

Rotated Component Matrix for Three Factors With the Means and Standard Deviations for IT Managers

Variable	Comp. 1 CPE reasons	Comp.2 Combination	Comp. 3 Job satisfaction	Mean	SD
Coworkers	.080	.698*	.249	40.09	10.87
Promotion	.030	.087	.843*	20.24	15.66
Pay	-.160	.366*	.660*	34.76	15.68
Supervision	-.035	.573*	.450*	38.59	13.93
Work	.117	.745*	.067	42.73	13.48
Professional Development	.816*	.173	-.199	53.34	8.47
Professional Service	.787*	.145	-.131	27.52	5.79
Collegial Learning	.750*	.275	-.060	21.79	5.19
Personal Benefits	.701*	-.483*	.140	27.64	7.04
Professional Commitment	.834*	-.262	.201	27.59	7.36

Note. *Factor is significant at > .3. Extraction Method: Principal Component Analysis with Rotation Method: Varimax with Kaiser Normalization.

Additionally, the factors were analyzed with oblique rotation, again yielding no further explanations for the addition of more components.

H₀4b: For IT non-managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

Again, an exploratory factor analysis was used to uncover any underlying structure among the 10 variables of reasons for attending CPE and job satisfaction for IT non-managers. The researcher’s à priori assumption was that any indicator relates to any factor. Using the extraction method of principle component analysis and a varimax orthogonal rotation, it was determined that only two factors were present, which explained 54.6% of the component variance. The decision criteria for determining the factors were simple structure and the root criterion. Using the root criterion method stops the extraction process when the eigenvalues are > 1.

Table 18 shows the components of the rotated matrix for non-managers. From the factor analysis, non-managers’ reasons for attending CPE only correlated with reasons for attending CPE, and constructs of job satisfaction only correlated with job satisfaction, indicating that the variables were not intercorrelated. Therefore, the null hypothesis was not rejected.

Table 18

Rotated Component Matrix for Two Factors with the means and Standard Deviations for Non-Managers

Variable	Factor 1 Job satisfaction	Factor 2 CPE reason	Mean	SD
Coworkers	.697*	.368	39.75	10.818
Promotion	.678*	.289	16.34	14.292
Pay	.615*	.003	28.65	16.818

(table continues)

Variable	Factor 1 Job satisfaction	Factor 2 CPE reason	Mean	SD
Supervision	.714*	.365	39.61	12.790
Work	.486*	.362	39.71	12.790
Professional Development	-.214	.824*	50.83	11.159
Professional Service	-.181	.793*	25.91	7.714
Collegial Learning	-.263	.713*	21.01	5.228
Personal Benefits	-.234	.671*	26.52	8.316
Professional Commitment	-.282	.804*	25.86	8.718

Note. *Factor is significant at $> .3$. Extraction Method: Principal Component Analysis with Rotation Method: Varimax with Kaiser Normalization.

Upon examination of the scree plot (shown in figure 2), the root criterion was examined for eigenvalues $> .8$ to ensure that too few or too many factors were not extracted. For IT non-managers, eigenvalues $> .8$ produced two possible components. Additionally, the factors were analyzed with oblique rotation, again yielding no further explanation for the components.

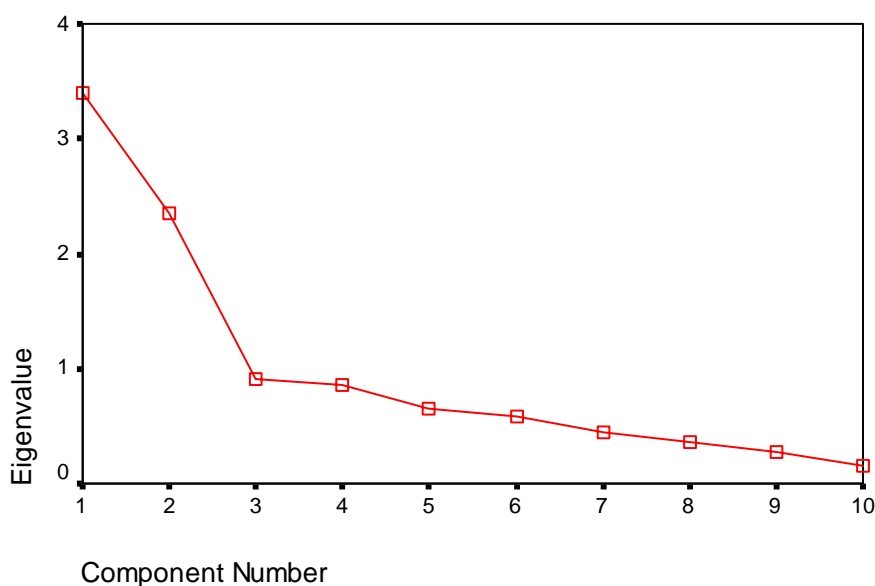


Figure 2. Scree plot for IT non-managers.

Further Assessment

The sample size ($n = 215$) for this study was sufficient for the factor analysis (Hair et al., 1987). However, the sample size was not sufficient to overcome the sample non-normality. The sample sizes needed for each variable were calculated post hoc and are recorded in Table 19. The

lack of normality in the distribution also can be seen in the cases where the standard deviations are larger than the mean.

The effect sizes for this study are considered small. Hinkle et al. (1998) described effect size as the degree to which a phenomenon exists, although the description is ambiguous. Cohen's (1965) benchmarks for effect size are usually expressed as "small" greater than or equal to .2, "medium" greater than or equal .5 and "large" greater than or equal .8 when used for mean values. However, for correlations, Kirk (1996) recommends using the population point biserial correlation coefficient. The effect size values for ρ_{bp} are usually expressed as "small" = .1, "medium" = .24 and "large" = .37. Table 19 shows the SPSS and PASS 2000 calculations for effect sizes. The researcher calculated the effect size for each variable used in this study.

Summary

This chapter discussed the purpose of this study as related to the data and also described the participants of the study with summaries of the descriptive demographic data. The instrumentation section presented the results of Chronbach's alpha to measure the instrumentation's reliability and validity as related to the data of this study. Concerns surrounding the data's lack of normality of the data and linearity were discussed in the section on data assessment. The data analyses section presented the statistical test used to analysis the data and the results of the analysis. The results were organized by hypotheses. Chapter 5 presents the implications and conclusion from the data analysis.

Table 19

Power Analysis and Post Hoc Sample Size Calculation for Each Variable

Variable	Managers (N=116)		Non-Managers (N=99)		Observed power	<i>Eta</i>	PASS (Program for power analysis)		N needed (each group) for 80% power
	Mean	SD	Mean	SD			Power	Effect size (<i>d'</i>)	
Coworkers	40.09	10.87	39.93	10.81	.056	>.001	.053	.015	>10,000
Promotion	20.24	15.66	16.34	14.29	.470	.017	.446	.259	254
Pay	34.76	15.68	28.65	16.82	.034	.783	.812	.377	104
Supervision	38.59	13.93	39.61	12.79	.085	.001	.085	.076	2928
Work	42.73	13.48	39.71	12.79	.387	.013	.375	.229	313
Professional Development	53.34	8.47	50.83	11.16	.464	.016	.582	.256	179
Professional Service	27.52	5.79	25.91	7.71	.411	.014	.530	.239	203
Collegial Learning	21.79	5.19	21.01	5.23	.194	.006	.198	.150	695
Personal Benefit	27.64	7.04	26.52	8.32	.187	.005	.215	.146	622
Professional Commitment	27.59	7.36	25.86	8.72	.351	.012	.406	.216	284
JIG	128.66	36.24	121.29	33.08	.338	.011	.320	.212	380
CPE Hours	221.31	273.90	196.71	273.25	.100	.002	.102	.090	1947

Calculations based on assuming $\alpha = .05$, Power = 80%, Normal Distribution, (unknown) equal variances, and 2-sided 2 Independent Samples t-test.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study was to investigate whether the perceived reasons for pursuing continuing professional education (CPE) activities related to improved job satisfaction for information technology employees in institutions of higher education. This study examined the relationship by comparing the number of hours of professional development attended to overall job satisfaction and the job satisfaction subscales. Additionally, the researcher examined the relationships among job satisfaction and the reasons for attending CPE by position level. This chapter summarizes the study and provides discussion and conclusions about the study results. The limitations of these results, the implications for higher education information technology (IT) managers, and suggestions for possible research also are presented in this chapter.

Summary of Study

The goal of the study was to discover relationships between attending CPE and job satisfaction for IT professionals in higher education. The study examined relationships between the hours of CPE attended, overall job satisfaction, and the constructs of job satisfaction for managers and non-manager holding IT jobs in higher education. In addition, the difference between managers' and non-managers' reasons for attending CPE was examined. Finally, the researcher investigated whether any relationships existed between the constructs of job satisfaction and the reasons for attending CPE.

The researcher collected data for this study using a Web-based survey application. The researcher solicited participation through a series of e-mail discussion lists frequently used by IT employees in higher education. The survey was comprised of three instruments and a demographic

section. The instruments used for this study were the Participation Reasons Scale (PRS) to measure the reasons an individual pursues CPE and the Job in General (JIG) and the Job Descriptive Index (JDI) to measure job satisfaction. The survey data were analyzed using frequency counts, means, standard deviations, Spearman *rho* correlations, Mann Whitney *U* mean rank order, and exploratory factor analysis.

Discussion of Results

Results compiled from survey responses address the following hypotheses, discussed in order below:

Hypothesis 1

H₀1a: There will be no statistically significant relationship between the number of CPE hours that IT managers attend and their overall job satisfaction as measured by the JIG scale summary.

For this study, the definition used for continuing professional education is those learning activities that an individual employee participates in that are directly related to the growth of that individual's knowledge, skills, or attitudes. Job satisfaction was defined for this study to be an affective reaction to a job that results from the incumbent's comparison of actual outcomes with those that are desired (expected, deserved, etc.) (P. C. Smith et al., 1969). Data collected in this study indicate that the null hypothesis concerning an IT manager's total number of hours of CPE attended and his or hers overall job satisfaction is not rejected. Therefore, the results show that no relationship exists between a managers' overall job satisfaction and the total of hours of CPE attended. Prior to the study, the researcher believed that a relationship existed between a manager's total number of hours of CPE and job satisfaction. However, the data in this study

failed to provide evidence that a relationship exists between a manager's overall job satisfaction and the total number of CPE hours that the individual attends.

Therefore, researcher expanded the hypothesis to determine whether the types of CPE hours contributing the total number of hours had a relationship to overall job satisfaction. In the case of managers, attending college courses has statistical significance; however, the correlation was negligible, and therefore the magnitude of the correlation was not large enough to indicate a strong statistical relationship. Additionally, the correlation coefficient was negative, which indicates that attending more college courses may decrease a manager's overall job satisfaction.

These results support and add to the existing literature relating training and development to the job satisfaction literature. This study supports similar studies examining job satisfaction and workplace, showing that workplace learning does influence an employee's job satisfaction (Acker, 2004; Rowden, 2002). Additionally this study contributes new information to the body of literature by establishing a relationship between the organizational roles of manager to the specific types of CPE learning activities that an individual receives and overall job satisfaction.

For managers this study indicates that a negative correlation exists between attending college courses and overall job satisfaction, and although correlation was low, the negative relationship is an unexpected result. This negative relationship demands further investigation to determine the underlying causes for why attending colleges would have a negative influence on overall job satisfaction. One possible explanation that needs further investigation is to determine whether learning new theories and ideas causes managers to view their work environment differently, perhaps creating a desire to try new approaches to managing that may create frustration with their existing job constraints thereby influencing their job satisfaction in a negative manner.

The negative correlation does not indicate that managers should not attend college courses because it will lower overall job satisfaction. Instead, it indicates that employers need to understand more about the connections between new learning and an employee's job satisfaction. It would be worth examining this correlation in more detail to discover the underlying causes to why attending college courses would have a negative influence on job satisfaction.

H₀1b: There will be no statistically significant relationship between the number of CPE hours that IT non-managers attend and their overall job satisfaction as measured by the JIG scale.

The null hypothesis concerning non-managers' total number of hours of CPE attendance and their overall job satisfaction is not rejected. Therefore, a non-manager's overall job satisfaction has no relationship to the total number of hours of CPE he or she attends. Prior to the study, the researcher believed that a relationship existed between a non-manager's total number of hours of CPE and job satisfaction. However, the data in this study failed to provide evidence that a relationship exists between a non-manager's overall job satisfaction and the total number of CPE hours that the individual attended.

The researcher expanded the hypothesis to determine whether the types of CPE hours contributing to the total number of hours had a relationship to overall job satisfaction. In the case of non-managers, attending workshops and seminars was statistically significant; however, the correlation was negligible. In this case, the correlation was positive, which indicates that increasing the number of hours attending workshops and seminars increased overall job satisfaction.

These results support and add to the existing literature. This hypothesis supports the results of similar studies that examine job satisfaction showing that workplace learning does influence an employee's overall job satisfaction (Acker, 2004; Rowden, 2002). Additionally this study contributes new information to the body of literature by establishing a relationship between the organizational role of non-manager to specific type of CPE learning activities that an individual receives and overall job satisfaction.

For non-managers, the relationship between the learning activity of workshops and seminars and overall job satisfaction adds new information to the existing literature. This relationship indicates that what non-managers learn through a workshop or seminar influences their overall job satisfaction. One possible explanation for this positive relationship could be that the type of information covered in a workshop or seminar is usually directly applicable to an individual's job. Therefore, the employee uses the new learning right away on the job that positively influences the his or her overall job satisfaction because the employee's new learning contributes right away to the job.

H₀1c: There will be no statistically significant difference between IT managers' and non-managers' degree of overall job satisfaction as measured by the JIG scale summary.

As a corollary to the above hypotheses, the researcher wanted to see whether a there was a difference between IT managers' and non-managers' degree of overall job satisfaction. In this case, the data show that a difference exists between the mean rank scores for managers' and non-managers' overall job satisfaction. Managers reported a higher mean rank score for overall job satisfaction than non-managers. Therefore, the position level that an employee holds does contribute to his or her overall job satisfaction. Further examination of the subscales of JDI helped to explain more about the differences in overall job satisfaction. The subscales indicate

that differences are present between managers and non-managers for the subscales of pay and the work itself. A possible explanation for these results may be that a manager's higher pay and additional work responsibility contribute to his or her overall job satisfaction. These findings are consistent with prior job satisfaction research (Grzyb et al., 1998; Kuo & Chen, 2004) indicating that job levels, such as management and non-management, influence differences in an employee's overall job satisfaction.

Hypothesis 2

H₀2: There will be no statistically significant difference between the mean reasons why IT managers and non-managers pursue CPE as determined by summarizing the five factors of PRS.

Prior to this study, the researcher anticipated that managers and non-managers would have different reasons for choosing CPE activities. This hypothesis was questioning whether Houle's (1961) theory of adult learners would be different for position level. However, in an examination of the differences between managers' and non-managers' reasons for pursuing CPE, the data failed to provide statistically significant results for the factors of professional development, personal benefit, professional commitment, collegial learning, and professional service. Therefore, the null hypothesis is not rejected concerning differences between why the managers and non-managers pursue CPE.

Therefore, the result of this hypothesis contributes new information to the literature in that the reasons why IT managers and non-managers employed in higher education attend CPE do not have statistically different means from one another. One explanation for failing to indicate a difference between the managers and non-managers could be that IT professionals in higher education may be too similar to each other when choosing reasons for attending CPE. For

example, IT professionals in higher education are well educated (as shown in Table 6), and many managers are working managers who are doing IT work as well as managing. Choosing another population might produce a statistically significant difference in the reasons for choosing CPE. For example, a population where managers and non-managers have different educational experiences might provide a greater difference in the mean difference. Another explanation could be that the reasons indicated by the PRS are not the reasons this population chose CPE.

Hypothesis 3

H₀3a: There is no statistically significant relationship between the number of CPE hours that IT managers attend and their job satisfaction as measured by the summary of each subscale of the Job Descriptive Index (JDI) scale.

From the work of P. C. Smith et al. (1969), job satisfaction was theorized to be a multidimensional construct comprised of five subscales – work, pay, promotion, supervision, and coworkers. The researcher computed correlations between the subscales of job satisfaction and with the total hours of CPE attended by IT managers. The data collected indicate that the null hypothesis is not rejected with regard to explaining of the difference an IT manager's total of hours of CPE attended and his or her job satisfaction as measured by the subscales of pay, promotion, coworkers, and the work itself. However, the null hypothesis is rejected for the total hours of CPE attended by IT managers and the subscale of supervision.

Prior to this study, the researcher believed that relationships may exist between the subscales of job satisfaction and the total hours of CPE that a manager attends. For example, attending professional development activities related to management could make existing managers more confident about their own work, thereby contributing positively to manager job

satisfaction. For managers, only the subscale of supervision showed statistical significance; however, the correlation was low and negative.

Expanding the evaluation, the researcher examined the relationships between the types of CPE hours contributing to the total number of hours and the job satisfaction subscales. In the case of managers, the results are statistically significant between the CPE activity type of self-study and the job satisfaction constructs of coworkers and supervision. Additionally, the results are statistically significant between the CPE activity type of attending college courses and the job satisfaction construct of the work itself. However, in all these cases the correlation coefficients indicate low correlations. Additionally, the correlation coefficients were negative, which indicates that increasing the hours of CPE attended decreases a manager's job satisfaction regarding coworkers, supervision, and the work itself.

Although the correlations were low, these results contribute new information to the literature about CPE and job satisfaction. Therefore, this study demands further investigation with a larger, more powerful sample, to prove that continuing professional education contributes to a manager's job satisfaction.

H₀3b: There is no statistically significant relationship between the number of CPE hours that IT non-managers attend and their job satisfaction as measured by the summary of each subscale of the JDI scale.

The researcher computed correlations between the subscales of job satisfaction and with the total hours of CPE attended by IT non-managers. The data collected indicate that the null hypothesis is not rejected with regard to explaining of the difference between an IT manager's total of hours of CPE attended and his or her job satisfaction as measured by the subscales of pay, promotion, coworkers, supervision, and the work itself.

Prior to this study, the researcher believed that relationships existed between the subscales of job satisfaction and the total hours of CPE that a non-manager attends. For example, attending professional development activities related to the employee's work could make an existing employee more satisfied with what he or she does on the job.

Through further inspection, the researcher examined the relationships between the types of CPE activities contributing to the total number of hours and the job satisfaction subscales. In the case of non-managers, the results were statistically significant between the CPE activity type of attending workshops and seminars and the job satisfaction subscales of pay and work. However, in both of these cases the correlation was negligible. The correlation was positive, which indicates that increasing attendance in workshops and seminars will increase job satisfaction in the areas of pay and work.

Although the correlations were low, these results contribute new information to the literature about CPE and job satisfaction. Therefore, this study demands further investigation with a larger, more powerful sample, to prove that continuing professional education contributes to a manager's job satisfaction.

Hypothesis 4

H₀4a: For IT managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

From the results of the factor analysis, the null hypothesis is not rejected in the case of IT managers. The researcher used exploratory factor analysis to determine whether an underlying structure existed between the variables associated with subscales of job satisfaction and the

reasons for attending CPE. Prior to this study, the researcher wanted to see whether a relationship existed between these variables. However, the results show that the constructs of job satisfaction relate to job satisfaction and the factors associated with the reasons for attending CPE relate to the reasons for attending CPE. Therefore, the results show no associations among the constructs of job satisfaction and the reasons for attending CPE. The result that no relationship exists between the subscales of job satisfaction and the reasons for attending CPE does contribute new information to the literature.

Another conclusion worth pursuing is the results from examination of the scree plot, which indicates the existence of a third component for IT managers. The third component solution is rejected because of cross-factor loading. However, if the study had a larger, more normally distributed sample, a third component factor solution relating the job satisfaction and reason for attending CPE may exist for IT managers. Therefore, further investigation is necessary to prove or disprove the existence of a third component relating the constructs of job satisfaction and the reasons for attending CPE. Although the results are not strong, this hypothesis contributes new information to the literature of job satisfaction and CPE with the possible relationship between the job satisfaction subscales of coworkers, pay, supervision, and the work itself and the CPE reason of personal benefits.

H₀4b: For IT non-managers, there are no statistically significant correlations between the summary of the five groups of reasons for pursuing CPE as measured by the PRS and the summary of the five constructs of job satisfaction subscales as measured by the JDI.

From the results of the factor analysis, the null hypothesis is rejected in the case of non-managers. The exploratory factor analysis failed to uncover an underlying structure between the

subscales of job satisfaction and reasons for attending CPE. Prior to this study, the researcher wanted to determine whether a relationship existed between the subscales of job satisfaction and reasons for attending CPE. However, the results show that for non-managers' job satisfaction constructs are related to job satisfaction and the factors associated with the reasons for attending CPE are related to the reasons for attending CPE. Therefore, the results show no associations between the subscales of job satisfaction the reasons for attending CPE. The result that no relationship exists between the subscales of job satisfaction and the reasons for attending CPE does contribute new information to the literature.

Limitations of Results

The data for this study were not normally distributed, but rather they had negative skew for all but the variables of promotion. Therefore, the researcher used the nonparametric tests of the Spearman rank order and Mann Whitney U to analyze the data. These test statistics tend to be more conservative in producing results. The lack of normality could be a function of the population's being too similar or a function of the researcher's sampling process not being random enough to identify a cross-section of the population, thereby eliminating the possibility of generalizing the results of this study.

Another limitation of these results relating to the lack of normality could be the inherent difficulties associated with self-reporting surveys (Gall et al., 1996). With self-reporting surveys, the researcher has to assume that the participants will answer honestly to the best of their ability. In addition, there may be confusion on the part of the participants about how to respond to specific questions. For example, some of the questions related to the hours of the CPE could have been difficult to respond to if the participant did not keep accurate records of the CPE that they had attended during the last 6 months. In addition, the categories that the researcher used

may not have been relevant to the participants' CPE activities. Other limitations that the researcher was not able to control for include the duration of the CPE activities and the types of CPE that participants attended and that the researcher did not ask about on the survey. Also, the quality of the CPE activities that the participants attended in the past was not controlled. A possibility for improving this study to account for these issues could be the use of a longitudinal design with a smaller sample.

Although the sample size of 216 appears to be a large sample, a larger sample is necessary for this study to be generalizable to the population of IT professionals in higher education. With 1,858 IT employees being solicited for participation in this research, the response rate was only 12%, indicating a low response. The inherent limitations of online research could explain the low response rate experienced by the researcher. Joinson (2001) noted that Web-based surveys have been found to have lower response rates than traditional mail surveys, but that some of the low response rate could be overcome by multiple reminders. Although researcher employed several techniques to solicit participation such as multiple reminders and incentives, the population still voluntarily had to agree to participate. Gall et al. (1996) acknowledged that volunteerism also contributes to biased sampling of the target population.

Another factor that could have affected the data of the study was nonresponse bias. Nonresponse bias can take two forms, one being total nonresponse, which occurs when the individual chooses not to respond at all, and unit nonresponse, which occurs when all the items on the survey are not completed (Joinson, 2001). The researcher used all fully completed survey attempts. The researcher did not use incomplete attempts for data. Therefore, unit nonresponse

was not an issue; however, total nonresponse bias was a possible limitation of this study, and this issue could partially explain the lack of normally distributed data.

The results of this study are bound by the limitations of the JIG and JDI. For example, the researcher did not control for the general personality construct of happiness. P. C. Smith (1992) concluded that “the happy person not only tends to be more satisfied with everything, including his or her experiences and behaviors, but also views events differently” (p. 13). The influence of happiness could be that, in all probability, people who are generally happy have greater job satisfaction. Additionally the JDI does not account for other workplace factors such as stress, a common workplace condition which has been attributed to job dissatisfaction (Stanton, Bachiochi, Robie, Perez, & Smith, 2002)

Additionally, the results of this study are bound by the limitations of the reason for participation in CPE as described by the factors measured by the PRS. There are several factors that PRS does not take into consideration. For example, the PRS does not account for participants who attend CPE activities because of coercion by management in their organization, professional affiliations, or legal requirements. Additionally, the PRS does not address barriers to attending CPE such as travel, budget, and time, which also may have influenced the results. Also, factors such as formal versus informal, current oriented versus future oriented, voluntary versus mandatory (McCamey, 2003) were not measured by the PRS and could have impacted the participants’ results.

Implications for Higher Education IT Managers

In this study, total hours of CPE activities failed to be associated with overall job satisfaction and the constructs of job satisfaction. However, the results indicate some small associations between the types of CPE activities with overall job satisfaction and the subscales of

job satisfaction. Therefore, CPE may contribute to aspects of an employee's job satisfaction, but more research is necessary to determine these associations, definitively.

In addition, there was no evidence that the reasons measured by the PRS produced different results for IT managers versus non-managers. Additionally, the reasons for attending CPE as measured by the PRS failed to be associated with the five subscales of job satisfaction. Therefore, the reasons of professional development, professional commitment, personal benefit, professional service and collegial learning used by this study may not explain the reasons IT professionals in higher education choose to attend CPE. Other factors such as formal versus informal, current oriented versus future oriented, voluntary versus mandatory (McCamey, 2003) may be more relevant.

However, this study did find that both managers and non-managers prefer to attend CPE activities related to their professional development and improvement as seen from the descriptive data ranking. This result is consistent with prior research results (DeSilets, 1990; Grzyb et al., 1998; McCamey, 2003). In addition, this study shows that IT professionals in higher education tend to have high job satisfaction as seen from the mean values for overall job satisfaction and the job satisfaction subscales.

Suggestions for Further Research

The results of this study contribute to the body of researcher associated with CPE and job satisfaction. This research focused on the relationship between the total hours of CPE, types of CPE activities, job satisfaction, and relationships between attending CPE and job satisfaction and differences between job satisfaction and the reason for CPE for managers and non-managers employed in IT job at institutions of higher education. However, this research can be extended to either prove or disprove the results and discover the causes for the relationships found. Some

possible recommendations to extend the research of this study include the following suggestions.

One of the results of this study show that college course correlate negatively to job satisfaction. This surprising result is worth further examination to discover the underlying causes. Understanding more about the contribution between workplace learning and employee job satisfaction could help IT management to make smarter decisions about choosing learning activities for employees.

This study solicited the population through e-mail lists; replication of the study using different sampling methods could produce better results. The type of solicitation used for survey participation inherently produces low response rates and has a high possibility for nonresponse bias (Joinson, 2001). Selecting the population and sample with more care such as targeting a specific institution or institutions of higher education also may produce a better sample with a more normally distributed data while still keeping the data generalizable.

The focus of the study examined the population of IT professionals in higher education and their position levels as managers or non-managers. Further research could replicate this study using IT professionals who are not working in higher education and compare those employees to IT professional in higher education to see the difference in preferences for CPE and job satisfaction. Comparing IT professional in higher education to their counterparts in industry could help higher education managers attract and retain IT employees.

This study used a specific population of IT professional in higher education; another suggestion would be to replicate this study using a different population of working professionals to see if the results would be similar or different to IT professionals.

Another suggestion would be to duplicate this study using different instruments to measure the reasons for attending CPE or to measure job satisfaction. The use of other instruments could

produce better correlations between the CPE and job satisfaction. The reasons for CPE as measured by the PRS may not be the reasons IT professionals consider relevant when choosing CPE. Therefore, a qualitative or mixed-methods study to determine the reasons for choosing CPE would be beneficial to the IT managers and would contribute to the existing literature.

Lastly, an interesting extension of this research would be to investigate the reasons IT professionals stay in higher education. This extension could have worthwhile implications to help IT management in recruiting and retaining employees. A mixed-methods approach would probably be necessary to implement this suggestion.

Conclusions

The purpose of this study was to investigate the relationship between the reasons for attending continuing professional education and job satisfaction for employed managers and non-managers in higher education information technology positions. This study furthers the existing research into job satisfaction and continuing professional education. The results do not indicate strong evidence that relationships exist between the reasons for participating in continuing professional education and overall job satisfaction or the construct of job satisfaction - work, pay, promotion, supervision, and the work itself. The study shows weak evidence that manager and non-managers have a difference between overall job satisfaction. Additionally, this study indicates that weak relationships exist between overall job satisfaction and certain types of CPE activities. This study shows that relationships do exist between attending CPE and job satisfaction. Better sampling methods may produce better results and is worth pursuing with other studies.

APPENDIX A
INFORMED CONSENT LETTER

I am currently involved in a research project investigating the reasons why information technology professionals working in higher education choose to attend educational, training and/or development activities and how those reasons for attendance relate to their job satisfaction. This study will strive to explain the importance of why IT professionals need continuous educational and training experiences. I would appreciate your assistance with this research project. All you need to do is complete this online questionnaire, which should take approximately 20 minutes.

To volunteer for this study you must meet the following criteria:

1. You must be 18 years of age or older to participate
2. You must be working in an information technology positions
3. You must be employed at an institution of higher education that can include community colleges or public or private colleges and universities.

If you would like to participate in this study, you must read and agree to the following information:

1. I understand what the study is about and how and why it is being conducted.
2. I understand that my responses will be completely anonymous; my name will not appear with questionnaire data. The data will be stored on a secure server.
3. I understand that I do not have to participate in this study and my refusal to participate or my decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop my participation at any time.
4. There are no foreseeable psychological or physical risks associated with participation in this study. Although there is no direct benefit for participating in the study, my participation will increase the body of research involved in understanding the issues surrounding an employees attendance in development and training activities and their job satisfaction.
5. If you have any questions not discussed here you may contact Sandra Bennett, graduate student in the Applied Technology, Training and Development program at the University of North Texas by telephone at (254) 710-4133 or by email at Sandy_Bennett@baylor.edu or you may contact Dr. Jeff Allen in Applied Technology Training and Development department by telephone at (940) 565-2093 or by email at jallen@unt.edu.
6. I understand my rights as a research subject and I voluntarily consent to participate in this study. Completing and submitting the questionnaire constitutes my consent to participate.
7. This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). If there are any questions regarding your rights as a research subject, contact the UNT IRB at (940) 565-3940 or by email to sbourns@unt.edu. You may also request a summary of the research findings after the study is completed by contacting Sandra Bennett at (254) 710-4133 or Sandy_Bennett@baylor.edu.

APPENDIX B
PERMISSION TO USE POPULATION

Copy of Permission to Use SIGUCCS E-mail List

Sandy,

I also received the pdf document with the approval from UNT's institutional review board (IRB) from you professor. Your e-mail went out yesterday afternoon to the membership list. Also feel free to send it to the open list if you'd like. It includes many of the same folks but has a good number not on the membership list. See <http://www.acm.org/sigs/siguccs/lists.htm>

If you need to send out a reminder, just send email to: siguccs-members@acm.org and I'll approve it for you.

Good luck!

Terry

-----Original Message-----

From: Teresa Lockard [<mailto:tw15b@virginia.edu>]

Sent: Monday, February 28, 2005 2:03 PM

To: Bennett, Sandy

Subject: Re: Request for assistance

Sandy,

SIGUCCS would very much like to work with you on your project. The topic sounds like it would be of interest to our members and we would be very interested in the result. Maybe you could do an article for our web site or perhaps you would consider presenting your results at one of our 2 conferences. But we can talk about that later.

To get started, I will need an e-mail (nothing elaborate) from you advisor indicating that this is part of your research - just so we can cover our bases. Then I can approve an email from you to our general listserv and the membership mailing list with the link to your survey.

I think this is a great idea and we look forward to working with you.

Terry

--On Friday, February 25, 2005 5:20 PM -0600 "Bennett, Sandy"
<Sandy_Bennett@baylor.edu> wrote:

Dear Terry Lockard,

I am a PhD candidate working on my dissertation in Applied Technology, Training and Development at the University of North Texas. My dissertation research is examining the relationship between training and job satisfaction in Information Technology Professionals. In

order to gather data, I will be administering a web-based survey. I feel the SIGUCCS membership, of which I am a part, would provide a rich source of data for this purpose. Therefore, I request your permission to survey the SIGUCCS membership in one of the following ways:

- * Through forwarding a link to my research survey through your Listserv.
- * Through providing me with a list of email addresses of membership to which I can send my link, or
- * Through approving the delivery of an email to members whose email addresses I have gathered from previous conference lists.

Please let me know which of the methods best fits the SIGUCCS mission. In return for your assistance, I will gladly share the results of my research and its implications with the membership.

Thank you in advance for your consideration,

Sandy Bennett

~~~~~

Sandy Bennett  
Program Manager, Online Teaching and Support Electronic Libraries,  
Client Services

Baylor University  
One Bear Place #97148  
Waco, Texas 76798

Phone: 254-710-4133  
Fax: 254-710-7271  
Email: [Sandy\\_Bennett@baylor.edu](mailto:Sandy_Bennett@baylor.edu)

Copy of Permission to Use LABMGR E-mail List

Certainly. I've subscribed you to the list.

Donnie

Original Message From "Bennett, Sandy" <Sandy\_Bennett@BAYLOR.EDU>  
Hello,

I would like to have your permission to post a request for participation in an online survey that I am conducting for my doctoral research on the attitudes of continuing professional education as these attitudes relate to an individual's job satisfaction. I am a doctoral student at the University of North Texas. The population that I am studying is information technology professionals in higher education and your list is a great resource for higher IT professionals. I am requesting your permission so that this message does not get filter out as spam.

Below the signature is a copy of what I would post to the list. IF you need any additional information, please let me know.

Additionally, I too am an IT professional at Baylor University and a graduate of the UofA - BSEE '85.

Thanks for you consideration and GO HOGS!

Cheers,

Sandy

~~~~~  
Sandy Bennett
Program Manager, Online Teaching and Support Electronic Libraries,
Client Services

Baylor University
One Bear Place #97148
Waco, Texas 76798

APPENDIX C
PERMISSION TO USE JOB DESCRIPTIVE INDEX
AND JOB IN GENERAL SCALE

Dear Sandy,

Thank you for your interest in the JDI. I will attempt to answer each of your questions in turn. Yes, we would like to have your signature on the non-commercial agreement. You can do this by either emailing a PDF of the agreement with your electronic signature or by faxing the agreement. Administering the JDI on the internet, using the precautions you have mentioned, should be fine. Finally, we ask that you not place the full JDI in your dissertation. I have attached the sample items that may be used for reproduction. Please include only these items. This way the JDI may not be put together in a piecemeal fashion from various sources. Once I received your agreement signed I will process your order.

Best regards,
Alison

Alison A. Broadfoot
Department of Psychology
Bowling Green State University
Voice: 419.372.8247
Fax: 419.372.6013

-----Original Message-----

From: Bennett, Sandy [mailto:Sandy_Bennett@baylor.edu]

Sent: Friday, June 24, 2005 5:39 PM

To: jdi_ra@bgnet.bgsu.edu

Subject: Permission to use JDI/JIG

I am writing you to request permission to use the Job Descriptive Index and Job in General Scale to collect data for my dissertation. I am a doctoral candidate at the University of North Texas and I am doing my research on the relationship between the reasons an individual pursues continuing professional education and their job satisfaction. I am planning to administer the survey to information technology employees who work in higher education. I am happy to work with in your non-commercial contract and share all my data with you. The population for my survey is approximately 1190 although, I expect that between 100-300 participants will actually responded and that is probably ambitious. I am attaching the non-commercial agreement; however, I realize that this document is not signed. I will be happy to fax or send a signed pdf document if that is necessary.

Additionally, with your permission I would like to administer the survey via the World Wide Web. The instrument would be available only to the participants in this research through a password protected web site. This website is also not searchable from web scanning systems so the Job Descriptive Index and Job in General Scale will remain copyright secure.

Lastly, as you the copyright holder of the survey, may I have permission to include the instruments in the appendix of my dissertation.

Respectfully yours,
Sandy Bennett

APPENDIX D

PERMISSION TO USE PARTICIPATION RESPONSE SCALE

Sandy,

Great to hear of your interest in using the PRS in your thesis research. With this note to you I am giving you permission to use the PRS for your thesis research and in the preparation of an online form to capture the data. Please show the copyright details of the form in all locations where it is posted.

Please share with me a copy of your results and your final thesis.

Best regards,
Del

On 5/23/05, **Bennett, Sandy** <Sandy_Bennett@baylor.edu> wrote:

Dr. Delwyn Harnisch
University of Nebraska at Lincoln
Teachers College, 214 Henzlik Hall
Lincoln, NE 68588
ph: 402-472-9413
harnisch@unl.edu

Dear Dr. Harnisch,

I am writing you to request permission to use the Participation Response Survey to collect data for my dissertation. I am a doctoral candidate at the University of North Texas and I am doing my research on the relationship between the reasons an individual pursues continuing professional education and their job satisfaction. I am planning to administer the survey to information technology employees who work in higher education. I would be delighted to send you my results or any form of the data that I receive.

Additionally, with your permission I would like to administer the survey via the World Wide Web. The instrument would be available only to the participants in this research through a password protected web site. This website is also not searchable from web scanning systems so the Participation Response Scale will remain secure.

Lastly, are you the copyright holder of the survey and if so may I have permission to include the survey in the appendix of my dissertation?

Respectfully yours,
Sandy Bennett

Doctoral Candidate
University of North Texas
Applied Technology and Training Development Program

APPENDIX E

SAMPLE OF JDI AND JIG INSTRUMENTS

Selected sample items from the JDI:

Think of the work you do at present. How well does each of the following words or phrases describe your work? In the blank beside each word or phrase below, write

- Y for "Yes" if it describes your work
 N for "No" if it does NOT describe it
 ? for "?" if you can not decide

WORK ON PRESENT JOB

- Fascinating
 Pleasant
 Can see my results

PRESENT PAY

- Barely live on income
 Bad
 Well paid

OPPORTUNITIES FOR PROMOTION

- Opportunities somewhat limited
 Promotion on ability
 Regular promotions

SUPERVISION

- Doesn't supervise enough
 Around when needed
 Knows job well

CO-WORKERS

- Stimulating
 Unpleasant
 Smart

JOB IN GENERAL

- Pleasant
 Worse than most
 Worthwhile

APPENDIX F
PRS INSTRUMENT

PARTICIPATION REASON SCALE
(Executive form)

There are many reasons that for participating in continuing professional education activities. The following items are designed so that you can indicate the relative importance of the general reasons you might have for participating in a continuing professional education activity. For each item circle, the numeral, which best represents the degree of importance you attach to each reason.

	Reasons	Not Important		Moderately Important		Extremely Important	
1	Further matched my knowledge or skills with the demands of my work situation	1	2	3	4	5	6 7
2	To mutually exchange thoughts with professional colleagues	1	2	3	4	5	6 7
3	To help me insure future productivity in my professional role.	1	2	3	4	5	6 7
4	To enable me to better meet client expectations.	1	2	3	4	5	6 7
5	To maintain my current abilities.	1	2	3	4	5	6 7
6	To increase the likelihood of benefits for family and friends.	1	2	3	4	5	6 7
7	To relate my ideas to those of my professional peers.	1	2	3	4	5	6 7
8	To maintain my identity with my profession	1	2	3	4	5	6 7
9	To better accommodate the needs of my clients	1	2	3	4	5	6 7
10	To review my commitment to my profession	1	2	3	4	5	6 7
11	To increased the likelihood of personal financial gain	1	2	3	4	5	6 7
12	To learned from interaction with other professionals	1	2	3	4	5	6 7
13	To obtain leadership capabilities for my profession.	1	2	3	4	5	6 7
14	To increase my proficiency with clients	1	2	3	4	5	6 7
15	To considered changing the emphasis of my present professional responsibilities	1	2	3	4	5	6 7
16	To developed new professional knowledge and skills	1	2	3	4	5	6 7
17	To sharpened my prospective of my professional role or practice	1	2	3	4	5	6 7
18	To help me keep abreast of new developments in my field	1	2	3	4	5	6 7
19	To help me increase the likelihood that my clients are better served	1	2	3	4	5	6 7
20	To assess the directions in which my profession is going	1	2	3	4	5	6 7
21	To helped me to be more competent in my current work	1	2	3	4	5	6 7
22	To increased the likelihood for me to advance in my present work position	1	2	3	4	5	6 7
23	To be challenged by the thinking of my professional colleagues	1	2	3	4	5	6 7
24	To enhance the image of my profession	1	2	3	4	5	6 7
25	To improve my professional service to clients	1	2	3	4	5	6 7
26	To considered the limitation of my professional role	1	2	3	4	5	6 7
27	To developed the proficiencies necessary to maintain quality performance	1	2	3	4	5	6 7
28	To enhanced the security of my present work position	1	2	3	4	5	6 7
29	To maintained the quality of my professional service	1	2	3	4	5	6 7
30	To reflected on the value of my professional responsibilities.	1	2	3	4	5	6 7

Note. From *An analysis of the Participation Reasons Scale administered to business professionals (Occasional Paper No. 7)*, by (Grotelueschen, Harnisch, & Kenny, 1979), Urbana: Office for the study of continuing professional education: University of Illinois at Urbana-Champaign. Copyright 1979 by D. K. Harnisch

APPENDIX G
DEMOGRAPHICS QUESTIONNAIRE

This form is designed to obtain descriptive information from professionals so that the researcher has a greater understanding about your participation in continuing professional education activities. All responses will be kept confidential. Thank-you for assistance.

1. Highest level of formal education you have completed:
 - High School
 - Associate Degree
 - Bachelor's Degree
 - Master's Degree
 - Doctor's Degree (PhD, MD, JD)

2. Your age: _____

3. Your gender:
 - Male
 - Female

4. Your home zip code: _____

5. Is your current position considered management?
 - Yes
 - No

6. What is your job title? _____

7. How many years have you worked professionally?
_____ year(s)

8. How many years have you performed the kinds of duties you are presently performing?
_____ year(s)

9. How much time has passed since you have participated in a continuing professional education activity (such as college class, seminar, workshop, or conference) while employed in your current profession?
 - Within the 6 months
 - 1-2 years
 - 3-5 years
 - More than 5 years
 - Have not participated

10. Please indicate the method of study of you have attended in the past year with the number of hours for each activity:
 - Discussion Groups _____ hours
 - College Course _____ hours
 - Study on my own _____ hours
 - Distance Education _____ hours

Workshops/Seminars _____ hours
Conferences _____ hours

Organizational Demographics

11. Are you working for an institution of higher education?
(community college, college or university)

- Yes
- No

12. Is your institution considered:

- Public
- Private

13. What region of the country are you from?

- New England
- Mid-Atlantic
- South
- Midwest
- Southwest
- Western
- Outside of United States

14. Your workplace zip code: _____

Thank you for your participation.

Your response to this survey is anonymous, however if you would like to be considered for a **chance** to win an IPOD shuffle for participating in this survey, please enter your e-mail address. A random drawing will take place at the end of the data collection phase and you will be contacted by email if you win. Your name will not be associated with your responses. _____

APPENDIX H

FACTOR STRUCTURE OF THE PRS (DeSilets, 1990)

Professional Improvement and Development (Factor 1)

- To further match my knowledge or skills with the demands of my work situation Q1
- To help me be more productive in my professional role Q3
- To maintain my current abilities Q5
- To develop new professional knowledge and skills Q16
- To sharpen my perspective on my professional role or practice Q17
- To help me keep breast of new developments in my field Q18
- To help me be more competent in my current work Q21
- To develop proficiencies necessary to maintain quality performance Q27
- To maintain the quality of my supervisory service Q29

Professional Service (Factor 2)

- To enable me to better meet client expectations Q4
- To accommodate more effectively the needs of my clients Q9
- To increase my proficiency with my clients Q14
- To help me increase the likelihood that clients are better served Q19
- To improve my individual service to the public as a supervisor Q25

Collegial Learning and Interaction (Factor 3)

- To mutually exchange thoughts with my colleagues Q2
- To relate my ideas to those of my professional peers Q7
- To learn from the interaction with other professionals Q12
- To be challenged by the thinking of my professional colleagues Q23

Personal Benefits and Job Security (Factor 4)

- To increase the likelihood of benefits for family and friends Q6
- To increase the likelihood of personal financial gain Q11
- To help me develop leadership capabilities for my profession Q13
- To consider changing the emphasis of my present professional responsibilities Q15
- To increase the likelihood of professional advancement Q22
- To enhance my individual security in my present work condition Q28

Professional Commitment and Reflection (Factor 5)

- To maintain my identity with my profession Q8
- To review my commitments to my profession Q10
- To assess the direction in which my profession is going Q20
- To enhance the image of my profession Q24
- To consider the limitations of my role as a supervisor Q26
- To reflect the value of my professional responsibilities Q30

REFERENCES

- Acker, G. M. (2004). The effect of organizational conditions (role conflict, role ambiguity, opportunities for professional development, and social support) on job satisfaction and intention to leave among social workers in mental health care. *Community Mental Health Journal, 40*(1), 65-73.
- Amundson, N. E., Borgen, W. A., Jordan, S., & Erlebach, A. C. (2004). Survivors of downsizing: Helpful and hindering experiences. *The Career Development Quarterly, 52*(3), 16.
- Balzer, W. K., Kihm, J. A., Smith, P. C., Irwin, J. L., Bachiochi, P. D., Robie, C., et al. (Eds.). (2000). *Users' manual for the Job Descriptive Index (JDI; 1997 version) and the Job In General Scales*. Bowling Green, KY: Bowling Green State University.
- Barron, T. (1999). Wooing IT workers. *Training & Development, 53*(4), 21-24.
- Bellamy, S., Morley, C., & Watty, K. (2003). Why business academics remain in Australian universities despite deteriorating working conditions and reduced job satisfaction: An intellectual puzzle. *Journal of Higher Education Policy and Management, 25*(1), 13-28.
- Berta, D. (2004). Training budgets climb to new heights. *Nations Restaurant News, 38*(17), 1.
- Blood, G. W., Swavely Ridenour, J. S., Thomas, E. A., Dean-Qualls, C., & Scheffner Hammer, C. (2002). Predicting job satisfaction among speech-language pathologists working in public schools. *Language, Speech, and Hearing Services in Schools, 33*, 282-290.
- Bolton, J. (2002). Chiropractor's attitudes to, and perceptions of, the impact of continuing professional education on clinical practice. *Medical Education, 36*, 317-324.

- Brooke, P., Russell, D., & Price, J. (1988). Discriminate validation of measures of job satisfaction, job involvement and organizational commitment. *Journal of Applied Psychology, 73*, 139-145.
- Brown, M. M. (2002). *An exploratory study of job satisfaction and work motivation of a select group of information technology consultants in the Delaware Valley*. Unpublished doctoral dissertation, Wilmington College, Wilmington.
- Bruce, W. M., & Blackburn, J. W. (1992). *Balancing job satisfaction and performance: A guide for human resource professionals*. New York: Quorum Books.
- Bukowitz, W. R., Williams, R. L., & Mactas, E. S. (2004). Human capital measurement. *Research Technology Management, 47*(3), 7.
- Bureau of Labor Statistics, U. S. D. O. L. (2004-2005, May 18, 2004). *Occupational outlook handbook, 2004-05 edition*. Retrieved April 04, 2005, from <http://www.bls.gov/oco/ocos042.htm>
- Campbell, S. L., Fowles, E. R., & Weber, B. J. (2004). Organizational structure and job satisfaction in public health nursing. *Public Health Nursing, 21*(6), 564-571.
- Cervero, R. M. (1981). A factor-analytic study of physicians' reasons for participating in continuing professional education. *Journal of Medical Education, 56*, 29-34.
- Cervero, R. M. (2000). Trends and issues in continuing professional education. *New Directions for Adult Continuing Education, 86*, 3-13.
- Clark, A., Oswald, A., & Warr, P. (1996). Is job satisfaction U-shaped in age? *Journal of Occupational and Organizational Psychology, 69*, 57-81.
- Cohen, J. (1965). Some statistical issues in psychological research. In B. B. Wolman (Ed.), *Handbook of clinical psychology* (pp. 95-121). New York: McGraw-Hill.

- Comm, C. L., & Mathaisel, D. F. (2000). Assessing employee satisfaction in service firms: An example of higher education. *The Journal of Business and Economics Studies*, 6(1), 43-53.
- Compton, T. R. (2002). The level of job satisfaction among AITP members. *Information Executive*, 6(2), 1-2.
- Cranny, C. J., Smith, P. C., & Stone, E. F. (Eds.). (1992). *Job satisfaction: How people feel about their jobs and how it affects their performance*. New York: Lexington Books.
- Cullen, P. D. (1998). Delaware RNs reasons for nonparticipation in continuing education. *The Journal of Continuing Education in Nursing*, 29(5), 228-233.
- DeLeon, L., & Taher, W. (1996). Expectations and job satisfaction of local government professionals. *American Review of Public Administration*, 26(4), 580-590.
- DeSilets, L. D. (1990). *Motivational reasons which influence the participation of registered nurses in continuing professional education program*. Unpublished doctoral dissertation, Temple University, Philadelphia.
- Dominelli, A. (2003). Web surveys - Benefits and considerations. *Clinical Research and Regulatory Affairs*, 20(4), 409-416.
- Educause. (2002). *2002 pocket guide to U.S. higher education* (Pamphlet). Washington DC: Educause.
- Ellickson, M. C. (2002). Determinants of job satisfaction of municipal government employees. *Public Personnel Management*, 31(3), 343-358.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction (6th ed.)*. White Plains, NY: Longman.
- Galvin, T., Johnson, G., & Johnson, H. (2004). 2004 training top 100. *Training*, 41(3), 22.

- Geyer, P. D., & Daly, J. P. (1998). Predicting job satisfaction for relocated workers: Interaction of relocation consequences and employee age. *The Journal of Psychology, 132*(4), 417-426.
- Gibbons, D. E., Corrigan, M., & Newton, J. T. (2000). The working practices and job satisfaction of dental therapists: Findings of a national survey. *British Dental Journal, 189*(8), 435-438.
- Good, P. I., & Hardin, J. W. (2003). *Common errors in statistics (and how to avoid them)*. Hoboken: Wiley.
- Goris, J. R., Pettit, J. D., & Vaught, B. C. (2002). Organizational communication: Is it a moderator of the relationship between job congruence and job performance/satisfaction? *International Journal of Management, 19*(4), 664-673.
- Gorman, H. (2003). Which skills do care managers need? A research project on skills, competency and continuing professional development. *Social Work Education, 22*(3), 245-259.
- Grotelueschen, A. D. (1985). Assessing professional's reasons for participating in continuing education. In R. M. Cervero & C. S. Scanlan (Eds.), *Problems and prospects in continuing education*. (Vol. 27). San Francisco: Jossey-Bass.
- Grotelueschen, A. D., Harnisch, D. L., & Kenny, W. R. (1979). *An analysis of the Participation Reasons Scale administered to business professionals (Occasional Paper No. 7)*. Urbana: University of Illinois at Urbana-Champaign, Office for the Study of Continuing Professional Education.

- Grzyb, S. W., Graham, S. W., & Donaldson, J. F. (1998). Participation in education and training: The influence of preparation and organizational roles. *Journal of Instructional Psychology, 25*(1), 13.
- Guest, D., Conway, N., & Dewe, P. (2004). Using sequential tree analysis to search for 'bundles' of HR practices. *Human Resource Management Journal, 14*(1), 18.
- Hair, J. F., Anderson, R. E., & Tatham, R. L. (1987). *Multivariate data analysis* (2nd ed.). New York: Macmillan.
- Harnisch, D. L. (1980). *The continuing education reasons for veterinarians*. Unpublished doctoral dissertation, University of Illinois, Urbana-Champaign.
- Hellman, C. M. (1997). Job satisfaction and intent to leave. *The Journal of Social Psychology, 137*(6), 677-689.
- Herzberg, F. (1965). The new industrial psychology. *Industrial and Labor Relations Review, 18*(3), 364-376.
- Herzberg, F. (1968). One more time: How do you motivate employees? *Harvard Business Review, 46*(1), 53-62.
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work* (2nd ed.). New York: Wiley.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1998). *Applied statistics for the behavioral sciences* (4th ed.). New York: Houghton Mifflin.
- Houle, C. O. (1961). *The inquiring mind: A study of the adult who continues to learn*. Madison: The University of Wisconsin Press.
- Houle, C. O. (1964). *Continuing your education*. New York: McGraw-Hill.
- Houle, C. O. (1980). *Continuing learning in the professions*. San Francisco: Jossey-Bass.

- Johnson, G., & Johnson, W. (2000). Perceived overqualification and dimensions of job satisfaction: A longitudinal analysis. *The Journal of Psychology, 134*(5), 537-555.
- Joinson, A. N. (2001). Knowing me, knowing you: Reciprocal self-disclosure in Internet-based surveys. *CyberPsychology & Behavior, 4*, 587-591.
- Kenny, W. R., & Harnisch, D. L. (1982). A developmental approach to research and practice in adult and continuing education. *Adult Education, 33*(1), 29-54.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement, 56*(5), 746-759.
- Kuo, Y.-F., & Chen, L.-S. (2004). Individual demographic differences and job satisfaction among information technology personnel: An empirical study in Taiwan. *International Journal of Management, 21*(2), 221-231.
- Locke. (1976). The nature and causes of job satisfaction. In *Handbook of industrial and organizational psychology*. Chicago: Rand McNally.
- Lopopolo, R. B. (2002). The Relationship of role-related variables to job satisfaction and commitment to the organization in a restructured hospital environment. *Physical Therapy, 82*(10), 948-999.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper & Brothers.
- McCamey, R. B. (2003). *The relationship between the reasons for participation in continuing professional education and the leader effectiveness of first-line supervisors*. Unpublished doctoral dissertation, University of North Texas, Denton.
- Morris, S. A., Marshall, T. E., & Rainer, R. K. (2002). Impact of user satisfaction and trust on virtual team members. *Information Resources Management Journal, 15*(2), 22-31.

- Morstain, B. R., & Smart, J. C. (1977). A motivational typology of adult learners. *The Journal of Higher Education*, 48(6), 665-679.
- Mott, V. W. (2000). The development of professional expertise in the workplace. *New Directions for Adult Continuing Education*, 86, 23-31.
- Numerof, R. E., Abrams, M., & Ott, B. (2004). What works...and what doesn't? *Nursing Management*, 35(3), 1.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Petty, M. M., McGee, G. W., & Cavendar, J. W. (1984). A meta-analysis of the relationship between individual job satisfaction and individual performance. *The Academy of Management Journal*, 9(4), 712-721.
- Quick, T. L. (1985). *The manager's motivation desk book*. New York: Wiley.
- Rowden, R. W. (2002). The relationship between workplace learning and job satisfaction in U.S. small to midsize business. *Human Resource Development Quarterly*, 13(4), 407.
- Scarpello, F., & Vandenberg, R. (1992). The importance of occupational and career view to job satisfaction attributes. *Journal of Organizational Behavior*, 13(2), 125-140.
- Schafer, M. (2005, March). Specialized HR for IT organizations. *HRMagazine*, 50, 4.
- Scott, K. D., & Taylor, G. S. (1985). An examination of conflicting findings on the relationship between job satisfaction and absenteeism: A meta-analysis. *The Academy of Management Journal*, 28(3), 599-612.
- Smith, F. J., Scott, K. D., & Hulin, C. L. (1977). Trends in job-related attitudes of managerial and professional employees. *Academy of Management Journal*, 20(3), 454-460.
- Smith, P. C. (1992). In pursuit of happiness. In C. J. Cranny, P. C. Smith, & E. F. Stone (Eds.), *Job satisfaction* (pp. 5-20). New York: Lexington Books.

- Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement*. Chicago: Rand McNally.
- Spears, M. C., & Parker, D. F. (2002). A probit analysis of the impact of training on performance appraisal satisfaction. *American Business Review*, 20(2), 12-16.
- Stanton, J. M., Bachiochi, P. D., Robie, C., Perez, L. M., & Smith, P. C. (2002). Revising the JDI work satisfaction subscale: Insight into stress and control. *Educational and Psychological Measurement*, 62(5), 877-895.
- Terpstra, D. E., & Honoree, A. L. (2004). Job satisfaction and pay satisfaction levels of university faculty by discipline type and geographic region. *Education*, 124(3), 528-538.
- Thompson, C. (2003). *Training for the next economy: An ASTD state of industry report* (Report). Alexandria: ASTD.
- Trevor, C. O. (2001). Interaction among actual ease-of-movement determinants and job satisfaction in the prediction of voluntary turnover. *Academy of Management Journal*, 44(4), 621-638.
- Ulrich, D., & Lake, D. (1991). Organizational capability: creating competitive advantage. *Academy of Management Executive*, 5, 77-92.
- Umbach, P. D. (2004). Web surveys: Best practices. *New Directions for Institutional Research*, 121, 23-38.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Weismann, C., Alexander, C., & Chase, G. (1980). Job satisfaction among hospital nurses: A longitudinal study. *Health Services Research*, 15, 341-364.

- Williams, E. S., & Cockrell-Skinner, A. (2003). Outcomes of physician job satisfaction: A narrative review, implications, and directions for future research. *Health Care Management Review, 28*(2), 119-130.
- Wolford, T. D. (2003). *A study of worker demographics and workplace job satisfaction for employees in a global engineering and construction organization*. Unpublished doctoral dissertation, Nova Southeastern University, Fort Lauderdale.
- Woods, A. M., & Weasmer, J. (2004). Maintaining job satisfaction: Engaging professionals as active participants. *The Clearing House, 77*(3), 118-121.