

**A PATH ANALYSIS OF RELATIONSHIPS AMONG JOB STRESS, JOB
SATISFACTION, MOTIVATION TO TRANSFER, AND TRANSFER OF
LEARNING: PERCEPTIONS OF OCCUPATIONAL SAFETY AND HEALTH
ADMINISTRATION OUTREACH TRAINERS**

A Dissertation

by

PRAKASH KRISHNAN NAIR

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2007

Major Subject: Educational Human Resource Development

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Approved by:

Co-Chairs of Committee,	Toby Marshall Egan Homer Tolson
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ABSTRACT

A Path Analysis of Relationships among Job Stress, Job Satisfaction, Motivation to Transfer, and Transfer of Learning: Perceptions of Occupational Safety and Health Administration Outreach Trainers. (May 2007)

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Many researchers have examined the effect of various work-related factors on transfer of learning. However, there has been little or no focus on the effect of key workplace factors such as job stress and job satisfaction on transfer of learning. The current study examines the relationship among job stress, job satisfaction, motivation to transfer and transfer of learning based on the perceptions of selected Occupational Safety and Health Administration (OSHA) outreach trainers who underwent training conducted by the Texas Engineering Extension, Texas. A 24-item questionnaire was utilized to collect data. The questionnaire was sent electronically to all outreach trainers who underwent the OSHA General Industry Course 501 during 2005, and the first six months of 2006. The sample included 418 respondents representing a population of 1234 outreach trainers. Descriptive statistics, Cronbach's alpha estimates for reliability, factor analysis, correlation analysis, regression analysis, path analysis, and Sobel tests were the analysis methods used in the study.

The results from the analysis suggest that job stress and its related dimensions, time stress, and anxiety had an indirect correlation with transfer of learning through job satisfaction and motivation to transfer. Further, it was found that job stress, time stress, and anxiety predicted job satisfaction; time stress predicted anxiety; job satisfaction predicted motivation to transfer; and motivation to transfer predicted transfer of learning. Finally, path analysis results and mediation tests showed that: (1) the relationship between job stress and transfer was mediated by job satisfaction and motivation to transfer, (2) the relationship between time stress and transfer was mediated by job satisfaction and motivation to transfer, (3) the relationship between anxiety and transfer was mediated by job satisfaction and motivation to transfer, and finally (4) the relationship between time stress and transfer was mediated by anxiety, job satisfaction, and motivation to transfer.

To Kavya, my daughter

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
DEDICATION	v
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	ix
LIST OF FIGURES	xii
LIST OF TABLES	xiii
 CHAPTER	
I INTRODUCTION.....	1
Problem Statement.....	5
Purpose	9
Research Question and Research Hypothesis.....	10
Conceptual Framework.....	12
Operational Definitions	14
Assumptions on Using a Survey Questionnaire	15
Limitations.....	15
Significance of the Study.....	16
Summary.....	17
II REVIEW OF LITERATURE.....	18
The Literature Review Process	18
Theoretical Framework.....	21
Factors That Affect Work Attitudes and Behavior	21
Job Stress.....	26
Job Satisfaction	38
Motivation to Transfer Learning.....	47
Transfer of Learning.....	54
Conclusions from the Review of Literature.....	63
Study Participants and Context.....	67
The Training Organization	68
The Training Program	68
Research on Safety Training	70

CHAPTER		Page
	Summary	72
III	METHODOLOGY	73
	Study Design.....	73
	Population	74
	Study Sample	75
	Procedure	79
	Instrumentation	82
	Measuring Job Stress.....	83
	Measuring Job Satisfaction	83
	Measuring Motivation to Transfer Learning.....	83
	Measuring Transfer of Learning	84
	Data Analysis.....	84
	Descriptive Statistics	84
	Reliability Analysis	84
	Factor Analysis.....	85
	Correlation Analysis.....	87
	Regression Analysis	88
	Path Analysis.....	89
	Test for Mediation Effects.....	91
	Comparative Fit Indices	92
	Item-Respondent Ratio.....	92
	Ethical Considerations	93
	Summary	93
IV	RESULTS AND FINDINGS	95
	Descriptive Statistics	95
	Estimates of Reliability.....	96
	Results of Factor Analysis	97
	Results of Correlation (r) Analysis	105
	Results of Regression Analysis	107
	Results of Path Analysis	109
	Structural Model 1	109
	Structural Model 2.....	113
	Structural Model 3.....	117
	Structural Model 4.....	121
	Summary	127

CHAPTER	Page
V DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS	128
Discussion.....	128
Hypothesis 1a	130
Hypothesis 1b.....	132
Hypothesis 1c	133
Hypothesis 2a	133
Hypothesis 2b.....	134
Hypothesis 2c	134
Hypothesis 3a	135
Hypothesis 3b.....	135
Hypothesis 3c	136
Hypothesis 4a	136
Hypothesis 4b.....	137
Hypothesis 5	137
Hypothesis 6.....	138
Models of the Study	138
Mediating Effects	140
Conclusions and Limitations	141
Implications for HRD Research and Practice.....	143
Recommendations and Directions for Future Research .	145
Summary.....	147
REFERENCES.....	149
APPENDIX.....	171
VITA.....	181

LIST OF FIGURES

FIGURE	Page
1 Conceptual Model of the Study.....	13
2 Scree Plot for Transfer	99
3 Scree Plot for Motivation to Transfer.....	100
4 Scree Plot for Job Stress.....	102
5 Component Plot for Job Stress	102
6 Scree Plot for Job Satisfaction	104
7 Structural Model 1.....	110
8 Reduced Model 1....	111
9 Structural Model 2.....	114
10 Reduced Model 2....	115
11 Structural Model 3.....	118
12 Reduced Model 3....	119
13 Structural Model 4.....	123
14 Reduced Model 4....	124

LIST OF TABLES

TABLE	Page
1 ANOVA Between Groups for Years.....	75
2 ANOVA Between Groups for Instructors.....	76
3 ANOVA Between Groups for Experience.....	78
4 Descriptive Statistics.....	95
5 Reliability Estimates.....	96
6 Total Variance Explained for Transfer of Learning.....	98
7 Component Matrix for Transfer of Learning.....	98
8 Total Variance Explained for Motivation to Transfer.....	100
9 Component Matrix for Motivation to Transfer.....	100
10 Total Variance Explained for Job Stress.....	101
11 Rotated Component Matrix for Job Stress.....	101
12 Total Variance Explained for Job Satisfaction.....	104
13 Component Matrix for Job Satisfaction.....	105
14 R Summary Table.....	106
15 Regression Analysis Summary Table.....	108
16 Model Fit Indices for Structural Model 1.....	113
17 Model Fit Indices for Structural Model 2.....	117
18 Model Fit Indices for Structural Model 3.....	121
19 Model Fit Indices for Structural Model 4.....	126

CHAPTER I

INTRODUCTION

Organizations worldwide spend billions of dollars on training with the anticipation that such investments will increase workforce effectiveness and organizational profitability. According to Yamnill and McLean (2001), the direct costs attributed to formal training in the year 1997 were approximately \$58.6 billion. This included only organizations with more than one hundred employees. Given exponential increases in the need for skilled workers and professionals, the costs of training have without doubt increased multifold over the past decade. With such enormous costs involved, human resource development (HRD) professionals are often expected to demonstrate the effectiveness of training and to provide evidence that the billions of dollars invested in training have yielded tangible benefits or return on investments (Holton, 1996; Kirkpatrick, 1998; Phillips, 1997). It is clear that the most practical assessment of training investment involves the determination of employees' motivation to learn and the transfer of learning to work related practices (Holton, 1996; Holton, Bates, Seyler, & Carvalho, 1997; Yamnill & McLean, 2001). However, the dynamics of today's workplace and employees reactions to pressures presented in their work environments may serve as barriers to employee motivation to learn and to transfer learning.

The importance of training effectiveness to organizational performance in HRD is already well known (Swanson, 2001; Swanson & Sleezer, 1987). In the last few

This dissertation follows the style of *Human Resource Development Quarterly*.

decades many models have been proposed to measure the different outcomes of training (Combs & Falletta, 2000; Holton, 1996; Kirkpatrick, 1975, 1998; Noe & Schmitt, 1986; Parry, 1997; Phillips, 1997; Rossi, Freeman & Lipsey, 1999). Transfer or application of learning is considered one of the major outcomes of training (Holton, 1996; Kirkpatrick, 1975, 1998; Yamnill & McLean, 2001). Many researchers consider transfer of learning as a direct and tangible measure of training success (Baldwin & Ford, 1988; Ford & Weissbein, 1997; Holton, 1996; Holton & Bates, 1998; Holton, Bates & Ruona, 2000; Noe, 1986, 2000; Noe & Schmitt, 1986; Yamnill & McLean, 2001). In a recent study by Subedi (2006), seventy percent of the study participants ranked transfer of knowledge, skills and attitudes to the job, as the most important defining criteria of training. Transfer of learning has also been equated with individual performance (Holton, 1996), and some researchers have found a link between transfer and performance improvement (Noe & Schmitt, 1986). However, the importance given to transfer as an outcome measure does not seem to translate into practice. According to the American Society for Training and Development's *State of the Industry Report* for 2004, only 14% of the 213 organizations under study in 2003, measured learning transfer (Sugrue & Kim, 2004). While many reasons could be and have been attributed to this disinterest in measuring transfer, Holton et al. (2000) proposed a compelling explanation. They point to the need (or lack thereof) for reliable diagnostic tools or models to identify and measure factors that might possibly impede transfer, or are barriers to transferring of learning to the job.

Transfer of learning, as an outcome, cannot be measured in isolation, that is, to measure transfer of learning adequately the factors that influence a trainee's transfer of

knowledge and skills to the job has to be also ascertained (Baldwin & Ford, 1988; Ford & Weissbein, 1997; Holton, 1996; Holton, Bates & Ruona, 2000; Noe, 1986; Rouiller & Goldstein, 1993; Tracey, Tannenbaum, & Kavanagh, 1995). Many researchers have measured the influence of various individual and environmental/situational factors on transfer. Some researchers have studied the effect of individual factors such as emotional stability, learner readiness, and self-efficacy on transfer (Herold, Davis, Fedor & Parson, 2002; Holton et al., 1997; Holton et al., 2000; O'Neill, Hansen & May, 2002). Others have studied the effect of environmental factors such as supervisor and peer support, negative and positive feedback, and workplace design on transfer (Awoniyi, Griego and Morgan, 2002; Bates & Khasawneh, 2005; Chen, Holton, & Bates, 2005; Cromwell & Kolb, 2004; Enos, Kehrhahn & Bell, 2003; Gaudine & Saks, 2004; Hawley & Barnard, 2005; Huint & Saks, 2003; Kupritz, 2002; Lim & Morris, 2006; Machin & Fogarty, 2004). The results of these studies provide support to the argument that individual factors and environmental factors affect a trainee's transfer of learning to the job. That is, these researchers found that individual factors and/or environmental factors can impede or enhance transfer. Therefore, to determine the success of training or to measure the effectiveness of training, the environmental or individual work-related factors that affect the transfer of learning process must be examined.

Many organizational researchers consider job stress to be an important work-related factor (Dewe, 1992, 2003; Dormann & Zapf, 2002; Fox & Spector, 2006; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Jamal & Baba, 1992; Judge & Colquitt, 2004; Karasek, 1979; Lazarus, 1991; Scheck, Kinicki, & Davy, 1995;

Viswesvaran, Sanchez & Fisher, 1999). Researchers have found strong links between job stress, and individual attitudes and behaviors in the workplace. Jex, Beehr, and Roberts (1992) found job dissatisfaction, anxiety, frustration, depression and turnover intention as direct outcomes of stress. Similarly, anxiety has been identified as a major effect of work-related stress by many researchers (Dewe, 2003; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Jamal & Baba, 1992; Karasek, 1979; Liu, Spector, & Jex, 2005). Job dissatisfaction was found to be another major effect of job stress (Barsky, Thoreson, Warren & Kaplan, 2004; Fox & Spector, 2006; Liu, Spector & Jex, 2005). Fox and Spector (2006) identified counter-productive work behavior (CWB) as a behavioral response caused by job stress. Some HRD scholars have suggested the potential negative effects of job stress or anxiety on transfer of learning (Noe, 2000; Russ-Eft, 2001).

Job satisfaction is another highly researched organizational factor that has been found to affect job attitudes and work behavior (Agho, Price, & Mueller, 1992; Gerhart, 1987; Heller, Judge, & Watson, 2002; Iaffaldano & Muchinsky, 1985; Katz & Kahn, 1978; Locke, 1976; Ostroff, 1992; Spector, 1997; Vroom, 1964; Weiss, 2002; Wright, & Bonett, 1992). Job satisfaction has been found to affect work behaviors such as organizational citizenship behavior (OCB), absenteeism, and turnover (Feather, & Rauter, 2004; Fisher, 2003; Iaffaldano, & Muchinsky, 1985; Locke, 1976; Spector, 1997) and, according to some, even work performance (Ostroff, 1992). In a HRD related topic, Egan, Yang, and Barlett (2004), examined the relationship between job satisfaction and motivation to transfer learning. Motivation to transfer learning, a

posttraining work attitude, has been a focus of HRD scholars for the past many years (Egan et al., 2004; Holton, 2005; Holton et al., 2000; Kontoghiorghes, 2002, 2004; Noe, 1986; Seyler, Holton, Bates, Burnett & Carvalho, 1998; Tannenbaum, Mathieu, Salas & Cannon-Bowers, 1991). Many of the above researchers found some association between motivation to transfer and transfer of learning.

The factors discussed above, that is, transfer of learning, job stress, job satisfaction, and motivation to transfer are the focus of this study. Exploration of these variables was based on a systematic examination of literature, a unique contribution toward elaborating upon the elements impacting training transfer. A detailed discussion of these four factors, including their definitions and underlying theories is provided in *Chapter II*.

Problem Statement

In the past few decades, transfer researchers have developed sound research-based systems to measure transfer (Baldwin & Ford, 1988; Holton, 1996; Holton & Bates, 1998; Kirkpatrick, 1975, Noe, 1986). Progress has also been made in identifying and measuring factors that affect transfer (Egan et al., 2004; Holton, Bates & Ruona, 2000; Kontoghiorghes, 2004; Noe, 2000; Ruona, Leimbach, Holton, & Bates, 2002; Yamnill & McLean, 2001; 2005). However, two major issues seem to plague transfer research, more specifically, in measuring the factors that affect transfer: the problem of identifying potentially major factors that affect transfer, and the problem of adequately measuring these factors.

HRD researchers have made good progress in identifying several important factors that affect transfer (Bates & Khasawneh, 2005; Chen, Holton & Bates, 2005; Cromwell & Kolb, 2004; Enos, Kehrhahn & Bell, 2003; Gaudine & Saks, 2004; Hawley & Barnard, 2005; Holton et al., 1997, 1998, 2000; Huint & Saks, 2003; Kontoghiorghes, 2002, 2004; Kupritz, 2002; Lim & Morris, 2006). For instance, the *Learning Transfer System Inventory* (LTSI) by Holton and Bates (1998) is used to measure sixteen factors that affect transfer (Holton et al. 2000). Kontoghiorghes (2004) used 109 items to measure more than 13 factors that affect motivation to learn, motivation to transfer, and transfer. While studies such as those by Holton et al. (1997, 2000) and Kontoghiorghes (2002, 2004) have contributed to our understanding of the numerous factors that can affect transfer, the list is surely not complete. For instance, Holton et al. (2000) failed to include key personality and dispositional factors such as anxiety, locus of control, and achievement motivation (Noe, 2000). According to Bond and Bunce (2003), “no study can examine every potential confound” (p. 1065). Kontoghiorghes (2004) while examining the effect of an extensive list of factors on transfer acknowledged the existence of other factors that he may have excluded from his study. According to him, further research in identifying organizational factors that influence transfer is needed and will assist in providing a “better explanation of the learning transfer phenomenon” (p. 219).

Two organizational factors are the focus of the current study, job stress and job satisfaction. These factors are not only relevant from a theoretical perspective, but have practical relevance for the modern workplace which is often described as dynamic and

ever changing. With mergers and takeovers and the pace at which technological advancements are taking place, employees are faced with numerous and continuous issues that greatly impact their workplace lives. Further, with unemployment remaining consistently low for sometime in the US and many countries, employees have options beyond their current employers and may make decisions regarding changing employers based on affective reactions to their experiences of the workplace. In transfer research, while job satisfaction has received some attention (Egan et al., 2004; Kontoghiorghes, 2002, 2004), job stress appears to have received no attention at all (Russ-Eft, 2001). The potential effects of anxiety (Noe, 2000) and job stress (Russ-Eft, 2001) on transfer of learning have already been highlighted. Job stress has been found to affect several work attitudes and behaviors, and has been a major focus area among organizational researchers (Fox & Spector, 2006; Ganster & Schaubroeck, 1991; Jex, Beehr & Roberts, 1992; Vegchel, Jonge & Lanbergis, 2005). Ganster and Schaubroeck (1991), in a review of ten years of stress literature, found more than 300 published articles (p. 236). However, job stress has not been a subject of focus in HRD research. Russ-Eft (2001), in reviewing major journals in HRD prior to 2001, found no studies in HRD literature that looked at the direct effects of work stress on transfer of learning. A literature review of major HRD journals between 2002 and 2006, conducted by the author of the current study, confirm Russ-Eft's conclusion. No published study examining the influence of work stress or its related dimensions (such as anxiety, workload or time stress) on transfer of learning was identified. Similarly job satisfaction and its effect on transfer have not been sufficiently examined. Only the study by Egan et al. (2004) which focused

on the effects of job satisfaction on motivation to transfer was identified. A study by Kontoghiorghes (2004) examined the effect of satisfaction on motivation to transfer, but the satisfaction measure was combined with job motivation; hence, it is not clear if the results can be attributed solely to the effect of job satisfaction.

Although a key challenge for HRD scholars is the determination of major factors affecting transfer, another problem faced by researchers is the practicality of using a single instrument that measures several factors at the same time. The LTSI, for instance, is used to measure sixteen factors and include 89 items (Holton & Bates, 1998). Similarly, Kontoghiorghes (2004) in his study used 109 items. According to Stanton, Sinar and Smith (2002) “longer surveys take more time to complete, tend to have more missing data, and higher refusal rates than short surveys” (p. 167). Lengthy instruments such as the LTSI (Holton & Bates, 1998) have posed problems when they were administered to participants (Chen, 2003; Yamnill, 2001). Yamnill (2001) suggested the shortening of the LTSI (Holton & Bates, 1998) because many of her study participants found it difficult to complete all the items. Chen (2003) faced similar problems with the length of the instrument. A lengthier instrument affects the reliability of responses because of respondent fatigue and disinterest (Cox, 1996). Additionally, potential organizational sponsors of HRD research may not be motivated to sponsor research that includes a perceived demand on employee time. Survey length and perceived time demands may be logically associated with individual choices regarding survey response (Cook, Heath, & Thompson, 2000; Fox, Crask, & Kim, 1988). Therefore, while it is

important to measure all possible factors, the need to understand prospective respondent time constraints is also important (Bond & Bunce, 2003).

In addressing the issues identified so far, first, transfer researchers need to continue to focus on some of the key situational and individual factors that could potentially influence transfer. Research on the influence of key factors such as job stress and job satisfaction on a trainee's motivation to transfer and eventually to transfer learning would provide useful insights to HRD scholars and practitioners and could help in enhancing transfer effectiveness. Second, as much as it is important to measure all the key factors, there is also a need to keep the instrument short, parsimonious, and practical to use (Cox, 1996; Noe, 2000; Stanton, Sinar & Smith, 2002). The objective of the current study was not only to measure important factors that affect transfer but also to limit the number of factors and items of measurement in order to keep the overall instrument within an acceptable length as perceived by study sponsors. According to Cox (1996), in typical contexts and for optimal results, a survey should not take more than ten to twelve minutes to finish. Thus the length of the instrument was a key consideration in choosing item sets for this study. In the current study a 24-item survey to measure four factors was used. A pilot test of the instrument showed that the survey took a participant less than ten minutes to finish.

Purpose

The purpose of this study was to examine the relationship among four variables: work stress, job satisfaction, motivation to transfer and transfer of learning based on the

perceptions of Occupational Health and Safety Training (OSHA) outreach trainers in Texas and neighboring states, who underwent the OSHA General Industry training, during the period January 2005 and April 2006, at the OSHA Training Institute, Texas Engineering Extension Services. Specifically, the direct and indirect effects of job stress, anxiety, and time stress, on transfer behavior was the focus of this study. That is, the study proposes to investigate the direct effect of stress on transfer and also to investigate the mediating role of two attitudinal variables, job satisfaction and motivation to transfer, between stress and transfer. A mediating variable is one that “transmits the effect of an independent variable to a dependent variable” (MacKinnon et al., 2002, p. 83).

Research Question and Research Hypotheses

The researcher sought to answer the following research question:

What are the relationships among job stress (time stress and anxiety), job satisfaction, motivation to transfer, and transfer of learning, in the perceptions of selected Occupational Health and Safety Administration (OSHA) outreach trainers in Texas and neighboring states?

The above research question was explained using the following research hypotheses:

- Hypothesis 1a: Job stress will have a significant negative correlation with transfer of learning, and job stress will be a significant predictor of transfer learning.

- Hypothesis 1b: Time stress will have a significant negative correlation with transfer of learning, and time stress will be a significant predictor of transfer learning.
- Hypothesis 1c: Anxiety will have a significant negative correlation with transfer of learning, and anxiety will be a significant predictor of transfer of learning.
- Hypothesis 2a: Job stress will have a significant negative correlation with motivation to transfer learning, and job stress will be a significant predictor of motivation to transfer learning.
- Hypothesis 2b: Time stress will have a significant negative correlation with motivation to transfer learning, and time stress will be a significant predictor of motivation to transfer learning.
- Hypothesis 2c: Anxiety will have a significant negative correlation with motivation to transfer learning, and anxiety will be a significant predictor of motivation to transfer learning.
- Hypothesis 3a: Job stress will have a significant negative correlation with job satisfaction, and job stress will be a significant predictor of job satisfaction.
- Hypothesis 3b: Time stress will have a significant negative correlation with job satisfaction, and time stress will be a significant predictor of job satisfaction.
- Hypothesis 3c: Anxiety will have a significant negative correlation with job satisfaction, and anxiety will be a significant predictor of job satisfaction.

- Hypothesis 4a: Job satisfaction will have a significant positive correlation with transfer of learning, and job satisfaction will be a significant predictor of transfer of learning
- Hypothesis 4b: Job satisfaction will have a significant positive correlation with motivation to transfer of learning, and job satisfaction will be a significant predictor of motivation to transfer learning.
- Hypothesis 5: Motivation to transfer will have a significant positive correlation with transfer of learning, and motivation to transfer will be a significant predictor of transfer of learning.
- Hypothesis 6: Time Stress will have a significant positive correlation with anxiety, and time stress will be a significant predictor of anxiety.

Conceptual Framework

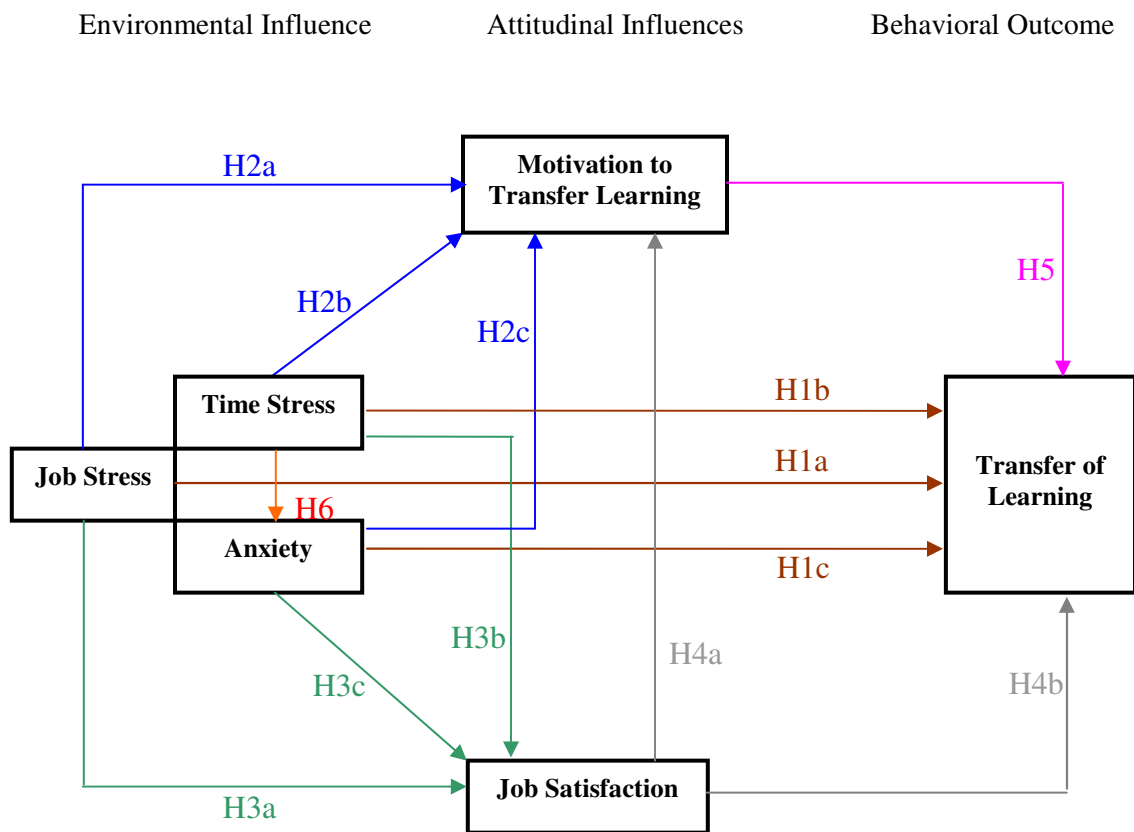
The conceptual framework of the study (see *Figure 1*) is based on the core theoretical assumptions that:

- Situational and individual factors affect job attitudes and job behaviors (Agho, Price, & Mueller, 1992; Davis-Blake & Pfeffer, 1989; Gerhart, 1987; Judge, Heller, & Mount, 2002). Based on these general theoretical assumptions job stress, time pressure, and anxiety are assumed to influence job satisfaction, motivation to transfer, and transfer of learning.
- Job attitudes affect job behavior (Holton et al., 2000; Kontoghiorghes, 2004). Motivation to transfer learning affects transfer of learning (Holton et al., 1997).

Based on these theoretical assumptions, job satisfaction and motivation to transfer learning are assumed to affect transfer of learning.

- Job stress is a situational factor (Jamal & Baba, 1991; Parker & Decotiis, 1983). Time stress and anxiety are two dimensions of job stress (Parker & Decotiis, 1983). Time pressure is a work demand or stressor (Karasek, 1979). Anxiety is a strain and is a response to a stressor (Dewe, 1992). Job satisfaction is a work attitude (Weiss, 2002), motivation to transfer is a work attitude (Noe, 1986), and transfer of learning is a work behavior (Kirkpatrick, 1975; Holton, 1996).

Figure 1. Conceptual Model of the Study



The theoretical framework for this study draws from four bodies of knowledge: transfer of learning, motivation to transfer learning, job stress and job satisfaction. In the review of literature in *Chapter II* the explanations and support for the above theoretical assumptions and for the conceptual framework (see Figure 1) will be provided.

Operational Definitions

Attitudes: Evaluative judgments (Weiss, 2002).

Human Resource Development (HRD): A field of practice that is the integration of three major functions, training and development, career development, and organization development (McLagan, 1989).

Job satisfaction: An evaluative judgment about one's job (a work attitude) which is sometimes expressed by affective means (feelings) (Spector, 1997; Weiss, 2002).

Job/work stress: A process that involves stressors (organizational events or conditions that an individual appraises as a negative or threatening situation), and strain, the resultant effect of such an appraisal (Dewe, 1992; Ganster & Schaubroeck, 1991; Lazarus, 1991).

Motivation: "A process governing choices made by persons...among alternative forms of voluntary activity" (Vroom, 1964, p. 6).

Motivation to transfer learning: "The intended effort towards utilizing the skills and knowledge learned in a training atmosphere to the real world work situation" (Seyler et al., 1998, p. 4).

Training: The “process of closing the KAS (knowledge, attitudes, and skills) gap between what our trainees bring to the course ...and what they must leave with to perform effectively at work...” (Parry, 1997, p. 2).

Training Effectiveness: A theoretical approach that focuses on understanding or determining why trainees learned or did not learn (Alvarez et al., 2004)

Transfer of learning: The degree to which an individual applies his or her knowledge, skills, behaviors, and attitudes that he or she gained in training, to his or her job (Holton et al., 1997, p. 96).

Training program: A planned, intentional, formal learning intervention (Nadler, 1984).

Assumptions on Using a Survey Questionnaire

1. Trainees will be capable of understanding and answering the questions.
2. Trainees will be honest and forthcoming in answering the questions.

Limitations

1. Trainees may have been unable to recall information accurately.
2. As with any self-report measure, there is a possibility of difference between trainee perceptions and actual performance. But many of the factors concerned in the study such as job stress, anxiety, motivation to transfer, and job satisfaction, are perception-based, and hence may be very difficult to measure objectively or to be measured by another person other than the person themselves.

3. All participants were not trained by one instructor. However, the course content and design are the same, and all instructors were trained in the same course.

Significance of the Study

Many researchers have pointed out the need to better understand the evaluation and effectiveness aspects of transfer of learning (Alvarez, et al., 2004; Holton, 1996; Holton, Bates & Ruona, 2000; Kim, 2004; Yamnill & McLean, 2001). Measuring transfer outcomes cannot be conducted in isolation; the various influences on transfer have to be considered while measuring transfer (Holton 1996, Holton et al., 2000). Although some progress has been made in the transfer arena, further research is needed in identifying other potential factors in the workplace that have not been identified (Kontoghiorghes, 2004). Factors such as job stress (anxiety, work load etc.) and job satisfaction have been identified by some HRD researchers as having the potential to influence motivation to transfer and transfer of learning (Egan et al., 2004; Kontoghiorghes, 2004; Noe, 2000; Russ-Eft, 2001).

The relationship between job stress, job satisfaction, motivation to transfer and transfer of learning were explored in this study. Understanding the influence of job stress and job satisfaction on motivation to transfer learning and on transfer of learning would provide useful insights for further research and development in the area of transfer of learning and should help HRD practitioners enhance the effectiveness of training.

Summary

In Chapter I, the researcher provided an introduction to the topic of the study and a brief discussion about the factors involved in the study. Then, a description of the problem was provided and arguments supporting the need for the study were made. Next, the purpose of the study and the research hypotheses that explained the research question were presented. Then, the conceptual framework and the conceptual model of the study were presented. These were followed by the definition of terms used in the study, assumptions for using a survey, and limitation of the study design. Finally, the significance of the study was provided. In Chapter II, that follows, the study's theoretical framework will be presented and a review of literature on the four factors involved in the study will be discussed.

CHAPTER II

REVIEW OF LITERATURE

The relationships between stress, job satisfaction, motivation to transfer learning, and transfer of learning are the focus of this study. In the ensuing sections, the theoretical framework for the study, a review and critique of research relevant to the topic, and a brief overview of the training and the organization conducting the training, is presented. However, before a detailed review of literature, an overview of the procedures involved in selecting, collecting and summarizing the literature is provided.

The Literature Review Process

The literature review process involved: (1) Search and selection of articles, (2) summarizing selected articles, and (3) synthesizing relevant information from the summaries. The following criteria were used to select articles for the four variables, stress, job satisfaction, motivation to transfer, and transfer of learning. These selection criteria limitations did not apply in the selection of articles for the literature review in general or for the other chapters of the dissertation.

- Journal articles related to the four constructs *stress*, *job satisfaction*, *motivation to transfer learning*, and *transfer of learning*.
- The initial search for articles was limited to ten of the top journals in HRD and related fields as determined by the researcher through informal inquiry.
- The search period was five years, from year 2002 to July 2006. Frequently occurring citations or seminal works from identified articles that preceded the

search period were also included. As identified below, there were many articles that preceded the search period, dating back to the 1960s and earlier, that were determined to be seminal works associated with variables under investigation in the study reported herein.

- The ten journals selected were *Advances in Developing Human Resources*, *Academy of Management Journal*, *Human Resource Development International*, *Human Resource Development Quarterly*, *Human Resource Development Review*, *International Journal of Training and Development*, *Journal of Applied Psychology*, *Journal of Organizational Behavior*, *Journal of Organizational and Occupational Psychology*, and *Personnel Psychology*. These journals are from fields related to the topic of study, human resource development, industrial-organizational psychology, business and management, and organizational behavior. As noted below, articles from several other journals were included.

The following criteria were used in the selection of central or seminal works that contributed to the theoretical framework of the study, specifically relating to the four variables:

- Studies that were most commonly cited in the selected articles between 2002 and 2006.
- The direct relevance of the article to the article to the study's theoretical framework and to the variables in the study
- The significance of an article's theoretical or empirical contribution.

- Articles identified as seminal in *Taking the Measure of Work* (Fields, 2002) (For job stress and job satisfaction only).
- The Social Science Citation Index was used as an additional resource.

The *Academy of Management Review*, *Human Resource Management Review*, *Psychological Bulletin*, *American Psychologist*, *Administrative Science Quarterly*, *Human Relations*, *Journal of Management*, *Journal of Vocational Behavior*, *Performance Improvement Quarterly*, and *Research in Occupational Stress and Well Being* were the source of these articles. Besides these journals, selected books such as *The Social Psychology of Organizations* by Katz and Kahn (1978), *Work and Motivation* by Vroom (1964), *Job Satisfaction* by Spector (1997), and *The Nature and Causes of Job Satisfaction* by Locke (1976) were identified as seminal works.

A Texas A&M University library search engine was used to search for articles and two databases provided access to all the journal articles, ERIC-EBSCO and CSA-Illumine. A year-by-year, volume-by-volume, issue-by-issue search was conducted for each variable. The identified articles were downloaded and stored in separate electronic folders. Hard copies were organized in binders.

The summarization of articles pertaining to the four variables was done in two phases. First, the 2002-2006 articles for each variable were summarized followed by summarization of the seminal articles for that variable. The over 200 page summary table included the year of the study, the authors, the abstract from the authors, and a summary of key points and study outcomes (Due to page length restrictions, the full summary table is not included in this document). That is, only key aspects of the articles

and those that are relevant to the topic of this study are included in the summary. The main purpose of the summary tables was to build an initial “literature data bank” for the four variables that would provide a point of reference. In total, 134 articles from 20 journals are included in the summary tables. This did not include other references used for the literature review, articles reviewed after December 2006, and book chapters. The last step in the literature review process was to synthesize information from the summary of articles. Synthesizing involved interpreting, evaluating, and integrating the collected literature (Pan, 2003).

Theoretical Framework

This study is based on the theoretical assumption that factors, both environmental (work-related) factors and individual factors, influence an individual’s work attitude and work behavior. Specifically, the study’s theoretical framework will be based on theories and models that suggest a relationship between work stress (a perceived work environment factor and/or response), job satisfaction (work related attitude and/or affective response), motivation to transfer learning (work attitude and/or behavioral intention), and transfer of learning (a work related behavior).

Factors That Affect Work Attitudes and Behavior. There is sufficient evidence in the literature to suggest that situational factors and individual factors affect a person’s work attitude and behavior (Agho, Price, & Mueller, 1992; Bowling, Beehr, Wagner, & Libkuman, 2005; Davis-Blake & Pfeffer, 1989; Gerhart, 1987; Holton, 1996; Holton, Bates & Ruona, 2000; Judge, Heller, & Mount, 2002; Judge & Illies, 2004;

Kirkpatrick, 1998; Noe, 1986; Piccolo, Judge, Takahashi, Watanabe, & Locke, 2005; Wright & Bonett, 1992). Environmental or situational factors are referred to work-related factors, external to the individual, such as autonomy at work, turnover, work-group cohesion, job complexity, job change, routinization etc., (Agho, Price, & Mueller, 1992; Davis-Blake & Pfeffer, 1989; Gerhart, 1987; Wright & Bonett, 1992). Individual factors are referred to the individual personality traits and dispositions that affect a person's work attitude or behavior (Bowling et al., 2005; Judge, Heller, & Mount, 2002; Judge & Illies, 2004; Piccolo et al., 2005). Personality traits such as neuroticism and self esteem and dispositional traits such as negative affectivity and positive affectivity are some commonly studied individual characteristics. Usually these traits exclude any physical or demographic characteristics such as color, race, physical attractiveness, ethnicity etc. The term situational factors and environmental factors may be used interchangeably to refer to work-related factors external to the individual. Similarly the term individual factors/characteristics will be used to refer to all psychological traits of an individual, both personality traits and dispositional characteristics.

Although most organizational behavior and psychology researchers agree that both situational factors and individual characteristics influence a person's work attitude and behavior, there is a strong disagreement on which of them are more dominant. Researchers who support the dominant influence of individual characteristics argue that individual factors have a stronger influence on certain work attitudes (Judge, Heller, & Mount, 2002; Judge & Illies, 2004; Piccolo et al., 2005). Judge, Heller, and Mount (2002) found job satisfaction to be influenced by emotional adjustment or emotional

maladjustment. Piccolo et al., (2005) found self- esteem, generalized self-efficacy, locus of control, and neuroticism, which they termed as a single core concept (Core Self Evaluations), to influence job satisfaction, life satisfaction, and happiness.

Davis-Blake and Pfeffer (1989), leading proponents of the situational approach, argue that situational factors have the most dominant influence on an individual's attitude and behavior on the job. According to them, organizational settings are strong situations and have significant influence on individual attitudes and behaviors. Although they do not fully discount the role of individual factors on work attitude and behavior, they contend that the effects of dispositions on attitudinal and behavioral responses are limited and secondary. A study by Wright and Bonett (1992) showed strong evidence of the influence of situational factors on work attitudes. They found situational factors such as job changes to have a positive effect on job satisfaction. Agho, Price, and Mueller (1992) found job satisfaction to be more strongly associated with situational variables such as autonomy, work group cohesion, and routinization than with personality traits such as negative affectivity (NA) and positive affectivity (PA). Egan et al., (2004) found organizational learning culture to significantly impact job satisfaction, turnover intention (a variable found to consistently correlate inversely with job satisfaction), and motivation to transfer learning.

For David-Blake and Pfeffer (1989), the argument that individuals are stable and are non-adaptive to organizational settings seemed flawed as most studies, according to them, show individuals to be highly adaptive to organizational situations. Structural factors (compensation systems or reinforcement patterns) and cultural factors (way of

doing things, mission, accepted behavioral norms) are good examples of strong organizational influences. For instance, many researchers have reported that stressful situations influence work attitude and behavior (Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004; Ganster & Schaubroeck, 1991; Totterdell, Wood, & Wall, 2006; Vegchel, Jonge, & Landsbergis, 2005).

In further criticism of the dispositional research, David-Blake and Pfeffer (1989), point out the failure of dispositional researchers to theoretically and empirically account for factors other than dispositions that might have strong influences on job attitudes. They suggest these researchers develop models that can simultaneously measure the effects of dispositional and situational factors and have some “testable ideas about the sources and stability of dispositions” (p. 396). Attention has to be paid, they argue, to measurement of dispositions, methods, and to the variables that have been omitted from their models. Those researchers supporting the importance of individual factors such as Judge et al., (2002) agree that theoretical explanations of the dispositional source of certain job behaviors or attitudes (e.g. job satisfaction) have been weakened due to the “lack of a framework for describing the structure and nature of personality” (p. 530). Although there are aspects about individual influences that need to be explained, recent studies in organizational research support examining both these sets of factors to understand their combined effects on work attitudes (Boswell, Boudreau, & Tichy, 2005; Gerhart, 2005; Judge & Ilies, 2004).

The role of situational and individual factors on transfer of learning, a training outcome, has been well established (Baldwin & Ford, 1988; Holton, 1996; Noe, 1986;

Noe & Schmitt, 1986; Wexley & Baldwin, 1986). Baldwin and Ford (1988) identified three types of factors that influence transfer of learning. They are, (1) training input factors such as training design; (2) trainee characteristics such as motivation, ability or skill, and other personality characteristics; and (3) work environment such as supervisor or peer support and opportunities to use learning. Other studies have examined the influence of workplace environment or transfer climate on transfer of learning (Ford & Weissbein, 1997; Holton et al., 1997; Rouiller & Goldstein, 1993; Tracey, Tannenbaum, & Kavanagh, 1995). Similarly, the influence of individual factors on transfer of learning have been examined (Holton et al., 2000; Klein, Noe, & Wang, 2006; Kontoghiorghes, 2002). The study by Seyler et al. (1998) demonstrated the significant effects of both individual and environmental factors on motivation to transfer. Holton, Bates, and Ruona (2000) measured the effects of sixteen factors on transfer of learning.

Although there have been numerous studies that have focused on the measurement of factors that influence work attitudes and behavior, there are many factors and their effects that have not yet been examined. In his critique of Holton et al.'s (2000) study on factors influencing learning transfer, Noe (2000) stated that "potentially important" factors such as anxiety are being overlooked and should be examined (p. 362). Russ-Eft (2001) identified need for HRD research to include important workplace factors such as stress and workload. A review of literature by author of the current study, between 2002 and 2006, showed that there were only three studies on work stress. Of this, only one study, by Clarke (2002), concerned work stress and transfer of learning. Similarly, job satisfaction is another factor that has not received much attention in HRD

research. Although some studies (Egan et al., 2004; Kontoghiorghes, 2002, 2004) have examined the effect of job satisfaction on motivation to transfer, job satisfaction has not been given the attention it deserves. The relationship between work stress, job satisfaction, motivation to transfer and transfer of learning is the focus of the current study. The following sections will discuss these factors and research related to them.

Job Stress. Job stress is a major workplace concern and the focus of many organizational researchers (Dewe, 1992, 2003; Dormann & Zapf, 2002; Fox & Spector, 2006; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Jamal & Baba, 1992; Judge & Colquitt, 2004; Karasek, 1979; Lazarus, 1991; Scheck, Kinicki, & Davy, 1995; Viswesvaran, Sanchez, & Fisher, 1999). Situations that create stress, such as downsizing, technology, violence, are part of the current business environment (DeFrank & Ivancevich, 1998). Further sources of stress in the workplace include work overload, incompetent supervisors, role ambiguity, and lack of recognition, among others (p. 56). According to Dwyer and Ganster (1991) it is a wide and popularly accepted proposition that stressful work conditions generate significant costs in terms of low productivity, sickness, and lost time (p. 595). DeFrank and Ivancevich (1998) found that, in 1990 stress related claims become the fastest growing segment of the *Workers Compensation System* (p. 55).

Although scholars are in agreement about the presence of stress-creating situations and events in today's workplace, there is a lack of consensus on defining stress. The term *stress* is defined in the work stress literature by some as a cause, and by others, as an effect (Ganster & Schaubroeck, 1991; Jex, Beehr, & Roberts, 1992;

Karasek, 1979). This general lack of agreement is due to the different and sometimes opposite theoretical connotations given to the elements involved in the stress process. Parker and DeCotiis (1983) summarize the confusion or lack of consensus among stress researchers thus: "...there is no consensus on the concept of stress...it is whatever a given researcher says it is" (p. 161). Jex et al., (1992) classified work stress researchers under three groups: (1) researchers who considered work stress as a stimulus that is as a job stressor or an environmental element or occurrence (a cause); (2) researchers who defined stress as a response, that is an individual's reaction or response to a workplace event or a strain (an effect); and (3) researchers who regarded stress as a stimulus-response process (as the interaction between an environmental event or job stressor and the individual's response/strain). According to these authors, most stress researchers can be best categorized as framing stress as a stimulus-response process.

Karasek's (1979) work strain model or *demand-control (D-C)* model is one of the most cited models in work stress research and has been widely acclaimed for its invaluable contributions (Fox & Spector, 2006; Ganster, & Schaubroeck, 1991; Liu, Spector & Jex, 2005; Totterdell, Wood & Wall, 2006; Vegchel, Jonge, Landsbergis, 2005). Karasek's (1979) *Demand-Control Model* or *D-C Model* includes three core elements: (1) stressors or job demands (the sources of stress) as the independent variable, (2) control or job decision latitude (e.g., job discretion, skill level) as the independent and moderating variable, and (3) psychological strain (e.g., exhaustion, depression) as the dependent variable. The combination of high job demands with low decision making authority or latitude, results in what is termed as strain. Job decision

latitude moderates the relationship between stressor and strain. If the decision latitude is low then the strain will be high and if decision latitude is high, strain will be low (even if demands are high). The process involves a cause, an effect, and a moderating variable. According to Karasek (1979), the D-C model is distinctive in being the first study to examine both job demands and decision latitude together

Irrespective of its contributions, the D-C model faced some major criticisms. Fletcher and Jones (1993) found no evidence of interactive effects between job demands and job decision-latitude, a central assumption of the Karasek (1979) model. Furthermore, the job decision-latitude, proposed as a single construct by Karasek (1979), is argued to be a combination of many theoretically distinct constructs (see Ganster & Schaubroeck, 1991, p. 242). Even the 'demands' construct that Karasek (1979) proposed as a stressor was disputed by Dewe (1992), who identified job demands and stressors as two distinct constructs that needed to be operationalized separately. According to Dewe (1992) while stressors are the actual events or sources of the events, demands are the meanings individuals make from these events or stressors. Irrespective of these valid criticisms against the D-C model, many studies continue to use and apply the model (Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004; Ganster & Schaubroeck, 1991; Totterdell, Wood, & Wall, 2006; Vegchel, Jonge, & Landsbergis, 2005). In a recent study, Totterdell et al. (2006) found that work demands were associated with greater anxiety and depression, and low job control was associated with high anxiety. Croon et al. (2004) found that low job control and high supervisor demands were

significant predictors of need for recovery (strain) and high physical demands and high psychological demands were strong predictors of need for recovery.

The weaknesses of the Karasek (1979) model highlighted the need for sound theories that would help explain the stress process. Many researchers attribute the accomplishment of such a theory (to explain the stress process) to the emotion theory of Lazarus (Dewe, 1992; Ganster & Schaubroeck, 1991; Jex, Beehr & Roberts, 1992; Schaubroeck, Ganster & Fox, 1992; Scheck, Kinicki, & Davy, 1995). According to Lazarus (1991), emotions are a result of a person's appraisal of the situation in the environment. The *appraisal process* makes the critical differentiation whether an environmental event is of relevance or importance to the individual's personal goal or well being. He termed emotions such as anxiety and anger as outcomes resulting from person-environment interactions. Stress, according to Lazarus, is a transactional process between the individual and his/her environment.

Since emotion is a response to an appraisal, knowledge about the situation is necessary for the appraisal to take place (Lazarus, 1991). The appraisal process includes meaning generation, that is an individual making sense of his/her environment and assessing whether his/her personal identity is compatible or incompatible with the external environment. Also the appraisal pattern, which is part of the cognitive process, helps to distinguish one emotion from the other. If a person appraises his/her environment positively then positive emotions occur (happiness, joy, pride); likewise, if an event is appraised as threatening, negative emotions occur (anger, anxiety) (p. 819). Lazarus (1991) identifies two stages of appraisal, a *primary appraisal* where an

individual appraises the event or situation to see if the event is tied to a personal goal (goal relevance) and if event is harmful or beneficial (goal incongruence or congruence, respectively), and finally whether the goal at stake concerns a moral value or one's personal ego (goal content). *Secondary appraisal* concerns the options and future prospects that an individual has for coping. Here the individual makes decisions based on the appraisal to blame or credit, assess one's coping potential, and identify future expectations.

Many researchers have used emotion theory to explain the stress process and studies have shown that the stress process is transactional in nature (Dewe, 1992; Ganster & Schaubroeck, 1991; Jex, Beehr & Roberts, 1992; Lowe & Bennett, 2003; Perrewe, Zellars, Ferris, Rossi, Kacmar, & Ralston, 2004; Schaubroeck, Ganster, & Fox, 1992; Scheck, Kinicki, & Davy, 1995). For instance Dewe (1992), in support of the transactional nature of stress, argued that stress did not reside just in the environment, or in an individual, but it is an outcome of the interaction between the individual and the environment. Stressors are not only the result of an individual's perception of the source of an event that causes negative response but also how that event is evaluated or appraised by the individual, hence appraisal is important in determining what is, and, what a stressor is not. The three constructs involved in the stress process, stressors, appraisal and coping were empirically validated by Dewe (1992). He also identified three categories of primary appraisals.

A more recent study by Lowe and Bennett (2003) found that participants did appraise situational events based on how relevant and how congruent the event was to

the participant's personal goals, thus adding further support to the existence of primary appraisal. They also found a strong presence of two emotions, anxiety and anger. Other studies in stress research have used emotion theory to explain relationships within the stress process and also to explain other work attitudes and behaviors that could be linked to stress (Dewe, 1992; Fox & Spector, 2006; Glazer & Beehr, 2005). Fox and Spector (2006) used emotion theory to explain their *stressor-emotional model*. They found that a lack of control or autonomy results in counter productive work behavior (CWB), a negative emotion or strain. Lowe and Bennett (2003) found support for the presence of coping strategies. High-emotion focused coping and high problem focused coping strategies were found to be used by participants who experienced stressful encounters. Dewe (2003), in his study, found that all coping strategies did not fit all situations. Similarly, coping responses were found to be different based on the nature of the emotional response. Based on the study Dewe (2003) suggested that coping strategies may need to be combined with other coping strategies to effectively handle the situation.

Many studies involve measurement of stressors (job demands, time pressures, role ambiguity) and strains (anxiety) under the construct "stress" (see Fields, 2002). For instance, Parker and DeCotiis (1983) measured anxiety and time stress as two dimensions of job stress. They defined job stress as a response to, what they termed, organizational and work-related stressors. However, it is important to note that this is different from using the term 'stress' in the instrument that measures stress as done by some researchers (Ellis, 2006; Jex, Beehr, & Roberts, 1992). As mentioned previously, the term stress has been referred to as a stimulus by some researchers and as a response

by some others (Jex et al., 1992). Ellis (2006) termed stress as a response that negatively affected a person's well being, and Janssen (2004) used the term stress to refer to responses such as anxiety and burnout which are usually categorized as strains. Jex, Beehr and Roberts (1992) conducted a study to find how study participants perceived the term stress. In their survey, they included sixteen items using the term "stress" in different ways and contexts. They also included measures of work-related stressors (role ambiguity, role conflict, perceived workload, and interpersonal conflict), and psychological strains (job dissatisfaction, anxiety, frustration, depression, and turnover intent). According to the results stress items most strongly related with anxiety. Most referred to stress as a response to an unpleasant event. This finding is useful because the term stress is used in reference to both stressors and strains (Jex et al., 1992). For instance, Jamal and Baba (1992) measured job stress as a response. Although stress items (together as a set) shared more variance with strains than stressors the stress scale strongly related to both, stressors and strains (Jex et al., 1992). In the case of the current study, none of the stress measurement items in the instrument use the terms 'stress', 'strain' or 'stressor'. The study used a condensed version of the instrument developed by Parker and DeCotiis (1983).

The discussion so far had focused on the important issues of defining stress, identifying the elements involved in the stress process, and the theories that provided the conceptual framework for the stress process. It is also relevant to examine types of stressors and strains, and other mediating or moderating influences on the stress process. Stressors have been broadly defined as workplace events, demands, conditions,

situations etc., by organizational researchers (Barsky, Thoreson, Warren, & Kaplan, 2004; Dewe, 1992; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Karasek, 1979; Ormond, Keown-Gerrard, & Kline, 2003; Penney & Spector, 2005; Viswesvaran, Sanchez, & Fisher, 1999). Glazer and Beehr (2005) termed stressors as that which induces stress. Dewe (1992) identified three major stressors, interpersonal relationships, work overload, and individual concerns regarding career, competence and health issues. Ormond, Keown-Gerrard and Kline (2003), found high workload, time wasted on meetings, lack of supervisor interactions, ineffective communication, lack of feedback, lack of recognition, role ambiguity, lack of training, dissent among employees, and lack of morale to be some of the common stressors in the workplace.

Most stress researchers used the term *strain* to refer to the responses or reactions of individuals to stressors (Barsky, Thoreson, Warren & Kaplan, 2004; Dewe, 1992; Karasek, 1979; Lazarus, 1991; Liu, Spector & Jex, 2005; Penney & Spector, 2005; Totterdell et al., 2006; Viswesvaran, Sanchez, & Fisher, 1999). However, some researchers used the term 'stress' to refer to the response individuals have to stressors (Ellis, 2006; Glazer & Beehr, 2005; Janssen, 2004). Parker and DeCotiis (1983) used the term job stress to refer to the response of individuals to various stressors at the workplace including their roles, relationships, and the work itself. They termed job stress as "a first-level outcome of the organization and the job..." (p. 160). Parker and DeCotiis (1983) considered job satisfaction, organizational commitment, motivation, and performance as second level outcomes, and as the consequences of job stress.

Researchers have classified strains under three types. For instance, Karasek (1979) measured depression and exhaustion as effects of job demands. He referred to these effects as psychological strains. Lazarus (1991) referred only to emotional or psychological strains (anxiety, anger, depression, sadness etc.). Barsky, Thoreson, Warren, and Kaplan (2004) further sub-classified psychological strains as affective strains (feelings or emotion-related reactions such as satisfaction) and cognitive strains (reactions related to cognitive thought such as turnover intentions). Jex, Beehr, and Roberts (1992) measured job dissatisfaction, anxiety, frustration, depression, and turnover intent as psychological strains. Dormann and Zapf (2002) found depression as mediating the relationship between role stressors and turnover intention.

Ganster and Schaubroeck (1991), in their summarization of over 300 articles on stress, found that studies measured two types of strains: psychological strains such as anxiety and dissatisfaction, and physiological strains such heart rate and blood pressure. Vegchel et al., (2005) identified three types of strains: psychological strains such as exhaustion, physical strains such as psychosomatic health complaint, and behavioral strains such as sickness absence. Recently Fox and Spector (2006) identified counter-productive work behavior (CWB) as a behavioral strain. Among the psychological strains, anxiety was found to be the most frequently measured strain (Dewe, 2003; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Jamal & Baba, 1992; Jex, Beehr & Roberts, 1992; Karasek, 1979; Liu, Spector, & Jex, 2005). Job dissatisfaction was another commonly measured strain (Barsky et al., 2004; Fox & Spector, 2006; Liu, Spector & Jex, 2005). Anxiety was operationalized as a psychological strain or an

emotional response (Dewe, 1992; Ganster & Schaubroeck, 1991; Karasek, 1979; Lazarus, 1991; Schaubroeck, Ganster & Fox, 1992).

Whereas the emphasis of studies discussed thus far is on measuring the direct effects of stressors on strains, there are many studies that have examined the mediating or moderating effects of a third factor on the stressor-strain relationship (Barsky et al., 2004; Dormann & Zapf, 2002; Glazer & Beehr, 2005; Janssen, 2004; Viswesvaran, Sanchez & Fisher, 1999). For instance, Barsky et al. (2004) found negative affectivity (NA) to partially mediate the relationship between role ambiguity and role conflict (stressors), and job satisfaction and life satisfaction. They found NA fully mediating the relationship between the role stressors and turnover intentions. Glazer and Beehr (2005) found anxiety to mediate the relationship between role stressors and intention to leave. Irritation was found to mediate the effect of social stressors on depressive symptoms in a study by Dormann and Zapf (2002). Distributive and procedural fairness were found to moderate the relationship between innovative behavior, and anxiety and burnout, in a study by Janssen (2004). These studies suggest the role of “third-party” or mediating variables in the stress process.

Although the term stress and strain are interchangeably used (and such usage has been accepted), most stress research models, past and present, define stress as a process in which stressors are the cause and strains the effect (Fox & Spector, 2006; Glazer & Beehr, 2005; Karasek, 1979; Lazarus, 1991; Liu, Spector, & Jex, 2005; Penney & Spector, 2005; Totterdell et al., 2006). Sufficient theoretical and empirical evidence in the literature exist to suggest that stressors are workplace events or situations (cause);

strains are the responses to these events (the effect); and these responses termed strains are a result of the appraisal by the individual of an environmental event or the potential stressor (Dewe, 1992; Ganster & Schaubroeck, 1991; Jex et al., 1992; Karasek, 1979; Lazarus, 1991). In the conceptual model for the current study (Figure 1), the term ‘job stress’ is used as one construct although it includes two dimensions of stress, time stress and anxiety (Parker & DeCotiis, 1983). The use of terms does not affect the collection of data for this study as neither *stress* nor *strain* is mentioned as a term in the instrument of measurement.

As the review of the literature suggests, job stress is considered an important area of research in the organizational behavior field. However, in HRD research, this area has not been given the attention it deserves. According to Russ-Eft (2001), despite the fact that most HRD research and practice takes place under “demanding personal and organizational situations” (p. 1), there is little or no research relating to work stress in HRD. She found that among three major HRD journals (HRDQ, HRDI and ADHR), there were just two articles on stress, one relating to stress and work style and the other on burnout. Neither of these studies related to work load or work demands. Two key problem areas identified by Russ-Eft (2001) are relevant to the current study:

- HRD researchers have not paid attention to the topic of work stress.
- Psychology and management literature on workload and stress have not focused on HRD related activities.

Five years since Russ-Eft’s (2001) editorial, the above issues still remain. The researcher of the current study reviewed five HRD related journals *Human Resource*

Development Quarterly, Human Resource Development International, Advances in Developing Human Resources, Human Resource Development Review, and the International Journal of Training and Development between 2002 and 2006, and found only three articles that related to work stress. Only one of them focused on stress or workload and transfer of learning. Clarke (2002) found lack of time, and pressure due to heavy workloads, to be the two major workplace constraints that impeded transfer. However, the findings of this study, due its qualitative nature and low sample size, could not be generalized beyond the study participants. Among the other two studies, one looked at stress workshops (Ormond, Keown-Gerrard, & Kline, 2003) and the other focused on the relationship between stress and change (Sikora, Beaty, & Forward, 2004). Similarly, no study on the effects of stress on transfer of learning was identified, in any of the top management or psychology journals. The journals the author reviewed included: *Journal of the Academy of Management, Journal of Applied Psychology, Journal of Organizational Behavior, Journal of Organizational and Occupational Psychology* and *Personnel Psychology*.

The current study is a step towards addressing this gap in HRD research. In this study the direct effects of stress on transfer of learning is being examined. Further the effects of stress on job satisfaction and motivation to transfer learning is also being examined. The effect of work stress on job satisfaction has been comparatively a better researched area. Liu et al. (2005) used a job satisfaction scale to measure the effect of job control or autonomy on job satisfaction. This study, as have other similar studies, measured job dissatisfaction as a psychological strain (Barsky et al., 2004; Fox &

Spector, 2006). In the current study the effect of work stress on job satisfaction is being measured, and the role of job satisfaction as a possible moderating variable between work stress and transfer is also being examined. Based on the aforementioned systematic review of literature, the latter aspect has not been previously explored. Finally, the effect of work stress on motivation to transfer learning is also examined in the current study. There are no known studies that have looked at this relationship. The study reported herein also examines the possible mediating role of motivation to transfer on the stress-transfer relationship.

While there is much disagreement among researchers on defining stress, there is a need to clearly define this construct for the purposes of this study. Having gone through the different perspectives and arguments and the empirical work that was used to support them, this researcher defines job stress as a process that involves stressors, that is any organizational event or condition that an individual evaluates as negative or threatening, and strain, the resultant effects of the negative or threatening event on the individual. According to this theoretical assumption job stress is the super construct and time stress (stressor) and anxiety (strain) are sub constructs of job stress.

Job Satisfaction. Job satisfaction is one of the most researched variables in organizational behavior research (Agho, Price, & Mueller, 1992; Gerhart, 1987; Heller, Judge, & Watson, 2002; Iaffaldano & Muchinsky, 1985; Katz & Kahn, 1978; Locke, 1976; Ostroff, 1992; Spector, 1997; Vroom, 1964; Weiss, 2002; Wright, & Bonett, 1992). It is termed by some organizational researchers as the “pivotal construct in organizational behavior” (as cited in Heller, Judge, & Watson, 2002, p. 815). Job

satisfaction is also one of the most debated constructs in organizational research. In an effort to elaborate upon the theories that underlie the job satisfaction construct and the possible causes and effects of job satisfaction, a review and critique of foundational studies on job satisfaction is presented below.

Vroom (1964) defined job satisfaction as one's attitude towards work. According to Vroom (1964), "positive attitudes toward the job are conceptually equivalent to job satisfaction..." (p. 99). That is, if a person is positively oriented towards his/her work roles then he/she is satisfied with his/her job; similarly if a person is negatively oriented towards his/her work roles, he/she is dissatisfied with the job. Vroom (1964) used his *valence-expectancy* theory to support this assumption. Valence is "an individual's preference for a particular outcome or "affective orientations toward particular outcomes" (p. 15). The individual's behavior is affected by both, the preference for the outcome and the probability of this preference leading to a higher benefit. The latter is "the degree to which he or she believes these outcomes to be probable" (p. 17), and the belief that a particular outcome will reap benefits is expectancy. The individual is satisfied if the expectancy is met. Locke (1976) in criticizing Vroom's (1964) theory, pointed out that it fails to differentiate "the amount of value wanted by the person and how much the person wants that amount" (p. 1306). The volume of the value (how much) and the degree of importance (how important) has to be distinguishable in order to accurately measure job satisfaction.

Locke (1976), in his definition of job satisfaction, described it as a result of "...the appraisal of one's job as attaining or allowing the attainment of one's important

job values, providing these values are congruent with or help to fulfill one's basic needs..." (p. 1319). The main characteristics of Locke's (1976) definition are that a person appraises his/her job based on how it measures up to his/her job values and that these job values stem from one's basic needs. Although the appraisal process could be implicit in Vroom's (1964) definition, Locke (1976) suggested these two levels in the job satisfaction process: job values stem from a person's basic needs and the attainment of the job values are equivalent to being satisfied with the job. Thus job satisfaction is an outcome on account of one's appraisal based on the attainment of job values that are important to the person. It is also important to point out that in one of Locke's (1976) initial descriptions of job satisfaction he termed it "...a positive emotional state resulting from the appraisal of one's job..." (p. 1300). This definition of job satisfaction overlaps with similar terms used by Lazarus (1991) to explain emotions such as anxiety and anger, and the appraisal process. Spector (1997), based on more recent studies, defined job satisfaction as an "attitudinal perspective" (p. 2). According to Spector, more recent researchers believe job satisfaction to be based on cognitive processes and not on needs. The need-based approach, as mentioned previously, was suggested by Locke (1976).

Although the above definitions provide important insights into the job satisfaction process there seem to be some contradictions that call for clarifications. Vroom (1964) termed job satisfaction as both, an "affective orientation" and an "attitude" (p. 99). Spector (1997) described job satisfaction as "how people feel about their jobs" (p. 2) but also defined it as an attitude based on cognitions. Locke (1976) initially termed it an affective state but later defined it as an appraisal of job values or

conditions. The term appraisal seemed to suggest a cognitive component. So what is job satisfaction? Is job satisfaction an attitude (Spector, 1997; Vroom, 1964), an “affective orientation” (Vroom, 1964, p. 99), an “emotional state” (Locke, 1976, p. 1300), or is job satisfaction a cognitive process (Spector, 1997)? If it is an attitude then what is an attitude? Can these terms be differentiated? What is and what is not job satisfaction?

Weiss’s (2002) deconstruction of the job satisfaction construct provides some needed clarification on the subject. According to Weiss, job satisfaction is an attitude; attitudes are evaluative judgments; evaluation is different from affect. Evaluative judgments of one’s job, beliefs about one’s job, and affective experiences at work, each are distinct constructs in themselves. While evaluation is the core of attitude, affect and beliefs are key components of attitude. Each may, independently, predict overall global evaluations. Therefore, in measuring job satisfaction, assessment of beliefs and affect will provide a sufficient measurement of overall job satisfaction. The affect or belief is based on an evaluative judgment of the object, the job.

While Weiss (2002) gives primary importance to the evaluative, cognitive aspect of job satisfaction, the affective element is considered an important component of job satisfaction by some researchers (Judge & Illies, 2004). A recent definition by Grandey, Cordeiro, and Crouter (2005) provides an integrated approach including both the cognitive and affective attributes. These authors described job satisfaction as an affective appraisal of an individual’s job (p. 310). This description takes in to account both the cognitive processes and affective orientations involved in the job satisfaction process. The definitions of job satisfaction are strongly intertwined with the debate concerning

the causes or determinants of job satisfaction. Most leading researchers agree that environmental or workplace factors play a very significant role in determining job satisfaction (Katz & Kahn, 1978; Locke, 1976; Spector, 1997; Vroom, 1964; Weiss, 2002). Vroom (1964) identified six probable determinants of job satisfaction, including the supervisor, the work group a person is assigned or has to work with, job description, pay, opportunities for promotion, and work load. Locke (1976) identified seven important conditions or job values for job satisfaction:

- (1) mentally challenging work with which the individual can cope successfully;
- (2) personal interest in the work itself;
- (3) work which is not too physically tiring;
- (4) rewards for performance which are just, informative, and in line with the individual's personal aspiration;
- (5) working conditions that are compatible with the individual's physical needs and which facilitate the accomplishment of his work goals;
- (6) high esteem on the part of the employee;
- (7) agents in the work place who help the employee to attain job values such as interesting work, pay, and promotions, whose basic values are similar to his own, and who minimize role conflict and ambiguity (p. 1328).

Studies cited by Katz and Kahn (1978) show worker gratification as being higher when tasks are "more varied, complex and challenging" (p. 364) compared to jobs that require lower skill levels. Decision making and variety in their job descriptions were cited by more people than salary or promotion, as the reason for higher job satisfaction. Vroom (1964) found supervisory behavior to be a very important determinant of an employee's job satisfaction. How considerate a supervisor is towards an employee or the

flexibility a supervisor allows an employee in making decisions can be a major determinant of how satisfied an employee is with his/her work. Environmental or work-related factors such as supervisor support, work load, and pay were identified as some of the major determinants of job satisfaction (Locke, 1976; Spector, 1997; Vroom, 1964).

Several research studies have suggested the dominant influence of environmental or situational factors on job satisfaction (Agho, Price, & Mueller, 1992; Bond & Bunce, 2003; Boswell, Tichy, & Boudreau, 2005; Egan et al., 2004; Gerhart, 1987, 2005; Katz & Kahn, 1978; Nagy, 2002; Rowden, 2002; Wright & Bonnett, 1992). But not all researchers agree that environmental factors are the primary determinants of job satisfaction. There has been a new wave of research studies that have shown that individual dispositional factors or personality factors have a huge role in determining a person's job satisfaction (Brewer & Clippard, 2002; Grandey, Cordeiro, & Crouter, 2005; Heller, Judge & Watson, 2002; Judge, Heller & Mount, 2002; Piccolo et al., 2005; Staw & Cohen-Charash, 2005). These researchers believe that a person's affective or emotional state determines whether a person will be satisfied or dissatisfied with his/her job. A study by Piccolo et al. (2005) found that core self evaluations, a personality trait that includes four sub-traits (self esteem, generalized self-efficacy, locus of control and neuroticism), showed strong correlations with job satisfaction. Similarly Judge and Illies (2004) found positive affectivity (PA), an affective trait, as a predictor of job satisfaction. There are other studies that have examined the effects of positive affectivity (PA) and negative affectivity (NA) on job satisfaction and found similar results (Piccolo et al., 2005; Heller, Judge & Watson, 2002). Judge, Heller & Mount (2002) examined

the effects of the Big Five personality characteristics (agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience) on job satisfaction and found that neuroticism, extraversion and conscientiousness strongly correlated with job satisfaction.

Based on some of these studies, dispositional researchers argue that individual characteristics such as personality and dispositions have a huge role in determining job satisfaction. Researchers who weigh dispositional factors highly tend to give primacy to the affective or emotional processes which they believe underlies the job satisfaction construct (Grandey, Cordeiro, & Crouter, 2005; Heller, Judge, & Watson, 2002; Judge, Heller, & Mount, 2002). Although the debate of which set of factors play a bigger role in determining job satisfaction is yet to be resolved, researchers acknowledge the importance of considering both environmental/situational and dispositional factors in measuring job satisfaction (Gerhart, 2005; Judge & Ilies, 2004; Spector, 1997).

While there is much disagreement on the causes of job satisfaction, the arguments on the effects of job satisfaction have been comparatively less contentious. Most studies on the effects of job satisfaction have focused on how job satisfaction effects work performance, organizational citizenship behavior, absenteeism, and turnover (Feather & Rauter, 2004; Fisher, 2003; Iaffaldano, & Muchinsky, 1985; Locke, 1976; Ostroff, 1992; Spector, 1997). It is important to note that some of these factors such as turnover have been studied as cause and effects of job satisfaction. For instance, a study by Egan et al. (2004) examined the effect of job satisfaction on turnover intention, where turnover intention was studied as an effect of job satisfaction. On the other hand, two studies, one by Wright and Bonnett (1992) and the other Boswell, Tichy,

and Boudreau (2005), examined the effects of turnover on job satisfaction, where job satisfaction was examined as the effect. Similarly, several studies have looked at effect of work stress and its related dimensions on job satisfaction (Barsky, Thoreson, Warren, & Kaplan, 2004; Jamal, 1990; Kelloway, Barling, & Shah, 1993; Liu, Spector, & Jex, 2005). Jamal (1990) found job stress, role ambiguity, role overload, role conflict and resource inadequacy to have a significant negative effect on job satisfaction. Kelloway et al. (1993) found negative industrial relations stress and positive industrial relations stress to affect job satisfaction. While the former had a negative effect, the latter had a positive effect on job satisfaction. According to Kelloway et al., negative industrial relations stressors occurred when employees perceived industrial relation events as negative and positive industrial relations stressors occurred when employees' perceived industrial relation events as positive.

Among studies of the possible effects of job satisfaction, the influence of job satisfaction on performance has been one of the most discussed or researched relationships in organizational research (Fisher, 2003; Iaffaldano, & Muchinsky, 1985; Ostroff, 1992; Spector, 1997). While some researchers have shown a strong link between job satisfaction and performance (Ostroff, 1992), many researchers suggest a weak correlation between job satisfaction and performance (Fisher, 2003; Iaffaldano, & Muchinsky, 1985; Locke, 1976; Spector, 1997). However the same does not hold for all work behaviors or outcomes. Spector (1997) cites studies that show strong correlations between organizational citizenship behaviors (OCB) and job satisfaction. According to Spector, OCB include positive behaviors or action taken by employee (outside of his job

description) to help peers and the organization voluntarily. Feather and Rauter (2004), in a recent study, found positive correlation between OCB and job satisfaction levels. Egan et al. (2004) found turnover intention to be significantly affected by job satisfaction. These examples provide evidence that job satisfaction does affect some work attitudes and behaviors.

Few studies on the effects of job satisfaction on factors or events related to training were identified in the systematic review of literature undertaken for this study. The author found only four studies that examined the effects of job satisfaction. Egan et al. (2004) examined the effects of job satisfaction on motivation to transfer learning. Kontoghiorghes (2002, 2004) examined the effects of job satisfaction on motivation to learn, motivation to transfer and transfer of learning. Rowden (2002) examined the relationship between workplace learning and job satisfaction. However, the focus of Rowden's (2002) study was on overall workplace learning (informal, formal and incidental) and was not specific to transfer of learning. The study by Kontoghiorghes (2004) measured job satisfaction along with job motivation as one factor. Job satisfaction as we have seen is considered a distinct factor by itself; hence, it needs to be studied separately. Egan et al. (2004) did not find a significant relationship between job satisfaction and motivation to transfer. This relationship is worth re-examining. The current study examines the effect of job satisfaction on motivation to transfer learning and transfer of learning.

One very useful outcome of reviewing varied and sometimes opposing views and arguments about a construct is gaining a big picture perspective on the subject. Job

satisfaction, as previous research on the subject suggests, is a highly debated construct. However, the extensive research available on job satisfaction has provided substance for a very rich and broad definition. At the outset this researcher supports the argument that job satisfaction is primarily an attitude that is based on an individual's assessment or evaluation of his/her job. That is, job satisfaction is more than just how people feel about their jobs; how a person feels about his/her job is a perceptible representation of one's assessment of the job. But this job-related assessment may be ongoing. What it means is that the more an individual learns about his/her job or the more him or her experiences his/her job, the better he/she is able to evaluate or assess it. Thus the evaluation process continues for a period of time until a firm conclusion about the job is reached.

Motivation to Transfer Learning. Before reviewing literature specific to motivation to transfer, a general understanding of the relation between motivation and work would be useful. This study uses Vroom's (1964) *valence-expectancy* theory to explain work motivation. Vroom (1964), in *Work and Motivation*, refers to motivation as "a process governing choices made by persons...among alternative forms of voluntary activity" (p. 6). He excludes from what he terms motivated behavior, reflexes, and responses related to the autonomic nervous system. According to Vroom, the choices people make among different work roles, the extent to which they are satisfied with these choices, and the degree to which they have performed in the work roles they chose, are three major characteristics that define the work-motivation relationship.

In his *valence-expectancy* model, Vroom (1964) explains the motivation-behavior relationship further. According to his model, an individual's preference for a

particular outcome is termed valence, and being positively valent (towards an outcome) meant choosing to attain an outcome compared to not choosing to attain it. Similarly, being negatively valent meant not choosing to attain an outcome compared to choosing it. The anticipated satisfaction from an outcome is said to be its valence, and the actual satisfaction from the outcome is termed its value. In the context of transfer, a trainee may prefer to transfer the learning acquired from a training program because this preferred choice may lead to higher monetary incentives. Here, the choice of transfer (the means) becomes the valence because of its expected relationship to the “incentives”. However, this “expected outcome,” the incentive, may or may not be realized because this is beyond the individual’s control. But the individual’s behavior is affected by both, the preference to transfer or not (choice of outcomes) and the probability of this preference to transfer leading to monetary incentive. Vroom (1964) terms the latter as “the degree to which he or she believes these outcomes to be probable” (p. 17). This belief is termed as expectancy.

Vroom’s (1964) expectancy model has been used by many HRD scholars to explain the underlying theoretical framework for motivation to learn and motivation to transfer learning (Colquitt, LePine, & Noe, 2000; Colquitt, & Simmering, 1998; Kontoghiorghes, 2004; Mathieu, Tannenbaum, & Salas, 1992; Noe, 1986; Yamnill & McLean, 2001). Many HRD scholars have suggested an association between expectancy theory and motivation to transfer (Kontoghiorghes, 2004; Noe, 1986; Yamnill & McLean, 2001). Noe’s (1986) explanation helps to understand the valence-expectancy model in the context of training motivation:

Trainees have preferences among the various outcomes (e.g., promotion, recognition) resulting from participation in the program (valences). Trainees also may have expectations regarding the likelihood that effort invested in the training program (i.e., participating in group exercises, answering questions, and practicing skills) will result in mastery of the content (Expectancy I). Finally, trainees differ in the extent to which they believe that good performance in the training program will lead to desirable outcomes (Expectancy II) (p. 740).

According to Noe (1986), trainees choose to learn from the training because they believe that learning and skill acquisition from the training would lead to monetary gains or career growth. According to Wexley and Latham, a trainee's *trainability* depends both on his/her ability and motivation (as cited in Noe & Schmitt, 1986). Hence, a trainee's learning from training and transferring that learning depends significantly on how motivated he or she is to do so.

Literature on training motivation largely focuses on two aspects of training, pre-training motivation which includes motivation to learn and post-training motivation which includes motivation to transfer (Mathieu, Tannenbaum, & Salas, 1992; Noe, 1986; Seyler et al., 1998; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). A trainee's desire to acquire knowledge and skills from the training is termed motivation to learn (Noe, 1986). Several studies have looked at a trainee's motivation to learn, its effects, and its causes (Colquitt & Simmering, 1998; Klein, Noe, & Wang, 2006; Kontoghiorghes, 2002, 2004; LePine, LePine, & Jackson, 2004; Naquin & Holton, 2002; Major, Turner, & Fletcher, 2006; Noe, 1986; Seyler et al., 1998; Tannenbaum et al. ,

1991; Tharenou, 2001; Tracey, Hinkin, Tannenbaum, & Mathieu, 2001; Wiethoff, 2003). Motivation to transfer learning, a posttraining work attitude, has been a focus of HRD scholars for many years (Egan et al., 2004; Holton, 2005; Holton, Bates, & Ruona, 2000; Kontoghiorghes, 2002, 2004; Noe, 1986; Seyler et al., 1998; Tannenbaum et al., 1991).

Noe (1986) identified motivation to transfer learning, in his model, as one of the work attitudes that has a major influence on transfer of learning. He defined motivation to transfer as “the trainee’s desire to use the knowledge and skills mastered in the training program on the job” (p. 743). A more recent definition by Seyler, Holton, Bates, Burnett, and Carvalho (1998) termed motivation to transfer as an “intended effort” (p. 4) to use learning from the training on the job.

While motivation to transfer can influence work behaviors such as transfer of learning, it can also be influenced by other work-related factors. Motivation to transfer is considered an important moderator between learning and change in behavior (Noe, 1986). For instance, some have suggested a possible moderating effect of motivation to transfer on the behavior change and work performance relationship (Seyler et al., 1998). Naquin and Holton (2003) identified a new construct, which they considered a combination of motivation to learn and motivation to transfer which they termed as *motivation to improve work through learning* (MTIWL). According to Naquin and Holton, motivation to improve work through learning is an employee’s motivation to improve performance by participating in training activities and utilizing what is learned to enhance job outputs. The construct was validated through a field test. Since the focus

of this study is specifically motivation to transfer learning, this will be discussed in more detail.

Several factors determine a trainee's posttraining attitudes including the motivation to transfer learning (Noe, 1986; Seyler et al., 1998; Tannenbaum et al., 1991). According to Tannenbaum et al., (1991) fulfilling trainee's expectations and desires could play an important role in developing posttraining attitudes. They found training fulfillment to be a significant predictor of posttraining attitudes. The posttraining attitudes differed between trainees who completed training and those who did not. The former reported higher levels of posttraining behavior compared to the latter.

Motivation to transfer has been found to be affected by both environmental factors and individual factors (Mathieu, Tannenbaum, & Salas, 1992; Seyler et al., 1998). Seyler et al., (1998) found peer support, supervisor support, supervisor sanctions, and opportunity to use, as significant predictors of motivation to transfer. Mathieu et al. (1992) found situational constraints had a negative effect on training motivation. In other words, they found that certain workplace factors impeded training transfer. Kupritz (2002) found workplace design to affect motivation to transfer learning. Seyler et al. (1998) found commitment to be strongly related to motivation to transfer learning, and this relationship was found to be moderated by environmental factors. Egan et al. (2004) found organizational culture and job satisfaction as important determinants of motivation to transfer learning. Seyler et al. (1998) found that learning was not a significant predictor of motivation to transfer learning. However, Kontoghiorghes (2002) found

motivation to learn as a strong predictor of motivation to transfer. Kontoghiorghes (2002) also found work environment factors such as organization commitment, job motivation, job design, quality driven culture as significant predictors of both motivation to learn, and motivation to transfer. Some studies have examined the effect of motivation to transfer learning on work behaviors. For instance Holton et al. (2002) examined the effect of motivation to transfer learning on transfer of learning. They found that motivation to transfer learning significantly affected transfer of learning. Transfer of learning in turn was found to be strongly related to performance improvement (Noe & Schmitt, 1986).

Even in HRD research, only a few studies have specifically focused on motivation to transfer (Egan et al., 2004; Holton et al., 2000; Kontoghiorghes, 2002, 2004; Seyler et al., 1998). Some of these studies measured motivation to transfer learning along with several other factors (Holton et al., 2000; Kontoghiorghes, 2002, 2004). These studies used instruments that had over 80 items. For instance Holton et al. (2000) used an instrument that had more than 80 items measuring 16 factors. Both the studies by Kontoghiorghes (2002, 2004) had more than 100 items. While respondent fatigue may have affected some or most of these measures, same source bias is another major concern. Further, some of the studies had sampling issues. The study by Seyler et al. (1998) used purposeful sampling which limits its generalization. Also in the same study respondents were asked to put their names on the instrument (Seyler et al., 1998). Although confidentiality was promised the authors caution that this may have biased some of the responses. In the Kontoghiorghes (2002) study, data was collected from a

single organization hence generalization is limited to that organization. Besides methodological issues, other key issues concerning the effects and causes of motivation to transfer remain. According to Noe (2000) motivation can be affected by dispositions such as anxiety and other personality characteristics. While Noe (2000) identified these omissions in his critique of the Holton et al. (2000) these variables identified by Noe, including anxiety, have still not been examined in relation to motivation to transfer. A study by LePine, LePine, and Jackson (2004) focused on stress, but this was in relation to motivation to learn among university students. Further, the study participants were undergraduate students; hence, their motivation to learn may be different from managers in organizational settings (LePine et al., 2004). The latter group may be more motivated to learn because the consequences for not learning may be more severe. Lepine et al. (2004) suggested the need for conducting research in organizational settings before the studies findings are used as a basis for organizational practice (p. 889).

Some of these gaps in motivation of transfer research, particularly the impact of job stress, time stress, and anxiety, on motivation to transfer learning are addressed in the current study. Furthermore, the effects of job satisfaction on motivation to transfer learning will be reexamined and its role as a potential mediator between job stress and transfer of learning will be explored. A study on the relationship between job satisfaction and motivation to transfer by Egan et al. (2004) found no significant relationship between the two factors. The study population was limited to information technology employees and, as identified by the authors, sampling limitations may have influenced study outcomes. The current study design has taken into account some of the

methodological concerns of previous studies. The study measures only four constructs and includes a total of 24 items. Also, study respondents were randomly selected, and the respondents were from diverse organizations and industry types.

Almost all research studies on motivation to transfer learning appear to have been done by HRD researchers. This is both advantageous and disadvantageous. Fewer studies mean that the perspectives, ideas, and knowledge, on the subject are narrow and, in this case, limited to a single field. On the other hand, fewer definitions mean fewer contradictions. After reviewing some of the definitions on motivation to transfer learning, this researcher defines motivation to transfer as a person's positive frame of mind or attitude that allows him/her to apply the learning he/she acquired from the training to the job.

Transfer of Learning. The research on transfer of learning has largely focused on two distinct but interconnected aspects, evaluating transfer as an outcome and identifying and measuring the factors that influence transfer (Alvarez, Salas, & Garfano, 2004; Holton, 1996; Holton et al., 2000). According to Alvarez et al. (2004), while training evaluation is done to determine if the training program has succeeded in imparting the necessary knowledge and skills to the trainee, measuring the effectiveness of training involves assessing the internal and external factors that may influence the individual in enhancing or impeding the transfer of knowledge and skills acquired from training. While one is a "methodological approach" to measure outcomes the other is a "theoretical approach" (p. 387).

The term transfer of learning has been interchangeably used with behavior change, transfer of training, and application of learning (Baldwin & Ford, 1988; Holton & Bates, 1998; Holton, Bates & Ruona, 2000; Kirkpatrick, 1975, 1998; Noe, 2000; Yamnill & McLean, 2001, 2005). This behavioral measure was first introduced as an outcome of training by Kirkpatrick (1975, 1998) in his *four-level model* (Alliger & Janak, 1989; Combs & Falletta, 2000; Holton, 1996; Kirkpatrick, 1998; Noe, 1986; Parry, 1997; Phillips, 1997). He termed it *behavior change*. Holton (1996) in his model proposed the term *individual performance* instead of behavior change because he believed that the term individual performance was “an appropriate descriptor for HRD objectives” (p. 9) and a broader construct. The term transfer of learning has been quite consistently used in recent HRD studies (Chen, Holton, & Bates, 2005; Holton, 2005; Khasawneh, Bates, & Holton, 2006; Lim & Morris, 2006; Subedi, 2006); hence, this term will be used in the current study.

Most HRD researchers describe transfer of learning as the extent or degree to which trainees apply or transfer their knowledge, skills attitudes acquired from the training to their jobs (Baldwin & Ford, 1988; Holton, 1996; Tracy et al., 1995; Wexley & Baldwin, 1986). The significance of this behavioral outcome has been emphasized by leading HRD researchers, and many theoretical models have been proposed to measure transfer, its causes, and its effects (Baldwin & Ford, 1988; Ford & Weissbein, 1997; Holton, 1996; Holton & Bates, 1998; Holton et al., 1997; Holton, Ruona & Leimbaugh, 1998; Kirkpatrick, 1975, 1998; Noe, 1986; Noe & Schmitt, 1986; Rouiller & Goldstein, 1993; Tracy et al., 1995; Wexley & Baldwin, 1986; Yamnill & McLean, 2001).

Noe (1986), in proposing a model for transfer, underlined the importance of what he termed *trainability*, a function of ability, motivation, and work environment perceptions. According to his model, environmental factors affect motivation to transfer which in turn influences transfer. Baldwin and Ford (1988) identified three major sets of elements involved in the transfer process: (1) Training input factors that includes training design, trainee characteristics, and work environment; (2) training outcomes such as the trainee's learning from the training and conditions of transfer which includes generalization of content learned in the training to the job and maintaining the use of learning over a period of time. The Baldwin and Ford model (1988) has been widely cited (180 times according to SSCI) by transfer researchers because of its ability to explain some of the theoretical aspects of transfer (Ford & Weissbein, 1997; Holton, 1996; Holton et al., 2000; Holton et al., 1997; Noe, 2000; Rouiller & Goldstein, 1993; Tracy et al., 1995; Yamnill & McLean, 2001). According to Baldwin and Ford's (1988) model, trainee input factors include training design that is, the relevance of the training content to trainee's job; trainee characteristics that is, motivation, ability or skill, and other personality characteristics; and work environment factors that is, supervisor, peer support and opportunities to use learning. Ford and Weissbein (1997) differentiated "situations or environments" (p. 37) that influence training outcomes into two types: the *training environment* that includes training design and situations that affect trainees while they are undergoing training and the *transfer environment* that is the environment that exists after trainees return to the job. According to Ford and Weissbein, both these

environments, in combination, impact the application or transfer of the learned knowledge and skills on to the job. The current study's focus is the transfer environment.

Holton (1996), in his model, categorized the major influences that impact training outcomes into two types: influences on learning and influences on transfer. The trainee's motivation to learn is influenced by the learner's readiness and willingness to learn from the training, trainee's attitude towards the job and the organization, trainee's own personal characteristics such as openness to extroversion, openness to experience, and, finally, trainee's ability to transfer. The influences on transfer were identified as motivation to transfer and transfer design. Yamnill and McLean (2001) in their study proposed a theoretical framework for supporting the three primary influences identified by Holton (1996). The primary influences on transfer are motivation to transfer or motivational elements, transfer climate or environmental elements, and transfer design or ability/enabling elements (Holton, 1996; Yamnill & McLean, 2001). Yamnill and McLean (2001) identified *Expectancy Theory* of Vroom, *Goal setting Theory* of Locke, *Equity Theory* of Adams as theories that helped explain intervention fulfillment, job attitudes, and expected utility or payoff, all related to motivation to transfer. Similarly, they identified *Elements Theory* by Thorndike and Woodworth, *Principles Theory* by Goldstein, and *Near and Far Transfer* theory to explain training design. Finally, the *Transfer Climate Framework* by Rouiller and Goldstein, and *Organization theory* by Kozlowski and Salas were used by them to explain transfer climate. Of these theories, Vroom's (1964) expectancy theory has been found to be used in most major transfer of learning models, and has been specifically used in explaining motivation to transfer by

many researchers (Baldwin & Ford, 1988; Holton, 1996; Noe, 1986). Expectancy theory has also been used to explain the link between transfer and performance (Noe & Schmitt, 1986). Trainees' expectancies of training were found to be related to behavior change and performance. The expectancy theory of Vroom (1964) has already been explained in more detail by this author in the previous section where it was found more relevant with the topic of discussion, motivation to transfer.

Besides motivation to transfer learning there are many other factors affecting transfer of learning (Baldwin & Ford, 1988; Holton, 1996; Holton & Bates, 1998; Holton et al., 1997; Holton et al., 2000; Noe, 1986, 2000; Noe & Schmitt, 1986; Rouiller & Goldstein, 1993; Tracy et al., 1995; Wexley & Baldwin, 1986; Yamnill & McLean, 2005). Wexley and Baldwin (1986) found that posttraining strategies such as assigned goals setting that is, goals assigned by the supervisor, and participative goal setting that is, goals jointly set by trainee and trainer, facilitate maintenance of transfer. Noe and Schmitt (1986) found that career planning correlated with behavior change and behavior change strongly related to performance improvement, which meant, successful transfer resulted in higher performance. The support for the link between *transfer behavior* and job performance was confirmed by Rouiller and Goldstein (1993) in their study. However, the primary purpose of Rouiller and Goldstein's (1993) study was to measure the influence of transfer climate on behavior and performance. They defined transfer climate as "situations or consequences that either inhibit or help to facilitate...transfer" (p. 379). Critical incident technique and focus group interviews were utilized to develop

a 63-item instrument to measure transfer climate. The study results confirmed the influence of, what they termed, *situational cues* on transfer.

Rouiller and Goldstein's (1993) study is considered a landmark in measuring work environment factors that affect transfer (Holton, 1996; Holton et al., 1997, 2000; Noe, 2000; Tracy, Tannenbaum & Kavanaugh, 1995). Many studies have used their study as a basis to measure transfer climate (Holton et al., 2000; Noe, 2000; Tracy, Tannenbaum, & Kavanaugh, 1995). Tracy et al. (1995) used 33 items from the Rouiller and Goldstein (1993) to measure transfer climate. Tracy et al. concluded that transfer climate can enhance or impede transfer of learning. The climate scales used in by Tracy et al. included social and goal cues that is, the extent to which supervisors and co-workers encourage trainees to transfer; task cues, the extent to which a trainee's job characteristics prompt him/her to transfer; no-feedback consequences or the extent to which supervisor neither supports nor discourages transfer; punishment consequences or the extent to which trainee is discouraged from transferring knowledge, skills from training; extrinsic reinforcement, the extent to which trainees receive extrinsic rewards such as a salary increasing for successful transfer; and intrinsic reinforcement, the extent to which trainees receive intrinsic rewards such as appreciation for transferring skills. Holton et al. (2000) identified sixteen factors that influenced transfer of learning. Their study included many items from the Rouiller and Goldstein (1993) instrument (Holton et al. 2000; Noe, 2000). Some of the key factors measured by Holton et al. (2000) included motivation to transfer learning, such as the perception that effort to transfer learning would lead to better performance; trainee characteristics, such as learner readiness or

preparedness in participating in the training program; work environment, such as supervisor support; ability, such as personal capacity to transfer learning on to the job; and transfer design, the extent to which training instructions match the job requirements or the extent to which the design of the training program enabled trainees to transfer their learning to the job.

In recent years, many studies have looked at different influences on transfer of learning. The effect of transfer climate or work environment on transfer of learning has been a focus of many recent studies (Awoniyi, Griego & Morgan, 2002; Bates & Khasawneh, 2005; Chen, Holton & Bates, 2005; Clarke, 2002; Cromwell & Kolb, 2004; Gumuseli & Ergin, 2002; Enos, Kehrhahn & Bell, 2003; Gaudine & Saks, 2004; Hawley & Barnard, 2005; Huint & Saks, 2003; Khasawneh, Bates & Holton, 2006; Kupritz, 2002; Lim & Morris, 2006; Machin & Fogarty, 2004; Pidd, 2004; Wickramasingh, 2006; Yamnill & McLean, 2005). Among the most studied environment variables were supervisor support and peer support, with the former being the most studied external support factor (Cromwell & Kolb, 2004; Gumuseli & Ergin, 2002; Hawley & Barnard, 2005; Huint & Saks, 2003; Lim & Morris, 2006; Pidd, 2004). Huint and Saks (2003) found supervisory support to have a positive effect on transfer. Lim and Morris (2006) found both supervisor and peer support to closely correlate with transfer of learning. Hawley and Barnard (2005) found peer support to have a positive influence on transfer and a lack of supervisor support to have negative effect on transfer. Cromwell and Kolb (2004) found that direct supervisor support, peer support, and use of peer support network significantly correlated with transfer. They also found organizational

commitment and supervisor involvement (support and feedback) as key factors that influenced transfer.

Kupritz (2002), in an ethnographic study, explored the effect of workplace design on transfer of learning. She found factors such as density of the workplace, sharing of workspace, and the comfort level with the way the furniture and equipment were laid out, influenced transfer. Gumuseli and Ergin (2002) conducted an experimental study among trainees to measure the impact of management support on job attitude, productivity, and job satisfaction. They found that performance levels and job satisfaction increased after training among the experimental group. In other studies concerning environmental factors, Awoniyi, Griego and Morgan (2002) found a significant positive relationship between person-environment fit (P-E) and learning transfer. They also found that support for freedom, sufficient resources, low workload pressure, and creativity has significant but modest relationships with transfer. An important finding in the Awoniyi, Griego and Morgan (2002) study, that may be useful for the current study, is that transfer of learning remained the same irrespective of when training took place. The study participants took their courses between 1996 and 1999, a span of three years. Lim and Johnson (2002) used questionnaires and conducted interviews to explore reasons for high transfer and low transfer. They found six reasons for high transfer and seven reasons for low transfer. While opportunity to use the learning acquired from training on the job was the most frequently cited reason for high transfer, lack of opportunity to apply the learning was cited as the reason for low transfer.

Although most studies found in the literature seemed to have focused on environmental factors, there have been some studies that have looked at the influence of individual characteristics on transfer of learning (Herold, Davis, Fedor, & Parson, 2002; Holton et al., 1997; Holton et al., 2000; Holton et al., 2003; O'Neill, Hansen & May, 2002). Herold et al. (2002) found that emotional stability and openness to new experiences were predictors of transfer of skills learned. They found emotional stability was high when participants were put in actual stressful situations. Although they did not examine the direct effect of stress on transfer, this study provides new insight. It suggests a positive outcome, when people are put in stressful situations. There have been some studies led by Holton et al. (1997, 2000, 2003) that have measured the effects of individual characteristics on transfer. For instance Holton et al. (2000) measured learner readiness, motivation to transfer, and performance self-efficacy, among few other individual trainee characteristics.

Although most studies discussed above have either looked at the effects of environmental factors or individual factors on transfer, there are some studies that have included both these measures. The *Learning Transfer System Inventory* (LTSI) by Holton and Bates (1998), considered one of the most comprehensive systems, uses measures for both individual and environmental factors that affect transfer (Holton, 1996; Holton et al., 1997; Holton & Bates, 1998; Holton et al., 2000; Seyler et al., 1997; Yamnill & McLean, 2001). It has been field tested and validated several times across organizations, industries and even across cultures (Bates & Holton, 2004; Chen, Holton, & Bates, 2005; Holton, Chen, & Naquin, 2003; Khasawneh, Bates, & Holton, 2006;

Ruona, Leimbach, Holton, & Bates, 2002; Yamnill & McLean, 2005). The LTSI has been field tested in the United States by Holton et al. (1997, 2000) and by Ruona et al. (2002). It was tested across organizations by Holton et al. (2003), and again by Bates and Holton (2004). A translated version of the LTSI was tested in Thailand by Yamnill and McLean (2005), a Taiwanese version was tested by Chen et al. (2005) and an Arabic version by Khasawneh et al. (2006). Although LTSI (1998) has been praised for its methodological strengths, it was criticized for leaving out important dispositional factors such as anxiety, personality characteristics such as openness to experience, and career job attitudes such as job involvement and job commitment (Noe, 2000). It also did not include demographic factors such as years of experience (Chen, 2003).

Although there are several definitions for transfer of learning, all definitions are mostly consistent in the way they define the process. For the purposes of this study transfer of learning is defined as the application of learning (by the trainee) acquired from a training program to the job, assuming that the training was specifically designed to address those job needs.

Conclusions from the Review of Literature

The literature review focused on the theories that underlie each of the study variables: transfer learning, motivation to transfer, stress, and job satisfaction. The review also included the determinants and assumed effects of these factors. Although much has been done in the assessment of transfer of learning and measurement of factors that affect it, a review of recent studies, between 2002 and 2006, show some major gaps

in HRD studies focusing on transfer. The weaknesses can be categorized into two types, methodological limitations and limitations regarding study constructs. Methodologically, many of the researchers used small sample sizes, limiting the generalizability of their results (Brown, 2005; Cromwell & Kolb, 2004; Enos et al., 2003; Gumuseli & Ergin, 2002; Lim & Morris, 2006; Machin & Fogarty, 2004). Some researchers used convenience sampling and few others used purposive sampling to select participants. The Lim and Morris (2006) and Enos et al. (2003) studies used convenience sampling to select their samples. A purposive sampling technique was used by Holton et al. (2000, 2003) for selecting their samples. In many studies homogeneity of the sample made it hard to generalize findings across persons of different demographic characteristics. For instance, in some studies the gender ratio was overwhelmingly tilted towards one direction, making the sample more or less homogeneous. Herold et al. (2002) used a sample that was predominantly male and predominantly Caucasian—almost ninety percent. In the Enos et al. (2003) study, women formed more than seventy percent of the sample. Also in some studies, the samples were selected from employees working for a single organization limiting the generalizability of their results to that organization. For example, Montesino's (2002) study sample included trainees from a training group in one organization. In similar sample related limitations, Kupritz (2002), Clarke (2002), Hawley and Barnard (2005), and Lim and Johnson (2002) used a qualitative approach with very small sample sizes. Their sample sizes were less than thirty in number.

Several issues were identified in terms of how researchers measured different constructs. In the case of organizational climate, research suggests that this construct has

several dimensions or sub-constructs (Holton et al., 1997; Rouiller & Goldstein, 1993; Tracey et al., 1995). Rouiller and Goldstein (1993) identified eight dimensions, which include goal cues, social cues, task cues, self control cues, positive feedback, negative feedback, punishment, and no feedback. Tracey et al. (1995) added extrinsic and intrinsic rewards, social support, continuous innovation, and competitiveness to this list. But most studies preferred to measure just two dimensions of transfer climate, supervisor support and peer support (Cromwell & Kolb, 2004; Hawley & Barnard, 2005; Pidd, 2004). Excluding important dimensions of organizational climate would mean an incomplete or inadequate measurement of the construct.

While there is the issue of constructs not being measured adequately, there is also a problem of instruments getting too long, complex and cumbersome. According to Cox (1996), for optimal results, an instrument should take no more than ten to twelve minutes to complete. Noe (2000) warns researchers not to compromise on parsimony and simplicity. Some of the instruments which have taken the understandably difficult task of measuring a large range of factors, failed to be “participant-friendly” for their extensive list of items. Machin and Fogarty (2004) used a 104-item instrument to measure five constructs. A study by Kontoghiorghes (2004) used a 109-item instrument to measure 13 factors. The LTSI (Holton & Bates, 1998), which was used in many recent research studies (Bates & Holton, 2004; Chen, Holton, & Bates, 2005; Holton, Chen, & Naquin, 2003; Khasawneh, Bates, & Holton, 2006; Ruona, Leimbach, Holton, & Bates, 2002; Yamnill & McLean, 2005), has 89-items (Holton & Bates, 1998). Some researchers who used the LTSI found the extensive length to be a challenge for

respondents to complete the items (Chen, 2003; Yamnill, 2001). Disinterest and possible fatigue may occur due to the instrument being too long and taking too much time to complete (Cox, 1996). This could in turn lead to inaccurate or incomplete data. As Bond and Bunce (2003), argued “no study can examine every potential confound” (p. 1065), and this is understandable considering the multitude of factors that could have potential influence people’s behavior or attitude. Researchers have to choose between including a huge list of factor measures and keeping the instrument short and respondent friendly. The latter seems to be a more effective path to ensure accuracy of data.

The effects of three variables on transfer of learning, work stress, job satisfaction and motivation to transfer were measured in the current study. Based on this review of literature, only one study was found that examined the effects of work stress on transfer. This study was a qualitative study by Clarke (2002) involving a very small sample of fourteen trainees. It would be useful to study the effect of work stress on transfer using a larger sample in an actual organizational setting. Similarly, in the review of literature, it was found that very few studies examined the direct effect of job satisfaction on transfer of learning. Kontoghiorghes (2002, 2004) examined the effect of job satisfaction on motivation to transfer and transfer of learning. Egan et al. (2004) investigated the influence of job satisfaction on motivation to transfer. While the Kontoghiorghes (2002, 2004) studies combined job satisfaction with job motivation and used it as a single measure, the Egan et al. (2004) study did not find job satisfaction significantly related to motivation to transfer. The importance given to job satisfaction in organizational research is already known; hence, it is essential that the effect of this important variable

on transfer be examined adequately. The effect of motivation to transfer, another work attitude, on transfer has already been examined by Holton et al. (2000) and by several others using the LTSI (Holton & Bates, 1998). But, it will be worthwhile to examine the effect of motivation to transfer as a mediating variable between job stress, job satisfaction, and transfer. The importance of transfer of learning as a key behavioral outcome measure of training success has been already discussed. It is not only seen as a measure of individual performance (Holton, 1996), but it has also been linked to performance improvement (Noe & Schmitt, 1986). Thus, the transfer of learning behavior's direct relevance to performance makes it a very important subject of research. In *Chapter III* the researcher will provide a detailed outline of the methodology and study design that has been used to examine the relationship between the four factors of the study.

Study Participants and Context

The participants for study were selected from trainees who underwent training at the Texas Engineering Extension (TEEX). TEEX was chosen for several important reasons. Firstly, TEEX provided a population that was of direct relevance to the researcher's topic of study. Many courses offered by TEEX focused on training trainers. OSHA 501, General Industry, is one such program. Secondly, the researcher had the option of choosing from several different training courses. This gave the researcher the opportunity to choose an appropriate course relevant to the study topic and a large enough population that would meet some of the methodological requirements such as

size of sample, response rate etc., Finally and most importantly, officials at TEEEX were actively involved in helping the researcher in identifying and selecting the appropriate population and in reaching them. This was extremely useful for designing the survey, for communicating with the participants, and for follow up.

The Training Organization. The Texas Engineering Extension or TEEEX is one of the largest training organizations in the United States, according to a senior official at the organization (Martin, 2005, personal communication). It is part of the Texas A & M University System. In 2005, they trained 176, 000 individuals from the United States and 50 other countries (TEEX.com). They have over 1000 experts training individuals in more than 40 fields of practice or jobs and across industries that include firefighters, police personnel and terrorism prevention experts. The Occupational Safety and Health Administration training is one of the many training programs offered by TEEEX. TEEEX is OSHA's Southwest training center. In 2005, TEEEX personnel trained more people in health and safety than OSHA's national training center and more than two of OSHA's regional training centers' combined. TEEEX conducts 28 different OSHA courses based on industry requirements (TEEX, Course Catalog, 2004-2005).

The Training Program. The Occupational Safety and Health Administration (OSHA) is a federal agency which is housed under the United States Department of Labor. The agency was established through the Occupational Safety and Health Act by President Richard Nixon in 1970 (OSHA.gov). The mission, according to the agency website, is "to send every worker home whole and healthy everyday" (Mission Statement of OSHA, 2006). Since the full implementation of the act in 1971, workplace

fatalities were cut by 62% and workplace injury and illness by 40% (OSHA.gov). This achievement is notable considering the enormous growth of the US workforce in the last 35 years, from 56 million workers to 115 million workers working at seven million sites.

According to a TEEEX catalogue, the OSHA General Industry training or OSHA-501 course covers information for trainers in occupational safety and health standards based on OSHA'S general industry standards. The course curriculum included the provisions of the Occupational Standards and Health Act, how the act is implemented in the workplace, the rights and responsibilities under the act, appeal process, and recordkeeping, are some of the topics covered under the course. Successful completion of the course qualifies an individual to train 10-and 30-hour general industry occupational safety and health outreach courses as an "OSHA authorized Outreach Trainer" (p. 3). However, for participants to be eligible for the course, they need to have met some basic prerequisites. Eligibility is determined based on completion of five years of relevant experience in and completion of at least 30 hours of General Industry Safety and Health training such as OSHA Course 511 or completion of the 30-hour OSHA General Industry Outreach training or 30-hours of similar Safety and Health training in General Industry. Although the course participants are predominantly trainers, the course is for individuals who have an interest in increasing their knowledge and effectiveness with regard to controlling and eliminating hazards in the general industry environment. The course duration is 26 contact hours. Major topics for the course include hazardous material handling, substance specific regulations, voluntary compliance programs, walking/working surface,, means of egress, hazardous materials, recordkeeping, blood

borne pathogens, permit-required confined space, fire protection, machine guarding, and personal protective equipment. The course also includes instructional techniques, classroom control, and managing other training issues.

Research on Safety Training. Work-safety is a vital component of organizational climate (Zohar, 1980). In industrial organizations safety climate is perceived as very important by its employees. However, managers' perceptions of safety are different from employees' perceptions. Managers view safety as a technical need and something that is required to comply with government regulations (p. 101). The commitment of management or organizational involvement in worker safety has been highlighted by other researchers. Oliver, Cheyne, Tomas, and Cox (2002) examined the effects of organizational and individual factors on occupational accidents. They found that workers perceived organizational involvement and work environment factors to be closely related in the context of safety. Furthermore, organizational involvement was considered more important in maintaining safe behavior. According to the findings of their study, safe behavior mediated the relationship between organizational involvement and occupational accidents.

Clarke and Robertson (2005) conducted a meta-analysis on the effects of individual personality traits on accident involvement in occupational and non-occupational settings. Specifically, they focused on five personality traits (known as the Big Five), extraversion, conscientiousness, agreeableness, neuroticism, and openness. Low conscientiousness and low agreeableness were found to predict accident involvement. Neuroticism was found to be a significant predictor of occupational

accidents. Barling, Kelloway, and Iverson (2003) investigated the effect of high quality jobs on occupational injuries and the role of job satisfaction in the relationship. They defined high quality work as a job that allowed workers a lot of variety in their jobs, adequate safety related training, and autonomy. They found high quality work to directly affect occupational injuries. That is, workers involved in high quality work had less occupational injuries. They also found that employees who were more satisfied with their jobs were less prone to occupational injuries.

McLain (1995) found that employees' exposure to risky environments that threatened their health and safety affected their job satisfaction levels. These employees also faced an increased possibility of job stress. That is, a perception of increased harm leads to dissatisfaction and increase in job stress levels among employees. McLain (1995) further found that overall job satisfaction was higher among employees who were willing to trade monetary incentives for improvement in workplace health and safety conditions (p. 1737). Similarly, perceived risk significantly predicted stress-related symptoms. Another finding was that exposure to risks also distracted employees from their tasks. Task-distraction in turn could affect performance.

The above studies underline the importance of occupational safety training. Occupational safety training protects individuals from personal injuries and the organization from personnel and productivity losses. Further, ensuring safety through training and the active involvement of management in maintaining a safe environment besides the possibility of reducing job stress and increasing job satisfaction could lead to higher performance.

Summary

In *Chapter II*, research relating to the four factors involved in the study: job stress, job satisfaction, motivation to transfer, and transfer were summarized. Specifically, the theories underlying the factors, proposed models, and opportunities for further research were discussed. A brief description of the organization conducting the training was included and a description of the training program was provided. In *Chapter III*, that follows, an outline of the research methodology used to conduct the study is provided. Specifically, the data collection method, the instrumentation, and the data analysis techniques used in the study are discussed.

CHAPTER III

METHODOLOGY

The methodology section includes a brief description of the study design, the population of the study, sample of the study and demographic composition, the procedures used for data collection, the instruments utilized to collect data, and finally the details of the methods and techniques used for analysis of the data.

Study Design

The purpose of this study was to address the research question and the supporting hypotheses about the relationships among job stress (anxiety and time stress), job satisfaction, motivation to transfer, and transfer of learning based on the perceptions of selected OSHA outreach trainers in Texas and neighboring states. A cross-sectional survey design was found to be appropriate in examining these relationships. According to Spector (1994), a cross-sectional self report methodology is useful not only in providing information about people's perceptions about their jobs but also in informing the researcher about possible inter-correlations between these perceptions. Spector (1994) suggested that such information can be insightful and "useful for deriving hypothesis about how people react to jobs" (p. 390). Most organizational researchers were found to use cross-sectional self report methodology. In a recent review of literature of some major HRD and organizational journals by the author of the current study, it was found that out of the 134 studies on learning transfer, job stress, and job satisfaction, 115 of them used cross-sectional self report methodologies. This indicates

both the usefulness and practicality of this methodology in field studies when compared to other methodologies.

An electronic survey was utilized to collect self report data. A pilot test was conducted with 11 respondents to test the clarity, simplicity, and accessibility of the survey. Pilot study participants included both in-field and out-of-field individuals. The survey was conducted in two phases. A random sampling method was used to select the sample. Estimates of reliability were conducted for the four variables of job stress, job satisfaction, motivation to transfer, and transfer of learning, and the two dimensions of job stress, anxiety, and time stress. *Cronbach's alpha* technique was used to estimate reliability. *Principal Component Analysis* (PCA) was conducted to analyze the factor structure of all the constructs involved in the study. A correlation coefficient (r) analysis was conducted to examine if the variables correlated with each other as hypothesized. A regression analysis was conducted to examine if the independent variables in the study predicted the dependent variables as hypothesized. A path analysis was conducted to test the four models hypothesized in the study and to test the goodness of fit of the models. Mediation tests were conducted to examine if there were mediating effects.

Population

The population of this study included 418 Occupational Safety and Health Administration (OSHA) outreach trainers who underwent the OSHA General Industry training conducted by the training centers of Texas Engineering Extension between January 2005 and March 2006.

Study Sample

The final sample size was 418, representing a population of 1234 (from the total training participants who received the surveys; specific sampling details provided below). Three respondents were removed because of incomplete responses and four others were removed because they took the survey after the survey deadline (August 30th, 2006). Of the total 418 useable responses, a total of 371 respondents or 89% of participants in the sample took the course in 2005, and 47 respondents or 11% of the participants in the sample took the course in 2006. An analysis of variance (ANOVA) was conducted to determine if there was a difference between respondents who took the course in 2005 and those who took the course in 2006. The results of the ANOVA are shown in *Table 1*.

Table 1. ANOVA Between Groups for Years

Variable	Sum of Squares	df	Mean Square	F	Sig.
Transfer	22.00	1.00	22.00	2.50	0.11
Motivation to Transfer	11.81	1.00	11.81	1.75	0.19
Stress	4.73	1.00	4.73	0.10	0.75
Job Satisfaction	11.31	1.00	11.31	0.85	0.36

As the results in *Table 1* indicate, there are no significant differences between the means of respondents who took the course in 2005 and 2006, for any of the four variables: transfer of learning, motivation to transfer, job stress, or job satisfaction. None of the F values were significant at the .05 level.

The respondents included outreach trainers located in Texas and neighboring states. Approximately 57% of the sample (241) was from Texas and 43 % (177) was

from neighboring states, which included Alabama, Arkansas, Louisiana and New Mexico. All participants were not trained by the same instructor. However, a sizable percentage of the sample, 31 %, was trained by the same instructor. Overall, four instructors accounted for 60% of the participants instructed. In order to determine if there were differences among respondents who trained under different instructors, an analysis of variance (ANOVA) was conducted among fifteen groups, separated based on instructors. The results of the ANOVA are shown in *Table 2*.

Table 2. ANOVA Between Groups for Instructors

Variable	Sum of Squares	df	Mean Square	F	Sig.
Transfer	229.25	14.00	16.37	1.91	0.02
Motivation to Transfer	174.19	14.00	12.44	1.90	0.02
Stress	719.96	14.00	51.43	1.11	0.34
Job Satisfaction	279.40	14.00	19.96	1.53	0.10

As the results in *Table 2* indicate, the differences in means were significant among instructors for two of the dependant variables measured, transfer of training, and motivation to transfer. This meant that instructors did influence the way participants transferred their learning or were motivated to transfer their learning. However, the differences among means were not significant for job satisfaction and job stress. This meant that instructors had little or no influence on the respondents' job stress and job satisfaction levels. Because the primary effort of the researcher was to maximize the sample size, any variation that results due to difference in instructors is being accepted as a limitation. However, it is important to note that although the instructors were not the

same for all participants, the course design and content were the same for all participants. According Martin (2006, personal communication), project manager at TEEEX, the instructors also go through the same course design and content before they train others. Furthermore, since the course is safety related, minimum divergence is allowed in terms of content or method of instruction.

To the question whether they have participated in any other similar OSHA training program during this period (2005-2006), 301 participants, approximately 71% of the sample answered in the negative. However, 120 participants or 28% of the sample had taken other similar OSHA courses during that period. Although this could be a potential limitation, it may not affect the study results adversely. Firstly, only the initial five items measure the participants' response to a specific course, and each of these five items contained the course name and number. In the instrument 19 items were used to assess general constructs and were not course specific hence would not be affected by this limitation.

In terms of the other demographics, number of years of experience in the current job and location of participants were collected. Of the 418 respondents, 136 of them had fewer than five years of experience in the current job (approximately 32 %). Approximately 23 % (93) of the respondents had 6-10 years of experience, and 15 % of the sample (59 of the respondents) had between 11-15 years of experience. Approximately 31% of them had 16 years of experience or more in their current jobs. An analysis of variance (ANOVA) was conducted to determine if there were any differences among groups based on their years of experience on the job. The respondents were

categorized into six groups, 0-5 years, 6-10 years, 11-15 years, 16-20 years, 21-30 years, and 31-40 years. The results of the ANOVA are shown in *Table 3*.

Table 3. ANOVA Between Groups for Experience

Variable	Sum of Squares	df	Mean Square	F	Sig.
Transfer	38.12	5.00	7.62	0.86	0.51
Motivation to Transfer	12.57	5.00	2.51	0.37	0.87
Stress	249.01	5.00	49.80	1.07	0.37
Job Satisfaction	55.57	5.00	11.11	0.84	0.53

As the results in *Table 3* indicate, none of the F values were significant at the .05 level for any of the four variables, suggesting that the means among groups (based on experience) did not significantly vary.

The information regarding the participant's gender was not collected as part of the demographic information during the survey. However, according to a TEEX official managing the OSHA 501 General Industry course, the composition of male and female participants was usually 80-85% male and 15-20 % female. This information suggests that the sample was probably largely male. Although this could be a general reflection of the outreach trainer population the results of the study may have limitations its terms generalizability to both genders. Besides the gender, the sample seems to be well distributed in terms of years of experience, location and instructors. Furthermore, all scales of measurement used in the study are generalized across occupations, gender, job

levels, years of experience, and industries (Agho, Price & Mueller, 1993; Holton, Bates & Ruona, 2000; Jamal & Baba, 1992; Pucel & Cerrito, 2001).

Procedure

Electronic surveys were sent in two phases to collect data from the selected participants. The first phase of the survey was conducted between the 7th of June, 2006 and the 10th of July, 2006. The *Mersenne Twister* method in SPSS was used to randomly select 400 participants from a population of 1784 OSHA outreach trainers who underwent the OSHA 501 General Industry training between 2005 and 2006 (March). The *Center for Distance Learning and Research* at Texas A&M University assisted the researcher in designing the electronic survey. The Texas Engineering Extension (TEEX) was also involved in the design process because of their familiarity with the sample. An e-mail with a cover letter introduced the study and the researcher, with clear instructions to access the survey, contact information of the researchers, contact information of the researcher's two advisors, contact information of an official at TEEX who was helping the researcher with the sample, and contact information of an Institutional Review Board official from Texas A&M. Also included in the e-mail, and in the survey, were the ethical guidelines that would be followed by the researcher, which included the terms of consent and the assurance of confidentiality. The electronic survey thus had an introductory e-mail that included the items mentioned above; a log in page that had instructions for entering the survey web page, contact information of the researcher, in case the participant faced any problems; an information and informed consent page with

an “I agree” and exit option; the demographics page with instructions for taking the survey; and finally the 24-item survey questionnaire (see *Appendix* regarding survey and related correspondences).

The surveys were sent using a TEEEX e-mail address so that participants would recognize the sender of the e-mail. The e-mail subject heading contained the name of the training course and the purpose of the e-mail survey. These procedures were used to maximize survey responses. The expected response rate was 50%. However, in the first part of the survey only 306 out of the 400 e-mails sent, reached the participants. Several e-mails (94) returned. The researcher sent the first reminder e-mail after a week of sending the survey, and two follow ups were made after the first reminder which was within a space of two weeks. The net result of the follow ups was 126 responses. The response rate was approximately 30% in first phase of the survey period. The response rates could have been low because of participant disinterest, lack of motivation to complete the survey, and change in jobs or occupations. The researcher received e-mails from some participants who cited the last reason. A reliability estimate for the total instrument and each of the item sets was conducted using the data from the first phase. Cronbach’s alpha reliability estimate for the whole instrument was .83, for the transfer of learning items it was .87, for motivation to transfer items it was .86, for the nine stress items it was .87, and finally for the six job satisfaction items it was .71.

In the second phase of the data collection, the researcher made several improvements to the survey based on the feedback from participants who participated in the first phase. The length of the e-mail was reduced, that is the content of the e-mail

was made more concise. Instruction in the log-in page was provided to remind participants to log-in using the same e-mail address that was used for sending them the survey. This was a major problem because individuals had several different e-mails and in some cases e-mails were being forwarded to their other e-mail addresses. Participants were instructed to select “other” if they did not remember the names of the trainer because for some of them this was an issue. Many users were confused with the statement regarding unauthorized use on the log-in page. An instruction was included in the log-in page explaining this note.

The second phase of data collection was conducted between July 19th 2006 and August 30th 2006. The survey was sent to 1222 participants. A total of 294 e-mails were returned as bad addresses hence the actual number of participants who received the survey in the second phase was 928. Three follow-up reminders were sent with a gap of one week in-between each reminder. A total of 355 people responded to the survey. The response rate in the second phase was close to 40 %, almost 10 % higher than the response rate in the first phase. With an improved response rate in the second phase, the total response rate of the study was increased to 34%. The final sample size was 418, representing a population of 1234 (from the total training participants who received the surveys). Considering that for a population of 1300 the recommended sample is 297 (Krejcie & Morgan, 1970), this sample size well exceeded the required number of respondents for the population under study. There were no measurable differences between the first (randomly selected) and second (total accessible population) respondent groups.

Instrumentation

In the survey used for the current study, four scales of measures, for job stress (Parker & DeCotiis 1983), job satisfaction (Agho, Price & Mueller, 1993), motivation to transfer (Holton & Bates, 1998), and transfer of learning (Pucel and Cerrito, 2001) have been utilized. The instruments for job stress and job satisfaction were obtained from Fields (2002). The instrument for motivation to transfer learning was obtained from the *Learning Transfer System Inventory* (Holton & Bates, 1998). Four of the items for the transfer of learning scale were obtained from a study by Pucel and Cerrito (2001), and one of the items from Cheng and Ho's (2001) study. Instruments were chosen keeping two key criteria in mind: (1) that the instruments met reasonable validity and reliability standards, and (2) that the instruments were short and are practical to administer in terms of the amount of time required to complete them. Except for transfer of learning, all other instruments met the above two criteria. The transfer scales were only five items, but they have not been validated in another study.

The instrument used in this study had a total of 24 items and was found to take less than ten minutes to complete. Although the reliability and validity of three of the four scales of measures, job stress, job satisfaction, and motivation to transfer have been established in previous studies (Agho, Price, & Mueller, 1992; Fields, 2002; Holton & Bates, 1998; Jamal & Baba, 1992), the researcher estimated the reliability and cross-validated all four scales using the current study's sample. The value of scores for measurement of all scales was 1-5, with 1, being "strongly disagree" to 5, being "strongly agree". Although a broader range (for example 1-7 or 1-9) could have given

participants a wider range of options to choose from, this could also confuse participants or delay responses because of the increased options. Owing to this reason, it was decided to limit the range of options to 1-5.

Measuring Job Stress. A shortened version of the *Jobs Stress Scale* developed by Parker & DeCotiis (1983) was used to collect data to measure job stress. The shortened version was first used by Jamal and Baba (1992) who measured job stress as one construct. The original instrument had 13 items reflecting two dimensions of job stress, time stress, and anxiety. The researcher obtained the shortened version of the instrument from Fields (2002). Cronbach's alpha was used to estimate reliability using the current study's sample. Factor analysis was used to re-examine construct validity of the items.

Measuring Job Satisfaction. The *Overall Job Satisfaction* questionnaire developed by Agho, Price and Mueller (1993), was used to measure job satisfaction. The instrument was obtained from Fields (2002). There were a total of six items. Cronbach's alpha was used to estimate the reliability of the item set and factor analysis was used to test construct validity of the items. The item, *I am often bored with my job*, was reversed scored.

Measuring Motivation to Transfer Learning. Four items designed to measure motivation to transfer were obtained from the Learning Transfer System Inventory (Holton & Bates, 1998). An estimate of reliability and a factor analysis for determining validity were conducted.

Measuring Transfer of Learning. The transfer of learning measure included five items. Four of them were adapted from Pucel and Cerrito (2001) and modified to measure the specific course objective of the current study. A fifth item was included from Cheng and Ho's (2001) study.

Data Analysis

The data analyses included descriptive statistics of the data, reliability estimation, factor analyses, correlation analysis, regression analysis and path analysis using AMOS. The path analytic approach was utilized to examine the correlation between the variables in four hypothesized models. The details of the analyses and the statistical techniques utilized to analyze and report the data are described in the following sections. *SPSS 13* was used for descriptive statistics, reliability analysis, factor analysis and regression analysis. *AMOS* was used to conduct path analyses. The SOBEL calculator was used to examine mediating effects.

Descriptive Statistics. Descriptive statistics included the number of participants who took the survey, the range of scores, and the means, medians, modes, and standard deviations for all the items.

Reliability Analysis. According to Pedhazur and Schmelkin (1991) reliability is a necessary condition of validity, and reliability is used to check the homogeneity of items measuring a variable or to the extent to which item scores are free from "errors of measurement" (p. 82). According to Pedhazur and Schmelkin (1991), Cronbach's alpha or alpha coefficient is the most often used technique in estimating internal-consistency

reliability. In the current study, the reliability of the four scales of measurement for transfer of learning, motivation to transfer, job satisfaction and work stress was estimated using Cronbach's alpha technique.

Factor Analysis. Although three of the four scales of measure involved in the current study, motivation to transfer, stress, and job satisfaction utilize item sets that have already been tested for validity, it was decided to cross-validate the scales for all the variables utilizing the current study's sample. Factor analysis was used to test the validity of the items. Pedhazur and Schmelkin (1991) term factor analyses as the most useful or valuable tool to study the internal structure of a set of items or indicators. Factor analyses is "a family of analytical techniques designed to identify factors, or dimensions, that underlie the relations among a set of observed variables.... that are the indicators (measures, items) presumed to reflect the construct (i.e., the factor)" (p. 66). According to Kachigan (1991), factor analysis is a data reduction technique that is used to "remove redundancy from a set of correlated variables" (237). Besides deriving a small set of variables from a big group of related variables, it also helps to identify underlying constructs.

Pedhazur and Schmelkin (1991) identified a few instances where factor analyses of an existing scale could be extremely useful or essential:

- If sufficient information is not available on the internal structure of some of the measures. In the case of measures used in this study, no tests of validity have been conducted for the transfer of learning measures (Pucel & Cerrito, 2001). Furthermore, some of the items in this measure were modified, and a new item

(labeled here as *transfer5*) was added from another study (Cheng & Ho, 2001). Considering these reasons, it was important to check if all the items were relevant and if all of the items measured the same construct.

- The factor structures for some measures were different from the one reported by previous users of the measure. For instance this researcher utilized the condensed version of the *Job Stress Scale* used by Jamal and Baba (1992). Although the original version developed by Parker and DeCotiis (1983) had identified two dimensions of job stress in the scale, the condensed version (Jamal & Baba, 1992) combined these two dimensions and measured it as one variable (see Fields, 2002). A review of the work stress literature clearly indicates that time stress and anxiety are two distinctively different constructs (Dewe, 1992; Karasek, 1979). Further, time stress is categorized as a work demand or cause and anxiety as an effect or strain.
- The authors of the instrument used nurses as their respondents. The current study uses a different and a more demographically diverse sample. Considering these concerns, a re-examination of the factor structure of the job stress construct was deemed necessary.

In factor analyses, a factor loading is an important estimate of the validity of the items used to assess a given construct because it signifies the relation between each indicator and the concerned factor (Pedhazur & Schmelkin, 1991). Factor loadings help in determining which of the items meaningfully correlate with the examined factor. The higher the factor loading, the greater is the relationship of the indicator to the factor and

the more valid the indicator or the item is with regards to the factor (p. 57). For the purposes of this study, it was decided to consider only factor loadings $\geq .5$. A loading of .5 and above is considered meaningful (Pedhazur & Schmelkin, 1991). The *Principal component analyses* (PCA) method was used for extraction of factors and the *Varimax* procedure was used for rotation. According to Pedhazur and Schmelkin (1991), PCA is a data reduction technique that is applied “to arrive at a relatively small number of components that will extract most of the variance of a relatively large set of indicators...principal components extract both variance that is unique to an indicator as well as error variance” (p. 598). On the other hand, FA consists of “estimates of the variance accounted for by the common factors” (p. 598). While FA helps in explaining common variance, PCA is expected to “extract total variance” (p. 598).

Varimax is an orthogonal rotation technique that is widely used by researchers (Pedhazur & Schmelkin, 1991) and “is aimed at maximizing variances of the factors” (p. 613). Thus, indicators that load high on a particular factor would load low on the other factors.

Correlation Analysis. In this study the researcher used the correlation coefficient (r) to determine if there were positive or negative associations between the variables under study. A correlation analysis is utilized to examine if there is an association between two variables and/or whether there is an observed covariance between the two variables of interest (Kachigan, 1991). According to Kachigan (1991), “the correlation coefficient, finds application in the widest range of data analysis problems” (p. 125). The range of the correlation coefficient or r can be from -1 to + 1.

While correlation coefficient or r of +1 suggests a perfect positive correlation, an r of -1 suggests a perfect negative correlation; an r of 0 suggests that there is no relationship between the two variables of interest. In this study the researcher hypothesized that there will a significant negative correlation between job stress and each of the dependent variables, job satisfaction, motivation to transfer, and transfer. Similarly, the researcher hypothesized that there will be a significant positive correlation between job satisfaction and the dependent variables, motivation to transfer, and transfer of learning. It was also hypothesized that there will be a significant positive correlation between time stress and anxiety, and a positive correlation between motivation to transfer and transfer. All hypothesized relationships were unidirectional hence are defined as one-tailed. The critical values for Pearson's r for one-tailed test based on the study's sample were 0.164 at the 0.05 significance level and 0.230 at the 0.01 significance level (Price, 2000).

Regression Analysis. Regression analysis was used in the current study to examine if the independent variables predicted the dependent variables. According to Kachigan (1991), a regression analysis equation “describes the *nature of the relationship* between two variables” and “regression analysis supplies variance measures which allow us to assess the accuracy with which the regression equation can predict values on the criterion variable...” (p. 160). Regression analysis could also be termed prediction analysis because it measures the degree of the relationship between the predictor variable and the criterion variable. In this study the researcher has hypothesized that job stress, anxiety, and time stress (predictor variables) will predict transfer of learning, motivation to transfer, and job satisfaction (criterion variables). Similarly the researcher

hypothesized that time stress will predict anxiety and that job satisfaction will predict motivation to transfer and transfer of learning and, finally, that motivation to transfer will predict transfer of learning. A *p-value* of 0.5 or less was used as the criterion to decide if the degree of prediction was significant.

Path Analysis. A path analytic approach was used to depict the correlation matrices hypothesized in the study and to test the hypothesized causal paths between variables. The *Maximum Likelihood* (ML) estimation method, in AMOS, was used to estimate path coefficients and model fit. According to Kline (1998) while multiple regression analysis does the same, that is estimate path coefficients, in ML the estimation is simultaneous (p. 125). In ML, estimation of all the parameters in the model are computed at the same time and are iterative (estimates are repetitively calculated). Furthermore, in ML disturbances or error terms for the unobserved exogenous variables are accounted for. ML estimation is among the most widely used model-fitting estimation method. The AMOS program was used to test the path models because it includes the ML estimation method and also provides goodness of fit indices. Goodness of fit index is discussed later on in this section.

A *Structural model* was used to depict the hypothesized relationships. A structural model is the model that represents the hypotheses of the researcher or that which represents the causal hypotheses (Kline, 1998). Specification of the structural model is the starting point for a path analysis (p. 51). A *reduced model* was used to depict the outcome of the analysis (Ingram, Cope, Harju, & Wuensch, 2000). This model is also known as the over identified model. The CMIN statistics was used to test

goodness of fit between the hypothesized model/ structural model and the independent model.

The path model for this study was hypothesized based on the results of researchers who suggest a causal relationship among selected work-related factors, work attitudes and behaviors. According to Ender (1998, para 3), a path analysis is conducted under the assumptions that:

1. Relations among models are linear, additive, and causal. Curvilinear, multiplicative, or interaction relations are excluded.
2. Residuals are uncorrelated with all other variables and other residuals.
3. The causal flow is in one-direction. That is, there is no reverse causation.
4. The variables are measured on an interval scale.
5. The variables used as predictors are measured without error.

Based on path analysis literature (Garson, 2007; Mertler & Vannatta, 2005) job stress, time stress, and anxiety are categorized as exogenous variables. Exogenous variables are explained as independent variables that do not have any clear causes. On other hand, endogenous variables are ones that have explicit causes and they include both intervening or intermediate variables and dependent variables. In this case, motivation to transfer learning, job satisfaction, and transfer of learning can be termed endogenous variables. Job stress, anxiety and time stress were examined as independent variables, and transfer learning was examined as a dependent variable. However, the intermediate variables, motivation to transfer, and job satisfaction, were examined as

both independent and dependent variables. AMOS was used to test the hypothesized models.

Generally, the path analysis approach was used to examine the direct and/or indirect effects of job stress and its two dimensions, anxiety and time stress, on transfer. Specifically, the following relationships were examined: (1) the direct correlation between job stress and its two dimensions, anxiety and time stress, and transfer of learning, (2) the correlation between anxiety and time stress and motivation to transfer learning, (3) the correlation between job stress, and its two dimensions, anxiety and time stress, and job satisfaction, (4) the correlation between job satisfaction and motivation to transfer learning, and (5) the correlation between motivation to transfer and transfer of learning. It is important to point out that motivation to transfer learning is an endogenous variable in relation to job stress and job satisfaction but is an exogenous variable for transfer of learning. It is acceptable to have a variable as an endogenous variable in one instance and an exogenous variable in another instance in the same model (Mertler & Vannatta, 2005). However, transfer learning is the only solely dependent variable.

Tests for Mediation Effects. Mediation analysis is usually conducted to “indirectly assess the effect of a proposed cause on some outcome through a proposed mediator” (Preacher & Hayes, 2004, p. 717). SOBEL tests were conducted to examine mediating effects. The guidelines provided by Preacher and Leonardelli (2003) were used to conduct the SOBEL tests to determine mediation effects. The two steps involved in conducting this analysis included: (1) estimating the unstandardized coefficient for the association between the independent variable and the mediator (a), and the standard

error pertaining to this association (S_a); (2) estimating the unstandardized coefficient for the association between the mediator and the dependent variable (b), and the standard error pertaining to this association (S_b). Regression analysis was used to obtain these scores. The SOBEL calculator provided by Preacher and Leonardelli (2003) was then used to estimate the SOBEL test statistic for mediation effects.

Comparative Fit Indices. Four path models were tested for *goodness of fit*. Goodness of fit indices that use a comparative approach, place the model of interest or the estimated model somewhere along a continuum; a continuum in which the independence model (a model with unrelated variables) is at one end and the saturated model or full model (a model where all variables are related with each other) at the other (Tabachnick & Fidell, 2001). Although there are several indices to test goodness of fit, three indices, Normed Fit Index (NFI), Comparative Fit Index (CFI), and Goodness of Fit Index (GFI), were chosen for estimating goodness of fit for the models in this study. NFI, CFI, and, GFI are popularly used indices (Ingram, Cope, Harju, & Wuensch, 2000; Kline, 1998; Tabachnick & Fidell, 2001).

Item-Respondent Ratio. The item-respondent ratio is considered a very important requirement for many of the above analyses. According to Kline, the ratio between the item and the number of respondents should be 1:10 (as cited by Garson, 2007). That is, for every one item there should be at least 10 responses. The item: response ratio for the current study was 1: 17. Although the ratio was deemed adequate, some other changes needed to be incorporated before regression analyses were conducted. Few respondents had to be removed because of missing values. According to

Garson (2007), the same sample should be used for analyzing all regressions for a path model. That is there should be no missing values for any of the variables. Since there were missing values for four of the variables, the corresponding responses were removed from the data set before analyzing for regression. Thus, the total sample used for regression after removal of these cases was 418. However, this did not affect the item: respondent ratio, which remained within 1:17 when taking rounding into consideration.

Ethical Considerations

Fontana and Frey's (2003, p. 662) ethical guidelines was followed for this study.

1. The identity of the respondents was not be revealed. There is no written mention in any public document of the name or any other indicators that identify the respondents. Only general demographic information was be collected.
2. No harm was done to the respondent physically, emotionally or in any other way, shape or form.
3. Institutional Review Board (IRB) approval was obtained before starting data collection.

Summary

In Chapter III, the population of the study and the details of the sample were discussed. The procedure used for data collection and the different instruments utilized for data collection was also explained. Further, a detailed description of the seven different

analyses conducted by the researcher to test the hypotheses of the study was provided. In *Chapter IV*, that follows, the results of the analyses conducted by the researcher will be presented.

CHAPTER IV

RESULTS AND FINDINGS

In this chapter results from descriptive statistics, reliability analyses, factor analyses, regression analyses, path analysis, and SOBEL tests are reported. *SPSS 13.0* and *AMOS* were used to analyze the data.

Descriptive Statistics

SPSS was used to compute descriptive statistics for all the 24 items. The descriptive statistics are shown in *Table 4*.

Table 4. Descriptive Statistics

	N	Min	Max	Mean	S.D.
TR1...course was relevant to my job duties.	418	1	5	4.43	0.70
TR2...course has had an impact on my performance on the job.	418	1	5	4.23	0.76
TR3...will recommend course to my peers.	418	1	5	4.47	0.66
TR4...applied course to my job.	418	1	5	4.34	0.69
TR5...incorporate skills, competencies and knowledge...to daily work...	418	1	5	4.21	0.73
MT1...training will increase personal productivity.	418	1	5	4.33	0.73
MT2...couldn't wait to get back to work to try what I learned.	418	1	5	3.89	0.83
MT3...will help me do my current job better.	418	1	5	4.35	0.69
MT4...think about trying to use my new learning on my job.	418	1	5	3.87	0.81
ST1...have too much work and too little time to do it in.	418	1	5	3.51	1.06
ST2...because the call might be job related.	418	1	5	2.51	1.11
ST3...feel like I never have a day off.	418	1	5	2.61	1.10
ST4...company get burned out by job demands.	418	1	5	3.23	0.99
ST5...nervous as a result of my job.	418	1	5	2.69	1.12
ST6...job gets to me more than it should.	418	1	5	2.71	1.08
ST7...feel guilty when I take time off from my job.	418	1	5	2.72	1.16
ST8...a lot of times when my job drives me right up the wall.	418	1	5	3.01	1.13
ST9...get a tight feeling in my chest.	418	1	5	2.28	1.00
JS1...often bored with my job.	418	1	5	3.91	0.98
JS2...well satisfied with my job.	418	1	5	3.96	0.79
JS3...satisfied with my job for the time being.	418	1	5	3.89	0.76
JS4...I am enthusiastic about my work.	418	2	5	3.98	0.70
JS5...better than the average worker does.	418	1	5	3.94	0.79
JS6...feel real enjoyment in my work.	418	1	5	4.01	0.79

As the results in *Table 4* indicate, the sample in this study included 418 respondents. The means and the standard deviations for each item are shown above. The means for transfer of learning, motivation to transfer learning, job stress, and job satisfaction items were 4.34, 4.11, 2.80 and 3.95 respectively. On the job satisfaction scale, the item, *I am often bored with my job*, was reverse scored.

Estimates of Reliability

The reliability estimates for transfer, motivation to transfer, job satisfaction, job stress, anxiety and time stress were computed using the Cronbach's alpha technique. The results of the analysis are provided in *Table 5*.

Table 5. Reliability Estimates

Variables	Alpha Scores
Transfer of Learning (5 items)	0.89
Motivation to Transfer (4 items)	0.87
Job Stress (9 items)	0.87
Time Stress (4 items)	0.77
Anxiety (4 items)	0.88
Job Satisfaction (6 items)	0.85

As the estimates in *Table 5* indicate, *Transfer of learning* had a alpha score of .89, *motivation to transfer* had an alpha score of .87, *job stress* had an alpha score of .87, and *job satisfaction* had an alpha score .85. *Anxiety* and *time stress* had alpha scores of .88 and .77 respectively. According to Pedhazur and Schmelkin (1991), a score of .80 or higher meant that 80% of the variance is systematic or reliable variance. An item from the anxiety scale, *I feel guilty when I take time off from my job*, was removed because it

had a factor loading of less than 0.5.

Results of Factor Analysis

Two tests, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Barlett's test of Sphericity, are usually conducted to determine if the sample has met the appropriate requirements for factor analyses (Andersen & Herbertsson, 2003). However, the Barlett's test of Sphericity is not necessary if the sample size is large (Pedhazur & Schmelkin, 1991). The KMO test is done to examine if the data set is adequate for factoring and is one of the pre-requisites for conducting a factor analysis (Andersen & Herbertsson, 2003). According to Kaiser and Rice (1974), "any index of factorial simplicity must lie between zero and one, attaining its maximum value only under perfect unifactoriality" (p. 12). In the criteria set by Kaiser and Rice (1974), a KMO value below .50 is unacceptable, a value above .60 is mediocre, a value above .70 is middling, a value above .80 is meritorious and a value above .90 is marvelous. In examining the sample of the current study, the KMO score for the 24 items combined was .905. However, since each of the four variables in the study is being examined separately, separate KMO tests were conducted for each of the variables. The KMO score for the transfer variable was .86; for motivation transfer it was .81; for job stress it was .89, and for job satisfaction it was .87. Considering the criteria of Kaiser and Rice (1974), the sample meets the adequacy needs for factor analysis.

Factor analysis was conducted for each of the variables under study. The five items for transfer of learning were factor analyzed. The percentage of variance explained

is provided in *Table 6*. The factor loadings are provided in *Table 7*. Only items with factor loadings of 0.50 and above were considered. The scree plot for transfer of learning, showing the sorted Eigenvalues, is depicted in *Figure 2*.

Table 6. Total Variance Explained for Transfer of Learning

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.5	70.5	70.5
2	0.5	10.7	81.2
3	0.5	9.1	90.2
4	0.3	5.5	95.7
5	0.2	4.3	100.0

Extraction Method: Principal Component Analysis.

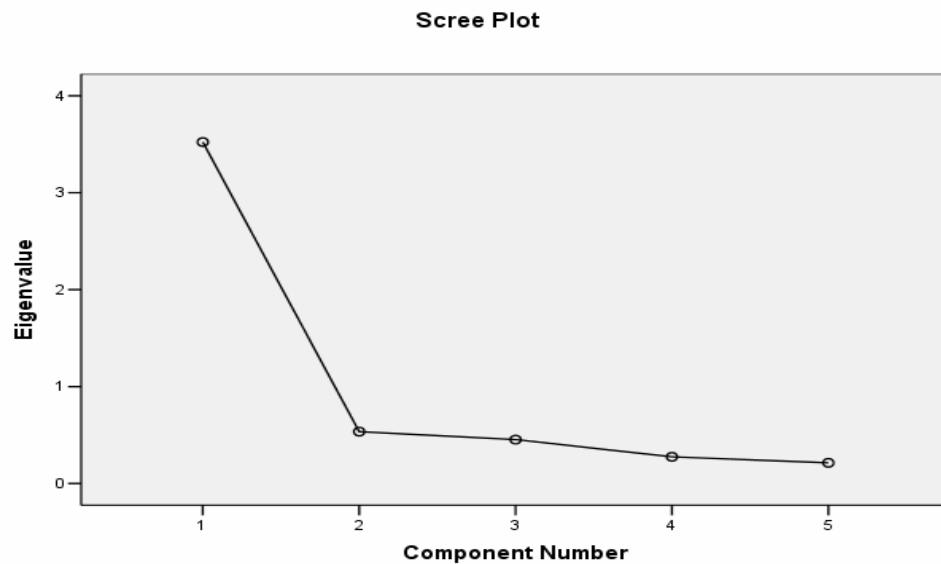
Table 7. Component Matrix for Transfer of Learning

Variable	Component
	1
TR1 course was relevant to my job duties.	0.76
TR2 course has had an impact on my performance on the job.	0.89
TR3 will recommend course to my peers.	0.79
TR4 applied course to my job.	0.89
TR5 incorporate skills, competencies and knowledge...to daily work activities.	0.86

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Figure 2. Scree Plot for Transfer



According to Pedhazur and Schmelkin (1991), the first two or three components are expected to extract at least 50% of the variance as a rule of thumb. As the results in *Table 6* indicate, in the case of transfer of learning, minimum Eigenvalues explained 70% of the variance. All variables of transfer of learning loaded as one component/ factor.

The four items of motivation to transfer were factor analyzed. The total variance explained is provided in *Table 8* and the factor loadings are provided in *Table 9*. The scree plot for motivation to transfer, showing the sorted Eigenvalues, is depicted in *Figure 3*.

Table 8. Total Variance Explained for Motivation to Transfer

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.9	71.7	71.7
2	0.5	13.1	84.8
3	0.3	8.5	93.3
4	0.3	6.7	100.0

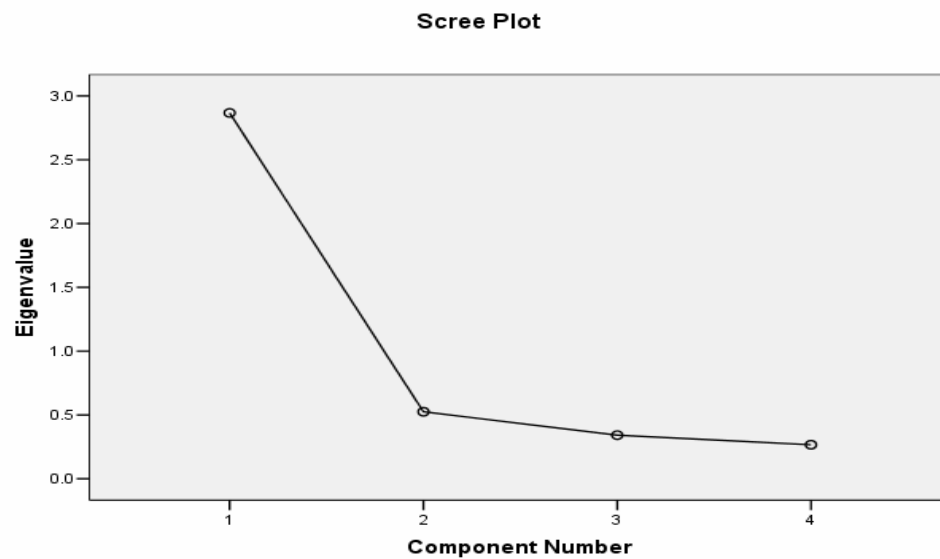
Extraction Method: Principal Component Analysis.

Table 9. Component Matrix for Motivation to Transfer

Variable	Component
	1
MT1 training will increase personal productivity.	0.77
MT2 ...couldn't wait to get back to work to try what I learned.	0.87
MT3 .. will help me do my current job better.	0.86
MT4... think about trying to use my new learning on my job.	0.87

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Figure 3. Scree Plot for Motivation to Transfer

As the analysis output in Table 8 shows, the first component/factor explained 72% of the variance of the motivation transfer variables. All of the four motivation to transfer variables loaded as one component/factor.

The job stress scale, with items, was factor analyzed. The Eigenvalues for total variance explained and extraction of sums of squared loadings are provided in *Table 10* and *Table 11* respectively. The scree plot for job stress, showing the sorted Eigenvalues, is depicted in *Figure 4*. The component plot for job stress is shown in *Figure 5*.

Table 10. Total Variance Explained for Job Stress

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.5	49.9	49.9
2	1.1	12.6	62.5
3	0.8	9.4	71.9
4	0.6	6.7	78.6
5	0.6	6.4	85.1
6	0.4	4.5	89.6
7	0.4	4.0	93.6
8	0.3	3.4	97.0
9	0.3	3.0	100.0

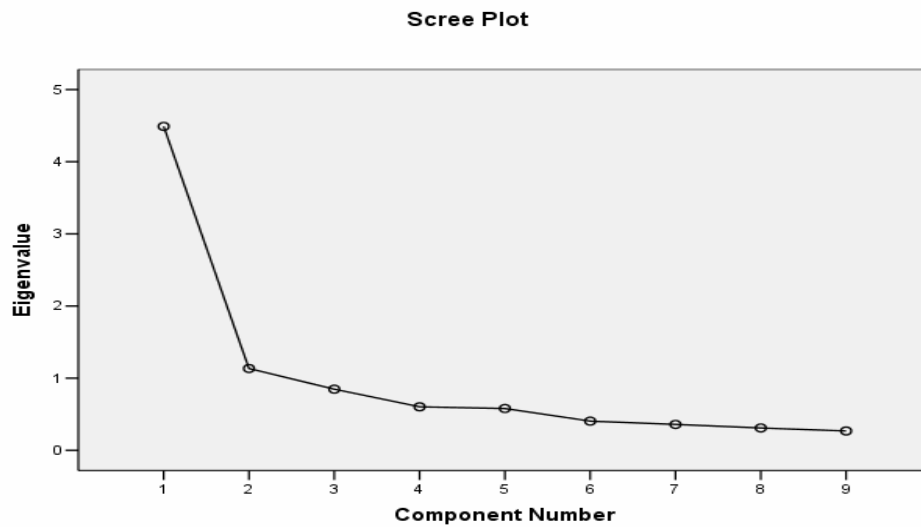
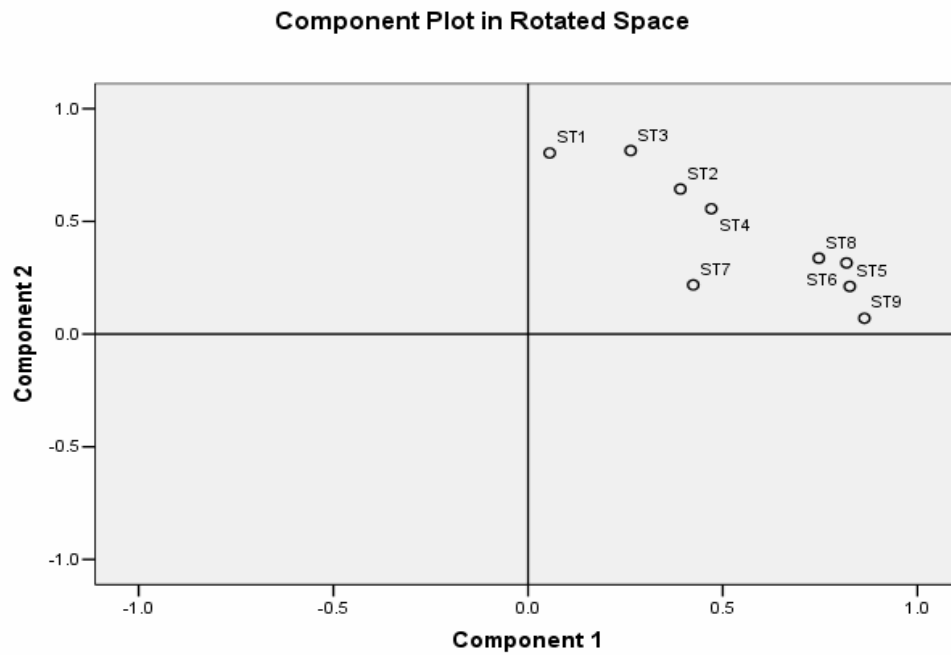
Extraction Method: Principal Component Analysis.

Table 11. Rotated Component Matrix for Job Stress

Variable	Component	
	1	2
ST1...have too much work and too little time to do it in.		0.80
ST2... because the call might be job related.		0.64
ST3...feel like I never have a day off.		0.81
ST4...company get burned out by job demands.		0.56
ST5... nervous as a result of my job.	0.83	
ST6...job gets to me more than it should.	0.82	
ST7...feel guilty when I take time off from my job.		
ST8...a lot of times when my job drives me right up the wall.	0.75	
ST9...get a tight feeling in my chest.	0.86	

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

Rotation converged in 3 iterations.

Figure 4. Scree Plot for Job Stress**Figure 5. Component Plot for Job Stress**

As the results in *Table 10* indicate, for the job stress factor, minimum Eigenvalues explained 62% of the variance. However, the variables in the job stress scale loaded under two components/factors. As the results in *Table 11* indicate, job stress items labeled as *ST5*, *ST6*, *ST8*, and *ST9* loaded under the first component, and job stress items labeled as *ST 1*, *ST2*, *ST3*, and *ST4* loaded under the second component. In the original *Job Stress Scale* developed by Parker & DeCotiis (1983, job stress was initially measured as single factor, but a factor analysis conducted by the authors produced two dimensions of stress. They identified one as anxiety and the other as time stress. A review of job stress research found support for the distinction between these two factors (Dewe, 1992; Glazer & Beehr, 2005; Karasek, 1979). Although the current study used a shortened version of the *Job Stress Scale* (Jamal and Baba, 1992) that combined anxiety and time stress into one factor, the factor analysis by this researcher and other previous research on time stress and anxiety prompted the decision to analyze anxiety and time stress separately. The loading for the item labeled *ST7* was less than; hence, it was decided to remove this item from the anxiety scale. The anxiety scale now consists of four items, labeled *ST5*, *ST6*, *ST8* and *ST9*.

The six job satisfaction variables were factor analyzed. The Eigenvalues for total variance explained and factor loadings are provided in *Table 12* and *Table 13* respectively. The scree plot for job satisfaction, showing the sorted Eigenvalues, is depicted in *Figure 6*.

Table 12. Total Variance Explained for Job Satisfaction

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.6	59.6	59.6
2	0.8	13.9	73.5
3	0.6	10.0	83.5
4	0.4	6.0	89.5
5	0.3	5.6	95.1
6	0.3	4.9	100.0

Extraction Method: Principal Component Analysis.

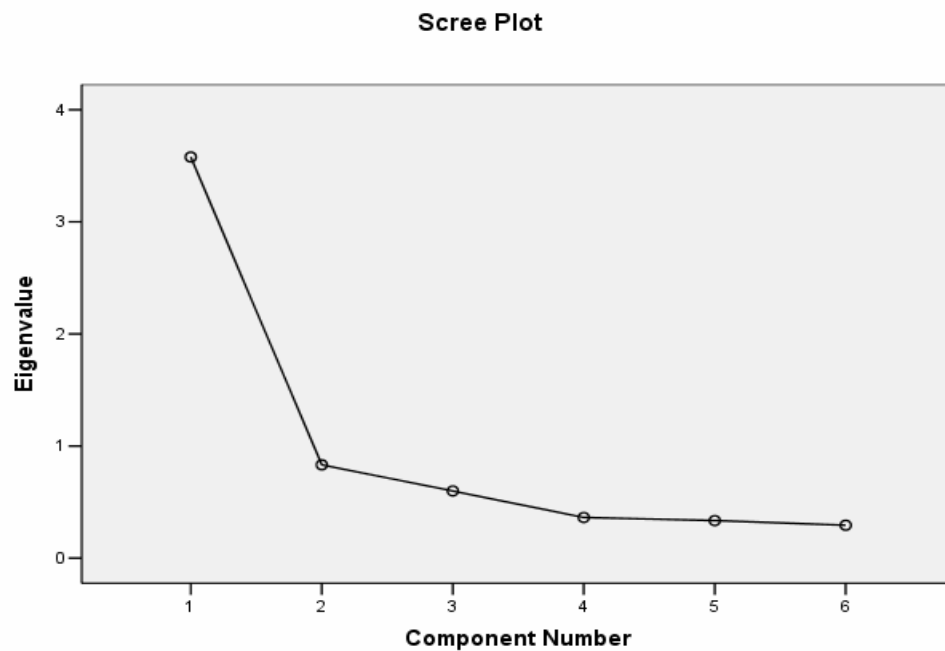
Figure 6. Scree Plot for Job Satisfaction

Table 13. Component Matrix for Job Satisfaction

Variable	Component
	1
JS1...often bored with my job.	0.53
JS2... well satisfied with my job.	0.84
JS3...satisfied with my job for the time being.	0.70
JS4...I am enthusiastic about my work.	0.85
JS5...better than the average worker does.	0.82
JS6...feel real enjoyment in my work.	0.84

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Minimum Eigenvalues explained more than 70% of the variance. All the six variables of job satisfaction loaded under a single component/factor.

Results of Correlation (r) Analysis

The direct correlations between job stress and transfer of learning, time stress and transfer of learning, anxiety and transfer of learning, job satisfaction and transfer of learning, motivation to transfer and transfer of learning, job stress and motivation to transfer, job satisfaction and motivation to transfer, time stress and motivation to transfer, anxiety and motivation to transfer, job stress and job satisfaction, time stress and job satisfaction, and time stress and anxiety were examined. The critical values for r (for one-tailed test) based on the study's sample were 0.164 at $p < 0.05$ significance level and 0.230 at $p < 0.01$ significance level (Price, 2000). The r values or correlation coefficients are provided in *Table 14*.

Table 14. R Summary Table

Model	R	R Square
Job stress and Transfer	-0.02	0.00
Job stress and Job satisfaction	0.33**	0.11
Job stress and Motivation to transfer	0.05	0.00
Time stress and Transfer	0.01	0.00
Time stress and Job satisfaction	-0.25**	0.06
Time stress and Motivation to transfer	0.01	0.00
Anxiety and Transfer	-0.07	0.00
Anxiety and Job satisfaction	-0.40**	0.16
Anxiety and Motivation to transfer	0.10	0.01
Time stress and Anxiety	0.61**	0.37
Job satisfaction and Motivation to transfer	0.29**	0.09
Job satisfaction and Transfer	0.23**	0.05
Motivation to transfer and Transfer	0.76**	0.58

Critical Value for R One-tailed: At 0.05 Level: 0.16*

*At 0.01 Level**: 0.23*

The correlation between job stress and transfer learning was not significant. Similarly, the correlation between job stress and motivation to transfer was not significant. Hence, hypothesis 1a and 2a were not supported. However, job stress had a significant negative correlation with job satisfaction at the $p < 0.01$ significance level; hypothesis 3a was supported. The correlation between time stress and transfer was not significant. Similarly, the correlation between time stress and motivation to transfer was not significant. Hence, hypotheses 1b and 2b were not supported. However, time stress had a significant negative correlation with job satisfaction at the $p < 0.01$ significance level; hypothesis 3b was supported. The correlation between anxiety and transfer was not significant. Similarly, the correlation between anxiety and motivation to transfer was not significant. Hypotheses 1c and 2c were not supported. However, anxiety had a significant negative correlation with job satisfaction at $p < 0.01$ significance, level;

hypothesis 3c was supported. Job satisfaction showed a significant positive correlation with transfer at the $p < 0.01$ significance level. Job satisfaction also showed a significant positive correlation with motivation to transfer. Both hypotheses 4a and 4b were supported. Hypothesis 5 was also supported, motivation to transfer showed a significant positive correlation with transfer of learning at the $p < 0.01$ significance level. Finally, hypothesis 6 was supported. The correlation between time stress and anxiety was significant at the $p < 0.01$ significance level. The relationship was positive.

Results of Regression Analysis

Single linear regression was done to examine the predictability of the independent variable or the predictor variable on the criterion variable (Kachigan, 1991). Except job stress, time stress and transfer, all other variables in the study, job satisfaction, motivation to transfer, and anxiety, were analyzed as both predictor and criterion variables. Job stress and time stress were examined solely as predictor variables and transfer solely as a criterion variable. A *p-value* of 0.5 or less was used as the criterion to decide if the degree of prediction was significant. The results of the regression analysis are provided in *Table 15*.

Table 15. Regression Analysis Summary Table

Model	Std. Beta Coefficients	p-value
Job stress and Transfer	-0.02	0.66
Job stress and Job satisfaction	-0.33**	0.01
Job stress and Motivation to transfer	-0.04	0.36
Time stress and Transfer	0.01	0.88
Time stress and Job satisfaction	-0.25**	0.01
Time stress and Motivation to transfer	0.01	0.78
Anxiety and Transfer	-0.07	0.15
Anxiety and Job satisfaction	-0.40**	0.01
Anxiety and Motivation to transfer	-0.10*	0.04
Time stress and Anxiety	0.61**	0.01
Job satisfaction and Motivation to transfer	0.29**	0.01
Job satisfaction and Transfer	0.23**	0.01
Motivation to transfer and Transfer	0.76**	0.01

*Significant at the $p < .05$ Level

**Significant at the $p < .01$ Level

Job stress was not found to be a significant predictor of transfer of learning hence, hypothesis 1a was not supported. Time stress was not found to be a significant predictor of transfer; hence, hypothesis 1b was not supported. Anxiety was not found to be a significant predictor of transfer; hence, hypothesis H1c was not supported. Similarly, neither job stress nor time stress were significant predictors of transfer of learning; hence, hypotheses 1b and 2b were not supported. However, anxiety was found to be a significant predictor of motivation to transfer at the $p < .05$ level of significance hence, hypothesis 1c was supported. All three variables: job stress, time stress, and anxiety, were found to be significant predictors of job satisfaction at the $p < .01$ level of significance. Hence, hypotheses 3a, 3b, and 3c were supported. Job satisfaction was found to be a significant predictor of both transfer of learning and motivation to transfer at the $p < .01$ level of significance; hence, hypotheses 4a and 4b were supported. Similarly, motivation to transfer was found to be a significant predictor of transfer of

learning at the $p < .01$ level of significance; hence, hypothesis 5 was supported. Hypothesis 6 was also supported. Time stress was found to be a significant predictor of anxiety at the $p < 0.01$ significance level.

Results of Path Analysis

In this analysis a *structural model* was used to represent the causal hypotheses of the researcher (Kline, 1998) and a *reduced model* or an *over identified model* was used to depict the outcome of the analysis (Ingram, Cope, Harju, & Wuensch, 2000). The analysis will be presented in three parts: the description of the structural model and the results of the AMOS analysis depicted by a reduced model, tests for mediation effects, and the model fit summary for each model.

The first model was hypothesized to examine the relationships among job stress, job satisfaction, motivation to transfer, and transfer of learning. The second model was hypothesized to examine the relationships among time stress, job satisfaction, motivation to transfer, and transfer. The third model was hypothesized to examine the relationships among anxiety, job satisfaction, motivation to transfer, and transfer. The fourth and final model was hypothesized to examine the relationships among time stress, anxiety, job satisfaction, motivation to transfer, and transfer. The reduced model from the AMOS analysis, mediation tests, and model fit data will be used to interpret the results of the analysis.

Structural Model 1. *Saturated Model 1*, as shown in *Figure 7*, depicts the relationship between job stress, job satisfaction, motivation to transfer, and transfer.

This model is based on the assumptions that there is a negative correlation between (a) job stress and transfer of learning, (b) job stress and motivation to transfer, and (c) job stress and job satisfaction. There is also a positive correlation between (a) motivation to transfer and transfer of learning, and (b) job satisfaction and transfer. Both direct and indirect (mediated) effects were examined. The reduced model is shown in *Figure 8*.

Figure 7. Structural Model 1

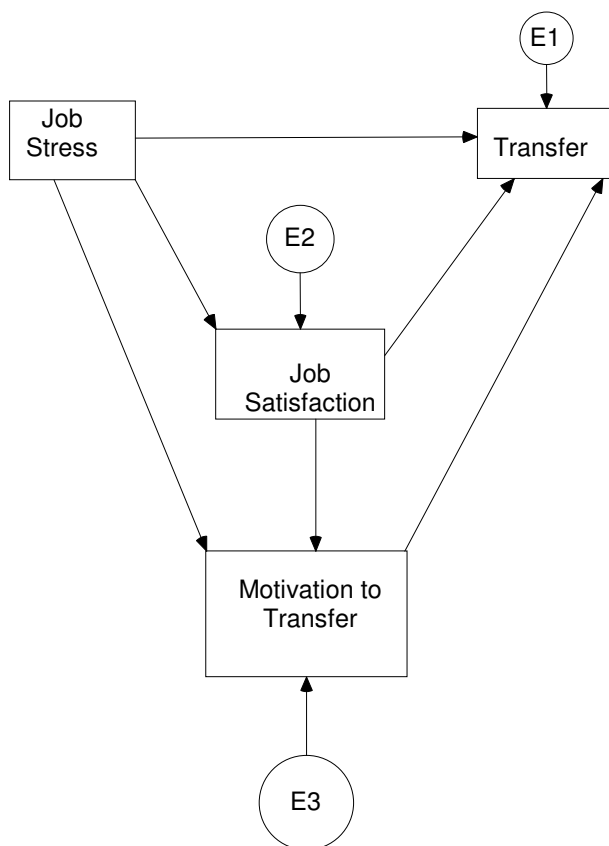
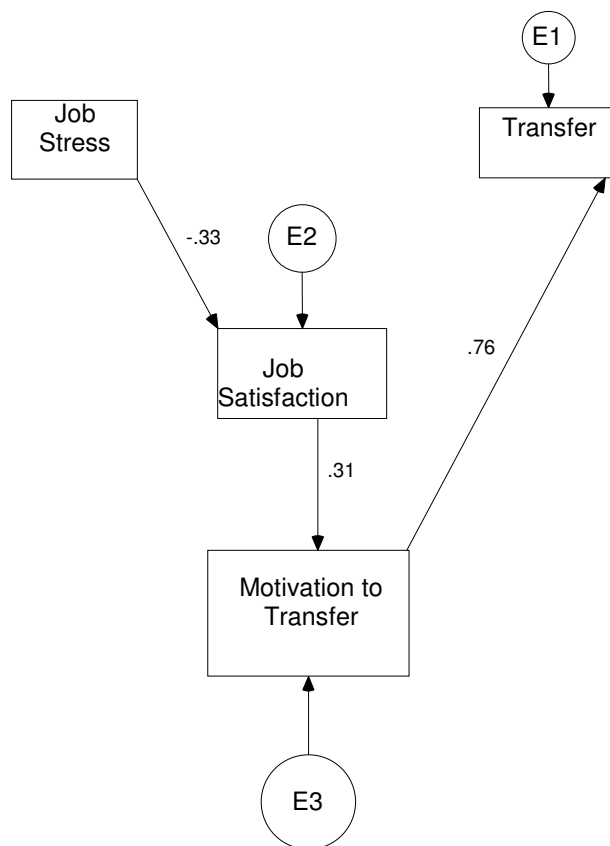


Figure 8. Reduced Model 1

The relationship between job satisfaction and job stress was significant with a standardized regression coefficient of -0.33 . The relationship was negative. The relationship between motivation and job satisfaction was significant with a standardized regression coefficient of $.31$. The relationship was positive. Similarly, the relationship between motivation to transfer and transfer of learning was significant with a

standardized regression coefficient of 0.76. All other relationships in the model were not significant.

There seems to be no direct effect between job stress and transfer. However, the relationship between job stress and transfer seems to be mediated by job satisfaction and motivation to transfer. The SOBEL test was conducted using a SOBEL calculator (Preacher & Leonardelli, 2003) to confirm mediation effects. SOBEL tests were done to test the mediation effects of job satisfaction on job stress and motivation to transfer learning and to test the mediation effects of motivation to transfer on job satisfaction and transfer of learning. The guidelines (see *Chapter III* for details) provided by Preacher & Leonardelli (2003) were used to calculate the SOBEL test statistic. The SOBEL test statistic for the mediating effects of job satisfaction on the job stress and motivation to transfer relationship was -4.71, which was found to be significant ($p < .01$). This suggested that job satisfaction mediated the relationship between job stress and motivation to transfer. In the next step, SOBEL statistic was calculated to determine the mediating effects of motivation to transfer learning on the job satisfaction and transfer learning relationship. The SOBEL test statistic for this relationship was 6.10; the score was significant ($p < .01$). This suggested that motivation to transfer learning mediated the relationship between job satisfaction and transfer of learning. The SOBEL test scores confirm the mediating effects of both the mediators in the model, job satisfaction, and motivation to transfer learning.

The Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI) were calculated to estimate the goodness of fit for *Structural Model 1*. The indices are provided in *Table 16*.

Table 16. Model Fit Indices for Structural Model 1

Model	GFI	NFI	CFI
Default model or Tested model	1.00	1.00	1.00
Saturated model or Full model	1.00	1.00	1.00
Independence model or No Paths model	0.72	0.00	0.00

Structural Model 1 had a GFI value of 1.00. According to Cope, Harju and Wuensch (2001), a GFI value of .90 and above is needed for the model to be considered a good fit. *Structural Model 1* had a NFI value of 1.00. According to Tabachnick and Fidell (2001), an NFI value of greater than .90 is indicative of a good-fitting model. *Structural Model 1* had a CFI value of 1.00. According to Hu and Bentler, a CFI value greater than .95 is indicative of a good-fitting model (as cited in Tabachnick & Fidell, 2001). All three indices suggest that the tested model is a good fit.

Structural Model 2. The saturated model for time stress, job satisfaction, motivation to transfer and transfer, is depicted in *Figure 9*. It was hypothesized that there is a negative correlation between (a) time stress and transfer learning (b) time stress and motivation to transfer, and (c) time stress and job satisfaction. It was further hypothesized that there is a positive correlation between (a) motivation to transfer and transfer of learning and (b) job satisfaction and transfer. Both direct and indirect

(mediated) effects were examined. Based on these results, the reduced model for time stress, job satisfaction, motivation to transfer, and transfer is depicted in *Figure 10*.

Figure 9. Structural Model 2

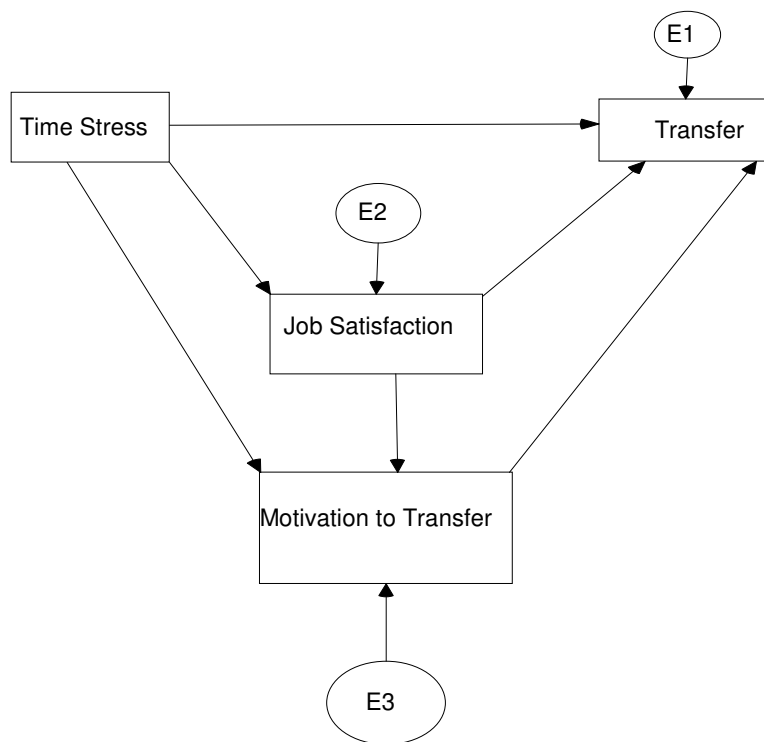
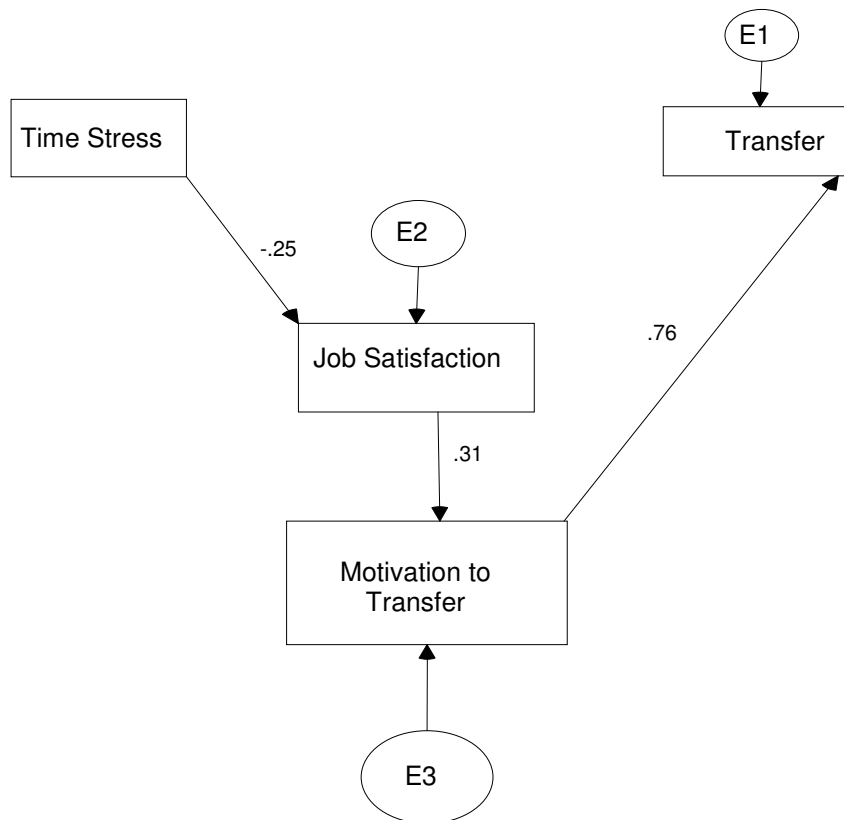


Figure 10. Reduced Model 2

Time stress was found to have a significant negative correlation with job satisfaction with standardized regression coefficient of -0.26. Job satisfaction was found to have a significant positive correlation with motivation to transfer. The standardized regression coefficient for this path was .31. Motivation to transfer was found to have a significant positive correlation with transfer with a standardized regression coefficient value of .76. None of the other relationships were significant. That is, time stress did not

have a correlation with motivation to transfer or with transfer. Similarly, there was no relationship between transfer and job satisfaction.

There seemed to be no direct relationship between time stress and transfer. However, an indirect relationship between time stress and transfer seemed to be mediated by job satisfaction and motivation to transfer learning. The SOBEL test was conducted using a SOBEL calculator (Preacher & Leonardelli, 2003) to confirm mediation effects. SOBEL tests were done to test the mediation effects of job satisfaction on time stress and motivation to transfer learning; and to test the mediation effects of motivation to transfer learning on job satisfaction and transfer of learning. The guidelines (see *Chapter III* for details) provided by Preacher & Leonardelli (2003) were used to calculate the SOBEL test statistic. The SOBEL test statistic for mediating effects job satisfaction on the time stress and motivation to transfer relationship was -4.02, which was found to be significant ($p < .01$). This suggested that job satisfaction mediated the relationship between time stress and motivation to transfer. The SOBEL test statistic for the mediating effects of motivation to transfer learning on the job satisfaction and transfer learning relationship (6.10) and its significance value ($p < .01$) is already known from a previous calculation. The SOBEL test scores confirm the mediating effects of both the mediators in the model, that is, job satisfaction and motivation to transfer learning.

The Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI) were calculated to estimate the goodness of fit for *Structural Model 1*. The indices are provided in *Table 17*.

Table 17. Model Fit Indices for Structural Model 2

Model	GFI	NFI	CFI
Default model or Tested model	1.00	1.00	1.00
Saturated model or Full model	1.00	1.00	1.00
Independence model or No Paths model	0.72	0.00	0.00

Structural Model 2 had a GFI value of 1.00. According to Cope, Harju and Wuensch (2001), a GFI value of .90 and above is needed for the model to be considered a good fit. *Structural Model 2* had a NFI value of 1.00. According to Tabachnick and Fidell (2001), an NFI value of greater than .90 is indicative of a good-fitting model. *Structural Model 2* had a CFI value of 1.00. According to Hu and Bentler, a CFI value greater than .95 is indicative of a good-fitting model (as cited in Tabachnick & Fidell, 2001). All three indices suggest that the tested model is a good fit.

Structural Model 3. The structural model for testing the relationship between anxiety, job satisfaction, motivation to transfer, and transfer is depicted in *Figure 11*. The hypothesis suggests that there is a negative correlation between (a) anxiety and transfer learning, (b) anxiety and motivation to transfer, and (c) anxiety and job satisfaction. Also there is a positive correlation between (a) motivation to transfer and transfer of learning and (b) job satisfaction and transfer. Both direct and indirect

(mediated) effects were examined. Based on the results, the reduced model for anxiety, job satisfaction, motivation to transfer, and transfer is depicted in *Figure 12*.

Figure 11. Structural Model 3

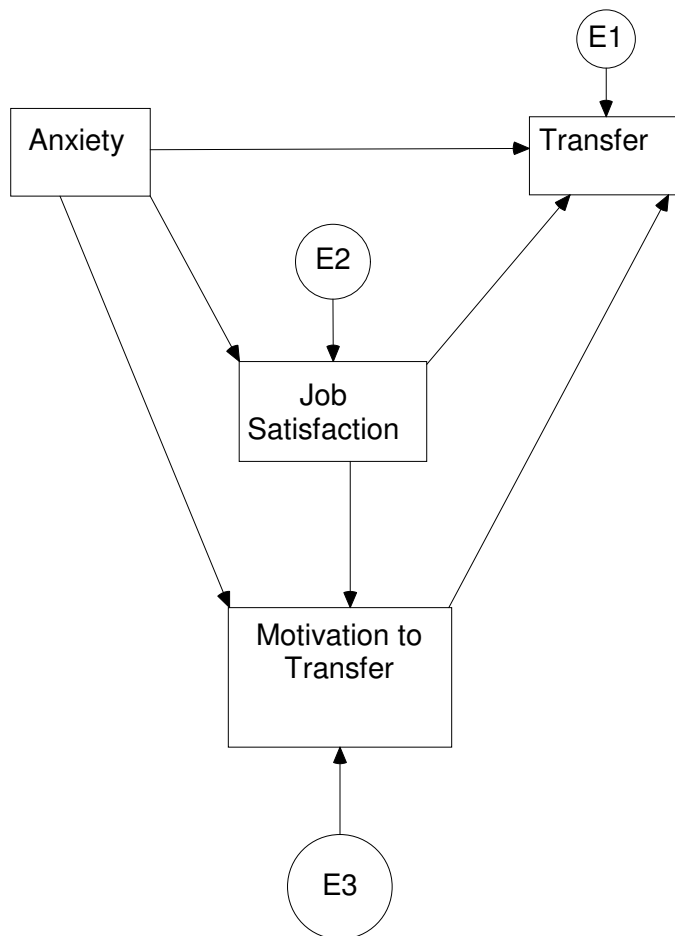
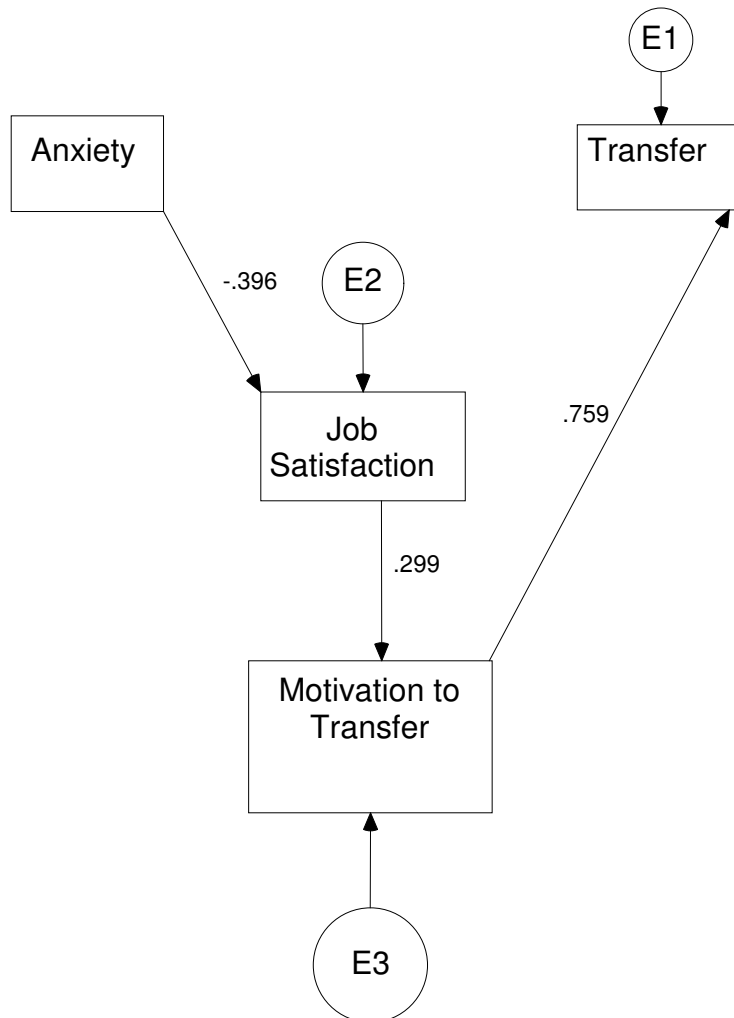


Figure 12. Reduced Model 3

Anxiety was found to have significant negative correlation with job satisfaction with a standardized regression coefficient of -0.40 . Motivation to transfer and job satisfaction showed a positive correlation with a standardized regression coefficient of $.30$. Motivation to transfer was found to have a strong correlation with transfer. The

standardized regression coefficient for this relationship was .76. None of other hypothesized correlations were significant.

No direct correlation was found between time stress and transfer. However, the relationship between time stress and transfer was found to be mediated by job satisfaction and motivation to transfer learning. The SOBEL test was conducted using a SOBEL calculator (Preacher & Leonardelli, 2003) to confirm these mediation effects. SOBEL tests were conducted to determine the mediation effects of job satisfaction on anxiety and motivation to transfer learning and to test the mediation effects of motivation to transfer learning on the job satisfaction and transfer of learning relationship. The guidelines (see *Chapter III* for details) provided by Preacher and Leonardelli (2003) were used to calculate the SOBEL test statistic. The SOBEL test statistic for the mediating effects of job satisfaction on anxiety and motivation to transfer was -4.88, which were found to be significant ($p < .01$). This suggested that job satisfaction mediated the relationship between anxiety and motivation to transfer. The SOBEL test statistic for the mediating effects of motivation to transfer on the job satisfaction and transfer of learning relationship (6.10) and its significance ($p < .01$), is already known from a previous calculation. These SOBEL test scores confirm the mediating effects of both the mediators in the model, i.e., job satisfaction and motivation to transfer learning.

The Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI) were calculated to estimate the goodness of fit for *Structural Model 1*. The indices are provided in *Table 18*.

Table 18. Model Fit Indices for Structural Model 3

Model	GFI	NFI	CFI
Default model or Tested model	1.00	1.00	1.00
Saturated model or Full model	1.00	1.00	1.00
Independence model or No Paths model	0.69	0.00	0.00

Structural Model 3 had a GFI value of 1.00. According to Cope, Harju and Wuensch (2001), a GFI value of .90 and above is needed for the model to be considered a good fit. *Structural Model 3* had a NFI value of 1.00. According to Tabachnick and Fidell (2001), an NFI value of greater than .90 is indicative of a good-fitting model. *Structural Model 3* had a CFI value of 1.00. According to Hu and Bentler, a CFI value greater than .95 is indicative of a good-fitting model (as cited Tabachnick & Fidell, 2001). All three indices suggest that the tested model is a good fit.

Structural Model 4. An examination of all the three reduced models, 1, 2 and 3, suggest that none of three exogenous variables, job stress, time stress, and anxiety, showed any direct relationship with the endogenous variable, transfer. However, all three of them were significantly correlated with job satisfaction. That is, job satisfaction seemed to be mediating the relationship between job stress, time stress, anxiety, and

motivation to transfer learning. These mediating effects were confirmed by the SOBEL tests. Similarly, motivation to transfer was found to mediate the relationship between job satisfaction and transfer. This mediating effect was also confirmed by the SOBEL test. In another observation, anxiety was found to have a significant positive correlation with time stress. A factor analysis conducted by this researcher had already confirmed the distinctness of these two factors. This distinction between the two factors has already been identified by other researchers (Parker & DeCotiis, 1983). While time stress is categorized as a cause or a stressor, anxiety is construed as a response or strain (Karasek, 1979; Liu, Spector, & Jex, 2005; Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004). It was decided to test this relationship along with the job satisfaction, motivation to transfer, and transfer of learning using the current sample.

The saturated model for testing the relationship among time stress, anxiety, job satisfaction, motivation to transfer, and transfer is shown in *Figure 13*. In the hypothesized model shown in *Figure 13*, time stress and anxiety are depicted as having a correlation with job satisfaction, motivation to transfer, and transfer. Job satisfaction is depicted as having a correlation with motivation to transfer and transfer. Motivation to transfer is depicted as having a correlation with transfer. Both direct and indirect (mediated) effects are being examined. *Reduced Model 4*, depicting the outcome of the analysis of *Structural Model 4*, is illustrated in *Figure 14*.

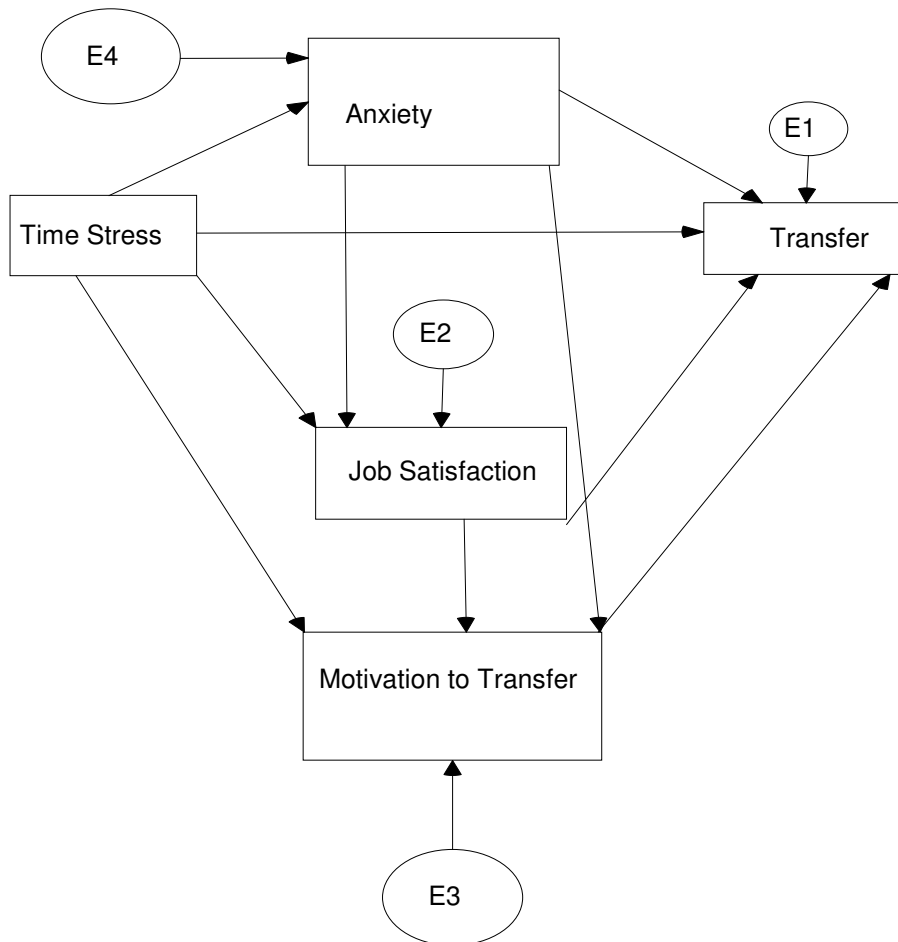
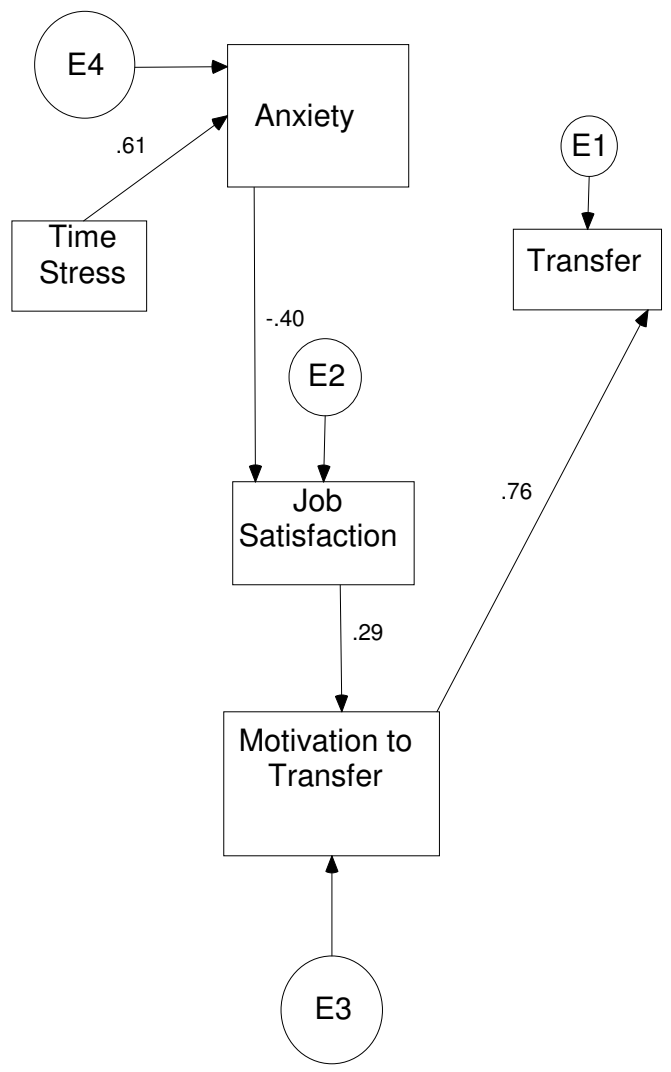
Figure 13. Structural Model 4

Figure 14. Reduced Model 4



The results showed a significant positive correlation between anxiety and time stress with a standardized regression coefficient of .61. The direction of the causal flow was confirmed. Job satisfaction significantly correlated with anxiety but not with time stress. It appears that anxiety mediates the relationship between time stress and job satisfaction. In a previous model, time stress was found to correlate with job satisfaction suggesting the possible mediation of anxiety. Motivation and job satisfaction were found to correlate significantly. The standardized regression coefficient was .30. Similarly, the correlation between transfer and motivation to transfer was significant with a standardized regression coefficient of .759. All other correlations were not significant.

As shown in *Figure 14*, anxiety seemed to mediate the relationship between time stress and job satisfaction; job satisfaction seemed to mediate the relationship between motivation and anxiety, and motivation to transfer seemed to mediate the relationship between job satisfaction and transfer. The SOBEL test was conducted using a SOBEL calculator (Preacher & Leonardelli, 2003) to confirm mediation effects. The guidelines (see *Chapter III* for details) provided by Preacher & Leonardelli (2003) were used to calculate the SOBEL test statistic for mediation effects. SOBEL tests was done to test the mediation effects of (1) anxiety on time stress and job satisfaction, (2) job satisfaction on anxiety and motivation to transfer learning, and (3) the mediation effects of motivation to transfer learning on the job satisfaction and transfer of learning relationship. The SOBEL test statistic for the mediating effects of anxiety on the time stress job satisfaction relationship was -6.26, which was found to be significant ($p < .01$). This suggested that anxiety mediated the relationship between time stress and job

satisfaction. The SOBEL test statistic for the mediating effects of job satisfaction on anxiety and motivation to transfer learning (-4.74) and its significance is already known from a previous calculation. Similarly, the SOBEL test statistic for the mediating effects of motivation to transfer on the job satisfaction and transfer of learning relationship (6.10) and its significance ($p < .01$), is also known from a previous calculation. These SOBEL test scores confirm the mediating effects of all three mediators in the model, anxiety, job satisfaction and motivation to transfer learning.

The Goodness of Fit Index (GFI), the Normed Fit Index (NFI), and the Comparative Fit Index (CFI) were calculated to estimate the goodness of fit for *Structural Model 1*. The indices are provided in *Table 19*.

Table 19. Model Fit Indices for Structural Model 4

Model	GFI	NFI	CFI
Default model or Tested model	0.998	0.997	1.000
Saturated model or Full model	1.000	1.000	1.000
Independence model or No Paths model	3.076	0.000	0.000

Structural Model 4 had a GFI value of 0.998. According to Cope, Harju and Wuensch (2001), a GFI value of .90 and above is needed for the model to be considered a good fit. *Structural Model 4* had a NFI value of 0.997. According to Tabachnick and Fidell (2001), an NFI value of greater than .90 is indicative of a good-fitting model. *Structural Model 4* had a CFI value of 1.00. According to Hu and Bentler, a CFI value

greater than .95 is indicative of a good-fitting model (as cited in Tabachnick & Fidell, 2001). All three indices suggest that the tested model is a good fit.

Summary

The results from the factor analysis, correlation analysis, regression analysis, path analysis, and tests for mediation effects, provide some very useful insights about the relationships among the variables involved in the study. A more detailed discussion of the results, the implications for HRD research and practice, and recommendations for future research will be presented in *Chapter V* that follows.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

There are four major sections in this chapter. In the first section, the research hypotheses and related findings are discussed. In the second section, the conclusions and limitations of the study are provided. In the third section, the implication of the current study for HRD research and practice is discussed. In the fourth and final section, recommendations and directions for future research are provided.

Discussion

The main research question of this study was concerned with the relationships among job stress, job satisfaction, motivation to transfer, and transfer of learning in the perceptions of selected Occupational Health and Safety Administration (OSHA) outreach trainers in Texas and neighboring states. This research question was described by thirteen research hypotheses. In the coming sections, results concerning the research question and each of the hypotheses will be discussed.

Generally, the results of the study found no direct relationships between job stress and transfer learning. However, the relationship between job stress and transfer was found to be mediated by job satisfaction and motivation to transfer. That is the correlation between job stress and transfer was weak, but the relationship between job stress and an intermediate variable, job satisfaction was strong. Similarly, the correlation between job satisfaction and motivation to transfer was significant. In addition to the above tested hypotheses, it was also decided to examine the relationships between the

two dimensions of job stress, anxiety and time stress, and job satisfaction, motivation to transfer, and transfer. This was done due to several reasons. First, the instrument of measure for job stress in the current study was a shortened version (used by Jamal & Baba, 1992) of the *Job Stress Scale* developed by Parker and DeCotiis (1983). Parker and DeCotiis (1983) identified anxiety and time stress as two dimensions of job stress. Second, the results of a factor analysis done by the author of the current study also found anxiety and time stress to be distinct factors based on the factor loadings. Third, research studies on job stress not only consider time stress and anxiety as two distinct constructs but also identified time stress as a work demand or stressor (Karasek, 1979) and anxiety as a response or strain (Dewe, 2003; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Karasek, 1979; Liu, Spector, & Jex, 2005). Considering these findings it was decided to examine the relationship between time stress and anxiety on one hand and job satisfaction, motivation to transfer, and transfer on the other.

In examining the relationship between time stress, job satisfaction, motivation to transfer, and transfer of learning, it was found that time stress was not directly correlated with transfer of learning but that the relationship was mediated by job satisfaction and motivation to transfer. In examining the relationship between anxiety, job satisfaction, motivation to transfer, and transfer, it was found that there was no direct correlation between anxiety, the independent variable and transfer of learning, the dependent variable. However, the relationship between anxiety and transfer was found to be mediated by job satisfaction and motivation to transfer learning. These findings are helpful in clarifying the importance of the mediating role of job related attitudes on the

relationship between job stress and learning transfer. In the final model presented, these mediation effects are quite prominent. In sum, time stress was positively correlated with anxiety; anxiety in turn had a negative correlational effect on job satisfaction; job satisfaction was, in turn, positively correlated with motivation to transfer; and, finally, motivation to transfer was positively correlated with transfer. Although time stress did not directly affect transfer, it had an indirect effect on transfer through other variables. The correlational effect was sequential.

These findings strongly suggest that environment factors such as time stressors can affect job attitudes, which in turn can affect job behaviors. Parker and DeCotiis (1983) consider job satisfaction, organizational commitment, motivation, and performance as second level outcomes and as the consequences of job stress. Job stress is the primary outcome of organizational stressors. They considered time stress and anxiety, both as responses to organizational stressors.

In the following sub-sections, the hypotheses of the study and results pertaining to each of the hypothesis are discussed. It is important to note that because several of the individual hypotheses did not account for mediating effects, but, instead, examined bivariate interactions, some of these individual results did not support the hypothesized relationships. However, when mediation effects are included and interactions between variables modeled (as presented in Chapter IV), the implied relationships in the overarching research question for this study was largely supported.

Hypothesis 1a. According to hypothesis 1a, job stress will have a significant negative correlation with transfer of learning, and job stress will be a significant

predictor of transfer learning. The results of correlation analysis indicated no direct correlation between job stress and transfer of learning. Similarly, regression analysis results suggested that job stress was not a significant predictor of transfer. Hence, hypothesis 1a was not supported. So, to the question: has job stress directly affected transfer of learning according to the participants in this study? The answer is no, at least not directly. There was no direct correlation found between job stress and transfer. This was not expected because stressors such as work demands and work conditions have been found by researchers to affect individual work attitudes and behaviors (Croon et al., 2004; Ganster & Schaubroeck, 1991; Glazer & Beehr, 2005; Penney & Spector, 2005). Glazer and Beehr (2005) found job stress to affect intention to leave and turnover rates. Croon et al. (2004) found job control, psychological demands, physical demands, and supervisory demands as significant predictors of turnover.

Although job stress did not correlate with transfer or predict transfer descriptive statistics indicate that a moderate number of respondents had medium or high stress levels. The mean score for stress was 2.8, which is below the mid point of the range of measure 1-5. However, this cannot be considered as the appropriate reflection of low or high stress. For instance to the item ST1, *I have too much work and too little time to do it in*, 210 respondents, more than 50 % of the sample, agreed or strongly agreed. To the item ST4, *Too many people at my level in the company get burned out by job demands*, 168 respondents agreed or strongly agreed, that is 40 % of the respondents in the sample. Similarly, to the item, *There are a lot of times when my job drives me right up the wall*, 154 participants agreed or strongly agreed, almost 37 % of the sample. Three other stress

items had more than 100 or 25% of the study respondents agree or strongly agree. A sizeable number of respondents, approximately 100, provided a neutral response (neither agree nor disagree) for all the nine stress items. These frequencies indicate a strong possibility of the presence of medium-high levels of job stress in the workplaces of the respondents. This was expected considering the type of training the respondents do. The OSHA training is health and safety related. According to a senior official, these trainers train participants on knowledge and skills that are ultimately going to decide the safety and well being of their participants in the workplace (Martin, 2006, personal communication).

In contrast to this, majority of the respondents, more than 80% of the respondents agreed or strongly agreed in response to the transfer items. Comparing the responses of job stress to transfer of learning suggests that although stress levels have been reported by more than 40% of the sample, this does not seem to have affected transfer, considering that more than 80% of the participants perceived that they have applied their learning successfully to their jobs. Although many reasons could be attributed to participant stress levels, and similar reasons could be attributed to their transfer of learning, a discussion of the reasons is not within the scope of this study hence will not be explored in detail.

Hypothesis 1b. According to hypothesis 1b, time stress will have a significant negative correlation with transfer of learning, and that time stress will be a significant predictor of transfer learning. This hypothesis was not supported. Time stress was found to have no significant correlation with motivation to transfer. Similarly, time stress was

not a significant predictor of transfer of learning. These results were similar to the ones between job stress and transfer. It will be helpful to re-examine this relationship. It is quite well known that work demands such as time pressure exist in the workplace. Researchers have found stressors to affect work attitudes and behavior. Penney and Spector (2005) found job stressors such as incivility, conflict, and organizational constraints significantly correlated with job satisfaction.

Hypothesis 1c. According to hypothesis 1c, anxiety will have a significant negative correlation with transfer of learning, and anxiety will be a significant predictor of transfer of learning. The correlation between anxiety and transfer was not significant. Similarly, anxiety was not a significant predictor of transfer. Again, these results were similar to the previous results concerning job stress and transfer and time stress and transfer. This was not expected. Many studies in the literature show the negative effects of anxiety on work behavior. Glazer and Beehr (2005) found anxiety to play a key mediating role between role stressors and intention to leave. Anxiety predicted intention to leave and anxiety was also found to affect job commitment.

Hypothesis 2a. According to hypothesis 2a, job stress will have a significant negative correlation with motivation to transfer learning and job stress will be a significant predictor of motivation to transfer learning. Job stress did not show a significant correlation with motivation to transfer. Similarly, job stress was not a significant predictor of motivation to transfer. Hence, hypothesis 2a was not supported. This was not expected. Researchers have found job stress to affect other work attitudes and work behavior. Parker and DeCotiis (1983) considered factors such as job

satisfaction, organizational commitment, motivation, and performance as second level outcomes and the consequences of job stress.

Hypothesis 2b. According to hypothesis 2b, time stress will have a significant negative correlation with motivation to transfer learning, and time stress will be a significant predictor of motivation to transfer learning. According to the results of the correlation analysis, time stress did not have a significant correlation with motivation to transfer. Similarly, regression analysis results showed that time stress was not a significant predictor of motivation to transfer learning. This was not expected. Researchers have found time stress to be a workplace stressor that affects work attitudes and work behavior.

Hypothesis 2c. According to hypothesis 2c, anxiety will have a significant negative correlation with motivation to transfer learning, and anxiety will be a significant predictor of motivation to transfer learning. While the first part of the hypothesis was not supported, the second part was supported. Anxiety did not have significant correlation with motivation to transfer, but anxiety was found to be a significant predictor of motivation to transfer at the .05 level of significance. The latter suggest the possibility that high levels of anxiety may be indicative of low levels of motivation to transfer. This result is useful because anxiety has been identified by many stress researchers as a psychological strain that is prevalent in the workplace. Hence, an employee who has high levels of anxiety may not be motivated to transfer his/her learning to the job even if adequate training is provided.

Hypothesis 3a. According to hypothesis 3a, job stress will have a significant negative correlation with job satisfaction, and job stress will be a significant predictor of job satisfaction. The hypothesis was supported. Job stress was found to have a significant negative correlation with job satisfaction. Job was also found to be a significant predictor of job satisfaction. Many studies have examined the relationship between job stress and job satisfaction and have found significant correlation between the two factors (Liu, Spector & Jex, 2005; Penney & Spector, 2005; Schaubroeck, Ganster, & Fox, 1992). Penney and Spector (2005) found a negative correlation between job stressors such as incivility, conflict and organizational constraints, and job satisfaction. Liu, Spector and Jex (2005) found moderately high correlations between anxiety, job dissatisfaction, and turnover intentions. Schaubroeck, Ganster, and Fox (1992) found strong correlations between various stressors and dissatisfaction.

Hypothesis 3b. According to hypothesis 3b, time stress will have a significant negative correlation with job satisfaction, and time stress will be a significant predictor of job satisfaction. Time stress was found to have significant negative correlation with job satisfaction. Similarly, time stress was found to be a significant predictor of job satisfaction. This hypothesis was supported. This is in line with previous studies in stress research that found a strong negative correlation relationship between stressors and job satisfaction (Karasek, 1979; Liu, Spector & Jex, 2005; Penney & Spector, 2005; Schaubroeck, Ganster, & Fox, 1992). Karasek (1979) found strong negative correlations between time pressure and job dissatisfaction.

Hypothesis 3c. According to hypothesis 3c, anxiety will have a significant negative correlation with job satisfaction, and anxiety will be a significant predictor of job satisfaction. This hypothesis was supported. Anxiety did have significant negative correlation with job satisfaction at the $p < .01$ significance level. Similarly anxiety was found to be a significant predictor of job satisfaction. The relationship between anxiety and job satisfaction has not been examined. Most stress researchers have examined these two variables separately as dependent variables. Anxiety and dissatisfaction have been examined as strains or effects of stressors.

Hypothesis 4a. According to H4a, job satisfaction will have a significant positive correlation with transfer of learning, and job satisfaction will be a significant predictor of transfer of learning. This hypothesis was supported. Correlation analysis results showed that job satisfaction had a significant positive correlation with transfer at the $p < .01$ significance level. Similarly job satisfaction was found to be a significant predictor of transfer of learning at $p < .01$ level of significance. However, when path analysis was used, job satisfaction showed a weak correlation with transfer of learning. While the direct relationship between job satisfaction (independent variable) and transfer of learning (dependent variable), using regression analysis, was significant when motivation to transfer was entered as the second independent variable, the correlation between job satisfaction and transfer was weakened. Instead motivation to transfer was found to strongly correlate with transfer. A path analysis, using AMOS, which included all four variables, job stress, job satisfaction, motivation to transfer, and transfer confirmed these results. That is, job satisfaction was found to have a weak correlation

with transfer, but motivation to transfer showed a strong correlation with transfer. This suggests that motivation to transfer mediated the relationship between job satisfaction and transfer. Some studies have found a correlation between job satisfaction and transfer of learning. Kontoghiorghes (2004) found job satisfaction to positively correlate with transfer. However, job satisfaction was not clearly defined in the study as it was measured in combination with job motivation.

Hypothesis 4b. According to hypothesis 4b, job satisfaction will have a positive correlation with motivation to transfer of learning, and job satisfaction will be a significant predictor of motivation to transfer learning. This hypothesis was supported. Job satisfaction was found to positively correlate with motivation to transfer. Job satisfaction was also found to be a significant predictor of motivation to transfer. Egan et al. (2004) conducted study that examined the relationship between job satisfaction and motivation to transfer. However, this study did not find a significant correlation between the two. Kontoghiorghes (2004), on other hand, found a significant correlation between job motivation/satisfaction and motivation to transfer. However, the measures were combined with job motivation; hence, it is not clear if the findings can be clearly attributed to job satisfaction. In the context of these findings, the results of the current study holds significance because job satisfaction is considered an important work attitude (Weiss, 2002), and motivation to transfer learning is considered to be a significant influence on transfer of learning (Holton et al., 1997).

Hypothesis 5. According to hypothesis 5, motivation to transfer will have a positive correlation with transfer of learning, and motivation to transfer will be a

significant predictor of transfer of learning. This hypothesis was supported. Motivation to transfer was found to have a significant correlation with transfer of learning. Similarly motivation to transfer was found to be a significant predictor of transfer. The results of the study are in line with other research studies that found motivation to transfer learning correlated with transfer of learning (Holton et al., 1997; Kontoghiorghes, 2004)

Hypothesis 6. According to hypothesis 6, time stress will have a significant effect on anxiety, and time stress will be a significant predictor of anxiety. This hypothesis was supported. Time stress significantly correlated with anxiety at the $p < .01$ significance level. Similarly, time stress was a significant predictor of anxiety at $p < .01$ significance level. This was expected because other studies have shown work demands such as time stress to cause strains such as anxiety and depression (Karasek, 1979; Totterdell, Wood, & Wall, 2006). Totterdell et al. (2006) found that weeks involving higher work demands could be associated with greater anxiety and depression.

Models of the Study. The study had hypothesized and tested four path models. While some of the specific paths in these models such as the ones between time stress and anxiety (Totterdell et al., 2006) and motivation to transfer and transfer (Holton et al., 1997; Kontoghiorghes, 2004) were supported from theory and previous empirical research findings, some of the paths were not. For instance, there were no specific theories or empirical studies that supported the hypothesized relationship between job stress and transfer, job stress and motivation, or time stress and transfer, anxiety and transfer etc., Hence, while part of the model was confirmatory model testing, part of it was exploratory model testing (see Kline, 1998). The results of the path analysis show

that all the four hypothesized models were a good fit. *Structural Model 4* is of particular interest and will be discussed in detail in this section because the model was the final outcome of the sequential analysis of models.

Structural Model 4 includes five variables: time stress, anxiety, job satisfaction, motivation to transfer, and transfer. The model was hypothesized based on the assumption that anxiety and time stress were two distinct factors. For instance, “*I have too much work and too little time to do it in*” is an indicator of time pressure which is a work demand (Karasek, 1979), a cause not a response as Parker and DeCotiis (1983) categorize it. As previously mentioned, this distinction is substantiated by many of the studies in job stress research that considers one as the cause (time stress) and the other as the effect (anxiety). Based on the analysis and the overwhelming research that differentiated time stress and anxiety as two different elements of the job stress process, the fourth model in this study was hypothesized to examine the relationship between time stress, anxiety, job satisfaction, motivation to transfer, and transfer. Time stress was found to significantly correlate with anxiety, and the correlation was positive. The relationship between anxiety and job satisfaction was significant. Similarly, the relationship between job satisfaction and motivation to transfer and the relationship between motivation to transfer and transfer were also significant. The results of this study indicate that there is significant relation between time stress and anxiety, between anxiety and job satisfaction, between job satisfaction and motivation to transfer, and between motivation to transfer to transfer of learning. It was also found that time stress predicted anxiety, anxiety predicted job satisfaction, job satisfaction predicted

motivation to transfer, and motivation to transfer predicted transfer. This sequential chain of correlational effects suggested that stressors such as time stress and strains such as anxiety could have an indirect on transfer.

Mediating Effects. One of the major focuses of this study was to examine the role of intervening or mediating variables. MacKinnon, Lockwood, Hoffman, West and Sheets (2002) provide examples of studies, across fields of psychology, that have focused on the role of intervening variables that mediate the relationship between attitude and behavior and between work environment factors and behavior (p. 83). One of the models identified in their article, which is of relevance to the results of this study, is the one by James and Brett. In this model work environment affects an intermediate variable, job perception, which in turn affects behavior (see MacKinnon et al., 2002). In this study time stress, a work environment variable (a stressor), was found to have a correlational effect on transfer through three intervening variables. All three of these intervening variables involve the individual's perception of his/her job and his/her job environment. Two of these variables, job satisfaction and motivation to transfer are attitudinal, and the third one, anxiety, is dispositional or affective in nature.

According to the results of the current study it was found that in all the four models, the intervening variables mediated the relationship between the independent variable and the dependent variable. Job satisfaction and motivation to transfer mediated the relationship between job stress and transfer in the first model. Job satisfaction and motivation to transfer mediated the relationship between time stress and transfer in the second model of the study. Job satisfaction and motivation to transfer mediated the

relationship between anxiety and transfer in the third model. Finally, anxiety, job satisfaction, and motivation to transfer mediated the relationship between time stress and transfer in the fourth model of the study.

Conclusions and Limitations

The study examined the relationship between job stress, time stress, and anxiety on job satisfaction, motivation to transfer, and transfer of learning using four different analysis techniques. This was done to cross-examine the relationships and to enhance the accuracy of the results. Both the direct and indirect, or mediating, relationships among the variables involved in the study were examined. The overall findings of the study suggest that although job stress, time stress, and anxiety did not have a direct effect on transfer, they had an indirect effect through job satisfaction and motivation to transfer. While some of these relationships, such as the ones between time stress and anxiety and motivation to transfer and transfer, have been researched in the past, some other relationships, such as the ones between anxiety and job satisfaction and job satisfaction and motivation to transfer, have not been researched sufficiently, and still others, such as the ones between job stress and transfer, time stress and transfer, and anxiety and transfer, have not been researched at all. More importantly, indirect effects of job stress, time stress, and anxiety on motivation to transfer or transfer of learning have not been examined at all. In this context, the study's findings are significant.

The study also had several theoretical and methodological strengths. The study used a large literature base for its theoretical framework. More than 170 published

articles from reputed academic journals in the fields of HRD, Psychology, Management and Organizational Behavior, were used in the study. Methodologically the study had several strengths. First, it was a field study done in an actual industry-setting. Second, the sample size was much larger than the required sample for the given population. Third, the size of the survey was relatively brief which, likely, increased the number and accuracy of responses. Fourth, the respondents were very diverse in terms of their number of years of experience in the job, the industry they worked in, and the different instructors who trained them.

The study also had some limitations. The researcher used self report data which depends on perceptions of respondents. But this limitation is usually accepted because self report surveys are considered the most practical way to collect data and to represent individual attitudes and behaviors. Secondly, aspects such as time stress, job satisfaction, and motivation to transfer are hard to observe; hence, collecting objective data may not be possible. Thus, this may be a limitation only in the case of measuring a work behavior such as transfer of learning. As seen in the research literature, in the case of measuring job attitudes such as job satisfaction and motivation to transfer and dispositions or strains such as anxiety, perceptions seem to be not just the most convenient but also the most appropriate measure. For instance, job stress is a process that involves a person's appraisal or perception of a work related event or situation (Dewe, 1992; Lazarus, 1991). Therefore, measuring self-reported perceptions seem to be the most appropriate method to understand this phenomenon. Similarly, job satisfaction is considered a job or work

attitude (Weiss, 2001) as is motivation to transfer (Noe, 1989). These attributes are most easily obtainable by asking the individuals themselves.

Another limitation of the study is that the researcher failed to collect information on the gender of the respondents. However, he was informed by an official involved in managing the training program, that the typical composition of the class is 80-85% male and the 15-20 % female (Martin, Personal communication, 2007). If this were true, then the study's findings cannot be generalized across both genders. However, if the composition of the course participants is the reflection of the overall population of OSHA outreach trainers this may not be a major limitation. Finally, an analysis of variance (ANOVA) confirmed that there were differences between some instructors. However, these differences were significant for only two of the dependent variables, transfer and motivation to transfer. For job stress and job satisfaction scores, the differences between means were not significant.

Implications for HRD Research and Practice

Implications of the findings of this study to HRD practice and research are many. Generally, the researcher field-tested four models, supported by a strong theoretical framework, in an actual organizational setting. Specifically, the study added to the existing knowledge in transfer research by examining the effects of major work-related factors on transfer of learning. It is already known that identifying the factors that impede or enhance transfer is vital in adequately assessing the effectiveness of training (Holton, 1996). Organizational researchers have identified job stress (Ganster &

Schaubroeck, 1991) and job satisfaction (Spector, 1997) as two very important work-related factors. This study highlights the importance of job stress and job satisfaction and its possible effects on motivation to transfer and transfer of learning. Further, it informs HRD researchers on the important aspects of the job stress and job satisfaction processes, their causes, their effects and so on. Secondly, the study used a unique population, a group of outreach trainers who were involved in critical safety related training. Outreach trainers usually are not permanent employees of any single organization; most of them work as independent service providers (Martin, Personal Communication, 2006). The study results provide useful insights into how these outreach trainers perceive job stress, job satisfaction, motivation to transfer, and the transfer of learning.

For HRD practitioners, the study provides some useful insights on how different factors affect workplace attitudes and behaviors. As indicated by Russ-Eft (2001) and others, although central to our understanding of workplace learning and performance, factors associated with job stress have long been understudied by HRD researchers. Considering the pace at which technology is advancing and the frequency in which mergers and corporate takeovers occur, employees are often faced with new and threatening situations. For HRD professionals, the successful planning and implementation of HRD programs becomes a challenge if proper assessments of situational and individual factors are not taken into consideration. While it is important to keep the quality of training at the highest level, it is also important to ensure that the employee is in the right frame of mind to apply the learning to the job and that the work

environment is supportive of the employee transferring the learning to the job. This study strongly suggests that stressors in the workplace could hinder transfer of learning indirectly by causing dissatisfaction among employees and by negatively affecting the motivation to transfer learning. Usually, trainers are blamed if trainees fail to transfer their learning to job. The current study provides empirical evidence to support the argument that several factors may be involved in affecting transfer of learning. Hence, top managers should not only focus on the quality of the training but should also ensure that other work-related factors do not affect the effectiveness of training or at the least try to minimize any negative influences on transfer. For instance, high job stress or low job satisfaction can affect motivation to transfer or transfer of learning to the job. So, even if employees have acquired the required learning from the training, transfer of learning may not happen or may not be effective enough if there are high levels of job dissatisfaction and job stress and low levels of motivation to transfer.

Recommendations and Directions for Future Research

Job stress and job satisfaction are among the most researched areas in organizational research. Further research is needed on how these two important work-related factors affect HRD activities. Future researchers need to re-examine both, the direct and indirect impact of job stress on transfer of learning. A model was tested in this study that included time stress, anxiety, job satisfaction, motivation to transfer, and transfer of learning. It will be useful to field-test this model with other samples. Multiple samples from different countries or cultures would provide very useful insights on how other

cultures perceive these relationships. Glazer and Beehr (2005) examined relationships between role stressors (ambiguity, overload, and conflict), anxiety, commitment (affective and continuance), and turnover intention. They compared samples from four countries: Hungary, Italy, the United Kingdom, and the United States. They found that the relationship among stress variables were similar across the four countries studied. Role stressors were found to be very strong predictors of anxiety in all four countries. Organizational commitment was found to be a predictor of intention to leave. Walumbwa, Orwa, Wang, and Lawler (2005) found transformational leadership to have a significant influence on job satisfaction and job commitment, in both Kenya and the USA. However, there were some differences, the extent of transformational leadership and satisfaction with supervisor were higher in the US than in Kenya. It would be useful to investigate the effect of job stress on motivation to transfer, and transfer of learning in other countries and cultures.

Second, HRD researchers can focus on examining the effects of other stressors in the workplace that affect transfer besides time stress. Similarly, they can examine the effects of job strains such as counterproductive work behavior (CWB) (Fox & Spector, 2006) on transfer of learning. It will be useful to study the CWB and other strains on motivation to transfer learning and transfer of learning.

Third, it will be useful to examine the relationship between transfer of learning and organizational performance measures such as productivity and employee turnover. There have been few studies on turnover intention. Egan et al. (2004) examined the effect of learning culture and job satisfaction on turnover intention. However, more

research is needed in investigating the relationship of transfer of learning with performance measures.

Summary

That transfer is an important outcome measure is evident from the amount of research done on transfer. Although measuring participant responses after training or measuring the learning of participants after training may offer some useful insights about the training program, it does not provide any tangible evidence of the actual transfer of learning to the job. As a measure of training, transfer of learning provides direct and tangible evidence about the success of the training program. However, measuring transfer of learning is more complex than measuring other outcomes because transfer cannot be measured in isolation. When measuring transfer, it is necessary to consider factors in the workplace that could potentially impede or enhance transfer. Similarly, there are many individual characteristics or personal factors that can affect transfer of learning. In this study the researcher examined the correlational effect of job stress (a work place factor), job satisfaction (an attitudinal/affective factor), and motivation to transfer (an attitudinal /dispositional factor) on transfer of learning (a behavioral factor). The perceptions of 418 Occupational Safety and Health Administration (OSHA) outreach trainers were collected utilizing a 24-item questionnaire. A series of analyses including factor analysis, correlation analysis, regression analysis, mediation tests, and path analysis were done to test the hypotheses of the study. The results from the analyses suggested that job stress and its related dimensions, time stress, and anxiety did not have

direct correlation with transfer of learning. However, there was an indirect relationship between job stress, anxiety, and time stress, and transfer of learning. This relationship was mediated by job satisfaction and motivation to transfer. It was also found that job stress, time stress, and anxiety predicted job satisfaction. Similarly, it was found that, time stress predicted anxiety, job satisfaction predicted motivation to transfer, and motivation to transfer predicted transfer of learning. The implications of this study to HRD research and practice were discussed. Further, recommendations for future research were made.

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APPENDIX

E-mail Cover Letter and Survey Questionnaire

Dear OSHA training recipient,

Greetings. TEEX and Texas A&M University would really appreciate a few minutes of your time to complete a survey on the OSHA "Train-the-Trainer" General Industry (501) course provided to you by TEEX. The average time taken to do the survey has been around 5 minutes. The survey is available at:  The same link is provided at the end of the e-mail as well.

Please read the information about the survey and guidelines to do the survey provided below:

The survey is part of a study about transfer of learning and the influence of job stress and job satisfaction on learning transfer. You were selected to be a participant because you attended the OSHA "Train-the-Trainer" course in Occupational Safety and Health Standards for General Industry (OSHA 501), conducted by TEEX. If you agree to be in this study, you will be asked to fill out and return a survey questionnaire that is being sent to you via this e-mail. The survey will be used to assess your ability in applying the knowledge and skills you gained from the above training to your job. Further, it will be used to investigate certain factors influencing your ability to apply the training to your job.

1. The survey will take between 5-6 minutes to complete, from start to finish, assuming there are no interruptions.

2. The risk associated with participating in this study is discomfort due to time taken to fill the survey out. The benefit for participating is that your responses might help in enhancing the success of transfer of learning acquired from training. You understand that there will be no monetary or other benefits.

3. Your e-mail address will not be visible to other participants doing the survey. Your name or any information that identifies you will be kept confidential by the researcher. The records of this study will be kept private and any information linking you to your information will be destroyed by the researcher once the information is recorded.

4. Your decision whether or not to participate will not affect your current or future relations with Texas A&M University. If you decide to participate, you will be free to refuse to answer any of the questions that may make you uncomfortable.

5. If you have any questions about this study you may contact Prakash Nair, the researcher by e-mail at prakash@tamu.edu, or by telephone at [REDACTED]. If you wish to contact the researcher's advisors, you could reach [REDACTED] at [REDACTED] or [REDACTED] at [REDACTED]. If you wish to speak with someone from TEEEX you could contact [REDACTED] at [REDACTED].

6. This research study has been reviewed by the Institutional Review Board-Human Subjects in Research, Texas A&M University. For research related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through [REDACTED], Director of Research Compliance, Office of the Vice President of Research at [REDACTED], or by e-mail at [REDACTED]. You are aware that you are encouraged to keep a copy of the information sheet for your records.

The link to the survey is: [REDACTED]. Access to the survey will be available until August 3, 2006.

Thank you very much for your attention so far and our sincere appreciation in advance if you do decide to participate in the survey.

Respectfully,

Prakash Nair

Prakash Krishnan Nair
Doctoral Candidate (HRD)
Texas A&M University

Note: The names and contact information of individuals other than the researcher have been blacked out to maintain confidentiality of those individuals.

Welcome to Training Survey!

Log-in Instructions

1. Please your email address (the one that was used to send you this information) to log in.
2. This survey will be available to you from June 7, 2006 to June 22, 2006.
3. If you have a pop-up blocker please disable it temporarily to access the survey portal.



This is a private Portal for registered users only. Unauthorized access is prohibited. To access, please sign in.

Email

Keep me logged in on this computer unless I log out.

Sign in



INFORMATION SHEET AND INFORMED CONSENT

Based on the information detailed in the e-mail you just read, you understand that:

1. This study is confidential and any information that identifies you will be kept confidential by the researcher.
2. If you decide to participate, you will be free to refuse to answer any of the questions that may make you uncomfortable.
3. You can withdraw at any time without your relations with the university, your job, benefits, etc., being affected.
4. For questions regarding subjects' rights, you can contact the Institutional Review Board through _____, Director of Research Compliance, at _____.

Please note: You will have to click on the "I agree" button to enter the survey. The "Exit" button may be used to exit from the survey either if you do not wish to pursue the survey or wish to do it at another convenient time, within the specified period the survey is made available to you.

INSTRUCTIONS

1. This instrument contains 24 items.
2. Each item provides a scale from 1-5 with 1 being "strongly disagree" and 5 being "strongly agree".
3. Please indicate the extent to which you agree or disagree with the statement by marking any one number on the scale.
4. Please be as candid as possible with your answers because the information you provide will help to improve future training efforts that you or your co-workers may attend.

A little about yourself...

1. In what month did you complete your OSHA General Industry(501) training?:
2. Year of training?:
3. Location of training (If in Texas)?:
4. Location of training (If NOT in Texas)?:
5. Years of experience in your current job?:
6. Your OSHA General Industry (Course 501) instructor name?:
7. I have participated in other OSHA "Train-the-Trainer" courses sponsored by TEEEX during 2005-06:

[Next](#)

Page 1 of 1

1) The course was relevant to my job duties.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) This course has had an impact on my performance on the job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) I would recommend this course to my peers.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) I applied what I learned from this course to my job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) I incorporate skills, competencies and knowledge learned in this training to daily work activities.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6) Training will increase personal productivity.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7) When I leave training, I can't wait to get back to work to try what I learned.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8) I believe the training will help me do my current job better.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9) I get excited when I think about trying to use my new learning on my job.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10) I have too much work and too little time to do it in.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11) I sometimes dread the telephone ringing at home because the call might be job related.

Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12) I feel like I never have a day off.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13) Too many people at my level in the company get burned out by job demands.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14) I have felt fidgety or nervous as a result of my job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15) My job gets to me more than it should.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16) I feel guilty when I take time off from my job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17) There are a lot of times when my job drives me right up the wall.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18) Sometimes when I think about my job, I get a tight feeling in my chest.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19) I am often bored with my job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20) I feel fairly well satisfied with my job.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21) I am satisfied with my job for the time being.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22) Most days I am enthusiastic about my work.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23) I like my job better than the average worker does.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24) I feel real enjoyment in my work.				
Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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