The Impact of Self-Efficacy, Commitment, and Coping on Occupational Strain in Non-Managerial, Non-Professional Employees

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Abstract
The current study explored the effects of moderators, self-efficacy and commitment, and mediators, problem-focused coping (strategies used when changeable conditions exist, thereby resulting in the employee taking action [Folkman & Lazarus, 1980]) and emotion-focused coping (perception that conditions are not changeable and emotions are regulated in a variety of ways versus taking action [Folkman & Lazarus, 1980]), on predicting psychological and physical occupational strain in non-managerial, non-professional employees. Ninety-three shift workers in a 24/7 call center from one division of a transportation company located in the western United States participated in the study. The first research objective was to examine the individual contributions of self-efficacy, organizational commitment, and coping strategies on predicting levels of psychological and physical strain. The next objective was to understand how the combined contribution of moderators and mediators might predict strain outcomes. Hierarchical regression analyses were used to explore five hypotheses. Lastly, using correlation analyses the relationships between commitment and problem-focused and emotion-focused coping strategies were investigated. Important findings were revealed by the results of the study. Self-efficacy significantly predicted both strain outcomes with higher self-efficacy predicting lower psychological and physical strain. Organizational commitment and emotion-focused coping also significantly predicted strain. As organizational commitment increased, psychological and physical strain decreased. Increases in emotion-focused coping strategies predicted increases in both strain variables. Problem-focused coping strategies failed to reach significance in predicting psychological or physical strain. The combination of self-efficacy, commitment, and coping strategies significantly predicted both occupational strain outcomes. Finally, there was a significant, negative relationship between commitment and emotion-focused coping strategies. As commitment increased, emotion-focused coping decreased in this sample. The current study has extended empirical understanding of the individual and combined effects of self-efficacy, commitment, and coping strategies on psychological and physical strain in a population largely overlooked by the literature, non-managerial, non-professional employees. Additionally, the current study investigated organizational commitment using a unique population and in combination with other known moderators and mediators of strain.

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THE IMPACT OF SELF-EFFICACY, COMMITMENT AND COPING ON OCCUPATIONAL STRAIN IN NON-MANAGERIAL, NON-PROFESSIONAL EMPLOYEES

A Dissertation
Presented to the
Morgridge College of Education
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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Susan L. Bennett
November 2010
Advisor: Cynthia McRae, Ph.D.
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CHAPTER ONE
STUDY OVERVIEW

Introduction

Background of the Problem

Americans are working longer and harder each year, and employee stress has become an increasing concern for many organizations. Employees spend a considerable amount of time in the workplace, and with 24 hour, 7-day a week (24/7) access to computers and the internet, workplace boundaries have become blurred. Job stress is not checked at the back door any more—it permeates one’s personal space. While statistics show that most Americans still officially only work 40 hours a week in their jobs, those hours do not include work performed at home or while traveling. In the past two decades, the average work year for working couples increased nearly 700 hours (Murphy & Sauter, 2003; U.S. Department of Labor, 1999). Due to the amount of time spent in the workplace, organizations contribute significantly to the total stress one experiences due to the job demands, expectations for performance, and interpersonal interactions (DeFrank & Cooper, 1987).

According to Richardson and Rothstein (2008), from 1997 to 2001, the average number of workers calling in sick because of stress-induced illness tripled. The American Institute of Stress reported that 80% of all work-related injuries and 40% of turnover is due in large part to stress (Atkinson, 2004). Reports such as those mentioned
are not limited to the United States. Research conducted in The United Kingdom, Europe (Giga, Cooper, & Faragher, 2003), and Australia (Caulfield, Change, Dollard, & Elshaug, 2004) found similar increases in stress-related illnesses. According to the U.S. Department of Labor, Bureau of Labor Statistics, there were 3,418 cases of stress-related illnesses (psychological and physical) reported, which resulted in time away from work in 1997 (Webster & Bergman, 1999). The median number of days of stress-related absence from work was 23 days, four times more than the absences associated with all nonfatal occupational injuries and illnesses. White-collar occupations (technical, sales, and administrative support) had a higher proportion of stress cases (64%) than blue-collar and service occupations combined, where 59% of all cases were related to stress.

There is an abundance of empirical research demonstrating a significant relationship between stress on the job and the psychological and physical illnesses of employees (Beehr, Johnson, & Nieva, 1995; Gross, 1998; Mak & Mueller, 2000; Maki, Moore, Grunberg, & Greenberg, 2005; Muraven & Baumeister, 2000; J.C. Quick, J. D. Quick, Nelson, & Hurrell, 1997; Richards & Gross, 2000; Shaffer, Joplin, Bell, Lau, & Oguz, 2000). Psychologically, a decrease in cognitive functioning relative to stress was found in one study (Fiedler, 1995). Several studies found that chronic stress was related to anxiety, depression, irritability, negative emotions, and sleep disorders (Gyllenstein, Palmer, & Farrants, 2005; Lloyds & Foster, 2006; Palmer, 2003) and may result in mortality (Cohen & Pressman, 2006; Karasek, 1990, 1988). Emotional exhaustion and/or job burnout are also frequently reported outcomes of workplace stress (Dormann & Kaiser, 2002; Grandey, 2000; Karasek, 1979, 1990; Kruml & Geddes, 2000; Mak &
One physical illness that has been directly linked to stress responses includes the development of coronary heart disease (Aboa-Eboule et al., 2007; Chandola et al., 2008; Karasek, 1990; Karasek et al., 1988; Kubzansky & Kawachi, 2000). Diabetes, lung cancer, and strokes have also been linked to stress (Gyllenstein, Palmer, & Farrants, 2005; Lloyds & Foster, 2006; Palmer, 2003).

The understanding of occupational stress and stress responses has clearly evolved. For example, a search of the EBSCO research database generated 12,000 literature references to occupational stress, a fifty-fold increase over the last 20 years. While research shows that workers are stressed, the term “stress” remains ambiguous. Stress, stressor, and strain are terms that have historically been used interchangeably in the literature, causing confusion about what is meant by each term. However, there are important differences between stress and strain. Stress occurs when an employee appraises his or her relationship with workplace demands and determines that the demands exceed his or her ability, which threatens his or her sense of self-efficacy and well-being (Lazarus, 1991). Strain occurs when an individual has an unhealthy psychological and/or physiological response to the stressful situation (Eden, 1982).

According to Mills (1995), the word “stress” was first used in the 14th century and suggested hardship, adversity, or affliction. Appley and Trumbull (1986) stated that in ancient Greece, Hippocrates was the first individual who referred to the concept of stress and strain. During the 1930s, Cannon was the first researcher to use the term “stress” from a physiological perspective. Beginning in the mid 1930s and over the next 30 years, Selye advanced the concept through research that focused primarily on
physiological responses to stressful stimuli. Following World War II, the concept of stress was broadened to include psychological factors. By the 1950s and 1960s, researchers were beginning to look beyond stressful stimuli to consider the role of individual differences that resulted in stress responses.

Münsterberg’s contributions to the field of industrial/organizational psychology and the concept of work stress in the early 20th century was the beginning of an explosion of research in the field of occupational stress. From the 1950s to 2000, Lazarus and Folkman, McGrath, and Long extended the literature in this area. During the period of the 1970s through the present time, increasing numbers of women have joined the workforce, prompting researchers such as Bonita Long to explore gender specific stress in the workplace. The results of the research efforts of the stress and occupational stress pioneers have resulted in multiple theories, which currently guide occupational stress research.

While there are many theories used to explain how stress affects employees, there are four models that are most prominent in the literature: 1) Role theory, 2) Person-Environment Fit, 3) Job Demand-Control model, and 4) the Transactional theory developed by Lazarus (1991). Role theory suggests that there is a variety of organizational roles that a person engages in at different times in the workplace. The manner in which role expectations are communicated to employees will often determine their levels of stress (Kahn et al., 1964). Person-Environment Fit theory postulates two conditions, Supplies—Values Fit and Demands—Abilities Fit. If the employee is in a position where there is not a good fit in one or both of these conditions, the environment will produce stress that will negatively affect the employee (French, Rogers, & Cobb,
The Job Demand-Control model suggests that job strain occurs when the demands of the job are high and the employee’s decision-making freedom is low (Karasek, 1979). Transactional theory considers how an individual perceives and appraises a stressful event. The judgment that follows determines whether the individual will experience a stress reaction. According to this model, there is an interaction between individual traits, appraisal of stressful stimuli, and the environment (Lazarus, 1991; Lazarus & Folkman, 1984).

Each of these models is theoretically different. However, consistent across these theories, employees are seen as actively participating in the stress process. The models purport that individual differences affect perceptions of stress, how employees appraise stressful situations, the coping strategies that will be selected, and how employees will ultimately respond to the work environment. These differences will largely determine if the employee will experience occupational strain. Therefore, it is important to note that individual differences influence perceptions and reactions to stress in the workplace.

More recently, occupational stress research has become less concerned with physiology than with psychological interactions with factors such as: environment, individual appraisals, perceptions, coping, commitment, consequences of emotional labor, job satisfaction, age, gender, multiple roles between work and family, personality, emotional intelligence, social support, and women entering executive positions once held only by men.

Research suggests that individuals who differ in resiliency, commitment (Schmidt, 2007), and coping strategies may differ in their responses, behaviors, and risk for developing stress-related disorders (Ashforth & Humphrey, 1993; Koolhaas,
deBoer, & Buwalda, 2006; Shiota, 2006). Consistent with earlier views, present empirical evidence suggests that some individuals are seemingly more resilient than others in demanding and challenging situations, whereas other individuals are adversely impacted by situations that are less demanding (Costa, Somerfield, & McCrae, 1996; Gosserand & Diefendorff, 2005; Suls, 2001; Zeidner, 1998).

Stress researchers attempt to understand how stress responses vary among individuals and to identify individual characteristics that may explain the variations (Kahn & Byosiere, 1992). Researchers have learned that stress is more than a simple physiological response to stress-provoking stimuli. There are moderators that affect the stress response. The presence of variables that alter the direction and strength of the relationship between an antecedent condition such as stress and the response to a stressor are referred to as moderator variables. Differences in personality characteristics and behavioral styles are examples of moderator variables that have drawn increasing interest among researchers. Those differences help to explain why some employees respond to a stressor without it inducing strain while others are adversely affected by the stressful situation. There are a number of individual differences that moderate the stress process. One moderator that has received the most attention in the literature is self-efficacy. Organizational commitment is an example of another moderator beginning to receive more attention in empirical studies.

Mediators also have an important impact on stress responses and have received increasing attention in occupational stress research. Mediators differ from moderators because they follow an antecedent condition and are stimulated by the stress process. Coping is an example of a mediator variable triggered by a stressful event. Following
stress stimuli, coping mechanisms are generated in response to the stress itself. Therefore, mediators further affect the relationship between moderators and occupational strain responses.

**Statement of the Problem**

Stress is not limited to one industry or environment. There are far reaching consequences to individuals in terms of psychological and physical health. Understanding how individual differences buffer strain has become increasingly important to the development of efficacious organizational programs and interventions. Research investigating the role of self-efficacy, commitment, and coping as individual factors buffering strain responses has shown promising results in the areas of education, healthcare, management, professional roles, and such public service as that performed by police officers. However, at the time of this study, occupational strain research had not been thoroughly extended to non-managerial, non-professional employees. Further, there were no studies known to the investigator that examined the combined contribution of self-efficacy, organizational commitment, problem-focused coping, and emotion-focused coping in predicting psychological and physical occupational strain. In addition, while organizational commitment has been identified in the literature as a moderating variable, to the investigator’s knowledge the construct had not been studied in combination with other moderators and mediators of occupational strain at the time of this study.

In order to understand the role of moderator and mediator variables in buffering strain, it is necessary to consider the strength of relationships across the variables. Specifically, which variables are more predictive of strain? Does greater self-efficacy
alone predict less occupational strain? What is the contribution of organizational commitment in predicting occupational strain? Which coping behaviors predict less occupational strain?

If the moderators, self-efficacy and commitment, and mediators, problem-focused and emotion-focused coping reduce occupational strain, interventions can be developed and implemented to assist employees and organizations in their efforts to improve workplace health and wellness.

Purpose of Studying the Problem

Occupational stress is a problem that affects multiple areas of psychology, including work with individuals, industrial-organizational, and education (Matthews, Davies, Westerman, & Stammers, 2000). A socially responsible organization may attempt to reduce stress; however, occupational stress and the potential for strain is an ongoing reality. A better understanding of the implications of strain may guide organizations to select individuals who are psychologically a better fit for more stress inducing positions. Organizations may also support employee development programs focused on building resilience by utilizing interventions that target employees who are more vulnerable to occupational stress (Cynkar, 2007; Matthews et al., 2006). It is important for employers, health care providers, therapists, and counseling psychologists to understand the implications of workplace strain. With this knowledge, stress responses and associated risks can be assessed within the context of the individual and the environment so organizations can implement preventive interventions within the workplace.
Unfortunately, many large organizations pay little attention to stress research outcomes until increased health care costs, long- and short-term disability, drug and alcohol use, workplace accidents, absenteeism, burnout, decreased productivity, poor customer service, employee turnover, employee acquisition costs, and training and development expenses impact profitability. At that point, the effects of occupational strain can no longer be ignored. By the time the consequences are acknowledged by organizations, the health and safety of employees have often been compromised. However, the views regarding organizational effectiveness are beginning to change, and organizations and researchers have begun to focus on more than profitability. The overall purpose of this study was to increase understanding of how moderators, self-efficacy and commitment, and mediators, problem-focused and emotion-focused coping affect psychological and physical strains in non-managerial, non-professional workers.

Importance of Studying the Problem

Researchers have begun to pay attention to workplace interventions and prevention, and the idea of the “healthy company” is receiving more attention in the literature (Cooper & Williams, 1994). Recently, NIOSH and the American Psychological Association (APA) have formed a collaborative partnership for the purpose of identifying and implementing strategies for the prevention of psychological disorders resulting from the work environment (Nelson, Quick, & Simmons, 2001). The recent movement spearheaded by the APA to recognize healthy organizations also speaks to the importance of addressing workplace stress (Cynkar, 2007). The psychological and physical well-being of employees will continue to receive as much if not more attention in the years to come. However, there will likely be a significant shift
from arguing that stress is unhealthy. Instead, developing a better understanding of the role of individual factors such as moderators, self-efficacy and commitment, combined with mediators such as coping on the stress response will become more important. The findings of studies focused on these factors will potentially lead to further empirical investigation of the efficacy of stress reducing, resiliency-building practices in the workplace.

This research was important for several reasons. First, employee health and safety are important to individuals, society, and organizations in terms of emotional and economic costs. Over the years, research outcomes have continued to identify more variables that appear to impact stress responses. Understanding protective factors is dependent on researchers continuing to build on past research and by investigating populations that have been neglected by the literature. The current study attempted to clarify the relationship between self-efficacy, commitment, and coping in predicting occupational strain in non-managerial, non-professional employees. The results of this study can have important implications for workers in terms of job satisfaction and wellness.

Second, the occupational stress/strain concept is complex and the nature of jobs, as well as worker attributes and attitudes, have changed considerably in the last 30 years. Job stress in the United States costs organizations nearly $300 billion each year in absenteeism, employee turnover, decreased productivity and increases in medical, legal, and insurance costs (American Institute of Stress, in Cynkar, 2007). While it is not possible to eliminate stress entirely from the workplace, if employers understand the individual factors that help employees to become more resilient, interventions can be
implemented to increase workers’ skills and enhance traits that help to buffer strain. Additionally, the results of this study can guide the introduction of modifications to the work environment focused on strain reduction. Decreases in workplace strain may prove beneficial in terms of employee job satisfaction, decreased turnover, reduced healthcare expenses, and increased productivity.

Third, this study also has implications for counseling psychologists, as well as other healthcare professionals. By better understanding the protective factors associated with moderating and mediating behaviors, psychologists and other healthcare providers can more efficaciously help workers who are seeking assistance for stress-induced concerns. Psychologists can work with employees to help them learn skills and behaviors for use in stressful situations in order to decrease the detrimental effects of strain and increase more positive outcomes. Psychologists can also actively participate in program development efforts aimed at increasing stress/strain prevention in the workplace. Counseling psychologists can assist organizations in the development and implementation of wellness programs, interventions, and advocating for psychologically healthy workplaces. Career counselors can also use the results of this study to help workers understand the relationship between individual traits, behaviors, and strain in order to assess resiliency and job fit before accepting high stress positions.

Review of Variables and Measures

The independent variables in the current study were self-efficacy, organizational commitment, problem-focused and emotion-focused coping. Demographic control variables were gender, age, and length of employment. Psychological and physical occupational strains were the dependent variables.
The *Self-Efficacy Scale* developed by Lorig, Chastain, Ung, Shoor, and Holman (1989) was used to measure self-efficacy of the participants in the workplace. The *Organizational Commitment Questionnaire* (O’Reilly & Chatman, 1986) was used to measure commitment of the participants to their respective organization. The *Brief COPE Inventory* (Carver, 1997) was used to measure two types of coping: problem-focused coping and emotion-focused coping within the context of the workplace. The *Occupational Stress Inventory Revised Edition (OSI-R)—Personal Strain Questionnaire* (Osipow, 1998) was used to measure psychological and physical strain associated with the workplace. Each measure mentioned above is a self-report instrument.

**Hypotheses**

1. Self-efficacy will significantly predict occupational strain; i.e., higher self-efficacy will predict lower psychological and physical strain beyond the demographic control variables (gender, age, length of employment).

2. Commitment will significantly predict occupational strain; i.e., higher levels of commitment will predict lower levels of psychological and physical strain beyond the demographic control variables (gender, age, length of employment).

3. Problem-focused coping will significantly predict occupational strain; i.e., higher problem-focused coping will predict lower levels of psychological and physical strain beyond the demographic control variables (gender, age, length of employment).

4. Emotion-focused coping will significantly predict occupational strain; i.e., higher emotion-focused coping will predict higher levels of psychological and physical strain beyond the demographic control variables (gender, age, length of employment).
5. Both the moderators, self-efficacy and commitment, and the mediators, problem-focused and emotion-focused coping, will significantly predict occupational strain beyond the demographic control variables (gender, age, length of employment).

6. There will be a statistically significant positive correlation between commitment and problem-focused coping and a statistically significant negative correlation between commitment and emotion-focused coping.

Limitations

Several limitations of the current study should be noted. First, this research examined the individual differences predicting strain outcomes by using a convenience sample of non-managerial employees working in a 24 hour, 7 days-a-week (24/7) call center in the transportation industry, thereby limiting its generalizability beyond 24/7 call centers. For instance, non-managerial employees working in transportation may differ in many ways from non-managerial employees who work in other occupations and industries.

Second, an important assumption was made based on the literature that the antecedent condition of stress existed in a workplace that required 24/7 shift work. Also, in this sample job insecurity was high due to management’s announcement that the division would be downsized and moved to a new location by October 2008. In addition, as the literature suggests, what is stressful to one employee may not be to another, so it is difficult to establish a consistent antecedent condition.

Third, the scores on the self-efficacy, commitment, coping, and occupational strain measures used in this study were based on non-managerial employees’ perceptions. Scores on self-report perceptual measures are often biased and subject to
socially desirable responding (response bias). However, using a survey employing the
use of self-report measures was the most efficacious way to collect data for the current
study. Every effort was made to select measures using non-leading questions that had
been tested for reliability and validity and had been used for previous research in the
occupational stress literature. However, two measures included in this study were less
widely used. For example, the Self-efficacy scale was modified from a similar measure
in the literature for the purpose of this study and two previous studies. The
Organizational Commitment Questionnaire, while it seemed to meet the needs of this
study, had received little attention in the literature, similar to other organizational
commitment measures. This is likely because the construct as a whole has not been
widely investigated.

Fourth, the measures used for the current study were incorporated into a larger
study utilizing a survey to collect data. While the survey was estimated to take 20 to 30
minutes to complete, concerns about respondent fatigue were taken into consideration.
To help mitigate these concerns, the survey design used different response patterns and
included the measures used for the current study in the first three sections and fifth
section out of a total of 11 sections so fatigue would be of less concern.

Fifth, another limitation was a small sample size possibly due to a lack of
interest, motivation, time constraints due to job demands, paranoia that management
would learn about participants’ responses and retaliate, fear of loss of job security,
system failures, or non-acceptance of an electronic survey. Every effort was made to
assure potential participants of the anonymity of the survey. Management of the host
organization agreed to allow employees to complete the survey during paid work
hours. To address concerns about an electronic survey, an identical paper and pencil form was made available with a pre-addressed, postage paid envelope provided. Another limitation associated with using two different survey mediums was individual differences that may slightly bias responses on one form versus another.

Sixth, using a cross-sectional research design utilizing regression analyses of the data prevented the drawing of conclusions regarding the causal relationship between the independent and dependent variables. Experimental research designs are needed to address this limitation, yet it is difficult to conduct experiments in an organizational context. Several demographic factors were entered into the analyses as control variables (gender, age, length of employment), which helped to mitigate many common confounds found in the organizational research.

Despite these limitations, this study represents an important first step in understanding the individual and combined relationships between occupational strain and the factors of self-efficacy, commitment, problem-focused coping, and emotion-focused coping.

Definition of Terms

*Coping*. Coping is defined as the “… constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141).

*Emotion-Focused Coping*. Emotion-focused coping strategies involve the individual’s appraisal of a situation and the regulation of emotional responses when the
individual has determined that nothing can be done to change a challenging situation (Folkman & Lazarus, 1980).

Mediator Variable. A mediator variable is stimulated by the stress process resulting in a response to the stressful condition, which changes the relationship between moderator variables and outcome variables (Folkman & Lazarus, 1988). The mediator variables examined by the current study were problem-focused coping and emotion-focused coping.

Moderator Variable. Moderators are antecedent variables, which exist prior to a stressful event and interact with other conditions that subsequently affect the outcome (Folkman & Lazarus, 1988). The moderator variables examined by the current study were self-efficacy and organizational commitment.

Occupational Stress. Lazarus (1991) defined occupational stress in the context of the relationship between a person and his or her work environment, where the individual’s appraisal of the relationship suggests that the workplace demands exceed his or her resources and threaten the person’s overall sense of well-being.

Organizational Commitment. In the current study, organizational commitment is defined as an individual’s psychological attachment to an organization based on shared values and goals and/or through behaviors induced to receive rewards (O’Reilly & Chatman, 1986).

Problem-Focused Coping. Problem-focused coping strategies are used when during the appraisal process it is determined that the conditions are changeable (Folkman & Lazarus, 1980).
Self-Efficacy. In the current study, self-efficacy is defined as an individual’s belief that a course of action will be carried out based on his or her ability to perform job duties in a way that exercise control over workplace demands (Bandura, 1997). Judgment of “certainty” is an important concept as Bandura (1982) wrote, “Perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (p. 122).

Strain. In the current study, the term “strain” is used to describe the individual’s unhealthy psychological and/or physiological response to stress (Eden, 1982). This study investigated psychological and physical strains.

Stress. In the current study, stress is defined as an employee’s appraisal of his or her relationship with environmental demands that exceed his or her resources and threaten the individual’s sense of self-efficacy and well-being (Lazarus, 1991).

Stressor. The term “stressor” refers to the antecedent conditions in the environment that affect the perceptions and cognitive process of an individual (Eden, 1982). In the industrial-organizational literature, “stressor” also refers to the demands made on the employee that require an adaptive response (Beehr & Newman, 1978).

Summary

The amount of time employees spend working in organizations located in the United States has increased considerably over the years. Increased pressure to meet or exceed performance expectations for organizational goal attainment has placed greater demands on employees. As a result, employees report that their levels of occupational stress/strain continue to increase. There is a considerable amount of empirical evidence that has found that the deleterious effects of stress have compromised many workers’
psychological and physical health. Most researchers and organizations agree that stress is here to stay. Through the years, a better understanding of the stress concept and resultant strains has helped researchers discover several individual differences that buffer stress responses. These advances are promising for employees, organizations, and stress researchers alike, as scientific investigation strives to find protective factors that will increase employee resilience in the workplace.

Chapter One provided the background of the stress/strain concept. This chapter also included a statement of the problem, purpose of studying the problem, importance of studying the problem, review of the variables and measures associated with the study, hypotheses, discussion of the limitations of the study, and a definition of terms. Chapter Two will present a review of the literature relevant to this study. Chapter Three contains descriptions of the methods and procedures used in the design of the study. Chapter Four includes the results of the preliminary and primary analyses. Chapter Five provides a discussion of the results, implications of the findings, limitations, recommendations for future research, and conclusions.
CHAPTER TWO

REVIEW OF SELECTED LITERATURE

Introduction

There is an employee mantra that echoes from the water cooler, boardroom, office cubicle, rail yards, truck stops, and the therapist’s office: “I’m stressed out.” The reality is that employees are not only stressed out but they may also be at risk for developing physical and/or psychological problems because of a stressful workplace. The manner in which employees experience stress becomes concerning when considering the centrality of work in people’s lives. Work plays an important role in society, and a job or career can be rewarding and contribute to one’s identity and purpose in life (Matthews, Zeidner, & Roberts, 2002). Experiencing stress in the workplace is not an anomaly, but many workers experience it more severely than others do and the work environment may be a source of considerable distress, which may have far-reaching consequences (Cartwright & Cooper, 1996). Nelson, Quick, and Simmons (2001) stated:

Work stress may lead to enhanced work performance up to an optimum level of stress. Conversely, it may place an employee at risk of distress if the work stress is too intense, frequent, chronic, unremitting, or employees do not possess necessary skills to meet the work demands and manage their stress response (p. 349).

Concerns associated with occupational stress have captured the attention of researchers, and an abundance of empirical findings over a number of years have demonstrated the
significance of workplace related stressors and stress responses on physical health and psychological well-being (Johnson, Cooper, Cartwright, Taylor, & Millet, 2005). In Western civilization, occupational stress has been identified as a prominent organizational health concern (Matthews, Zeidner, & Roberts, 2004).

When considering the implications and consequences of occupational stress, it is important to acknowledge that stress is not limited to one type of work environment. Examples include stress induced by human service work in the counseling, mental-health nursing (Mann & Cowburn, 2005), social work, and teaching (Oginska-Bulik, 2005) environments. Another example is the delivery driver who must navigate through challenging traffic each day, the overworked office clerk who balances multiple duties, and the graduate student who must balance the demands of school while working as a research assistant (Matthews & Desmond, 2002). Aiello and Kolb (1995) found that employees who are electronically monitored for performance by their employers experience higher degrees of workplace stress than their peers who are not being monitored. Therefore, the degree to which an employee experiences work-related stress is potentially the result of a number of factors, including specific work duties that are associated with the job (Johnson, Cooper, Cartwright, Donald, Taylor, & Millet, 2005; Pugliesi, 1999).

In order to efficaciously address the implications of job stress and resultant occupational strain, it is important to explore and subsequently understand the factors contributing to these responses in order to help moderate strain in the workplace. This literature review provides a rationale for the relationships that are examined by the current study. The theoretical framework for the investigation comes from studies
conducted on managers and non-managerial workers in private organizations, educational and health care settings.

While researchers have a continued interest in stress responses, the extent to which the research focuses on non-managerial, non-professional employees working outside of education or health care settings is minimal. The current study addressed two gaps in the literature by examining the effects of self-efficacy, commitment, and coping on occupational strain in non-managerial, non-professional positions and how each variable’s direct and combined effects predict strain outcomes.

This chapter includes an examination of the general concepts of stress and will more specifically explore occupational stress/strain. Further, a review of the most relevant literature will be provided focusing on the factors (self-efficacy, commitment, and coping) that provide the most theoretical support for their moderating and mediating effects on occupational strain.

The History of the Stress Concept

There is a vast body of literature exploring the stress concept. However, there is confusion in the literature between stress and strain because terms have been used interchangeably, making it difficult to isolate stress from strain. For instance, through the years researchers have referred to stress as stress, stress as strain, and stress and/or strain as stressors. The stress/strain literature has frequently discussed the two concepts as the same thing. As a result, there exists a difficulty with distinguishing between the concepts. Therefore, this section of the chapter will include a thorough review of the important contributions of both stress and strain to the literature.
Understanding what is meant by stress is challenging because stress is an ambiguous area. Selye (1974) defined it as “The nonspecific response of the body to any demand made upon it” (p. 27). Lazarus and Folkman (1987) defined stress as negative environmental and/or interpersonal relationships, cognitive perceptions and appraisals. These processes are often followed by emotional responses such as fear, anger, guilt, and shame (Folkman, Lazarus, Gruen, & DeLongis, 1986). Slaski and Cartwright (2003) wrote: “The experience of stress is the manifestation of negative emotions triggered by danger, threat or challenge and which signal to the body the need to prepare for action of defense and protection” (p. 234).

Beehr and Franz (1987) identified three types of stress. The first type is stimulus-based, which is concerned more with situational or emotional bases that affect the person. The second type is defined by an interactive approach frequently referred to as the stressor-strain approach, which considers both the source (stimuli) of the stressor and the outcome of the stress or strain (response). The third type is response-based. This definition of stress focuses on an individual’s psychological and physiological responses to situational or environmental stimuli.

As one can see, the stress concept is rarely defined in the same way and has undergone many definitional changes over the years. Therefore, some historical background may provide the perspective necessary to understand how stress is conceptualized. The word “stress” was first used in the 14\textsuperscript{th} century and suggested hardship, adversity, straits, or affliction (Mills, 1995). In ancient Greece, Hippocrates alluded to stress by asserting that suffering is associated not only with disease, but with the body’s reaction in an attempt to restore itself through “toil” (Appley & Trumbull,
Cannon (1932) was a physiologist and professor at Harvard Medical School in the early 20th century. He contributed to the stress literature with his concept of homeostasis, which in Greek terms means “similar position.” Cannon (1932) defined homeostasis as “the coordinated physiological processes which maintain most of the steady states of the organism . . .” (p. 24). Cannon (1935) also identified three reaction patterns described as fight, flight, and freeze—also known as the three f-reactions. According to Cannon, the three f-reactions were associated with physiological changes that were needed to respond to danger or threat in order to ameliorate the effects of the threat or to escape from it. He stated: “They are adjustments, which so far as possible, put the organism in readiness for meeting the demands which will be made upon it” (Cannon, 1932, p. 228).

Cannon (1932) defined stress as a physiological change in the organism, caused by the disturbance of homeostasis through internal and external changes of environment under conditions of heat, cold, lack of oxygen, or the lowering of blood sugar. According to Lazarus and Folkman (1984), Cannon referred to his research subjects as being “under stress,” thereby suggesting that stress could be measured.

The Physiological Concept of Stress

Hans Selye (1976) committed 30 years of his professional life to the scientific investigation of stress. He described stress responses to demands placed upon the body as being “non-specific” because the response to any demand was essentially the same and could be stimulated by any noxious agent. The noxious agents triggered physiological defenses. Therefore, the attempt to reestablish homeostasis within the organism occurs without discriminating between the types of demands experienced.
In 1926, Selye (1976) was a second-year medical student and he began to question why patients who suffered from diverse diseases shared similar symptoms. He noticed that whether patients had cancer, a blood loss, or some type of infectious disease, they lost their appetites, lost weight, became weaker muscularly, and suffered from a lack of ambition. These findings caused Selye to question:

What is the scientific basis of what I thought of at the time as the syndrome of just being sick? Could the mechanism of this syndrome be analyzed by modern scientific techniques? Could it be reduced to its elements and expressed in the precise terms of biochemistry, biophysics and morphology? (p. 4).

By 1936, Selye (1976) was working in the Biochemistry Department of McGill University conducting research where he extracted hormones from cattle ovaries and injected them into the organs of rats for the purpose of investigating if the rats’ organs would show unexpected changes attributed to a previously unidentified hormone. Regardless of the preparation of the hormonal extract that was injected into the rats, there were three consistent changes that occurred in the rodents. Selye referred to this syndrome as the “characteristic triad.” He observed that the triad produced the following: 1) the adrenal cortex became enlarged, 2) the thymus, spleen, lymph nodes and all other lymphatic structures became quite small, and 3) deep, bleeding gastrointestinal ulcers erupted. Selye realized that this outcome replicated the syndrome that he first observed in medical school. He recognized that the “characteristic triad” represented signs of damage to the body when under the attack of disease. The three changes were referred to as the objective indices of stress and became the foundation for the development of Selye’s entire stress concept.
Selye (1956) subsequently identified three stages in the stress reactions process, which became known as the General Adaptation Syndrome (G. A. S.). The syndrome was comprised of three stages: 1) the alarm reaction, 2) the stage of resistance, and 3) the stage of exhaustion. This model suggested that there was a limited supply of energy available to the body. He saw adaptation or resistance as a response to alarm, stating: “No organism can be maintained continuously in a state of alarm” (Selye, 1976, p. 5). However, Selye (1976) also asserted that constant demands that were placed on the body could result in exhaustion and/or death.

The first stage described by Selye (1976) is “the alarm reaction.” This is when the body shows changes associated with the initial exposure to a stressor and the organism increases energy in order to ameliorate the stressful event. However, if the stressor is strong and persistent, the second “stage of resistance” takes over. Following prolonged exposure to the same stressor, the body becomes adjusted to the stressor until at some point in the third stage, adaptation energy becomes exhausted and death may result. Selye wrote: “Just as any inanimate machine gradually wears out, so does the human machine sooner or later become the victim of constant wear and tear” (p. 6).

Selye (1982) considered the physiological aspects of stress by paying attention to changes in body chemistry and the analysis of hormones during stress responses. However, he eventually acknowledged that stressors had a psychological component. He became increasingly interested in the idea that not all stress was bad because people seek and thrive on activity and the acquisition of new abilities. This led to his distinction between good stress, referred to as “eustress,” and bad stress, known as “distress.”
As research advanced on the process and theory of stress, there was a shift away from Selye and Cannon’s strict definitions of stress as a purely physiological response. Over time, psychological constructs were proposed as having an important influence on stress.

*The Psychological Concept of Stress*

In terms of a timeline, there was an overlap between the physiologists’ and psychologists’ views of stress. Kahn and Byosiere (1992) wrote that stress research by psychologists and psychiatrists was included in the scientific literature only after World War II. The authors stated that most stress research focused on the experiences of the war. Examples include Grinker and Spiegel’s *Men Under Stress*, Karkiner and Spiegel’s *War Stress and Neurotic Illness*, and Janis’ *Air War and Emotional Stress* (Kahn & Byosiere, 1992). In their research, psychologists often referred to the Yerkes-Dodson law first published in 1908. The law was based on the inverted U-shaped curve and asserted that arousal improved task performance to a certain level, and performance would be impaired beyond an optimal level (Lazarus & Folkman, 1984). As psychologists advanced stress research, an alternative view of stress resulted in the “stimulus model,” which asserted that stress was caused by an individual’s interaction with the environment and the subsequent response to the stress was referred to as tension or strain.

This view made room for the idea that stress is complex and more than mere biological responses were stimulated by the stress response. Beginning in the 1950s there was a shift away from simplistic thinking about the stress reaction being induced purely through exposure to stressful stimuli (Lazarus & Eriksen, 1952). By the 1960s,
the concept of stress had been popularized. As the research expanded to investigating
the role of coping and appraisal of environmental stimuli, it became apparent that
individual differences played an important role in explaining how and why individuals
responded to the same stressors in different ways (Lazarus, 1966; Lazarus & Folkman,
1984).

As a result of these observations, a transactional model of stress was proposed
that considered the relationship between the individual and the environment based on
found that stress responses were determined by the level of threat, harm, and/or
challenge that the individual perceives after appraising the situation. Lazarus’ and
Folkman’s (1984) transactional model remains an important theory used by many stress
researchers (Long, 1989; Long, 1998; Long & Schutz, 1995; Long, Kahn, & Schutz,
1992; Moos & Schaefer, 1993; Moos & Swindle, 1990; Morris & Long, 2002; Portello
& Long, 2001). Over the years, additional theories and models of stress have also been
proposed and will be discussed later in this chapter.

*Occupational Stress*

The body of stress research is continuing to grow. As it grows, more attention is
being paid to specific areas of concern. One of these areas is related to workplace stress
and its negative implications. As a result, the understanding of occupational stress and
stress responses has clearly evolved.

*Definitions of Occupational Stress*

Through the years, the term stress has been described by multiple definitions.
Occupational stress has also generated multiple definitions and has been conceptualized
differently than stress alone. Beehr (1985) defined occupational stress as the interaction between stressors of the workplace and negative responses, also referred to as “strains,” that have physical or psychological outcomes that negatively affect employees. Quick and Quick (1984) defined occupational stress as an energy that is stimulated unconsciously when an employee is confronted with demands at work. Lazarus (1991) defined occupational stress in the context of the relationship that exists between a person and his or her work environment, whereby the individual’s appraisal of the relationship is interpreted in a way in which the environmental demands exceed his or her resources and threaten the person’s overall sense of efficacy and potential well-being. Occupational stress begins with an emotional reaction such as anger, fear, or anxiety and escalates to a personal experience of losing control over one’s work resulting in feelings of loss of control over life and self. The body responds as if one’s survival is threatened. While not a life-threatening situation, there is a physiological response to the perception and reappraisal of the stressor (Schabracq, Cooper, Travers, & van Maanen, 2001). Everly, Smith, and Haight (1987) defined work-related stress as “…the conditions where occupational, or work-related, factors either cause or significantly contribute to the initiation of the stress response” (p. 238).

This leaves one with questions about how the field of psychology has come to understand the occupational stress concept. As Selye (1976) stated: “…[I]nterest in stress as it influences the lives of individuals, and even entire societies, has grown enormously during the past few decades” (p. vii).
The History of Occupational Stress

The history of psychology in relation to work stress can be traced to Hugo Münsterberg when he focused his efforts toward studying industrial accidents and safety in the early 20th century, which marked the beginning of concerns with psychology and work stress (Offermann & Gowing, 1990). To illustrate the evolution of occupational stress from the stress literature, Nelson, Quick, and Simmons (2001) provide an overview of the historical events during the 20th century as they relate to work stress (see Table 1).
Table 1

*A Brief Historical Overview of Work Stress and Health Psychology*

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>1908 – The Yerkes-Dodson Law: stress-performance curvilinear relationship (the inverted U)</td>
</tr>
<tr>
<td>1910</td>
<td>1910s – Hugo Münsterberg’s efforts to study industrial accidents and human safety</td>
</tr>
<tr>
<td>1920</td>
<td>1920s – An era of work conflict and violence in labor-management relationships</td>
</tr>
<tr>
<td>1930</td>
<td>1963 – Levinson’s psychoanalytic model</td>
</tr>
<tr>
<td>1940</td>
<td>1970 – Legislation to establish NIOSH</td>
</tr>
<tr>
<td>1950</td>
<td>1971 – Gardell’s work environment psychology</td>
</tr>
<tr>
<td>1960</td>
<td>1979 – Karasek’s job strain model</td>
</tr>
<tr>
<td>1970</td>
<td>1984 – Quick &amp; Quick’s prevention model</td>
</tr>
</tbody>
</table>

Münsterberg conducted psychological research on a variety of occupations such as streetcar operator, salesperson, ship captain, and telephone operator (Schultz & Schultz, 2004). However, according to Mills (1995), over 300 years ago a physician by the name of Bernardino Ramazinni suggested that the work an individual performed might be linked to his or her health.

By the mid 1960s, studies began to focus on role conflict and role ambiguity, illuminating the problem of stress in large industrial organizations (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Kahn et al., (1964) emphasized the idea of role stress as a subset of work stress and recognized the potential adverse consequences associated with work roles. They also developed strategies to produce a better fit between the person and his or her work environment, whereas Münsterberg had been more concerned with the safety of the physical environment.

Levinson (1963, 1975) focused his research on executives, although his model of stress applied across the organization. He emphasized psychodynamics and the person’s unique contribution to the stress process. Nelson, Quick, and Simmons (2001) wrote: “Levinson emphasized the intrapersonal psychological processes related to stress and strain for executives at work” (p. 350). Two important concepts that Levinson (1963) used in his understanding of executive stress were the ego-ideal and the self-image, where the conflict between the two would lead to acute stress responses, such as executive suicide.

Gardell’s (1987) work in environmental psychology considered the role of workload and an individual’s self-determination in order to conceptualize work stress
and strain. Karasek (1979), also an environmental psychologist, relabeled Gardell’s two constructs as job demands and job decision latitude.

McGrath (1976) considered the social psychological factors involved in the stress cycle and developed a paradigm for analysis of the stress cycle (see Figure 1).
McGrath’s (1976) model involved a four-step sequence beginning with an external stimuli leading to the observable behaviors of the individual, which subsequently affected the situation. He asserted that the stress situation was a closed-loop cycle and began with a condition or events within the context of the socio-physical environment. When an event occurs, the individual considers the situation, leading to a perception of...
stress based on linking stage A with stage B, thereby resulting in a cognitive appraisal process first discussed by Lazarus (1966). The individual then chooses some type of response with the goal of changing the situation typically in a more desirable direction by linking stage B and stage C, which is the decision-making process. Lazarus (1966) considered this process the “secondary appraisal.” The link between stage C and D is the response or performance process that results in behaviors selected by the individual (McGrath, 1976). The fourth link is between stage D and stage A where the response results in consequences to the individual, also referred to as the outcome (McGrath, 1976).

By the early 1980s and continuing into the 1990s, occupational health psychology and work related stress had become a major concern in the United States (Quick et al., 1997). According to the U.S. Department of Labor, Bureau of Labor Statistics, there were 3,418 cases of psychological and physical illnesses resulting in time away from work that were caused by occupational stress (Webster & Bergman, 1999). Psychological disorders were included in the top ten occupational health and safety risks as identified by the National Institute of Occupational Safety and Health (Nelson, Quick, & Simmons, 2001). During this time frame, efforts to address health risks associated with stress were beginning to shift toward conceptualizations of prevention in an organizational context (J. C. Quick & J. D. Quick, 1984).

Theories of Occupational Stress

Theories of work stress have resulted in many models that attempt to explain how stress in the workplace affects employees. However, over the years there are several that have received the most attention in the literature: 1) Role theory, 2) Person-
Environment Fit, 3) Job Demand-Control model, and 4) the Transactional theory developed by Lazarus (1991). Further research contributions by Long and colleagues from the 1980s to 2000 have advanced the understanding of stress as it relates to female workers and women in managerial roles (e.g. Long, 1989; Long, 1998; Long & Schutz, 1995; Long, Kahn, & Schutz, 1992; Morris & Long, 2002; Portello & Long, 2001). Additionally, the Effort-Reward Imbalance model (Nelson, Quick, & Simmons, 2001) is beginning to get attention as is the Preventive Stress Management model (J. C. Quick, J. D. Quick, Nelson, & Hurrell, 1997). A brief overview of each of the four most referenced theories specified above is provided.

**Role Theory**

The Role theory of occupational stress is the longest established and has been the most prominent theory for over 20 years. The theory suggests that there are “role sets” and they may differ based on a variety of roles that a person is involved in at various times in an organization (Kahn et al., 1964). The theory suggests that organizations communicate “sets” of expectations that dictate what employees are supposed to do and how they are to do it (Kahn et al., 1964). If the organizational expectations are ambiguous, leading to a lack of clarity about the employee’s role, or if there is a conflict between what is expected and what is actually occurring in the work setting, either of these two situations results in role stress for the employee (Kahn et al., 1964). According to Beehr (1985) and Jex and Beehr (1991), these two conditions, role ambiguity and role conflict, are the major causes of stress and strain responses.
**Person-Environment Fit Theory**

Person-Environment Fit is another widely accepted model that is an evolution of Role Theory. French, Caplan, and van Harrison (1982) developed this model, postulating that there are two concepts associated with occupational fit: Supplies-Values fit and Demands-Abilities fit. The Supplies-Values fit approach considers the extent to which the work environment meets employee needs and permits workers to use their knowledge and skills in the workplace. The Demand-Abilities fit approach relates to the requirements of the job and whether the employee’s abilities meet environmental demands (Nelson, Quick, & Simmons, 2001). If there is not a good fit in one or both of these conditions, then stress will likely occur, thereby adversely affecting both the employee and the organization (French, Rogers, & Cobb, 1974).

**Job Demand-Control model**

The Job Demand-Control model was developed by Karasek (1979) and was based on research that showed that employees in jobs where they perceived themselves to have low decision-making latitude, coupled with high job demands were likely to report poor health and low job satisfaction. Karasek (1979) asserted that work stress and the potential for psychological and physical strain due to occupational stress resulted from a combination of the effects of the demands of the employees’ work environment and the latitude the employee had been given to make necessary decisions while facing the demands. In other words, job strain occurs when the demands of the job are high and the employee’s decision-making freedom is low.

Quick, Quick, Nelson, and Hurrell (1997) found that the negative implications associated with job strain resulted in behavioral, psychological and other physical
concerns. Karasek (1979) found that psychological concerns resulting from job strain included depression, job burnout, anger, and overall job dissatisfaction, whereas medical concerns (Theorell & Karasek, 1996) included backaches, ulcers, and cardiovascular disease. Behavioral distress caused by job strain often includes workplace violence, being prone to accidents on the job, and abuse of substances (Mack, Shannon, J. D. Quick, & J. C. Quick, 1998), as well as exhaustion, job dissatisfaction, sick days, overuse of tranquilizers and sleeping aids, and a higher incidence of myocardial infarctions (Karasek et al., 1988).

*Transactional Theory*

The transactional theory of stress emphasizes continual change based on the dynamic relationship that exists between individuals and their environment rather than the static relationship suggested by the Person-Environment Fit theory (Lazarus & Folkman, 1984). Additionally, individual appraisal and reappraisal is an important concept associated with this theory. In other words, the manner in which the individual perceives and subsequently judges an event determines whether it will evoke a stress reaction (Lazarus, 1991; Lazarus & Folkman, 1984). An interaction occurs between the traits of an individual, his or her appraisal of the stressful situation, and the environment. Subsequently, coping strategies are selected that have been affected by the stressful event and that affect the event. According to Lazarus (1991), there are three types of encounters requiring the individual’s appraisal. If the first encounter is considered irrelevant and having no personal significance, it is ignored. The second encounter is referred to as benign-positive, which is considered desirable and potentially beneficial. The third type of encounter is identified as stressful based on its ability to
harm, threaten, or challenge the individual (Lazarus, 1991). The outcomes vary according to this process and are seen as unique to the individual (Lazarus & Folkman, 1984).

While theoretically different, each of these models suggests that employees are active participants in the stress process. How workers perceive stress, appraise situations, use coping strategies, and decide to respond to the work environment largely determine whether the employee will experience occupational strain. Therefore, it is important to note that individual differences influence perceptions and reactions to stress in the workplace.

**Stress, Stressor, Strain**

Understanding what is referred to when discussing stress is at times challenging due to several different components associated with the stress process. Therefore, it is important to identify the differences between the components often referred to interchangeably in the literature as “stress,” “stressor” and “strain.”

The meaning of stress has previously been defined and will not be revisited in this section. The term “stressor” refers to the antecedent conditions in the environment that affect the perceptions and cognitive process of an individual (Eden, 1982). Beehr and Newman (1978) similarly defined stressors, although they extend the antecedent conditions to the workplace where demands are made on the employee that require some kind of adaptive response. The term “strain” is used to distinguish between the antecedent condition and the individual’s unhealthy psychological and/or physiological response to the stress (Eden, 1982). Therefore, a stressor is a demand that is made upon an individual because of circumstances in the environment. Stress subsequently occurs
based on the relationship between an individual and his or her perception of the environmental demands. If there is a negative physical, psychological, or behavioral response to the stress, it is defined as strain. This study focused on stress responses resulting in strain.

Strains

As discussed earlier, stressors associated with the work environment may result in stress, depending on the individual. If there is a negative reaction to the stress, the employee is said to have strain. Research has provided a considerable amount of evidence suggesting that prolonged periods of stress result in impairment of physical health and psychological well-being (Beehr, Johnson, & Nieva, 1995; Gross, 1998; Mak & Mueller, 2000; Maki, Moore, Grunberg, & Greenberg, 2005; Muraven & Baumeister, 2000; J.C. Quick, J. D. Quick, Nelson, & Hurrell, 1997; Richards & Gross, 2000; Shaffer, Joplin, Bell, Lau, & Oguz, 2000) and are then referred to as strain (Harrison, 1978; Kulka, 1979). Through their review of the stress literature, Herbert and Cohen (1993) found that short-term stress actually enhanced immune efficiency, but chronic stress resulting in strain impaired immune system functioning. Individual symptoms of stress may vary in severity of strain responses and have short- or long-term consequences. While strain has been referred to in the literature in several different ways, there are two categories that were the focus of this study: 1) physical strain and 2) psychological strain.

Physical Strain

There are multitudes of stressors in the workplace that can potentially result in physical strain, and this section focuses on what the literature suggests regarding the
short- and long-term consequences of strain. It is important to point out that measures of physical strain vary considerably. Therefore, it can be challenging to make conclusive statements about the results of most studies. The most common measure of physical strain in organizations (self-report) is more subjective than other measures sometimes used in stress research. Researchers typically gather data using measures that ask specific questions and request self-report responses that identify physical symptoms. However, increasing numbers of studies are also using objective physiological measures. For example, more stress researchers are using saliva samples to test cortisol levels, blood samples to test cholesterol, and blood pressure readings. The use of objective measures has been helpful in reducing the response bias associated with self-report measures. Still, there are difficulties with using more objective measures in organizational research such as invasive procedures (Cooper, Dewe, & O’Driscoll, 2001) or with methodological controls that result in conflicting findings (Fornari et al., 2007; Fried, Rowland, & Ferris, 1984). The following section will consider the physiological changes that occur with individuals experiencing stressful situations, as well as what the research has shown to date regarding the health consequences associated with work-related strain.

First, a brief review of Selye’s (1976) theory is presented. As mentioned earlier, in response to stress, the first stage of G.A.S as described by Selye is the alarm reaction. This is when the body shows changes associated with the initial exposure to a stressor in which the organism increases energy in order to ameliorate the stressful event. However, the behavioral reactions such as running away, freezing from a frightened response, or kicking and hitting a customer or manager are not appropriate in the
workplace. Therefore, the natural reactions must be suppressed while the heightened activation remains unchanged, thereby resulting in physiological damage. The resistance stage (stage two) is where one becomes habituated to the stressors and he or she no longer feels the unpleasant situation. Depersonalization may take over in this phase, so the individual does not experience many feelings. By this time, hormones of the hypothalamus and adrenal cortex become involved and one’s immune system is compromised, thereby making one susceptible to illness (Herbert & Cohen, 1993).

While the body adjusts to prolonged exposure to the same stressor, if the stressor is strong and persistent the second stage of resistance will be overcome and lost. Stage three is the exhaustion or breakdown phase when the adrenal cortex quits producing hormones and emotional and physical exhaustion ensues. Research suggests that these reactions lead to short-and long-term physical effects.

The short-term effects of stress include increases in blood-pressure (Aboa-Eboule et al., 2007; Chandola et al., 2008; Fornari et al., 2007; Fox, Dwyer, & Ganster, 1993; Markovitz et al., 2004), cortisol (Aboa-Eboule et al., 2007; Chandola et al., 2008; Fox, Dwyer, & Ganster, 1993), heart rate, palpitations, gastrointestinal problems, increases in alcohol and/or caffeine consumption, nicotine use, lower back problems, and muscle tension, which may lead to longer-term negative health outcomes (Gyllensten, Palmer, & Farrant, 2005). Research suggests that physiological responses to stress involve the hypothalamic pituitary adrenocortical (HPA) axis. When the HPA axis responds, the adrenal cortex secretes the stress hormone known as cortisol, which subsequently enters the circulatory system (Adam, Hawkley, Kudielka, & Cacioppo, 2006; Fox, Dwyer, & Ganster, 1993; Ganster, Walton, Fox, & Dwyer, 2001; Kudielka,
The short-term effects of cortisol are an increase in arousal and a defense of the body against the stress response (Salovey, Stroud, Woolery, & Epel, 2002). When the body is exposed to chronic HPA stress responses, damage to the regulatory system, organs, and the development of disease may occur (McEwen, 1998; Sapolsky, Romero, & Munck, 2000). Additionally, people who respond to stress with unhealthy coping strategies may suppress the healthy functioning of the immune system (Chandola et al., 2008; Cohen, 1996).

The long-term negative health outcomes may result in the development of coronary heart disease (Aboa-Eboule et al., 2007; Chandola et al., 2008; Karasek, 1990; Karasek et al., 1988; Kubzansky & Kawachi, 2000). While the research findings have varied in results and understanding the relationship between work stress and coronary heart disease (CHD), a recent study conducted by researchers from the University College London (Chandola et al., 2008), examined work stress and coronary heart disease with the aim of identifying causation. A total of 10,308 civil servant employees were studied by looking at the mechanisms underlying CHD. The study focused on the direct effects of work stress, as well as behavioral risk factors, such as low physical activity, poor diet, etc. Significant associations were found between work stress, higher cortisol measures, low heart rate variability (resulting from elevated cortisol production in response to chronic stress), and CHD. Additionally, there was a significant relationship between work stress, health behaviors and increased risk for CHD, with 32% of the effect size explained by health behaviors to cope with stress (primarily poor diet and little exercise). Their findings suggested that cumulative work stress was a
clear risk factor for CHD based on hormonal stress responses. These findings were consistent with the INTERHEART study (Rosengren et al., 2004), which was a large case control study comparing 11,119 patients with a first myocardial infarction (MI) and 13,648 age- and sex-matched controls in 52 countries. The researchers found that exposure to chronic work stress was related to more than two times the risk of MI when compared to employees who reported no work-related stress. A study conducted by Aboa-Eboule et al. (2007) found that a cohort of 972 participants who returned to jobs where they continued to experience chronic work-related strain following their first MI were at increased risk for a recurrent CHD. In other words, chronic job strain was a predictor for repeat coronary events even after adjusting for a multitude of confounding variables.

Research results also suggest that chronic stress results in greater risks for developing diabetes, lung cancer, and suffering strokes (Gyllenstein, Palmer, & Farrant, 2005; Lloyds & Foster, 2006; Palmer, 2003).

**Psychological Strains**

The consequences of strain are far reaching, not only in terms of employees’ physical health, but also in terms of cognitive and psychological impairment. Fiedler (1995) found that individuals exposed to ongoing occupational stress exhibited decreases in cognitive functioning. In one study collectively conducted by the International Communication Research, the American Society of Chartered Life Underwriters and Chartered Financial Consultants, and the Ethics Officer Association, results suggested that 88% of those who responded to the survey frequently reported psychological reactions to occupational stress in the form of headaches, depression,
insomnia, weight fluctuations, and panic attacks (Boyd, 1997). Several outcome studies have found similar results, suggesting that prolonged periods of stress may result in clinical anxiety, depression, irritability, negative emotions, and sleep disorders (Gyllenstein, Palmer, & Farrants, 2005; Lloyds & Foster, 2006; Palmer, 2003). Organizational research has also found that employees who experience prolonged workplace stress often report symptoms of emotional exhaustion and/or job burnout (Dormann & Kaiser, 2002; Grandey, 2000; Karasek, 1979, 1990; Kruml & Geddes, 2000; Mak & Mueller, 2000; Zaef, Seifert, Schmutte, Mertini, & Holz, 2001). Further, research suggests that chronic negative affect, such as anxiety, depression, anger, and hostility are frequently associated with increases in morbidity and mortality (Cohen & Pressman, 2006; Karasek, 1990, 1988).

One psychological strain that has received extensive attention in the literature is job burnout. The concept of burnout has been explored for over 30 years. The term was introduced by Freudenberger (1974), who defined burnout in the following terms: “To fail, to wear out, or become exhausted by making excessive demands on energy, strength, or resources” (p. 159). Maslach and Jackson (1981) extended the concept of burnout through the development of the Maslach Burnout Inventory. They defined burnout as a syndrome comprised of three dimensions: emotional exhaustion, depersonalization, and a reduction of personal accomplishment. The authors found that emotional exhaustion was associated with the demands and stressors that combine and result in feelings of being overwhelmed. This dimension is characterized by individuals who no longer feel that they have anything to give at an emotional/psychological level. Depersonalization is experienced when individuals develop cynical and negative
attitudes and there is a loss of empathy toward others. A reduced sense of accomplishment is experienced when one begins to view him or herself negatively and becomes disenchanted or critical with his or her accomplishments. The symptoms of burnout in the workplace frequently include decreased motivation and job satisfaction, increased health problems, conflicts among co-workers, and decreases in productivity and efficiency (Maslach, Jackson, & Leiter, 1997). Leiter and Maslach (2001) stated: “According to this model, burnout is an individual stress experience embedded in a context of complex social relationships, and it involves the person’s conception of both self and others” (p. 416).

*Emotional Labor: A Psychological and Physical Strain*

Emotional labor is another strain concept that has received increasing attention in the literature. Consideration of this body of research is important because empirical evidence suggests that there are negative psychological and physical effects resulting from strains associated with emotional labor. Strain responses occur when employees are required by employers to display specific emotions (emotional labor) in the workplace, which most employees are expected to do, especially in service related positions. In fact, one study examining 365 teachers in the Netherlands found evidence suggesting that occupational strain in the form of burnout was more significantly correlated with emotional labor than it was with Karasek’s (1979) Job Demand-Control-Support model (Naring, Briet, & Brouwers, 2006).

Managing emotions and responses is known in the behavioral sciences as emotion regulation. However, within the context of the workplace, emotion regulation is commonly referred to as emotional labor (Hochschild, 1983; Morris & Feldman,
1996; Totterdell & Holman, 2003). According to Hochschild (1983), emotional labor is defined as “the management of feeling to create a publicly observable facial and bodily display” (p. 7).

Emotional labor is used in service organizations to maintain or increase market share. As a result, strong emphasis is placed on customer service and satisfaction (Dormann & Kaiser, 2002). Morris and Feldman (1996) defined emotional labor as the “effort, planning, and control needed to express organizationally desired outcomes during interpersonal transactions” (p. 987). Many organizations have established formal policies known as *display rules* that define the appropriate emotional expression employees must use in their responses to customers (Ekman & Friesen, 1982; Mann, 2004; Rafaeli & Sutton, 1987, 1990; Sutton & Rafaeli, 1998; Totterdell & Holman, 2003; Wharton & Erickson, 1995). Examples of organizations that incorporate display rules in their job expectations are Delta Airlines (Hochschild, 1983), Disney (van Maanen & Kunda, 1989), and McDonalds (Leidner, 1993).

Emotional labor is performed by employees in two ways that are antecedent-focused and response-focused: (1) deep acting and (2) surface acting (Grandey, 2000; Gross, 1998; Hochschild, 1983). Grandey’s (2000) employee-focused, emotion regulation model (see Figure 2) depicts the manner in which emotion regulation is used and becomes emotional labor.
Deep acting is when employees regulate their emotional experiences in response to customer demands so that the employee is perceived as authentic (Hochschild, 1983; Totterdell & Holman, 2003). Deep acting involves the modification of perceptions of stimuli through attention deployment and cognitive change, such as focusing one’s thoughts on events likely to induce the emotions that are required (Hochschild, 1983; Totterdell & Holman, 2003). When using deep acting, employees modify their internal
emotions and subsequent emotional portrayal to the public (Cote, 2005). It is postulated that deep acting may be less stressful than surface acting.

Surface acting is involved when employees regulate emotional behaviors in order to perform their job responsibilities and meet employer expectations (Hochschild, 1983; Totterdell & Holman, 2003). When employees are using surface acting, what is portrayed to the public is incongruent with their internal emotional state (Cote, 2005). This process may involve suppressing, intensifying, or faking emotions (conveying happiness when actually sad) and may be more behaviorally based and superficial (Ashforth & Humphrey, 1993). Recent research findings suggest that surface acting results in personal devaluation and experiencing fewer positive emotions (Beal, Trougakos, Weiss, & Green, 2006; Cote, 2005).

Employees who are required to meet display rules through emotional labor exercise a great deal of self-control. In their research, Muraven, Tice, and Baumeister (1998) investigated self-control as a limited resource. Their findings suggest that continually drawing upon this resource may lead to failure of the regulatory capacity, and in particular, self-regulation in subsequent responses. These findings support the idea that the stress associated with emotional labor may have adverse consequences for employees, resulting in strain (Rupp & Spencer, 2006).

While emotional labor can benefit an organization through employee performance that meets or exceeds organizational values and expectations, behavioral inhibition can also adversely affect an employee’s psychological and physical health (Ashkanasy, Hartel, & Daus, 2002; Parker & Wall, 1998).
Moderators and Mediators of Occupational Strain

Moderators and mediators have been used interchangeably in the literature for years, which, in turn, has caused confusion and misinterpretation of the differences between the two variables (Baron & Kenny, 1986; Holmbeck, 1997). Moderators are identifiable antecedents that interact with other conditions, which subsequently affect the stress process or other outcome variables (Folkman & Lazarus, 1988). An example of a moderator variable would be self-efficacy because the beliefs about one’s abilities are in place before the stressful event occurs.

Mediators are different from moderators in that they are stimulated by the stress process. For instance, coping is a mediator which is triggered by a stressful event. In essence, the coping mechanisms were generated in response to the stress itself. Therefore, mediators affect the relationship between moderator variables and the outcome variables (Folkman & Lazarus, 1988).

Empirical findings suggest that some individuals are seemingly more resilient in demanding and challenging situations, whereas other individuals are adversely impacted by situations that are less demanding (Costa, Somerfield, & McCrae, 1996; Gosserand & Diefendorff, 2005; Suls, 2001; Zeidner, 1998). More specifically, some research suggests that individuals who differ in resiliency, commitment (Schmidt, 2007), and coping strategies may differ in their responses, behaviors, and risk for developing stress-related disorders (Ashforth & Humphrey, 1993; Koolhaas, deBoer, & Buwalda, 2006; Shiota, 2006).

A prevalent theme in the literature is one emphasizing the importance of individual differences in the stress process. Type A behavior and locus of control are
among the personal variables that affect the stress-strain relationship and that have been investigated for years (Nelson, Quick, & Simmons, 2001). In attempting to understand how stress responses vary among individuals, stress researchers continue to identify individual characteristics that may explain the variations (Kahn & Byosiere, 1992). In the following sections, individual differences associated with moderators, self-efficacy and commitment, and mediators, problem-focused and emotion-focused coping, were examined as predictors of psychological and physical strain. The moderating roles of self-efficacy and commitment and mediating roles of problem-focused and emotion-focused coping have previously been well established in the literature.

**Self-efficacy**

Self-efficacy, a term identified by Bandura (1982), is a belief that individuals hold about themselves. The concept of self-efficacy has been widely studied in the teaching and health care professions, receiving extensive attention in the literature; however, only recently has the occupational stress literature begun to investigate the role of self-efficacy on organizational outcomes. Recently, there has been a modest interest in examining the role of self-efficacy in the moderation of stress responses in this body of literature (Grau, Salanova, & Peiro, 2001; Jex & Bliese, 1999; Jex & Gudanowski, 1992; Jex et al., 2001; Lu, Siu, & Cooper, 2005; Siu et al., 2005; Stetz, Stetz, & Bliese, 2006). While there is a paucity of organizational research in this domain, there are sound theoretical and practical reasons to consider the implications of self-efficacy on occupational strain responses.

Bandura (1997) was a pioneer of the self-efficacy concept. He stated that self-efficacy is comprised of individual beliefs that a specific behavior or action will be
carried out successfully to produce a desired outcome (Bandura, 1997). Bandura (1982) asserted that the level of self-efficacy that one possesses will largely determine the coping behaviors that will be used to confront stress, how long the behaviors will be used to buffer the situation, the effort one will invest in coping with the stressful event, which, in turn, will affect the amount of stress actually experienced. From a practical and logistical perspective, it appears realistic to postulate that workplace stressors would have more dire consequences on an individual’s psychological and physical well-being if the person is low in self-efficacy compared to those employees who are high in self-efficacy and believe they can capably perform their job responsibilities. Individuals who mistrust their abilities create increased stress for themselves because, instead of focusing on how best to proceed in given situations, they become overwhelmed by obstacles and beliefs that they do not have the abilities or will fail (Bandura, 1982). Jex et al. (2001) found that there was a strong relationship between low strain responses and high self-efficacy among employees in spite of work-place stressors.

While occupational stress researchers have focused on the relationship between stressors in the workplace and stress responses, very few studies have focused on the role of individual differences and how these influence occupational strain. In this body of literature, self-efficacy has not received as much attention when compared to other personal beliefs such as self-esteem. While the literature supports theoretical arguments regarding the moderating effect of self-efficacy on occupational strain outcomes (Jex et al., 2001; Lu, Siu, & Cooper, 2005), several studies have produced mixed results (Jex et al., 2001). For example, one study of university employees failed to find significant evidence that self-efficacy moderated the relationship between stress and strain.
However, the sample was small and this possibly contributed to negligible results (Jex & Gudanowski, 1992). Other studies have found evidence to the contrary.

Jex and Bliese (1999) investigated stressors, strain, individual and collective self-efficacy, and organizational commitment. The researchers collected survey data from United States Army soldiers ($n = 2,273$). Random coefficient models were used to analyze the data, with results indicating there was a significant relationship between self-efficacy and occupational strain. Additionally, low levels of self-efficacy were related to high levels of psychological and physical strain, as well as low levels of organizational commitment.

In another study, Jex et al. (2001) collected data from an infantry brigade in the United States Army ($n = 1477$) to investigate the effects of self-efficacy on psychological strain and active and avoidance coping. Using a random coefficient model to analyze the data, they found evidence that supported their hypotheses that individuals with high self-efficacy had lower strain.

Lu, Siu, and Cooper (2005) examined the relationship between managerial self-efficacy and job strains, which included job satisfaction, physical strain, and psychological strain. Survey data were collected from 450 enterprise managers in eight cities of the People’s Republic of China. Hierarchical regression analyses were conducted to evaluate the moderating effects of managerial self-efficacy on the stressor-strain relationship. They found no significant moderating effect of self-efficacy in predicting psychological strain; however, there was a significant moderating effect found in predicating physical strain.
Stetz, Stetz, and Bliese (2006) examined the moderating effect of social support on the stressor-strain relationship; the effect was hypothesized to be dependent on one’s self-efficacy. The study was longitudinal, collecting data at two different points, three months apart. Survey data were collected from 96 military police soldiers of the United States National Guard and Army Reserve. Moderated linear multiple regression using four regression analyses were used to test the researchers’ hypotheses. Results indicated there were significant three-way interactions. The interaction terms used in the analyses were organizational constraints, social support, self-efficacy, organizational constraints x social support, organizational constraints x self-efficacy, social support x self-efficacy, and organizational constraints x social support x self-efficacy. The significance of the findings suggested that social support buffered the stressor-strain relationship only when self-efficacy was high. The results of this study indicated that organizations wanting to reduce strains through social support should also take into consideration an employee’s degree of self-efficacy.

In summary, there is a great deal of research investigating the moderating effects of self-efficacy in the stressor-strain relationship in the educational and health care domains. However, few studies of consequence have considered the moderating effects of self-efficacy in the organizational literature. The studies that were selected for this discussion provided findings that suggest that individuals’ beliefs about their abilities likely reduce the deleterious effects of a stressful work environment, although more research needs to be conducted in this area in order to substantiate the claims. Nevertheless, the results are promising and encourage additional investigation in the
study of self-efficacy as a moderator of the strain response in populations that have received little attention in the organizational literature.

Organizational Commitment

The study of organizational commitment has a history spanning over 25 years. However, only recently have various consequences of commitment been explored. Lazarus and Folkman (1984) postulated that stress outcomes would be moderated by levels of commitment. Several studies have produced findings suggesting that organizational commitment is a significant moderator of work stress (Begley & Cazjka, 1993; Cohen, 1992, 1993; Mathieu & Zajac, 1990; Mowday, Porter, & Steers, 1982; Schmidt, 2007; Siu, 2002; Somers, 1995).

Mowday, Porter and Steers (1982) first proposed that organizational commitment was comprised of three factors: 1) acceptance of the organization’s goals and values; 2) a strong desire to exert effort in the organization’s best interest; and 3) one’s motivation to remain an employee of the organization.

O’Reilly and Chatman (1986) offered an alternative behavioral concept of organizational commitment. They asserted that the commitment between an individual and his or her employer could take three forms: 1) compliance, identification, and internalization. Compliance is comprised of instrumental behavior that is developed for gaining recognition and rewards. Identification is based on behaviors that help to ensure that employees will sustain a relationship with the organization because of its attractive values or goals, whether or not employees decide to adopt them personally. Internalization is a behavior that occurs because the employee’s internal values and/or goals are consistent with that of the organization.
Meyer and Allen (1991) conceptualized commitment as incorporating three factors: affective, continuance, and normative. Affective commitment considers the emotional attachment of individuals to the organization in which they work. Continuance commitment is associated with one’s intention to remain a member of the organization based on rewards or the costs of terminating. Normative commitment is represented by one’s emotional obligation to maintain membership in an organization. Mowday (1999) pointed out that there was clearly an overlap in the way that organizational commitment was conceptualized by Mowday, Porter and Steers (1982), Meyer and Allen (1991), and O’Reilly and Chatman (1986).

The most commonly researched consequences of organization commitment have concentrated on turnover, job satisfaction, absenteeism, and productivity (Schmidt, 2007). At the time of this study there was a paucity of research that measured the contribution of organizational commitment as a predictor of occupational strain and no studies known to the investigator that measured the combined contribution of self-efficacy, commitment, and coping on occupational strain. Therefore, the investigation of organizational commitment is considered an important variable examined by this study.

Jepson and Forrest (2006) conducted a study examining individual contributory factors in teacher stress. The outcome variable was stress and the antecedent variables were occupational commitment, Type A behavior, and personal achievement strivings. Survey data were collected from 95 teachers employed in schools in the United Kingdom. The study focused on identifying individual factors that might help explain, when environment was held constant, why some individuals report much greater stress
responses than others. To test their hypotheses, data analyses were conducted using multiple regression. The results found that of the antecedent variables, occupational commitment was the strongest predictor of job stress with a significant negative relationship, which suggested that as occupational commitment increased, perceived stress decreased. This finding suggested that commitment as an individual factor could potentially moderate work-related stressors; therefore, organizations should find ways to increase employee commitment because of its buffering effects.

Vakola and Nikolaou (2005) examined the moderating effects of commitment on attitudes toward organizational change and occupational stress. A total of 292 employees from various Greek organizations were surveyed. To test their hypotheses, data analyses were conducted using t-tests and moderated multiple regression. The results confirmed a positive relationship between organizational commitment and positive attitudes toward change. This finding was consistent with the literature that showed organizational commitment as instrumental in managing organizational change (Iverson, 1996). However, another set of analyses considered the moderating effect of organizational commitment on the relationship between occupational stress and attitudes toward organizational change. The findings suggested that organizational commitment did not moderate occupational stress and attitudes towards change (Vakola & Nikolaou, 2005).

Siu (2002) examined the moderating effects of organizational commitment on stress outcomes by measuring mental and physical well-being among blue- and white-collar workers. A total of 158 white-collar and 138 blue-collar workers in Hong Kong, as well as 372 blue-collar workers in China, completed a survey. Hierarchical
regressions analyses were used to analyze main and interaction terms. The analyses considered the joint contribution of stressors and organizational commitment on three outcome variables for the three groups. In the Hong Kong white-collar group, findings were significant across all variables, suggesting that organizational commitment interacted with stressors to affect job satisfaction and mental and physical well-being. In the Hong Kong blue-collar group, organizational commitment contributed significantly to job satisfaction only, but not to mental and physical well-being. In the China blue-collar group, organizational commitment significantly moderated mental and physical well-being. For two of the three groups, organizational commitment provided a significant buffering effect for strain responses.

Schmidt (2007) studied the moderating effect of organizational commitment in the relationship between work related stress and strain. In one of two hypotheses, Schmidt proposed that affective commitment would serve as a buffer for stress, as well as potential strain outcomes. The second hypothesis postulated that highly committed employees would experience the adverse effects of stress more than less committed employees. A total of 506 municipal administration staff members in a middle-sized city in Germany completed a questionnaire designed to measure competing hypotheses. The main and interaction effects of organizational commitment and work stress and strain were explored using a hierarchical moderated regression analysis. The results confirmed that commitment significantly buffered strain responses (in this study, emotional exhaustion and depersonalization). The results contributed to the limited evidence of the buffering effect of affective commitment on stress and strain outcomes where commitment directly reduced strain and increased well-being (Siu, 2002).
However, the results of this study did not find a significant relationship between work stress and commitment. This finding is important because it suggests that there are other mechanisms at work, such as coping, that underlie the buffering effect of commitment (Schmidt, 2007). The purpose of this study was to attempt to understand the direct and combined effects of two of these mechanisms, commitment and coping, on occupational strain.

Coping

The concept of coping has received considerable attention in the literature for over 60 years. However, coping in organizations has received much less attention, with few studies that have examined the ways individuals cope with stress in the workplace (Burke, 2002; Korabik et al., 1993). Still, coping resources have generally been shown to help reduce occupational strain (Kirmeyer, 1988; Osipow & Davis, 1988; Parkes, 1994). An increased understanding of the coping construct has stimulated the development of many programs, psychoeducational pursuits, and therapies that focus on helping individuals develop coping skills (Lazarus & Folkman, 1984). However, much like the confusion that exists over definitions and meanings associated with the stress, stressor, and strain concepts, coping has its own difficulty with inconsistency in what is meant by coping and what is actually measured in the research (Lazarus & Folkman, 1984). While a full review of the literature on coping is outside the scope of this study, the following review provides a context for the research that has been conducted investigating the role of coping in relationship to occupational strain.

To help contain the meaning of the coping construct, Lazarus and Folkman (1984) emphasized the multiple functions associated with coping and subsequently
proposed that coping is a process. Lazarus and Folkman (1984) offered the following definition: “We define coping as constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141).

Folkman and Lazarus (1980) described two coping dimensions, which have been widely researched in areas unrelated to occupational stress literature. These dimensions are “emotion-focused” and “problem-focused” coping strategies and both attempt to solve a problem actively (Torkelson & Muhonen, 2004). Emotion-focused coping strategies do not involve the individual’s attempts to change a problem or situation directly (Folkman & Lazarus, 1980). Rather, the strategies help to assign new meaning and/or regulate emotional responses when it is determined that nothing can be done to change the difficult situation (Folkman & Lazarus, 1980). Problem-focused coping strategies are used when, during the appraisal process, it is determined that the conditions are changeable (Folkman & Lazarus, 1980). This type of coping has often been referred to as the more adaptive of the two styles because the actions used to respond to sources of stress typically ameliorate the source rather than solely reducing the negative consequences (Folkman & Lazarus, 1980). The literature has provided support for the two types of coping strategies (Beehr, Johnson, & Nieva, 1995; Burke, 2002; Chang et al., 2006; Folkman & Lazarus, 1980; Lambert et al., 2004; Lazarus & Folkman, 1984; Mak & Mueller, 2000).

Lazarus and Folkman (1984) described the strategies that one implements when using emotion-focused coping. For instance, exercise, using alcohol, making impulsive
decisions, changing cognitions to distort reality, and telling oneself that he or she cannot change the circumstances are common examples of emotion-focused coping. In many cases, emotion-focused coping does not include cognitive reappraisals (Lazarus & Folkman, 1984). However, several of these strategies may be adaptive and reduce strain in situations where the employee has little control over his or her environment.

Problem-focused forms of coping differ from emotion-focused strategies in that they are directed inward, as well as being closely related to problem-solving (Lazarus & Folkman, 1984). For example, consideration of resources available in the workplace, generating alternative solutions, choosing alternatives based on a cost-benefit analysis, and taking action are considered to be problem-focused strategies (Lazarus & Folkman, 1984).

While Lazarus and Folkman (1984) have suggested that problem-focused coping is more effective in moderating the effects of stress, other studies have produced results suggesting the emotion-focused coping can also be effective, depending on the situation. Decker and Borgen (1993) examined the role of problem-focused and emotion-focused coping strategies of 249 adults in 75 occupations on psychological and physical occupational strain and job satisfaction. Regression analyses were used and the results of the study supported the hypotheses that both emotion-focused coping and problem-focused coping could moderate psychological and physical strain. Seen as an emotion-focused strategy, rational/cognitive coping produced significant effects on reducing psychological strain but not on physical strain. Also considered among emotion-focused strategies, self-care and recreation produced significant effects in reducing both types of strain. Social support is considered a problem-focused strategy
according to the literature (Lazarus & Folkman, 1984), and it also produced significant effects in reducing psychological and physical strain.

In their study, Beehr, Johnson, and Nieva (1995) examined the effect of coping with 177 police officers and their spouses on occupational stress and strain. Hierarchical multiple regressions were calculated using various forms of coping, one of which was emotion-focused coping to predict strains for officers. Problem-focused coping was entered as the final predictor based on past research that suggested its superior buffering effects on occupational strain outcomes. Interestingly, and contrary to the literature that has advocated problem-focused coping as a superior style, emotion-focused coping was found to have a significantly beneficial effect on moderating police officers’ psychological and physical strains. Problem-focused coping, while negatively related to their strains, did not produce significant results on any measurement of strain.

In their study of job insecurity, coping resources, and personality dispositions in occupational strain, Mak and Mueller (2000) examined the coping resources of 222 Australian public servants. Findings from the blockwise hierarchical regression analysis were significant for the effects of coping on psychological and physical strain outcomes. Coping resources were entered as the second block of variables into the regression analyses and both coping styles significantly contributed to the variation in the strain outcomes. However, when entering interaction terms that included perceived job insecurity and coping variables, the interaction, while making a significant unique contribution to strain, only explained physical strain and not the other strain indicators. Altogether, the combined predictor variables (personality, dispositions, coping resources, perceived job insecurity, and the interaction terms involving perceived
insecurity) accounted for 40% of the variation in physical, interpersonal, and vocational strain, and over 50% of the variation in psychological strain. These findings generally support the effect of coping resources on lowering strain found in previous research and suggest that different types of coping resources may be helpful in reducing different types of strain (Mak & Mueller, 2000).

Chang et al. (2006) examined role stress, coping and health in 328 Australian and 190 New Zealand hospital nurses. For their analyses, a three stage hierarchical model was used for each health scale. Problem-focused and emotion-focused coping factors were entered into the regression equation last in order to assess their effect on strain beyond the demographic variables identified as region, age, year in the unit, and income. Contrary to their hypotheses, the researchers found that regardless of whether nurses used problem-focused or emotion-focused coping, it had no effect on their physical health. However, as predicted, emotion-focused coping produced negative effects for mental health, while problem-focused coping related positively to mental health. Consistent with the results of this study, Lambert, Lambert, and Ito (2004a) and Lambert et al. (2004b) found neither problem-focused nor emotion-focused coping styles to correlate significantly with physical health. The results support the idea that nurses using a more problem-focused style of coping to counter workplace stress would report better mental health outcomes. Also noted in the results of this study was that reducing emotion-focused coping had nearly the same standardized effect on mental health as reducing stress in the workplace. Therefore, the researchers argued in favor of reductions in workplace stress, as well as helping nurses to shift coping responses away from emotion-focused coping toward problem-focused coping (Chang et al., 2006).
There is a large body of research investigating the role of coping on stress and strain. However, there are few studies of consequence examining coping in organizations and its effect on occupational strain. The studies that were selected for this discussion provide findings that suggest that individuals’ styles of coping likely reduce the effects of a stressful work environment and resultant occupational strain. However, more research needs to be conducted in this area in order to substantiate the claims. The results, while mixed, are promising and encourage further investigation of coping on the strain response in populations that have not historically been studied.

Summary

Whether strain is induced through emotional labor and/or other environmental stressors, stress has been found to impact individuals, organizations, and society with regard to economics and health (Danna & Griffin, 1999; Matthews, Zeidner, & Roberts, 2002). The concept of stress has been around for centuries and has been the focus of research in a variety of ways and contexts. An impressive body of literature exists on the implications of stress, and yet there are many questions that are unanswered regarding stress responses (strain) in the workplace. The empirical evidence contained in the literature proposes that not everyone who is exposed to stress responds negatively, thereby suggesting that there are a number of individual factors that moderate and mediate the stress process. This literature review provides empirical support for the role of self-efficacy, commitment, and coping in the strain relationship. At the time of this study, no occupational research known to the investigator had explored the combination of these factors when attempting to understand their relationship to occupational strain. Further, there were few studies examining
occupational strain in non-managerial, non-professional populations. The first goal of this study was to examine these factors individually to investigate how each contributed to predicting psychological and physical occupational strain. The second goal of this study was to examine the combination of these individual factors to investigate how the combination contributed to predicting psychological and physical occupational strain. The theoretical model was extended to a group of non-managerial, non-professional employees who have largely been overlooked in the occupational strain literature.
CHAPTER THREE

METHODS

Participants

For the current study, participants were recruited through one division of a transportation company located in the western United States through an e-mail announcement sent by management (See Appendix A for a sample of the recruiting email) and through announcements made at regularly scheduled staff meetings. Potential participants represented non-managerial employees ($N = 336$) working in a 24/7 unionized call center. Union management was contacted in advance in order to obtain permission to recruit employees and conduct the study. The organization and its union disallowed incentives of any kind to encourage participation. In support of the study, the organization agreed to allow all non-managerial employees to complete the survey during paid work hours.

In order to participate in the study, it was required that participants were 18 years of age or older and were full-time employees of the organization. A total of 93 employees participated in the study. Of the 93 participants, 86 completed the demographic information section of the survey. Results indicated that 57% ($n = 48$) were female, and all participants were full-time, non-managerial employees of the organization. The age range of participants was between 18 and 60+ with 38% of the participants between the ages of 50 and 59. In this sample, 22% had earned a Bachelor’s
degree, while 49% indicated that they had had some college experience. Seventy-eight percent of the participants were Caucasian, 5.9% were Hispanic/Latino/a, 10.6% were African American, 1.2% were American Indian/Alaskan Native, and 4.8% were Multiracial. Fifty-one percent reported being married, 34.1% reported that they had no children, 19% lived alone, and 25% lived with their spouses. Forty-four percent had worked for one to three years in their present position, and 33.3% reported working over ten years in their present position. Forty-one percent reported working for the organization for one to three years while 47% reported working for the organization for over 10 years. Fifty-eight percent reported making an annual income of $41,000 to $60,999, while 36.9% reported making over $61,000.

Measures

Participants completed the Demographic Information Section of the survey (see Appendix D). The demographic section consisted of 12 close-ended questions at the end of the survey. The purpose of the Demographic Information Section was to gather relevant data about the participants and to determine if employees met the requirements for participation (e.g., full-time employment status, age 18 or older, non-managerial).

The information requested from each participant included: age, gender, race/ethnicity, marital status, number of children, current living arrangement, education, position, length of time in position, length of time in the organization, employment status (e.g., full- or part-time), and expected gross annual income (See Appendix D for demographic section of the survey).

Self-Efficacy Scale. (Lorig, Chastain, Ung, Shoort, & Holman, 1989). A modified version of the Self-Efficacy Scale was used to measure self-efficacy of the participants.
The original scale was developed and used to assess the self-efficacy of individuals dealing with arthritis. The original scale was modified by Mills (1995) and subsequently used by Diem (2002). The modifications were made to more adequately focus on self-efficacy of employees dealing with workplace demands. The measure includes ten items, which are answered on a seven point Likert scale ranging from “Very Uncertain” to “Very Certain.” Examples of items include, “How certain are you that you can deal with the demands of your job?” and “How certain are you that you can do something to relieve stress caused by work demands?” Higher scores indicate that individuals have a stronger belief that they are able to handle a variety of demands associated with their jobs. The scale takes less than 5 minutes to complete and scores are summed to generate a total score.

Alpha coefficient estimates of internal consistency for the original scale ranged from .76 to .90 (Lorig et al., 1989). Reported test-retest reliabilities have ranged from .71 to .85 for one week to one-month intervals (Lorig et al., 1989). Mills (1995) obtained a Cronbach’s alpha level of .89 for the modified scale in her study of managerial women. Diem (2002) obtained a Cronbach’s alpha level of .80 for the modified scale in her study of stress in the transportation industry. Additional reliability and validity data for the adapted scale are not available. However, the alpha levels obtained by the previous studies mentioned above suggest acceptable reliability for the scale. For the current study, Cronbach’s alpha of .92 was obtained. The items used in this measure can be found in Appendix E.

*Organizational Commitment Questionnaire.* (O’Reilly & Chatman, 1986). The Organizational Commitment Questionnaire is a measure of overall commitment of the
participant to their respective organization. The scale includes 12 items, which are answered on a seven point Likert scale ranging from “Strongly Agree” to “Strongly Disagree.” The scale takes less than five minutes to complete and scores are summed to generate a total score; lower scores indicate a greater commitment to the organization. There are two subscales, which measure two types of commitment, normative and instrumental. Normative commitment is defined by eight items measuring values shared by the individual and the organization. The second type of commitment is defined as instrumental commitment and is measured by four items that focus on the exchange of involvement for specific rewards (Caldwell et al., 1990). Examples of items are “What this organization stands for is important to me” (normative commitment) and “In order for me to get rewarded around here, it is necessary to express the right attitude” (instrumental commitment). The current study examined the total scale score.

There are very few measures of organizational commitment, which reflects the paucity of research conducted in this area. Therefore, the literature continues to lack a widely used global measure of organizational commitment. The commitment measure selected for this study was used by Mills (1995) at a time when the measure was new and unresearched. Mills (1995) conducted an exploratory factor analysis to determine whether the items would load on two factors as suggested by Caldwell et al. (1990). The results of Mills’ (1995) principal components analysis using varimax rotation suggested two distinct factor loadings of .40 or greater. For Mills’ (1995) sample, Cronbach’s alphas of .87 and .58 were obtained for the normative and instrumental subscales, respectively. O’Reilly and Chatman (1986) and Caldwell et al. (1990) have conducted several principal component analyses of the scale. In their analysis, Caldwell et al.
(1990) identified normative and instrumental commitment as two factors with loadings of greater than .50 and .60, respectively. Reliability information is not reported in the literature for this measure. For the current study, Cronbach’s alpha of .74 was obtained for the total scale. The intention of this study was to use a total scale score to determine levels of commitment. However, it was determined that the commitment measure became a better measure of the construct after dropping the four items that made up the instrumental commitment subscale. The reliability of the instrumental subscale was very low at .35. While the sample associated with this study was too small to conduct a reliable factor analysis with varimax rotation, the original study (O’Reilly & Chatman, 1986) produced data suggesting that items loaded on three factors rather than the two factors suggested by Mills (1995), Caldwell et al. (1990), and O’Reilly and Chatman (1986). Because of low reliability and confounds within the instrumental subscale, it was decided to remove these items from further data analyses. Following removal of the four instrumental commitment items, a Cronbach’s Alpha of .93 was obtained for the remaining eight items related to normative commitment. The first eight items (1-8) used in this measure can be found in Appendix F, as well as the last four items (9-12) that were dropped from the scale.

Brief COPE Inventory. (Carver, 1997). This questionnaire was used to measure two types of coping within the context of the workplace; problem-focused coping and emotion-focused coping. The Brief COPE Inventory (BCI) is an abbreviated version of the widely used COPE Inventory and is comprised of 28 items. The BCI uses 14 subscales containing two items per subscale. Examples of the coping subscales include denial, active coping, and behavioral disengagement. To complete the questionnaire,
each of the 28 descriptive statements is rated on a four point scale related to frequency of behavior: (1 = I haven’t been doing this at all, 2 = I’ve been doing this a little bit, 3 = I’ve been doing this a medium amount, 4 = I’ve been doing this a lot). Examples of items are, “I’ve been concentrating my efforts on doing something about the situation I’m in” and “I’ve been criticizing myself.” Instructions for the measure state: “Take a few minutes to think about a work-related event or situation that has been the most stressful for you in the past month. What is meant by stressful is that the situation was particularly challenging for you because it either made you feel uncomfortable, bad, or because it took effort to deal with it. In the space provided, please briefly describe the event or situation (optional).” The scale takes less than 10 minutes to complete and scores are summed to generate a total score.

As in previous research (Grant & Langan-Fox, 2006), coping strategies were designated as problem-focused (active coping, instrumental coping, social support seeking, planning), and emotion-focused (acceptance, emotional social support seeking, positive reframing, behavioral disengagement, denial, substance use, venting). Scores for each subscale were obtained by computing the sum of the items. According to Carver (1997), the reliability of the BCI subscales were: Active Coping (α = .68), Planning (α = .73), Positive Reframing (α = .64), Acceptance (α = .57), Humor (α = .57), Religion (α = .82), Using Emotional Support (α = .71), Using Instrumental Support (α = .64), Self-Distraction (α = .71), Denial (α = .54), Venting (α = .50), Substance Use (α = .90), Behavioral Disengagement (α = .65), Self-Blame (α = .69).

Grant and Langan-Fox (2006) found that the BCI demonstrated adequate reliability with the exception of one subscale (Self-Distraction), which they excluded
from their analyses. They also excluded the Religion subscale based on past research (O’Connor & O’Connor, 2003) that suggested its lack of utility for their purposes (Grant & Langan-Fox, 2006). O’Connor and O’Connor (2003) used a modified version of the COPE Inventory. By applying Carver et al.’s (1989) factor analysis to select two items from each subscale, O’Connor and O’Connor (2003) obtained similar internal consistencies reported by Carver et al. (1989). The internal consistencies for each of the subscales were acceptable (O’Connor & O’Connor, 2003), and Carver et al. (1989) found the test-retest reliability of the subscales to be stable over six and eight weeks. For the current study, Cronbach’s alpha of .88 was obtained for problem-focused coping items, and .81 was obtained for emotion-focused coping items. The items for this measure can be found in Appendix G.

Occupational Stress Inventory Revised Edition (OSI-R)—Personal Strain Questionnaire. (Osipow, 1998). The Personal Strain Questionnaire (PSQ), a scale of the OSI-R, is comprised of four subscales that are focused on affective and subjective responses to stress in the workplace. The four subscales are Vocational Strain (VS), Psychological Strain (PSY), Interpersonal Strain (IS), and Physical Strain (PHS). Based on the literature and for the purpose of this study, only the PSY and PHS subscales were used to measure occupational strain. Each scale includes 10 statements for a total of 20 items. Sample statements for the PSY subscale are “Lately I have been depressed” and “I have been happy lately.” Examples of statements for the PHS subscale are “I have unplanned weight gains” and “I have aches and pains I can not explain.” To complete the questionnaire, each of the 20 descriptive statements is rated on a five point scale (1 = rarely or never true, 2 = occasionally true, 3 = often true, 4 = usually true, 5 = most of
the time) related to frequency of the behavior. The scale takes less than seven minutes to complete. The OSI-R scores are derived by summing the items that comprise each scale. Lower total scores indicate less psychological and physical occupational strain. For example, high scorers on the psychological strain scale may report feeling depressed, anxious, unhappy, and/or irritable (Osipow, 1998). High scorers on the physical strain scale may report frequent worries about their health as well as other physical symptoms such as colds, heart palpitations, etc., (Osipow, 1998).

Lombard (in Osipow, 1998) analyzed test-retest reliability through the administration of the OSI-R to a sample of 65 Air Force cadets over a two-week period. Results indicated the two administrations of the PSQ had a correlation of \( r = .74, p < .01 \). The PSY and PHS test-retest correlations were \( r = .65 \) and \( r = .67 \), respectively. An internal consistency analysis was completed and the alpha coefficient for the PSQ scale was \( \alpha = .93 \). Alpha coefficients for the PSY and PHS scales were \( \alpha = .75 \) and \( \alpha = .85 \), respectively. The OSI-R was comparable to the original OSI in both reliability and validity and has been used extensively in research worldwide (Osipow, 1998). There is evidence of good convergent, criterion, construct validity (Lyne, Barrett, Williams, & Coaley, 2000), and concurrent validity (Osipow, 1998). According to the OSI-R manual (Osipow, 1998), the validity and reliability should not be affected by only using the 20 items to assess psychological and physical strain. For the current study, Cronbach’s alpha of .90 was obtained for psychological items and .89 was obtained for physical health items. The items used in this measure can be found in Appendix H.
Procedure

Permission to conduct this study was granted by the Institutional Review Board for the use of Human Subjects at the University of Denver (see Appendix J). Additionally, permission to invite employees to consider participation in the study was obtained from the organization’s management and union officials. Prior to conducting the primary study, a pilot study was performed in order to investigate the accessibility of the online survey, clarity of directions, pertinence of each item to the purpose of the study, and general understanding of the survey. Eight colleagues of the investigator were invited to participate in the pilot study and were sent the online link to the electronic survey. Following their completion of the survey, they were each requested to provide feedback of the introductory e-mail, description of the study, process of informed consent, all directions, survey items, and any technical difficulties navigating through the survey and submitting their responses. Each participant’s feedback was taken into consideration and changes were made in order to improve the survey as needed.

For the primary study, participants were recruited through the use of five methods. First, all employees of the division ($N = 336$) received two separate e-mails from the investigator and management at two weeks before and one week before the study commenced. The e-mail was used to inform the employees of the purpose of the study and to encourage their voluntary participation (see Appendix A). On the date of the study’s commencement, a division-wide e-mail was sent in which the purpose of the study was described again. The e-mails included an invitation to participate on a voluntary basis. Second, the researcher attended prearranged staff meetings to describe
the survey, its purpose, and to encourage participation. The anonymity of participant responses was emphasized and assured verbally and in writing. All employees were discouraged against providing any information on the survey that could potentially lead to identification. All division employees were provided with a web link to an electronic questionnaire (Survey Monkey), which was also included in the division-wide e-mail and described the process of informed consent. Consent to participate in the study was assumed when participants accessed the electronic survey, completed and submitted the survey. Participants were assured they could cease participation at any time and not submit the survey (see Appendix B). Participants were requested to complete the survey within two weeks, and the electronic survey link was disabled after the deadline. The completion time of the survey was estimated at 20-30 minutes. Third, participants who were uncomfortable taking an electronic form of the survey were provided with a paper and pencil questionnaire by the researcher \( n = 5 \). There was also a supply of survey booklets (paper and pencil format) available for two weeks at a central location within each of four workstations. The paper and pencil format matched the electronic version of the survey. The cover page of the paper and pencil format included a description of the study and its purpose, together with a description of the consent process (see Appendix C). The anonymity of participant answers using the paper and pencil format was also emphasized and assured. As disclosed on the cover page, the participants could cease to participate in the study at any time; however, by completing and mailing the survey, the participants provided consent to participate in the study. A division-wide e-mail was sent out by management to employees informing them that a paper and pencil version was also available on the date of the survey commencement. The employees
choosing to participate using this format were requested to return the survey to the
researcher within two weeks in a pre-addressed, postage paid envelope provided with
the survey booklet. Envelopes postmarked later than the final due date were not
included by the researcher in the total sample \( n = 0 \). The completion of the paper and
pencil format of the survey took 20-30 minutes to complete during scheduled work
hours or at home. Fourth, the researcher was on-site for 10-12 hours each day for three
days in a division conference room in order to answer employee questions and concerns
about the study. A sign was posted on the conference room door inviting employees to
speak with the researcher. Approximately 11 employees stopped in to ask a variety of
questions. The researcher also circulated periodically through the division to increase
visibility and to encourage participation. Fifth, management sent out two division-wide
e-mails to employees each week, one on Monday and one on Friday, for two weeks
following commencement of the study, reminding employees of the survey,
encouraging their participation, and emphasizing the deadline date. The union and
management disallowed incentives. However, participants were allowed to complete the
survey during paid work hours.

Data Analyses

The data collected from Survey Monkey (online service) were automatically
copied from an Excel worksheet provided by the online service into the Statistical
Package for the Social Sciences version 14 (SPSS 14.0) by the investigator. SPSS
compute functions were used to calculate the total sum scores for the four independent
and two dependent variables. The alpha level was set a \( p < .05 \) for all statistical
analyses.
Within the stress/strain literature, many studies have identified demographic variables that may have a distorting effect on the relationships being examined (Cohen & Cohen, 1983; Wampold & Freund, 1987). There are disparate views in the occupational research literature regarding the choice of demographic control variables to be used in the current study. However, two prominent studies suggested that the most frequently studied demographic variables are age (Chang et al., 2006; Decker & Borgen, 1993), workplace experience, socio-economic status as indicated by income (Chang et al., 2006), gender, education, and length of employment (Decker & Borgen, 1993). The sample size of this study prohibited use of all the variables suggested in the literature. Since gender, age and length of employment are the most commonly used occupational strain variables, these demographic variables were initially used as control variables in the current study.

**Preliminary Analyses**

Prior to analyzing the data, preliminary analyses were conducted to determine the response rate, examine missing data and provide an overview of how cases missing data would be treated. In addition, the analyses provided demographics of the sample, descriptive statistics, and correlations related to the variables analyzed in the six research hypotheses. Further, an independent samples t-test was examined for mean differences between participants completing the online version of the survey as compared to those completing the paper and pencil form of the survey. Finally, a power analysis was conducted on each statistical method used in the study to determine the adequacy of the sample size.
Primary Analyses

First, the assumptions of normality, linearity, homoscedasticity of residuals, mean independence, and the absence of multicollinearity were determined. These procedures were followed by identification and treatment of outliers in each of the statistical analyses associated with the six research hypotheses. Next, analyses focused on investigation of the six hypotheses. Finally, themes were identified from responses that participants provided when they were asked to describe a stressful event or situation they experienced in the workplace. The research hypotheses are as follows:

Hypothesis 1. Self-efficacy will significantly predict occupational strain; i.e., higher self-efficacy will predict lower levels of psychological and physical strain over and beyond the demographic control variables.

Analyses: Two hierarchical regression analyses were run using SPSS 14.0 to determine the contribution of the self-efficacy scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Three demographic control variables (gender, age, length of employment) were entered as the first block, and self-efficacy was entered as the second block in the model. A total of 85 cases (self-efficacy and psychological strain) and 84 cases (self-efficacy and physical strain) were entered into the equation after listwise deletion for missing data.

Hypothesis 2. Commitment will significantly predict occupational strain; i.e., higher levels of commitment will predict lower levels of psychological and physical strain over and beyond the demographic control variables.
Analyses: Two hierarchical regression analyses were run using SPSS 14.0 to determine the contribution of the commitment scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Three demographic control variables (gender, age, length of employment) were entered as the first block, and commitment was entered as the second block in the model. A total of 85 cases (commitment and psychological strain) and 84 cases (commitment and physical strain) were entered into the equation after listwise deletion for missing data.

Hypothesis 3. Problem-focused coping will significantly predict occupational strain; i.e., higher problem-focused coping will predict lower levels of psychological and physical strain over and beyond the demographic control variables.

Analyses: Two hierarchical regression analyses were run using SPSS 14.0 to determine the contribution of the problem-focused coping scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Three demographic control variables (gender, age, length of employment) were entered as the first block, and problem-focused coping was entered as the second block in the model. A total of 84 cases (problem-focused coping and psychological strain) and 83 cases (problem-focused and physical strain) were entered into the equation after listwise deletion for missing data.

Hypothesis 4. Emotion-focused coping will significantly predict occupational strain; i.e., higher emotion-focused coping will predict higher levels of psychological and physical strain over and beyond the demographic control variables.
Analysis: Two hierarchical regression analyses were run using SPSS 14.0 to determine the contribution of the emotion-focused coping scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Three demographic control variables (gender, age, length of employment) were entered as the first block, and emotion-focused coping was entered as the second block in the model. A total of 84 cases (emotion-focused coping and psychological strain) and 83 cases (emotion-focused and physical strain) were entered into the equation after listwise deletion for missing data.

Hypothesis 5. Both the moderators, self-efficacy and commitment, and the mediators, problem-focused and emotion-focused coping, will significantly predict occupational strain over and beyond the demographic control variables.

Analyses: Two hierarchical regression analyses were run using SPSS 14.0 to determine the contribution of the moderating and mediating variables predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Three demographic control variables (gender, age, length of employment) were entered as the first block in the model. Self-efficacy and commitment (moderating variables) were entered as the second block, and problem-focused and emotion-focused coping (mediating variables) were entered as the third block in the model. A total of 84 cases (self-efficacy, commitment, problem-focused coping, emotion-focused coping and psychological strain) and 83 cases (self-efficacy, commitment, problem-focused coping, emotion-focused coping and physical strain) were entered into the equation after listwise deletion for missing data.
focused coping and physical strain) were entered into the equation after listwise deletion for missing data.

_Hypothesis 6._ There will be a statistically significant positive correlation between commitment and problem-focused coping and a statistically significant negative correlation between commitment and emotion-focused coping.

**Analyses:** A Pearson product-moment correlation was run using SPSS 14.0 to determine the relationship between commitment and problem-focused coping, and commitment and emotion-focused coping. A total of 91 cases for each variable was included in the analysis after listwise deletion for missing data.

**Summary**

Chapter Three discussed the methods associated with the current study, participants’ demographic information, descriptions of the four measures used in the survey including respective reliabilities for the current sample, procedures, processes of preliminary and primary analyses, and the six research hypotheses. This study was designed to examine self-efficacy, commitment, problem-focused coping, and emotion-focused coping to understand how each individual factor and combined factors contributed to predicting psychological and physical occupational strain. The study also considered the relationship between organizational commitment and both coping variables. The theoretical model was extended to a group of non-managerial, non-professional employees who have largely been overlooked in the occupational strain literature. An anonymous online survey was distributed through email to employees from one division of a transportation company located in the western United States. Participants completed four measures examining self-efficacy, organizational
commitment, problem-focused and emotion-focused coping, and psychological and physical occupational strain. They were asked one open-ended question regarding the source of their workplace stress, and 86 participants answered demographic questions. The sample was diverse in terms of gender, age, ethnicity, and length of employment. Chapter Four presents the results of the preliminary and primary analyses regarding the six research hypotheses.
CHAPTER FOUR

RESULTS

Overview

In this chapter, the findings of the statistical analyses associated with the study are presented. Covered are the results of the preliminary analyses followed by the results of the primary analyses related to the six stated hypotheses. Finally, themes are identified from responses that participants provided when they were asked to describe a stressful event or situation they experienced in the workplace. All preliminary and primary statistical analyses were performed using the Statistical Package for the Social Sciences version 14.0 (SPSS 14.0). All statistical procedures used two-tailed tests of significance with an alpha level set a $p < .05$.

Preliminary Analyses

This section includes: 1) details of the survey response rate, 2) an analysis of missing data and how it was treated in analyzing the research hypotheses, 3) the participants’ demographic information, 4) descriptive statistics and correlations related to the variables analyzed in the research hypotheses, 5) results of an independent samples t-test to examine significant differences between two groups (online survey, paper and pencil survey), and 6) an overview of power and sample size associated with this study.
Survey Details and Response Rate

This study used an anonymous, online survey method. Employees from one division of a transportation company located in the western United States were invited to participate in the survey ($N = 336$). Out of 336 non-managerial employees, 106 employees started the electronic form of the survey and five employees completed the paper and pencil form of the survey. Of these employees, 18 cases were lost due to a computer outage. These surveys contained over 90% missing data and were eliminated from all analyses as the small percentage of data remaining was not useable. The response rate was 111 out of 336 employees (33%), and of those, 93 surveys were useable.

Analysis of Missing Data

There were 93 completed surveys in the final data set. Prior to the quantitative analyses, the data set was examined using Frequencies analyses to assess the missing data in an attempt to understand possible reasons or patterns that might explain why it was missing. Eighteen completed surveys were missing data on only one item and one case was missing data on three items on three separate measures. A thorough inspection of the missing data on these cases was completed and revealed no discernable pattern. Missing values were not related to age, gender, race/ethnicity, marital status, number of children, living arrangement, education level, position, length of time in position, length of time with organization, employment status, or income. Therefore, data values were considered to be missing at random (Allison, 2002). In order to conserve statistical power on a small sample size, and due to the random nature of missing values and the small percentages of missing data, it was determined that it was acceptable to replace
these values with the mean for each respective measure (Roth, Switzer, & Switzer, 1999). Further, there were three surveys that contained 20 or more missing values and one survey that contained 10 missing values (out of a total of 70 values per survey). In addition, one survey was missing four consecutive items on one subscale of the Occupational Strain measure, which represented nearly half of the items on the 10 item subscale. According to Osipow (1998), when there are three or more items missing on any of the OSI scales, the data may not be substituted with a mean score nor interpreted. Therefore, all five surveys were excluded from the analyses using listwise deletion. While listwise deletion may reduce power (Tabachnick & Fidell, 1996), it is a more conservative approach to dealing with this amount of missing data and is considered to be less biased than other methods.

**Demographic Information**

A demographic questionnaire (Appendix D) designed for this study was used to collect information on the participants’ demographic characteristics, which are presented in Table 2. The demographic variables initially utilized in the analyses were gender, age, and length of employment. The results indicated that the sample was relatively heterogeneous with respect to these variables.
Table 2

Overview of Demographic Characteristics

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<th>Demographics</th>
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<td>One</td>
<td>14</td>
<td>16.5</td>
</tr>
<tr>
<td>Two</td>
<td>25</td>
<td>29.4</td>
</tr>
<tr>
<td>Three</td>
<td>9</td>
<td>10.6</td>
</tr>
<tr>
<td>Four or more</td>
<td>8</td>
<td>9.4</td>
</tr>
<tr>
<td><strong>Living Arrangement</strong></td>
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<td></td>
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<tr>
<td>Live alone</td>
<td>16</td>
<td>19.0</td>
</tr>
<tr>
<td>Live with spouse</td>
<td>13</td>
<td>15.5</td>
</tr>
<tr>
<td>Live with spouse and minor children</td>
<td>21</td>
<td>25.0</td>
</tr>
<tr>
<td>Live with minor children only</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Live with spouse and adult children</td>
<td>9</td>
<td>10.7</td>
</tr>
<tr>
<td>Live with adult children only</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>Live with significant other</td>
<td>10</td>
<td>11.9</td>
</tr>
<tr>
<td>Live with friends or relatives</td>
<td>10</td>
<td>11.9</td>
</tr>
<tr>
<td>Demographics</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma (or GED)</td>
<td>11</td>
<td>12.9</td>
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<tr>
<td>Some college</td>
<td>42</td>
<td>49.4</td>
</tr>
<tr>
<td>College degree (Bachelor’s)</td>
<td>19</td>
<td>22.4</td>
</tr>
<tr>
<td>Some graduate school training</td>
<td>8</td>
<td>9.4</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>5</td>
<td>5.9</td>
</tr>
<tr>
<td>Staff Position</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Full-time Employee</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td>Length of Time in Position</td>
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<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>8</td>
<td>9.5</td>
</tr>
<tr>
<td>One to three years</td>
<td>37</td>
<td>44.0</td>
</tr>
<tr>
<td>Four to six years</td>
<td>7</td>
<td>8.3</td>
</tr>
<tr>
<td>Seven to ten years</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>Over ten years</td>
<td>28</td>
<td>33.3</td>
</tr>
<tr>
<td>Length of Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>One to three years</td>
<td>35</td>
<td>41.2</td>
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<tr>
<td>Four to six years</td>
<td>5</td>
<td>5.9</td>
</tr>
<tr>
<td>Seven to ten years</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>Over ten years</td>
<td>40</td>
<td>47.1</td>
</tr>
<tr>
<td>Expected Gross Income</td>
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<td></td>
</tr>
<tr>
<td>$25,000 - $40,999</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>$41,000 - $60,999</td>
<td>49</td>
<td>58.3</td>
</tr>
<tr>
<td>Over $61,000</td>
<td>31</td>
<td>36.9</td>
</tr>
</tbody>
</table>

*Descriptive Statistics for Independent and Dependent Variables*

Descriptive analyses of the independent and dependent variables included in the study were performed to determine if the responses were normally distributed and if the data showed sufficient variability within this sample of non-managerial, non-professional employees (see Table 3). An examination of the data indicated that the responses were normally distributed and that there was sufficient variability within the sample.
Table 3

*Descriptive Statistics for Independent and Dependent Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Self-Efficacy Scale</td>
<td>91</td>
<td>54.75</td>
<td>13.01</td>
<td>10</td>
<td>70</td>
<td>10-70</td>
</tr>
<tr>
<td>Organization Commitment</td>
<td>92</td>
<td>30.88</td>
<td>11.54</td>
<td>8</td>
<td>56</td>
<td>8-56</td>
</tr>
<tr>
<td>Problem-focused Coping</td>
<td>92</td>
<td>12.78</td>
<td>4.88</td>
<td>6</td>
<td>24</td>
<td>6-24</td>
</tr>
<tr>
<td>Emotion-focused Coping</td>
<td>92</td>
<td>41.92</td>
<td>9.86</td>
<td>22</td>
<td>80</td>
<td>6-88</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSI-Psychological Strain</td>
<td>93</td>
<td>23.48</td>
<td>8.58</td>
<td>10</td>
<td>46</td>
<td>10-50</td>
</tr>
<tr>
<td>OSI-Physical Strain</td>
<td>92</td>
<td>25.64</td>
<td>8.94</td>
<td>13</td>
<td>50</td>
<td>10-50</td>
</tr>
</tbody>
</table>

Table 4 provides the correlation coefficients for the demographic, independent, and dependent variables utilized in the study. Length of employment was removed as a demographic variable based on a high correlation with age ($r = .81$, $p = .01$). This action is discussed further in the primary analyses section addressing the multiple regression assumption of multicollinearity.

Table 4

*Correlation Coefficients*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td>-21</td>
<td>-81**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Length of Empl</td>
<td>-.34**</td>
<td>.81**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Self-efficacy</td>
<td>.17</td>
<td>-.05</td>
<td>-.14</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Commitment</td>
<td>-.17</td>
<td>.28**</td>
<td>.40**</td>
<td>-.34**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PF Coping</td>
<td>-.05</td>
<td>.09</td>
<td>.11</td>
<td>-.03</td>
<td>-.07</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. EF Coping</td>
<td>-.09</td>
<td>.32**</td>
<td>.35**</td>
<td>-.15</td>
<td>.23*</td>
<td>.54**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Psych. Strain</td>
<td>.09</td>
<td>.02</td>
<td>.15</td>
<td>-.46**</td>
<td>.39**</td>
<td>.26*</td>
<td>.52**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>9. Phys. Strain</td>
<td>.13</td>
<td>-.05</td>
<td>.07</td>
<td>-.36**</td>
<td>.28**</td>
<td>.10</td>
<td>.46**</td>
<td>.79**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*p < .05 level, two tailed. **p < .01 level, two tailed. Listwise N = 83*
Mean Comparisons for Variables Between Two Groups

An independent samples t-test was run using SPSS 14.0 to compare means of self-efficacy, commitment, problem-focused coping, emotion-focused coping, psychological strain and physical strain between participants who completed the survey online and five participants who chose to complete a paper and pencil form of the survey (hard copy). Results indicated that there was a statistically significant difference between the mean scores of the two groups on the commitment measure, with the online group reporting lower scores than the group that filled out the hard copies. However, running an independent samples t-test to compare a group of five to a group of 88 may not provide meaningful information. The power analysis included in the conclusion of the preliminary analysis section below, indicated that the current sample size (86 to 88 for the online group, five for the hard copy group) fell short of what was required for maximum power (102 for maximum power with 51 in each group). Therefore, a frequency analysis was run to examine the scores of the online participants on the commitment variable, as well as the scores of the five hard copy participants. One person who filled out the hard copy contributed to the difference in the commitment score for the hard copy group by producing a low commitment score. In addition, two online cases were below the score reported by the one participant who completed the hard copy form. Further, none of these cases met criteria for outliers. Therefore, the commitment scores associated with the hard copy cases were retained. Table 5 provides a detailed overview of the results of the analysis.
Table 5

Comparison of Two Sample Means (Online and Paper and Pencil)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Difference</th>
<th>SD</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>.79</td>
<td>6.02</td>
<td>89</td>
<td>.132</td>
<td>.895</td>
</tr>
<tr>
<td>Commitment</td>
<td>-10.91</td>
<td>5.21</td>
<td>90</td>
<td>-2.093</td>
<td>.039*</td>
</tr>
<tr>
<td>Problem-Focused Coping</td>
<td>-.85</td>
<td>2.25</td>
<td>90</td>
<td>-.381</td>
<td>.704</td>
</tr>
<tr>
<td>Emotion-Focused Coping</td>
<td>-13.83</td>
<td>7.60</td>
<td>90</td>
<td>-1.82</td>
<td>.141</td>
</tr>
<tr>
<td>Psychological Strain</td>
<td>-2.66</td>
<td>3.95</td>
<td>91</td>
<td>-.673</td>
<td>.502</td>
</tr>
<tr>
<td>Physical Strain</td>
<td>-1.00</td>
<td>4.13</td>
<td>90</td>
<td>.808</td>
<td>.808</td>
</tr>
</tbody>
</table>

*p < .05 level, two-tailed

Power and Sample Size

The GPOWER program was used to determine the ideal sample size for the analyses selected for this study. An a priori analysis indicated that a sample size of at least 81 was necessary for maximum power in multiple regressions including six predictors, using a \( p < .05 \), medium effect size, and power set at .70. The sample size for the current study varied in each regression equation between 83 and 85; therefore, the sample sizes were sufficient for maximum power in each of the regression equations. A sample size of at least 65 was necessary for bivariate correlations using an alpha of \( p < .05 \), medium effect size, and power set at .70. The sample size for the current study relating to the correlation analysis was 92, which was sufficient for maximum power. Using the same parameters and applying them to independent samples t-test, a sample size of at least 102 (51 in each group, online and paper and pencil) was necessary for maximum power. For the t-test, the sample size for the current study varied between 91 to 93 for each variable, and the sample after listwise deletion
was between 86 to 88 for the online group and five for the paper and pencil group, thus falling short of what was required for maximum power and reliability of results of the t-test.

Primary Analyses

This section first addresses concerns with and treatment of missing data. Second, the assumptions of multiple regression are discussed. Next, identification and treatment of outliers is considered. The discussion then focuses on the analyses and results for each of the six research hypotheses. Finally, themes are identified from responses that participants provided when they were asked to describe a stressful event or situation in the workplace. The alpha level was set a $p < .05$ for all statistical analyses.

In order to determine how best to manage missing data, cases were examined and it was determined that data were missing at random. Next, two sets of regression equations were calculated. The first regression equations were calculated with cases that contained missing data and where listwise deletion was used. The second regression equations were calculated after replacing missing values with the mean of the respective measures. The incremental $R^2$ values in the regression models varied from being slightly lower to slightly higher (.002 -.04) in the set of regression equations that were missing data and were deleted listwise. Due to the random nature of the missing data, it was determined that it was acceptable to replace missing values with mean values for the respective measure (Allison, 1999; Roth, Switzer, & Switzer, 1999). While the differences were minimal, the majority of the equations using mean replacement yielded more conservative regression coefficients when compared to the equations using
listwise deletion; therefore, the strategy of replacing missing values with mean values was used for each of the multiple regression analyses. However, there remained five cases that were missing too many values for mean replacement; therefore, each of the five cases was deleted listwise from all regression analyses.

The multiple regression assumptions of normality, linearity, mean independence, homoscedasticity of residuals, and the absence of multicollinearity (Allison, 1999) were examined and evaluated as follows. Normality was assessed by plotting the residuals for each model using histograms overlaid by a normal curve. A visual inspection indicated that the residuals for each model reasonably followed a normal distribution. While normality is less critical in multiple regression, the assumption is more important with sample sizes of less than 200. The visual inspection of the distribution of the residuals associated with this smaller sample was sufficient to determine that the assumption of normality was met (Allison, 1999) for each of the regression equations.

Linearity was assessed by using scatterplots of the observed predicted values against the expected predicted values and visually determining the fit of the linear model (Allison, 1999). Each regression model exhibited acceptable linearity, and the linear model was determined to be the best fit for each regression equation.

Mean independence is an assumption that addresses error term. Allison (1999) stated that this is a critical assumption because violations can result in significant bias in the estimates; however, there is no direct test for this assumption. In assessing independence, there are several conditions that must be considered. The first condition is that independent variables relevant to the analyses are included in the regression
model. If independent variables that influence the outcome variables are omitted from the regression model, mean independence would be violated. Therefore, the variables used in the model were determined by existing literature and existing theories in order to ascertain that the appropriate predictors and control variables were selected. The second condition involves causality. Bias is introduced when the dependent variable has a causal effect on the independent variables (Allison, 1999; Keith, 2006). When a study is non-experimental and cross-sectional data are used, certainty regarding the direction of causality is compromised (Allison, 1999). The current study is non-experimental and cross-sectional; therefore, caution has been taken when drawing conclusions as discussed in Chapter Five. The third condition is that the variables are, at best, measured without error. Therefore, the measures used in this study were selected based on their reliability. Each of the independent and dependent measures produced above average to high reliability with the current sample. To further evaluate independence of errors, Durbin-Watson coefficient $d$ values were examined and each regression equation demonstrated that there were no autocorrelations and there was an independence of errors.

Homoscedasticity was assessed by examining scatterplots for each model. The residuals of each model were plotted around the regression line (Allison, 1999; Keith, 2006). A visual inspection of each of the scatterplots indicated acceptable homoscedasticity for all of the regression analyses.

Multicollinearity was assessed using tolerances and variance inflation factors (VIF). The values used in the analyses were based on Allison’s (1999) tolerance cutoff level of less than .40 and the VIF value was set at above 2.50.
Correlation coefficients were also examined in order to evaluate the significance of the demographic control variables previously identified for the regression analyses. It was discovered that age and length of employment were highly correlated \( (r = .81, p = .01) \) with one another, meaning there was a great deal of overlap between the two constructs. A correlation this high also caused multicollinearity in each of the regression equations. Therefore, analyses were run with and without controlling for length of employment in order to determine whether controlling for this variable would significantly alter the results. With the exception of multicollinearity, the two analyses produced similar results. As a result, length of employment was removed from each of the regression equations. Age was retained as a control variable based on stronger support in the literature and the postulation that age may better describe differences in individuals due to maturity rather than length of employment with the same employer. Following removal of length of employment, no additional tolerances below .40 and no other VIF above 2.5 were detected in any of the regression equations.

Outliers were detected using a Studentized Residual value of greater than 2.5 or less and -2.5 and a Cook’s D cutoff was determined by using \( D > 4/n-k-1 \) (.0512 = 4/85-6-1). Cases meeting both of these criteria were considered outliers (Allison, 1999; Keith, 2006). After the cases were identified, the data were closely examined to make sure they were not outliers due to coding problems or errors in data entry (Tabachnick & Fidell, 1996). No miscoding or data entry errors were found for any of the analyses. Next, regression equations were recalculated to assess the extent to which these observations influenced the results. Finally, the decision to keep or discard extreme cases was made based on whether it could be clearly determined that the outlying cases
were not truly representative of the target population (Tabachnick & Fidell, 1996) for each regression analysis. A description of the action taken is explained under each specific research hypothesis.

**Statistical Analyses Addressing Research Hypotheses**

*Hypothesis 1.* The first hypothesis stated, “Self-efficacy will significantly predict occupational strain; i.e., higher self-efficacy will predict lower levels of psychological and physical strain over and beyond the demographic control variables.” To address this hypothesis, two hierarchical regression analyses were used to determine the contribution of the self-efficacy scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Control variables gender and age were entered as the first block in the model, and self-efficacy was entered as the second block in the model.

Using the Cook’s D influence statistic and studentized residuals (Allison, 1999), one outlier was detected in the first regression equation measuring psychological strain. The regression equation was recalculated with this case deleted and there were no substantial differences in the regression coefficients. Therefore, this observation was kept in the analysis. The demographic control variables in the first equation, which predicted psychological strain (Block 1), did not contribute significantly to the model, $R^2 = .008$, $(F = .326 [2, 82], p > .05)$, accounting for less than one percent of the variance. With respect to self-efficacy (Block 2), the block significantly predicted psychological strain after controlling for the demographic variables, $R^2 = .237$, $\Delta R^2 =$
.229, \( F = 8.370 \ [3, 81], p < .001 \), accounting for an additional 23% of the variance. Self-efficacy was significant as an individual predictor of psychological strain, 
\( \beta = -.486, t(-4.927) = p < .001 \). The demographic control variables in the second equation, which predicted physical strain (Block 1), did not contribute significantly to the model, \( R^2 = .014, (F = .574 \ [2, 81], p > .05) \), accounting for only one percent of the variance. With respect to self-efficacy (Block 2), the block significantly predicted physical strain after controlling for the demographic variables, \( R^2 = .167, \Delta R^2 = .153, (F = 5.347 \ [3, 80], p = < .01) \), accounting for an additional 15% of the variance. Self-efficacy was significant as an individual predictor of physical strain, \( \beta = -.397, t(-3.834) = p < .001 \). These findings suggest that an increase in self-efficacy appears to be related to a decrease in both psychological and physical strain. Table 6 provides a summary of the statistical findings.

Table 6

Hierarchical Regression of Gender, Age, and Self-Efficacy on Psychological Strain \((n = 85)\) and Physical Strain \((n = 84)\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychological Strain</th>
<th>Physical Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( B )</td>
<td>( SE \ B )</td>
</tr>
<tr>
<td>Block 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.403</td>
<td>1.922</td>
</tr>
<tr>
<td>Age</td>
<td>.356</td>
<td>.715</td>
</tr>
<tr>
<td>Block 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>2.761</td>
<td>1.719</td>
</tr>
<tr>
<td>Age</td>
<td>.268</td>
<td>.631</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-.313</td>
<td>.064</td>
</tr>
</tbody>
</table>

Note. Psychological Strain: \( R^2 = .008 \) for Block 1; \( \Delta R^2 = .229 \) for Block 2 \( p < .001 \). Physical Strain: \( R^2 = .014 \) for Block 1; \( \Delta R^2 = .153 \) for Block 2 \( p < .01 \). *** \( p < .001 \).
Hypothesis 2. The second hypothesis stated, “Commitment will significantly predict occupational strain; i.e., higher levels of commitment will predict lower levels of psychological and physical strain over and beyond the demographic control variables.” To address this hypothesis, two hierarchical regression analyses were used to determine the contribution of the commitment scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Control variables gender and age were entered as the first block in the model, and commitment was entered as the second block in the model.

Using the Cook’s D influence statistic and studentized residuals (Allison, 1999), no outliers for either regression equation were detected. The demographic control variables in the first equation, which predicted psychological strain (Block 1), did not contribute significantly to the model, $R^2 = .008$, ($F = .326 \ [2, 82], p > .05$), accounting for less than one percent of the variance. With respect to commitment (Block 2), the block significantly predicted psychological strain after controlling for the demographic variables, $R^2 = .180$, $\Delta R^2 = .172$, ($F = 5.918 \ [3, 81], p < .01$), accounting for an additional 17% of the variance. Commitment was significant as an individual predictor of psychological strain, $\beta = .437$, $t(4.120) = p < .001$. The demographic control variables in the second equation, which predicted physical strain (Block 1), did not contribute significantly to the model, $R^2 = .014$, ($F = .574 \ [2, 81], p > .05$), accounting for only one percent of the variance. With respect to commitment (Block 2), the block significantly predicted physical strain after controlling for the demographic variables, $R^2 = .126$, $\Delta R^2 = .112$, ($F = 3.850 \ [3, 80], p < .01$), accounting for an additional 11% of
the variance. Commitment was significant as an individual predictor of physical strain, $\beta = .354$, $t(3.205) = p < .01$. The direction of the commitment scale may be confusing with regard to lower scores representing higher levels of commitment and higher scores representing lower levels of commitment. Therefore, the positive relationship between commitment and strain scores is actually in the expected direction of the hypothesis stated above.

These findings suggest that an increase in commitment (low scores) appears to be related to a decrease in both psychological and physical strain. Table 7 provides a summary of the statistical findings.

Table 7

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychological Strain</th>
<th>Physical Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Block 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.403</td>
<td>1.922</td>
</tr>
<tr>
<td>Age</td>
<td>.356</td>
<td>.715</td>
</tr>
<tr>
<td>Block 2.</td>
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<td></td>
</tr>
<tr>
<td>Gender</td>
<td>2.249</td>
<td>1.771</td>
</tr>
<tr>
<td>Age</td>
<td>-.395</td>
<td>.679</td>
</tr>
<tr>
<td>Commitment</td>
<td>.319</td>
<td>.077</td>
</tr>
</tbody>
</table>

Note. Psychological Strain: $R^2 = .008$ for Block 1; $\Delta R^2 = .172$ for Block 2 ($p < .001$). Physical Strain: $R^2 = .014$ for Block 1; $\Delta R^2 = .112$ for Block 2 ($p < .01$).

Hypothesis 3. The third hypothesis stated, “Problem-focused coping will significantly predict occupational strain; i.e., higher problem-focused coping will predict lower levels of psychological and physical strain over and beyond the demographic control variables.” To address this hypothesis, two hierarchical regression
analyses were used to determine the contribution of the problem-focused coping scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Control variables gender and age were entered as the first block in the model, and problem-focused coping was entered as the second block in the model.

Using the Cook’s D influence statistic and studentized residuals (Allison, 1999), one outlier was detected in the first regression equation measuring psychological strain. The regression equation was recalculated with this case deleted and there was no substantial difference in the regression coefficients. Therefore, this observation was kept in the analysis. The demographic control variables in the first equation, which predicted psychological strain (Block 1), did not contribute significantly to the model, $R^2 = .008, (F = .332 [2, 81], p > .05)$, accounting for less than one percent of the variance. With respect to problem-focused coping (Block 2), the block did not significantly predict psychological strain after controlling for the demographic variables, $R^2 = .079, \Delta R^2 = .070, (F = 2.276 [3, 80], p > .05)$, accounting for only seven percent of the variance. Therefore, results did not support the third hypothesis as problem-focused coping did not predict a significant amount of the variance of the psychological strain scores after controlling for gender and age. The demographic control variables in the second equation, which predicted physical strain (Block 1), did not contribute significantly to the model, $R^2 = .017, (F = .709 [2, 80], p > .05)$, accounting for less than two percent of the variance. With respect to problem-focused coping (Block 2), the block did not significantly predict physical strain after controlling for the demographic variables, $R^2 = .030, \Delta R^2 = .013, (F = .816 [3, 79], p > .05)$.
accounting for only one percent of the variance. Therefore, the third hypothesis was not supported as problem-focused coping did not predict a significant amount of the variance of the physical strain scores after controlling for gender and age. These findings suggest that an increase in problem-focused coping does not appear to be related to psychological or physical strain for this sample. Table 8 provides a summary of the statistical findings.

Table 8

Hierarchical Regression of Gender, Age, and Problem-Focused Coping on Psychological Strain (n = 84) and Physical Strain (n = 83)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychological Strain</th>
<th></th>
<th></th>
<th>Physical Strain</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
<td>β</td>
</tr>
<tr>
<td>Block 1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.534</td>
<td>1.924</td>
<td>.090</td>
<td>2.201</td>
<td>2.024</td>
<td>.123</td>
</tr>
<tr>
<td>Age</td>
<td>.241</td>
<td>.722</td>
<td>.038</td>
<td>-.185</td>
<td>.756</td>
<td>-.028</td>
</tr>
<tr>
<td>Block 2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<td>1.868</td>
<td>.102</td>
<td>2.272</td>
<td>2.025</td>
<td>.127</td>
</tr>
<tr>
<td>Age</td>
<td>-.113</td>
<td>.702</td>
<td>.018</td>
<td>-.243</td>
<td>.758</td>
<td>-.037</td>
</tr>
<tr>
<td>PF Coping</td>
<td>.477</td>
<td>.193</td>
<td>.267*</td>
<td>.212</td>
<td>.209</td>
<td>.113</td>
</tr>
</tbody>
</table>

Note. Psychological Strain: $R^2 = .008$ for Block 1; $\Delta R^2 = .070$ for Block 2 ($p > .05$). Physical Strain: $R^2 = .017$ for Block 1; $\Delta R^2 = .013$ for Block 2 ($p > .05$). *$p < .05$.

Hypothesis 4. The fourth hypothesis stated, “Emotion-focused coping will significantly predict occupational strain; i.e., higher emotion-focused coping will predict higher levels of psychological and physical strain over and beyond the demographic control variables.” To address this hypothesis, two hierarchical regression analyses were used to determine the contribution of the emotion-focused scores in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables.
Control variables gender and age were entered as the first block in the model, and emotion-focused coping was entered as the second block in the model.

Using the Cook’s D influence statistic and studentized residuals (Allison, 1999), one outlier was detected in the first regression equation measuring psychological strain. The regression equation was recalculated with this case deleted and there was no substantial difference in the regression coefficients. Therefore, this observation was kept in the analysis. The demographic control variables in the first equation, which predicted psychological strain (Block 1), did not contribute significantly to the model, $R^2 = .008$, $(F = .332 [2, 81], p > .05)$, accounting for less than one percent of the variance. With respect to emotion-focused coping (Block 2), the block significantly predicted psychological strain after controlling for the demographic variables, $R^2 = .297$, $\Delta R^2 = .289$, $(F = 11.254 [3, 80], p < .001)$, accounting for an additional 29% of the variance. Emotion-focused coping was significant as an individual predictor of psychological strain, $\beta = .567$, $t(5.730) = p < .001$. The demographic control variables in the second equation, which predicted physical strain (Block 1), did not contribute significantly to the model, $R^2 = .017$, $(F = .709 [2, 80], p > .05)$, accounting for less than two percent of the variance. With respect to emotion-focused coping (Block 2), the block significantly predicted physical strain after controlling for the demographic variables, $R^2 = .269$, $\Delta R^2 = .252$, $(F = 9.698 [3, 79], p < .001)$, accounting for an additional 25% of the variance. Emotion-focused coping was significant as an individual predictor of physical strain, $\beta = .530$, $t(5.217) = p < .001$. These findings
suggest that an increase in emotion-focused coping appears to be related to an increase in both psychological and physical strain. Table 9 provides a summary of the statistical findings.

Table 9

Hierarchical Regression of Gender, Age, and Emotion-Focused Coping on Psychological Strain (n = 84) and Physical Strain (n = 83)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychological Strain</th>
<th>Physical Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Block 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.534</td>
<td>1.924</td>
</tr>
<tr>
<td>Age</td>
<td>.241</td>
<td>.722</td>
</tr>
<tr>
<td>Block 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.772</td>
<td>1.631</td>
</tr>
<tr>
<td>Age</td>
<td>-.897</td>
<td>.643</td>
</tr>
<tr>
<td>EF Coping</td>
<td>.497</td>
<td>.087</td>
</tr>
</tbody>
</table>

Note. Psychological Strain: $R^2 = .008$ for Block 1; $\Delta R^2 = .289$ for Block 2 ($p < .001$).
Physical Strain: $R^2 = .017$ for Block 1; $\Delta R^2 = .252$ for Block 2 ($p < .001$).

Hypothesis 5. The fifth hypothesis stated, “Both the moderators, self-efficacy and commitment, and the mediators, problem-focused and emotion-focused coping, will significantly predict occupational strain over and beyond the demographic control variables (gender, age).” To address this hypothesis, two hierarchical regression analyses were used to determine the contribution of the combinations in predicting both psychological and physical strain. Separate analyses were conducted for Psychological and Physical Strain, with each being entered as dependent variables. Control variables gender and age were entered as the first block in the model, self-efficacy and commitment were entered as the second block in the model, and problem-focused and emotion-focused coping were entered as the third block in the model.
Using the Cook’s D influence statistic and studentized residuals (Allison, 1999), one outlier was detected in the first regression equation measuring psychological strain. The regression equation was recalculated with this case deleted and there was no substantial difference in the regression coefficients. Therefore, this observation was kept in the analysis. The demographic control variables in the first equation, which predicted psychological strain (Block 1), did not contribute significantly to the model, $R^2 = .008$, $(F = .332 \ [2, 81], p > .05)$, accounting for less than one percent of the variance. With respect to self-efficacy and commitment (Block 2), the block significantly predicted psychological strain after controlling for the demographic variables, $R^2 = .305$, $\Delta R^2 = .297$, $(F = 8.681 \ [4, 79], p < .001)$, accounting for an additional 30% of the variance. With respect to problem-focused and emotion-focused coping (Block 3), the block significantly predicted psychological strain after controlling for the demographic variables, self-efficacy and commitment, $R^2 = .508$, $\Delta R^2 = .203$, $(F = 13.253 \ [6, 77], p < .001)$, accounting for an additional 20% of the variance. In the final block, the demographic control variable, gender, was significant as an individual predictor of psychological strain, $\beta = .186$, $t(2.238) = p < .05$, with women reporting more strain than men. The demographic control variable, age, was significant as an individual predictor of psychological strain, $\beta = -.178$, $t(-2.019) = p < .05$, with younger workers reporting more strain than their older counterparts. Self-efficacy was significant as an individual predictor of psychological strain, $\beta = -.339$, $t(-3.927) = p < .001$. Commitment was significant as an individual predictor of psychological strain, $\beta = .254$, $t(2.777) = p < .01$. Emotion-focused coping was significant as an individual predictor of psychological strain, $\beta = .443$, $t(4.286) = p < .001$. 
The demographic control variables in the second equation, which predicted physical strain (Block 1), did not contribute significantly to the model, $R^2 = .017$, ($F = .709 \ [2, 80], p > .05$), accounting for less than two percent of the variance. With respect to self-efficacy and commitment (Block 2), the block significantly predicted physical strain after controlling for the demographic variables, $R^2 = .212$, $\Delta R^2 = .195$, ($F = 5.258 \ [4, 78], p < .01$), accounting for an additional 20% of the variance. With respect to problem-focused and emotion-focused coping (Block 3), the block significantly predicted physical strain after controlling for the demographic variables, self-efficacy and commitment, $R^2 = .417$, $\Delta R^2 = .204$, ($F = 9.042 \ [6, 76], p < .001$), accounting for an additional 20% of the variance. The demographic control variable, gender, was significant as an individual predictor of physical strain, $\beta = .195$, $t(2.139) = p < .05$, with women reporting more strain than men. The demographic control variable, age, was significant as an individual predictor of physical strain, $\beta = -.235$, $t(-2.429) = p < .05$, with younger workers reporting more strain than their older counterparts. Self-efficacy was significant as an individual predictor of physical strain, $\beta = -.271$, $t(-2.862) = p < .01$. Emotion-focused coping was significant as an individual predictor of physical strain, $\beta = .562$, $t(4.939) = p < .001$. Commitment and problem-focused coping did not emerge as significant individual predictors of strain. Table 10 provides a summary of the statistical findings.
Table 10

Hierarchical Regression of Gender, Age, Self-Efficacy, Commitment, Problem-Focused, and Emotion-Focused Coping on Psychological Strain (n = 84) and Physical Strain (n = 83)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychological Strain</th>
<th>Physical Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Block 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.534</td>
<td>1.924</td>
</tr>
<tr>
<td>Age</td>
<td>.241</td>
<td>.722</td>
</tr>
<tr>
<td>Block 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<td>1.654</td>
</tr>
<tr>
<td>Age</td>
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<td>.635</td>
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<td>Self-efficacy</td>
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<td>.065</td>
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<tr>
<td>Commitment</td>
<td>.217</td>
<td>.076</td>
</tr>
<tr>
<td>Block 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>3.161</td>
<td>1.413</td>
</tr>
<tr>
<td>Age</td>
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<td>.564</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-.218</td>
<td>.055</td>
</tr>
<tr>
<td>Commitment</td>
<td>.186</td>
<td>.067</td>
</tr>
<tr>
<td>PF coping</td>
<td>.112</td>
<td>.174</td>
</tr>
<tr>
<td>EF coping</td>
<td>.388</td>
<td>.091</td>
</tr>
</tbody>
</table>

Note. Psychological Strain: $R^2 = .008$ for Block 1; $\Delta R^2 = .297$ for Block 2 ($p < .001$); $\Delta R^2 = .203$ for Block 3 ($p < .001$).
Physical Strain: $R^2 = .017$ for Block 1; $\Delta R^2 = .195$ for Block 2 ($p < .01$); $\Delta R^2 = .204$ for Block 3 ($p < .001$).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis 6. The sixth hypothesis stated, “There will be a statistically significant positive correlation between commitment and problem-focused coping, and 2) a statistically significant negative correlation between commitment and emotion-focused coping.” To address this hypothesis, a Pearson product-moment correlation coefficient was run to investigate the relationship between the three variables: 1) total score on the commitment scale, 2) total score on the problem-focused coping scale, and
3) total score on the emotion-focused coping scale. A total of 91 cases for each variable were included in the analysis following listwise deletion. The correlation between commitment and problem-focused coping \( [r(90) = -.068] \) was not significant \( (p > .05) \). Therefore, the first part of the hypothesis was not supported. Results indicated that levels of commitment and emotion-focused coping were correlated, \( [r(90) = .251], p < .05 \); however, the relationship between the two variables was low. The positive correlation is deceiving due to the directionality of the commitment scale where lower scores represent higher levels of commitment and higher scores represent lower levels of commitment. Therefore, in this case, the positive correlation represents a negative relationship and is in the expected direction. This indicates that as commitment scores increase, emotion-focused scores decrease. In other words, as employees report higher commitment, they also report using less emotion-focused coping strategies. Therefore, the second part of the sixth hypothesis was supported.

**Alpha Level**

For this study, the alpha level was set at \( p < .05 \). However, because of the number of hierarchical regression analyses being done, the Benjamini and Hochberg Adjustment (1995) was used to adjust the \( p \) values of the first four sets of regression equations. Following the adjustment, the regression models that were significant at \( p < .05 \) remained significant at that alpha level and the two regression models that were not initially significant at \( p < .05 \) were still not significant. Table 11 provides a summary of the adjusted \( p \) values.
Table 11

Summary of Benjamini and Hochberg Adjustment to Type I Error Rate (n = 8)

<table>
<thead>
<tr>
<th>*Ranked Variables</th>
<th>p Value Rank (i)</th>
<th>n/i</th>
<th>* = Adjusted p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotion-focused &amp; Psych</td>
<td>.000003091</td>
<td>8/1</td>
<td>8*p .00002</td>
</tr>
<tr>
<td>2. Emotion-focused &amp; Physical</td>
<td>.0000160</td>
<td>8/2</td>
<td>4*p .000064</td>
</tr>
<tr>
<td>3. Self-efficacy &amp; Psych</td>
<td>.000065</td>
<td>8/3</td>
<td>2.67*p .0002</td>
</tr>
<tr>
<td>4. Commitment &amp; Psych</td>
<td>.00106</td>
<td>8/4</td>
<td>2*p .00212</td>
</tr>
<tr>
<td>5. Self-efficacy &amp; Physical</td>
<td>.00208</td>
<td>8/5</td>
<td>1.60*p .00333</td>
</tr>
<tr>
<td>6. Commitment &amp; Physical</td>
<td>.01254</td>
<td>8/6</td>
<td>1.33*p .0165</td>
</tr>
<tr>
<td>7. Problem-focused &amp; Psych</td>
<td>.086</td>
<td>8/7</td>
<td>1.14*p .10</td>
</tr>
<tr>
<td>8. Problem-focused &amp; Physical</td>
<td>.489</td>
<td>8/8</td>
<td>1*p .49</td>
</tr>
</tbody>
</table>

Note.* Variables are rank ordered from the smallest non-adjusted p value to the largest.

Themes Associated with Workplace Stress

Prior to completing the Brief Cope measure, participants were asked to describe a stressful situation that they experienced in the workplace in the last 30 days before responding to the coping strategy statements. Table 12 contains common themes that were identified from the responses that the participants provided.

Management/Supervisor (15), Peer relations (15), and Work Demands (12), emerged as the top three themes that contributed to stress in the workplace. Computer Conversion/System Problems (9), Understaffed/Absenteeism (7), and Inadequate Training (4) followed the top three themes. The actual de-identified responses (several contained more than one stressful situation) can be found in Appendix I.
Table 12

Distribution of Stressful Workplace Themes

<table>
<thead>
<tr>
<th>Major Themes</th>
<th>Number of Descriptions (n = 69)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management/Supervisor Relations</td>
<td>15</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>15</td>
</tr>
<tr>
<td>Work Demands (schedule &amp; workload)</td>
<td>12</td>
</tr>
<tr>
<td>Computer Conversion/System Problems</td>
<td>9</td>
</tr>
<tr>
<td>Understaffed/Absenteeism</td>
<td>7</td>
</tr>
<tr>
<td>Inadequate Training</td>
<td>4</td>
</tr>
<tr>
<td>Layoffs</td>
<td>3</td>
</tr>
<tr>
<td>Procedural</td>
<td>2</td>
</tr>
<tr>
<td>Work Hours</td>
<td>2</td>
</tr>
</tbody>
</table>

Summary

Chapter Four provided the results of the preliminary analyses used in this study. This was followed by the primary analyses, which included the results from the statistical tests aimed at addressing the six research hypotheses. Based on the regression equations, the demographic control variables, gender and age did not initially account for significant variance in predicting psychological and physical strain (outcome variables). Hypotheses one and two were supported when the independent variables, commitment and self-efficacy, significantly predicted psychological and physical strain. Hypothesis three was not supported when problem-focused coping did not account for significant variance in predicting psychological or physical strain. Hypothesis four was supported when the independent variable, emotion-focused coping, significantly predicted both psychological and physical strain. Based on the fifth hypothesis, the
combination of moderator variables, self-efficacy and commitment, was found to significantly predict psychological and physical strain (outcome variables) over and beyond the demographic variables. In the next step, the combination of mediator variables, problem-focused and emotion-focused coping explained a significant amount of the variance in the outcome variables over and beyond the demographic variables and the moderator variables of self-efficacy and commitment. When the moderator and mediator variables were combined in the third regression equation, problem-focused coping was not a significant predictor of either psychological or physical strain; commitment was not a significant predictor of physical strain. Each of the demographic control variables, gender and age, accounted for a significant amount of variance in the final equation; however, the contribution was small. The first part of the sixth hypothesis, i.e., that commitment would be positively correlated with problem-focused coping, was not supported. However, the second part of the hypothesis was supported when findings indicated there was a negative relationship between commitment and emotion-focused coping. Finally, themes were identified from responses that participants provided when they were asked to describe a stressful event or situation in the workplace. Chapter Five will discuss these results, as well as the limitations associated with this study and recommendations for future study.
CHAPTER FIVE
DISCUSSION

This chapter covers 1) a brief summary of the study, 2) a discussion of the overall findings related to the six research hypotheses and their implications, 3) limitations of the study, 4) recommendations for future research, and 5) conclusions.

Summary of the Study

Past research examining the role of individual factors in the occupational stress-strain relationship has focused almost exclusively on research investigating the role of self-efficacy, commitment, and coping as individual factors buffering strain responses. The results of these studies have shown promising results in the areas of education, healthcare, management, professional roles, and public service positions. However, there is a noticeable gap in the occupational stress-strain literature investigating the individual factors mentioned above with samples that include non-managerial, non-professional employees. Further, while organizational commitment has been identified in the literature as moderating strain, the construct has not been widely studied or investigated in conjunction with other moderator or mediator variables. Additionally, to the investigator’s knowledge, at the time of this study there was no research that evaluated the combined contribution of the individual factors mentioned above in the organizational literature. In contrast to past research, in order to understand the role of moderator and mediator variables in buffering strain, the current study examined the
direct predictive contributions of self-efficacy, commitment, problem-focused coping and emotion-focused coping on psychological and physical strain in the workplace, as well as the combined predictive contribution of the moderating and mediating variables on the two types of occupational strain.

The overall purpose of this study was to increase understanding of how each of these factors, as well as combinations of the factors, contributed to predicting psychological and physical strains in non-managerial, non-professional workers. Findings suggested that directly and combined, self-efficacy, commitment, and emotion-focused coping play an important role in employee occupational health and that problem-focused coping appeared to be used less by the current sample.

A better understanding of protective factors associated with individual traits and behaviors might be helpful in efforts to increase employee resilience in stressful workplaces, assist in identifying new stress reduction strategies, and overall, may help to improve employee health and wellness outcomes. There are multiple implications associated with the findings for employees, organizations, psychologists, and career counselors. When organizations take actions to reduce strain in the workplace and help employees to develop strain reducing behaviors and increase skills, employee job satisfaction may increase (Atkinson, 2004; Lu, Siu, & Cooper, 2005), turnover may decrease (Jamal, 2007; Ongori & Agolla, 2008), absenteeism may decrease (Darr & Johns, 2008; Jamal, 2007; Lidwall & Marklund, 2006; Richardson & Rothstein, 2008), stress related mental illness (Boyd, 1997; Chang et al., 2006; Darr & Johns, 2008; Gyllenstein, Palmer, & Farrants, 2005; Lloyds & Foster, 2006; Palmer, 2003) and physical illness (Aboa-Eboule et al., 2007; Chandola et al., 2008; Darr & Johns, 2008)
may decrease, productivity may increase (Jacobs, Tytherleigh, Webb, & Cooper, 2007; Ongori & Agolla, 2008; Jamal, 2007), health care costs may decrease (Ganster, Fox, & Dwyer, 2001), and profitability may increase (Cooper, 1994). Clinically, understanding individual protective factors can inform psychologists in program development areas focused on workplace wellness and stress reduction initiatives, as well as helping workers develop skills and increase behaviors that buffer against occupational strain. Finally, with the knowledge of strain reducing factors, career counselors can help their clients assess their capacity to efficaciously manage workplace stress and more thoroughly consider appropriate job fit.

Specific Findings and Implications for Hypotheses

The first hypothesis in the present study stated that self-efficacy would significantly predict occupational strain. Specifically, higher self-efficacy would predict lower levels of psychological and physical strain. This hypothesis was supported. After controlling for the demographic variables, self-efficacy accounted for an additional 23% of the variance in psychological strain and 15% of the variance in physical strain. For every one point increase in the self-efficacy score, psychological strain decreased by 0.313 points and physical strain decreased by 0.267 points. The demographic variables did not contribute significantly to the variance in either strain variable.

These findings contribute to the existing literature, which suggests that a higher level of self-efficacy has a buffering affect against stress and strain (Jex & Bliese, 1999; Jex, Bliese, Buzzell, & Primeau, 2001; Lu, Siu, & Cooper, 2005). The outcome of this hypothesis suggests that increasing self-efficacy may be an important intervention to protect against occupational strain.
There are important individual and organizational implications. The more employees’ believe that they have the ability to do their jobs is correlated with the amount of control they feel they have over job demands, which predicts decreases in job strain (Jex & Bliese, 1999; Lu, Siu, & Cooper, 2005; Stetz, Stetz, & Bliese, 2006). Therefore, it is likely that high levels of self-efficacy might contribute to reducing occupational strain (Jex & Bliese, 1999; Jex et al., 2001; Lu, Siu, & Cooper, 2005). These findings suggest that it might be important to help employees increase their sense of self-efficacy related to how they perform their job duties in order to buffer stress and reduce strain responses. Efforts to increase self-efficacy will often occur directly between employees and supervisors (Bandura, 1997). Offering opportunities for employees to increase their skills through training programs, setting measurable goals, receiving positive reinforcement and incentives, and providing adequate supervision will increase the employee’s self-confidence and self-efficacy (Bandura, 1997). The investment in training programs aimed at increasing employee self-efficacy will likely be offset by decreases in health care costs associated with illnesses caused by strain.

The second hypothesis in the present study stated that organizational commitment would significantly predict occupational strain. Specifically, higher commitment would predict lower levels of psychological and physical strain. This hypothesis was supported. After controlling for the demographic variables, commitment accounted for an additional 17% of the variance in psychological strain and 11% of the variance in physical strain. For every one point increase in the commitment score,
psychological strain decreased by 0.319 points and physical strain decreased by 0.270 points. The demographic variables did not contribute significantly to the variance in either strain variable.

These findings contribute to the current body of literature, which suggests that stress responses would be moderated by levels of commitment (Begley & Cazjka, 1993; Cohen, 1992, 1993; Lazarus & Folkman, 1984; Mathieu & Zajac, 1990; Mowday, Porter, & Steers, 1982; Schmidt, 2007; Siu, 2002; Somers, 1995). The results regarding the commitment construct used in the current study are important for several reasons. First, there is a paucity of evidence related to levels of organizational commitment and occupational strain in non-managerial, non-professional workers. Past organizational research has tended to focus more on exploring the relationship between commitment and turnover, job satisfaction, absenteeism, and productivity (Schmidt, 2007) than on strain outcomes. However, several studies have investigated the role of commitment in reducing stress and strain, finding that as commitment increases, stress and strain decrease (Jepson & Forrrest, 2006; Schmidt, 2007; Siu, 2002). The outcome of this hypothesis suggests that increasing organizational commitment may be an important intervention to protect against occupational strain.

There are important implications associated with understanding the role of commitment in buffering strain responses. Organizations may strive to better understand the types of commitment that are important in the workplace. In this study, normative commitment measured the values shared by the individual and the organization, thereby representing the employees’ emotional obligation to maintain membership in the organization. However, other organization researchers may
alternatively find that monetary rewards (instrumental commitment) rather than shared values are more important to employees based on the existing corporate culture and organizational purpose. As economic times change, employee attitudes and levels of commitment may also change. Through understanding the various types of commitment, the relationship between levels of commitment and strain provides organizations with opportunities to address interventions aimed at increasing employee commitment in order to reduce psychological and physical strain. While outside the scope of this study, future research might focus on commitment to the employee work group in addition to the organization to investigate which provides greater protection against strain in order to inform and direct efficacious interventions.

The third hypothesis in the present study stated that problem-focused coping would significantly predict occupational strain; specifically, higher problem-focused coping would predict lower levels of psychological and physical strain. No significant results were obtained in either regression equation measuring the two strain variables; therefore, this hypothesis was not supported.

Based on the literature, this finding was not expected (Chang et al., 2006; Decker & Borgen, 1993; Lazarus & Folkman, 1984). However, there are likely several reasons for this outcome, as well as implications that should be considered in future research. It is important to note that the problem-solving skills associated with problem-focused coping are empirically more efficacious in reducing strain according to the literature (Chang et al., 2006; Folkman & Lazarus, 1980; Lazarus & Folkman, 1984). Problem-focused coping strategies are used when it has been determined that the conditions are changeable (Folkman & Lazarus, 1980). However, non-managerial
employees, unlike supervisors, are not always in positions where they can make workplace changes by taking direct action. Therefore, it is not unusual for non-managerial employees to solve most work-related problems by using resources that are more emotional in nature (Beehr, Johnson, & Nieva, 1995). Further, workers in highly structured work groups like the sample in the current study may be even more constrained by their environments and, therefore, taking direct action may not be a functional strategy. In some cases, the use of emotion-focused coping strategies may be seen as an adaptive, albeit less healthy way of dealing with stress in positions where workers have less control. One study involving police officers found that problem-focused coping did not produce significant results on psychological or physical strain outcomes (Beehr, Johnson, & Nieva, 1995), similar to the current study.

There are other important considerations associated with the outcome of this hypothesis. The Brief Cope Inventory (Carver, 1997) used in the current study only dedicated three subscales (six items) to problem-focused coping out of a total of 14 subscales (28 items). The ratio (3.7:1) of emotion-focused coping strategies (22 items) to problem-focused coping strategies (six items) in the current measure is similar to other measures of coping such as Lazarus’ & Folkman’s Ways of Coping (1984) measure. It is possible that the small number of problem-focused items was inadequate to measure the construct and detect problem-focused coping strategies in an organizational context. Additionally, there are few studies that have investigated the role of coping on occupational stress and strain in organizations; therefore, measures of problem-focused coping may not be refined to the extent necessary to capture these types of strategies in the workplace. This area remains an important field for further
investigation, as the scant research in areas related to coping in organizations has found mixed results (Decker & Borgen, 1993; Mak & Mueller, 2000). Still, an overwhelming amount of evidence in other areas such as health care and education suggests that problem-focused coping is a more efficacious strategy to mediate strain. Further investigation into the strategies used by non-managerial, non-professional workers would be an important contribution to the theoretical and empirical literature for this population. The results of further study will help organizations determine the coping strategies that will provide protective factors to informatively guide interventions.

The fourth hypothesis in the present study stated that emotion-focused coping would significantly predict occupational strain. Specifically, higher emotion-focused coping strategies would predict higher levels of psychological and physical strain. This hypothesis was supported. After controlling for the demographic variables, emotion-focused coping accounted for an additional 29% of the variance in psychological strain and 25% of the variance in physical strain. For every one point increase in the emotion-focused coping score, psychological strain increased by 0.497 points and physical strain increased by 0.485 points. The demographic variables did not contribute significantly to the variance in either strain variable.

These findings contribute to the extant literature, which suggests that occupational strain might be reduced by encouraging employees to use fewer emotion-focused coping strategies to manage workplace stress (Chang et al., 2006; Lambert, Lambert, & Ito, 2004a; Lambert et. al., 2004b). These results are important for several reasons. First, while there exists a large body of research focused on the role of coping strategies and stress-strain reduction, few studies have examined different types of
coping in organizational contexts. Next, most of the research that has been conducted has not focused on non-managerial, non-professional workers. Finally, the findings of the studies have produced mixed results regarding the efficacy of various coping strategies. For example, contrary to the evidence found in this study, one investigation found that emotion-focused coping had a significant effect on mediating both psychological and physical strain (Beehr, Johnson, & Nieva, 1995). Another study also found that emotion-focused coping decreased levels of psychological strain but not physical strain (Decker & Borgen, 1993). However, several studies investigating the role of emotion-focused coping strategies in reducing strain, found that as emotion-focused coping increased, psychological strain also increased, although there was not a significant relationship between emotion-focused coping and physical strain (Chang et al., 2006; Lambert, Lambert, & Ito, 2004a; Lambert et al., 2004b; Mak & Mueller, 2000). The outcome of this hypothesis suggests that decreasing emotion-focused coping strategies may be an important intervention to protect against psychological and physical occupational strain.

There are important implications associated with understanding the role of emotion-focused coping in buffering strain responses. Based on the mixed findings in the literature, the question of whether emotion-focused coping is a less helpful coping style when compared to problem-focused coping as originally suggested by Lazarus and Folkman (1984) begs an answer. According to the results of the current study, evidence suggests that emotion-focused coping increases both psychological and physical strain outcomes consistent with the theoretical literature.
While it would be advantageous to workers if organizations decreased stress in the workplace, it is unlikely that stress will be completely ameliorated. Therefore, it is important to note that in the study by Chang et al. (2007), the researchers found that reducing emotion-focused coping had nearly the same standardized effect on psychological health as decreasing stress in the workplace. However, the presence of occupational stress alone does not necessarily suggest that less adaptive emotion-focused coping strategies are being used by employees. When the work environment does not foster a climate where problem-focused coping strategies can be effectively used, employees may be forced to use emotion-focused coping to function in a workplace where they have little perceived power. If changes are not also made to the work environment that encourage and reward employees for taking action, it is likely that changing employee behaviors and skills alone will not lead to healthier coping strategies and reductions in strain.

Several research outcomes have provided evidence that emotion-focused strategies are less effective for reducing strain (Chang et al., 2006; Folkman & Lazarus, 1980; Lazarus & Folkman, 1984). The current study has further supported these findings. Organizational efforts to decrease emotion-focused coping strategies by implementing programs that encourage and reward employees’ problem-solving contributions may result in workers who feel more empowered in working conditions that are perceived as changeable and where individuals have an element of control. Karasek (1979, 1989, 1990) found that when work environments make high demands on employees while providing few opportunities for personal control, they will likely experience adverse health consequences from the ensuing strains.
Understanding the relationship between levels of emotion-focused coping and psychological and physical strain provides organizations with opportunities to address interventions aimed at decreasing emotion-focused coping in order to increase employee resiliency in the workplace. Additional research needs to be conducted in this important area with populations that have been overlooked, such as non-managerial, non-professional workers, in order to replicate these findings. Future research might also consider evaluating conditions in which the work environment promotes the use of emotion-focused coping strategies, as well as personality variables that seem to fit or be a good match for vocations or situations that may support this type of coping strategy.

The fifth hypothesis in the present study stated that both the moderators, self-efficacy and commitment, and the mediators, problem-focused and emotion-focused coping, would significantly predict psychological and physical strain. This hypothesis was supported. After controlling for the demographic variables, the combination of self-efficacy, commitment, problem-focused coping and emotion-focused coping accounted for an additional 50% of the variance in psychological strain and 40% of the variance in physical strain. In the combined equations, gender became a significant individual contributor to the variance in psychological and physical strain scores, with women reporting more strain than men, thereby increasing the psychological strain score by 3.16 points and the physical strain score by 3.48 points. In addition, age became a significant individual contributor to the variance in psychological and physical strain scores, with younger participants reporting more strain than their older counterparts. For every one point increase in the age category, psychological strain decreased by 1.14 points and physical strain decreased by 1.57 points. For every one point increase in the
self-efficacy score, psychological strain decreased by .218 points and physical strain decreased by .182 points. For every one point increase in the commitment score, psychological strain decreased by .186 points. However, in the combined model the commitment variable ceased being a significant individual contributor to the variance in the physical strain score, which will be discussed below. Problem-focused coping did not significantly contribute to the variance in either psychological or physical strain scores, which will also be discussed below. For every one point increase in the emotion-focused coping score, psychological strain increased by .388 points and physical strain increased by .515 points.

The implications of this finding are of interest to organizational researchers who seek to understand which combination of individual factors are predictive of occupational strain and to what degree. There are few studies in the occupational research domain that have examined the individual factors (self-efficacy, commitment, problem-focused coping, and emotion-focused coping) used in this study with a sample that has been largely overlooked in the literature (non-managerial, non-professional employees). For the first time, organizational commitment was included among the predictor variables in the combined regression model, which significantly improved the ability to predict psychological and physical strain within the study population. Examining the contributions of the combined model on psychological strain, emotion-focused coping emerged as the largest individual contributor to the variance followed by self-efficacy, commitment, gender, and age. It is not surprising that problem-focused coping did not significantly individually contribute to the variance in psychological or physical strain in the combined model because it failed to produce direct effects in the
earlier regression equations (see discussion related to the third hypothesis above). Considering the contributions of the combined model on physical strain, emotion-focused coping emerged as the largest individual contributor to the variance followed by, self-efficacy, age, and gender. Interestingly, commitment no longer contributed to the variance in the physical strain variable. This may be explained by the other variables in the equation. In other words, the addition of the coping variables and how they related to physical strain likely changed the relationship between commitment and physical strain and resulted in the commitment score becoming non-significant. This change is potentially attributed to the low but significant relationship that was found between commitment and emotion-focused coping.

One important implication of these findings is that multiple individual factors appear important when considering how they buffer psychological and physical occupational strain. This understanding may help organizations develop more holistic interventions that address each of the individual factors within the workplace. The results of this study suggest that the combination of factors might play an important role in improving employee resiliency in the workplace pertaining to both strain outcomes. The relationship between self-efficacy, commitment, emotion-focused coping and psychological and physical strain appears to be stronger for women and younger workers. These results indicate that women are more likely than their male counterparts to report psychological and physical strain, and younger workers are more likely than older workers to experience increased levels of strain. Therefore, employers may want
to better understand these differences and consider interventions that tailor strain reduction strategies to address the health and wellness needs of women and younger workers in the workplace.

The sixth hypothesis in the present study stated that there would be a statistically significant positive correlation between commitment and problem-focused coping, and a statistically significant negative correlation between commitment and emotion-focused coping. At the time of this study, no occupational research known to the investigator had explored the relationship between commitment and coping. Therefore, this hypothesis was exploratory in order to determine if a relationship existed between commitment and problem-focused coping and commitment and emotion-focused coping. The hypothesis was partially supported. The findings contribute new information to the occupational health literature. While there was a positive correlation, commitment was not significantly related to problem-focused coping; therefore, for this sample, levels of commitment did not appear to be related to problem-focused coping scores. It may be that the strength of the commitment measure was compromised by primarily focusing on one distinct component of commitment (normative). Possibly, for similar reasons that problem-focused coping did not predict psychological or physical occupational strain, commitment may not be related to problem-focused coping strategies because the environment that the employees work within is not one where they can effectively use this coping strategy. However, the results of this study provided support for the relationship between commitment and emotion-focused coping, showing that a statistically significant, negative relationship exists between the two constructs. This finding suggests that the more committed employees are to the organization, the
less likely they are to use emotion-focused coping strategies. The results provide important information to organizations regarding the relationship between commitment and coping. Extending this finding by exploring the interaction between commitment and coping will help organizations further understand how the variables respectively moderate and mediate strain responses.

Based on the findings of this study, interventions aimed at enhancing employee commitment may prove beneficial in producing healthier coping strategies and may subsequently decrease occupational strain. As previously discussed, there are different types of commitment such as normative (Meyer & Allen, 1991; O’Reilly & Chatman, 1986), affective (Meyer & Allen, 1991), continuance (Meyer & Allen, 1991), and instrumental (Caldwell et al., 1990; Meyer & Allen, 1991; O’Reilly & Chatman, 1986), to name several. While these types of commitment appear separate and distinct, Mowday (1999) suggested that there is an overlap in the way that theorists conceptualize organizational commitment. Some studies have measured commitment as a global construct (Jepson & Forrest, 2006; Vakola & Nikolaou, 2005; Siu, 2002) while others have measured it as distinct components such as affective commitment (Armstrong-Stassen, 2004; Glazer & Kruse, 2008; Payne & Morrison, 2002; Schmidt, 2007), continuance commitment (Armstrong-Stassen, 2004; Glazer & Kruse, 2008), and/or normative commitment (Addae, Parboteeah, & Velinor, 2008; Markovits, Ulrich, van Dick, & Davis, 2008; Martin, 2008; Meyer & Allen, 1991; Meyer, Allen, & Smith, 1993, Meyer, Allen, & Topolnytsky, 1998; Tsai & Huang, 2007; Wasti & Can, 2008). The current study measured normative commitment, which considers values shared by the organization and the employee. Before considering interventions, it is important that
organizations understand the prominent type of commitment employees express in the workplace. In other words, if employees are committed to the organization based on monetary rewards, attempts to increase commitment based on shared values will likely have little effect in increasing commitment and improving coping style. Organizational interventions aimed at increasing employee commitment may also need to consider changes to the work environment and organizational culture in order to better align with the type of commitment valued most by the employees.

Summary of Study Implications

The empirical literature has provided mounting evidence of the negative health effects of job-related strain. Psychological and physical strain has cost employees their job satisfaction, as well as their health and wellbeing. Organizations have incurred increasing expenses associated with rising health care costs, absenteeism, job dissatisfaction, low productivity, and turnover. Through the years, a better understanding of the stress concept and resultant strains has helped researchers discover several individual differences that buffer stress responses. These advances are promising for employees, organizations, and stress researchers alike, as scientific investigation strives to find protective factors that will increase employee resilience in the workplace. The results of this study provided additional information about the relationships between several factors and levels of strain. There are potentially many reasons contributing to these findings. Among these reasons are the individual characteristics of each employee that moderate and mediate stress, which then relates to the level of occupational strain that is experienced.
The participants in this study provided important information about a variety of personal and work-related variables, which helped to identify opportunities to increase employee resilience in the workplace. In particular, each of these qualities, methods, strategies, skills, and perceptions had some relationship to levels of strain within the sample studied during a time when strain may have been exceptionally high due to reorganization efforts. Understanding each contribution will help organizations determine where they might focus attention for the purpose of increasing protective factors in order to guard against increases in or to reduce occupational strain.

The implications of the findings related to this study are important to both employees and organizations. Interventions aimed at modifying employee self-efficacy, increasing shared values between the employees and the organization to increase commitment, and providing training related to healthy coping strategies may help build employee resilience and reduce psychological and physical strain in the workplace. However, employee changes alone will likely not decrease strain outcomes. Importantly, organizations should also consider opportunities to make changes to the environment in order to build upon or reinforce employees’ positive attitudes and behaviors. Organizational initiatives focused on modifying the work environment to encourage and reward an employee shift from emotion-focused coping strategies to a problem-solving orientation, increasing perceptions of changeable circumstances such as inviting employees’ to provide suggestions for organizational modifications, and adding elements of control in the workplace may go a long way toward increasing employee resiliency and decreasing strain. When employee strain is decreased, there may be multiple benefits to the organization in terms of satisfied employees, lower
turnover, decreased expenses associated with lower absenteeism and health care costs, and increases in productivity and profitability.

Study Limitations

While this study produced results that addressed important gaps in the occupational health literature, there are limitations to the contributions. First, while the sample size was adequate for this study, a larger sample would have provided the statistical power to control for additional demographic variables that may have contributed to the variance in outcome scores. The occupational health literature supports using more demographic control variables than were used by this study (Chang et al., 2006; Decker & Borgen, 1993). However, the choice to use fewer demographic variables was based on the projected sample size. This study began by using three demographic variables: gender, age, and length of employment. However, age and length of employment were too highly correlated in this sample, thereby causing multicollinearity of the regression equations, which required the removal of length of employment. While the literature supported gender and age as the most frequently used demographic variables, length of time in the position as well as other variables such as education and salary level may have also provided important information (Chang et al., 2006; Decker & Borgen, 1993). It is also possible that a larger sample may have produced different results with the control variables originally proposed. Other variables that might be important to consider for future research would be the addition of supervisor support, person-job fit, person-organization fit, and job burnout.

Next, because of the constraints placed upon the researcher by the sample organization based on its concerns with employee confidentiality, age was a
demographic variable that was collected using ranges of ages (e.g., 40-49) rather than specific ages. This undoubtedly led to restriction of range and made the understanding of the effects of age more difficult. Age emerged a significant individual contributor explaining the variance in psychological and physical strain in the combined regression equation; however, it was difficult to explain specifically the contribution since the age ranges were presented in increments of approximately 10 years. Using specific ages rather than the five broad age categories used in the current study may have produced more significant results in the other regression analyses.

Another limitation of this study resulted from the use of a cross-sectional research design. With this type of design, there exists a possibility of a reverse causation hypothesis, and future researchers might consider a longitudinal design to rule out the potential for a competing hypothesis (Allison, 1999; Grant & Langan-Fox, 2007). However, the presumed priority of self-efficacy, commitment, and/or coping strategies as moderators and mediators that buffer strain responses has been supported by the literature (Bandura, 1982; Beehr, Johnson, & Nieva, 1995; Begley & Cazjka, 1993; Cohen, 1992, 1993; Jex et al., 2001; Lazarus & Folkman, 1984; Lu, Siu, & Cooper, 2005; Mak & Mueller, 2000; Mathieu & Zajac, 1990; Mowday, Porter, & Steers, 1982; Schmidt, 2007; Siu, 2002; Somers, 1995; Stetz, Stetz, & Bliese, 2006).

The collection of data using a convenience sample of non-managerial, non-professional employees from one department in one transportation industry limits the generalizability of the findings beyond 24/7 call centers. While the findings may be generalizable to call centers in a variety of organizations, it is important to note that non-managerial, non-professional employees working in one department of
transportation may differ in important ways from employees working in other
departments, occupations, industries, and parts of the country.

Additionally, on average, the respondents reported average levels of
psychological and physical strain. This may indicate that the regressions and
correlations associated with this study included data provided by more healthy and
motivated individuals, which may have biased the results. This study collected data
using an electronic, anonymous survey; therefore, the sample was not random. Thus, the
individuals who elected to participate potentially may have suffered less strain than
their coworkers, and as a result, had more energy and motivation to complete the
survey.

An additional limitation involved the collection of data at a critical time in the
organization when jobs were being eliminated and the work unit was undergoing
significant restructuring and facility relocation. It is possible that uncertainty about
future job duties and/or ongoing employment may have made employees less motivated
to complete the survey. Further, time constraints due to job demands, paranoia that
management might learn about participants’ responses and retaliate, and fear of loss of
job security may have affected the responses and the results. It is also possible that the
sample size would have been larger and more diverse if the data were collected during a
more stable time.

There are two important limitations to note when using electronic surveys. This
sample was comprised of three shifts in a 24/7 call center. Their duties were identical.
The first limitation involved the workers’ sharing of computers and system limitations.
It was not until the study commenced that it was discovered that employees who began
the survey must complete and send the data before logging off the computer. Failure to do so would drop the respondent data on incomplete surveys when the worker logged off as required before the next shift-worker logged on. Once this problem came to the researcher’s attention, it was quickly addressed with management and prospective participants. It is possible that important data was lost that could not be recaptured because employees did not want to take the time necessary to retake the survey. Another problem involved a computer system outage resulting in a significant amount of lost data. Employees were encouraged to retake the survey but possibly were no longer motivated to do so. Importantly, workers who may have made a second attempt at completing the survey possibly responded differently due to their frustration. The advent of electronic surveys is an efficient, expedient and convenient method to collect data. However, as with any electronic source, it is important to anticipate and have a solid plan in place for responding to such challenges. Failure to do so may result in the unnecessary loss of data.

Another limitation involved the assumption that the antecedent condition of stress existed in a workplace that required 24/7 shift work. The sample used for this study was affected by job eliminations, duty changes, and an upcoming facility move. Therefore, the condition of stress appeared to be established and a direct quantitative measure of stress was not used with this sample. Because stress was not assessed, it is difficult to consider the results of the study in the context of the amount of stress experienced by employees. However, participants were asked to describe a stressful workplace situation or event before they responded to the coping strategy statements. The open-ended question provided respondents with an opportunity to disclose
important information about their experience with stress in the workplace. For this sample, relations between management, supervisors, and peers were the prevalent themes associated with stress in the workplace. Additionally, work demands related to schedules and workload were common themes contributing to workplace stress. It may strengthen future research findings to clarify levels of stress in order to more clearly establish the moderating and mediating effects of individual factors on strain responses.

Similar to the design of other organizational studies, this sample utilized only self-report measures, and only one measure for each construct was used in order to reduce response burden. It is well established in the literature that scores on self-report measures are often contaminated by respondent bias and/or are subject to socially desirable responding (Spector & O’Connell, 1994). However, utilizing a survey employing the use of self-report measures in addition to assuring anonymity of the respondents was the most efficacious way to collect data for the current study, although there was a risk of self-selection bias.

While every effort was made to select measures that had been tested for reliability and validity within the occupational stress literature, there are limitations associated with two of the measures included in this study. These measures have been less widely used since the constructs are only beginning to receive attention in the organizational literature. Therefore, there were few measurement options for the investigator. The Self-efficacy Scale was modified from a similar measure in the literature that had previously been used to measure self-efficacy of arthritis patients. Two organizational studies have used this measure for their organizational research
(Diem, 2002; Mills, 1995). However, the validity of this instrument to measure self-efficacy in organizational contexts has not been investigated and might be an important area for future research.

The Organizational Commitment Questionnaire, while it seemed to meet the needs of this study, has received little attention in the literature, similar to other organizational commitment measures. This is likely because the construct as a whole has not been widely investigated in the organizational literature. It was not until data had been collected and analyzed that it was apparent that there was a problem with the four items comprising one subscale (instrumental commitment). The subscale confounded total scale scores and overall instrument reliability was compromised. Additionally, the instrumental commitment subscale had extremely low reliability ($\alpha = .35$). It is difficult to determine why the instrumental subscale had such poor reliability while the normative commitment subscale had strong reliability ($\alpha = .93$). While the current sample size prohibited a reliable factor analysis, it appeared that the instrumental subscale actually loaded on two factors instead of one, contrary to the literature (O’Reilly & Chatman, 1986). In order to address these issues, removal of the four items was indicated for the present study. However, before removing the items, regression analyses involving the commitment construct were first conducted using the total scale score (12 items). Following the removal of the four items, statistical results changed minimally and the regression models that were initially significant at $p < .05$ using the total scale remained significant at the same alpha level. Finally, the decision to use the eight normative items was made based on the high reliability of the subscale ($\alpha = .93$) for the current sample, as well as the attention that normative commitment has

However, through the removal of the four items, it is possible that important information regarding the complete construct was not considered. At the time of this study, there were few measures of commitment available (Fields, 2002), possibly because the construct has not been widely studied. Therefore, future researchers may want to consider other measures of organizational commitment based on subsequent studies that establish the validity and higher reliability of the instrument(s) on all subscales.

Measuring problem-focused coping with the population used for this study has rarely been done in previous organizational research. While the selected instrument is widely used and generally considered a good measure of the construct (Carver, 1997; Carver et al., 1989; Clayton, Chester, Mildon, & Matthews, 2008; Cooper, Katona, Orrell, & Livingston, 2008; Grant & Langon-Fox, 2006; Miyazaki, Bodenhorn, Zalaquett, & Ng, 2008; O’Connor & O’Connor, 2003; Qiu & Li, 2008; Schroevers & Teo, 2008; Welbourne, Eggerth, Hartley, Andrew, & Sanchez, 2007; Zelikovsky, Schast, & Jean-Francois, 2007), it is important to note limitations associated with measures that have not been widely used in occupational health research and especially with highly structured, non-managerial, unionized workers. The failure to find significant results regarding problem-focused coping as a predictor for psychological and physical strain may be a result of using a measure that was potentially not adequate to detect this type of coping strategy. It is also plausible that options to use problem-
focused coping strategies do not readily exist in this type of environment, which will be discussed below in the recommendations for future research.

Recommendations for Future Research

This study was designed to explore the relationships between self-efficacy, commitment, problem-focused and emotion-focused coping and psychological and physical strain. Non-managerial, non-professional employees were recruited from one division in the transportation industry located in the western United States. It will be important for future research to focus on non-managerial, non-professional employees in various industries, organizational divisions located in a range of geographic areas with diverse demographics in order to generalize findings for this group.

An important area for future research is to more closely investigate the modifications of the Self-efficacy Scale for use with this population. There is little information on this measure in an organizational context because the construct has not received much attention in the organizational literature. Further research will continue to establish the reliability and validity of the self-efficacy instrument. Organizational commitment is another area that has received scant attention. Future research using a commitment measure with higher subscale reliability will help to further establish a reliable and valid instrument for wider use in organizational research. Additionally, coping resources and strategies are receiving increased attention in the occupational health literature; therefore, future research might focus on continuing to develop a specific organizational coping instrument that more readily identifies healthy and unhealthy coping strategies in an occupational context. It would be especially beneficial to consider theoretical differences in coping styles between managers and non-managers.
in highly structured workplaces. Further research could consider coping strategies that have become adaptive responses to the workplace and of those, which ones provide protective benefits for non-managerial employees.

While the current sample explained 50% of the variance in psychological strain outcomes and 40% of the variance in physical strain outcomes, another recommendation is to increase sample size and include more predictors in future studies in order to explain as much of the variance in outcome scores as possible. Additional predictors that seem relevant to the population used for this study include: 1) length of time in position, 2) education, 3) income, 4) supervisor support, 5) person-job fit, 6) person-organization fit, 7) work group commitment, and 8) job burnout. Based on sample size and attempts to keep the survey as short as possible, it was not practical to measure other significant variables. For example, it would have also been advantageous to measure negative affectivity as some researchers have suggested that it should be controlled for because it is often a nuisance variable in self-report measures (Payne, 1988).

Additionally, replicating findings regarding coping strategies and psychological and physical strain would help to advance research in this important area. This study found support that emotion-focused coping predicted an increase in both psychological and physical strain in the sample; however, other studies have produced mixed results (Beehr, Johnson, & Nieva, 1995). Problem-focused coping has also produced mixed results, but this study found that this coping strategy did not significantly predict either psychological or physical strain in non-managerial, non-professional workers. It would
be interesting to see if these findings are replicated with other non-managerial, unionized and non-unionized workers in other industries.

Finally, using a cross-sectional research design utilizing regression analyses of the data prevents the drawing of conclusions regarding the causal relationship between the independent and dependent variables, yet it is difficult to utilize experimental designs in organizations. However, the use of objective measures of stress and strain combined with self-report measures would provide researchers with a more complete understanding of how the workplace affects employee health and wellness. While the findings of this study are an important step in considering the individual and combined predictive ability of the variables on psychological and physical strain, a more complex statistical method such as structural equation modeling will be an important progression so researchers can consider larger theoretical models. Additionally, future research using a longitudinal design will help to establish causation and help to control the possibility of a reverse causation hypothesis (Allison, 1999; Grant & Langan-Fox, 2007).

Conclusions

The current study examined the effect of self-efficacy, commitment, problem-focused and emotion-focused coping on psychological and physical strain in non-managerial, non-professional employees. Results indicate that self-efficacy, commitment, and emotion-focused coping accounted for a significant amount of the variance in levels of psychological and physical strain with this population. These findings are consistent with both the theoretical and empirical literature in the occupational health area. The hypothesis that problem-focused coping would predict
both types of strain was not supported. The combination of the independent variables accounted for a significant amount of the variance in levels of psychological and physical strain, which is a new contribution to the literature. This study also found a significant negative relationship between commitment and emotion-focused coping, which is also a new contribution to the literature. While this study had several limitations, these findings provide further evidence that self-efficacy, commitment, and coping strategies are important considerations in occupational health research where workers’ skills, behaviors, and organizational changes may provide protection against psychological and physical occupational strain in the workplace.
REFERENCES


APPENDIX A

Email Message Sent to Employees in Advance of Study (De-identified)

We would like to invite you to participate in an upcoming study of occupational health. A research team from the University of Denver, Denver, Colorado will arrive the end of February to XYZ (pseudonym) to encourage your participation in this important area of research. The study has been developed as a result of a joint effort between the Unions and the University of Denver to assist in developing an understanding of employee health and wellness. The results of this collaborative venture will be used to consider the benefits of developing a comprehensive wellness program for transportation companies. The ultimate goal is to improve work conditions and to make a better and healthier work environment for you, the employees of XYZ.

The study involves the completion of an online questionnaire. Your participation is voluntary and will be completely anonymous. An electronic link will be provided in another communication at the end of the month that will make the questionnaire available once you click on it. If you are uncomfortable taking the online survey, the researchers will make available a paper copy and return, postage paid envelope. The research team from the University of Denver, Patrick Sherry PhD and Susan Bennett M.A., will be on site Wednesday and all day Thursday, February 27th until Friday afternoon, February 28th. They will be happy to answer any questions you may have regarding this study. We strongly encourage your participation. By being involved in this study, you are taking advantage of an important opportunity to let management know how you are doing in the workplace.
APPENDIX B

Informed Consent for Electronic Survey (De-identified)

Dear XYZ (pseudonym) Employee:

We would like to invite you to participate in our study of occupational health. Portions of this questionnaire have been developed as a result of a joint effort between the Unions and the University of Denver to assist in developing a better understanding of employee health and wellness. The results of this questionnaire will help us identify areas of concern and possibly assist us in developing a comprehensive wellness program for transportation companies. The ultimate goal is to improve work conditions and to make a better and healthier work environment. This project is being supervised by Dr. Patrick Sherry, Associate Professor of Counseling Psychology, University of Denver, Denver, CO 80208, (303) 871-2495, psherry@du.edu.

If you participate in this study, you will be asked to complete an online survey (enter survey at bottom of page). Participation should take about 20 to 30 minutes of your time. Questions and/or statements will be on a number of topics, including stress in the workplace, beliefs about your abilities to handle your job duties, commitment to your organization, supervisor support, job control, coping skills, and your health. You will also be asked to provide answers to a short demographic questionnaire. Your responses will be completely anonymous. That means that no one, including the research team from the University of Denver, will be able to connect your identity with the information that you provide. Please do not include your name anywhere on the survey. Consent to participate is indicated when you enter the survey website.

Your participation in this study is strictly voluntary, and the risks associated with it are minimal. While we encourage you to answer every question or statement, we respect your right to choose not to answer any items that may make you feel uncomfortable. If you experience any discomfort whatsoever, you may discontinue your participation at any time. Should you decide to withdraw your participation for any reason, simply exit the website without submitting your answers.

Only researchers at the University of Denver will analyze responses. Final summary reports will present trends, percentages, and written responses to open-ended questions. No information that could identify an employee will be reported. You may request a copy of the results of this study in approximately 6 months by contacting psherry@du.edu.

If you have any concerns or complaints about this study, please contact Dennis Wittmer, PhD, Chair, Institutional Review Board for the Protection of Human Subjects, at 303-871-2431 or Sylk Sotto-Santiago, Research Compliance Manager, at 303-871-4052, or write to either at the University of Denver, Office of Sponsored Programs, 2199 S. University Blvd., Denver, CO 80208-2121.
The questionnaire must be completed by March 16, 2008. You may print this page for your records. Thank you for your participation.

Please enter the survey here:
https://www.surveymonkey.com/s.aspx?sm=GFr61Eyy5Qm21Aqvdygyw_3d_3d
APPENDIX C

Informed Consent for Paper and Pencil Survey (De-identified)

Dear XYZ (pseudonym) Employee:

We would like to invite you to participate in our study of occupational health. Portions of this questionnaire have been developed as a result of a joint effort between the Unions and the University of Denver to assist in developing a better understanding of employee health and wellness. The results of this questionnaire will help us identify areas of concern and possibly assist us in developing a comprehensive wellness program for transportation companies. The ultimate goal is to improve work conditions and to make a better and healthier work environment. This project is being supervised by Dr. Patrick Sherry, Associate Professor of Counseling Psychology, University of Denver, Denver, CO 80208, (303) 871-2495, psherry@du.edu.

Participation should take about 20 to 30 minutes of your time. Questions and/or statements will be on a number of topics, including stress in the workplace, beliefs about your abilities to handle your job duties, commitment to your organization, supervisor support, job control, coping skills, and your health. You will also be asked to provide answers to a short demographic questionnaire. Your responses will be completely anonymous. That means that no one, including the research team from the University of Denver, will be able to connect your identity with the information that you provide. Please do not include your name anywhere on the survey. Consent to participate is indicated when you complete the survey and return it to a member of the University of Denver research team or return it in the self-addressed, postage paid envelope provided.

Your participation in this study is strictly voluntary, and the risks associated with it are minimal. While we encourage you to answer every question or statement, we respect your right to choose not to answer any items that may make you feel uncomfortable. If you experience any discomfort whatsoever, you may discontinue your participation at any time.

Only researchers at the University of Denver will analyze responses. Final summary reports will present trends, percentages, and written responses to open-ended questions. No information that could identify an employee will be reported. You may request a copy of the results of this study in approximately 6 months by contacting psherry@du.edu.

If you have any concerns or complaints about this study, please contact Dennis Wittmer, PhD, Chair, Institutional Review Board for the Protection of Human Subjects, at 303-871-2431 or Sylk Sotto-Santiago, Research Compliance Manager, at 303-871-4052, or write to either at the University of Denver, Office of Sponsored Programs, 2199 S. University Blvd., Denver, CO 80208-2121.
The questionnaire must be completed by March 16, 2008. You may keep this page for your records. Thank you for your participation.
APPENDIX D

Demographics

Please answer the following biographical questions about yourself. These will be used for statistical analysis only.

For the following questions, please place a checkmark in the area to the left of the option that best applies to you.

1. Which of the following categories includes your age?

___ Less than 18
___ 18 to 29
___ 30 to 39
___ 40 to 49
___ 50 to 59
___ 60 or older

2. What is your gender?

___ Male
___ Female

3. Which of the following categories below do you feel best describes your race or ethnicity?

___ Caucasian
___ Hispanic, Latino/a
___ African-American
___ Asian or Pacific Islander
___ American Indian or Alaskan Native
___ Mult-racial
___ Other: please indicate ______________________________

4. What is your marital status? (Specify only one)

___ Single (never married)
___ Married/Remarried
___ Divorced/Separated/Widowed
5. How many children do you have?
   ____ None
   ____ One
   ____ Two
   ____ Three
   ____ Four or more

6. What is your current living arrangement? (Specify only one)
   ____ Live alone
   ____ Live with spouse
   ____ Live with spouse and minor children
   ____ Live with minor children only
   ____ Shared custody, live alone and with minor children
   ____ Live with spouse and adult children
   ____ Live with adult children only
   ____ Live with significant other
   ____ Live with friends or relatives

7. What is your education level?
   ____ Did not finish high school
   ____ High school diploma (or GED)
   ____ Some college
   ____ College degree (Bachelor’s)
   ____ Some graduate school training
   ____ Graduate degree (please specify in the space below)

   _____________________________________________________________

8. Which of the following best describes your present position?
   ____ Entry level staff position
   ____ Staff position
   ____ Supervisor

9. How long have you been in this position?
   ____ Less than one year
   ____ One to three years
   ____ Four to six years
   ____ Seven to ten years
   ____ Over ten years
10. How long have you worked for this organization?
   ____ Less than one year
   ____ One to three years
   ____ Four to six years
   ____ Seven to ten years
   ____ Over ten years

11. Are you working full or part-time?
   ____ Part-time
   ____ Full-time

12. What is your total expected household income for the present calendar year before taxes?
   ____ Less than $15,000
   ____ $15,000 - $25,999
   ____ $26,000 - $40,999
   ____ $41,000 - $60,999
   ____ Over $61,000
APPENDIX E

Self-Efficacy Scale

The following 10 questions concern how you believe you will handle certain aspects of your job. For each question, write the number in the space to the left of each question that corresponds with your level of certainty according to the scale below. There are no right or wrong answers. Please choose only one answer for each question.

Very Uncertain

1  2  3  4  5  6  7

Very Certain

____ 1. How certain are you that you can deal with the demands of your job?

____ 2. How certain are you that you can manage the interpersonal aspects of your position?

____ 3. How certain are you that you can effectively balance the duties of work and home?

____ 4. How certain are you that you can continue to advance at your present organization?

____ 5. How certain are you that you can handle the administrative aspects of your position?

____ 6. How certain are you that you can do something to relieve stress caused by work demands?

____ 7. How certain are you that you can adhere to the time demands of your job?

____ 8. How certain are you that you can effectively handle the multiple roles required of you in your job?

____ 9. How certain are you that you are able to utilize your skills and expertise in your present position?

____ 10. As compared to people in a similar position, how certain are you that you can handle the requirements of your present position?
APPENDIX F

The Organizational Commitment Questionnaire

The following items refer to your feelings about the organization you work for. Indicate how much you agree or disagree with each statement by writing the appropriate number from the scale below next to the statement.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

1. If the values of this organization were different, I would not be as attached to this organization.
2. Since joining this organization, my personal values and those of the organization have become more similar.
3. The reason I prefer this organization to others is because of what it stands for, its values.
4. My attachment to this organization is primarily based on the similarity of my values and those represented by the organization.
5. What this organization stands for is important to me.
6. I am proud to tell others that I am a part of this organization.
7. I talk up this organization to my friends as a great organization to work for.
8. I feel a sense of “ownership” for this organization rather than being just an employee.
9. Unless I’m rewarded for it in some way, I see no reason to expend extra effort on behalf of this organization.
10. How hard I work for the organization is directly linked to how much I am rewarded.
11. My private views about the organization are different than those I express publicly.
12. In order for me to get rewarded around here, it is necessary to express the right attitude.
APPENDIX G

The Brief Cope Inventory

The purpose of the following statements is to determine the strategies that you use to handle or control the stress associated with your job.

Take a few minutes to think about a work-related event or situation that has been the most stressful for you in the past month. What is meant by stressful is that the situation was particularly challenging for you because it either made you feel uncomfortable, bad, or because it took effort to deal with it.

In the space provided, please briefly describe the event or situation (optional):

______________________________________________________________________
______________________________________________________________________

Each statement below is a possible strategy for handling or controlling the stress associated with your job. Use the following scale to rate the effectiveness of each strategy for the event or situation that you described above or that you are thinking about. Write the appropriate number from the scale in the space to the left of each item. Rate each statement separately in your mind from the others and be sure to rate each one. Make your answers as true FOR YOU as you can.

-----------------------------------------------------------------------

SCALE:

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

-----------------------------------------------------------------------

_1. I've been turning to work or other activities to take my mind off things.
_2. I've been concentrating my efforts on doing something about the situation I'm in.
_3. I've been saying to myself "this isn't real."
_4. I've been using alcohol or other drugs to make myself feel better.
_5. I've been getting emotional support from others.
_6. I've been giving up trying to deal with it.
_7. I've been taking action to try to make the situation better.
_8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.
APPENDIX H

OSI-R, Psychological (PSY) and Physical (PHS) Strain Scales

Copyright laws protect this instrument. A copy of the OSI-R may be obtained through Psychology Assessment Resources, Inc., through a written request sent to the following address:

P. O. Box 998
Odessa, Florida 33556
or
http://www.parinc.com
Phone: 1-800-331-TEST
APPENDIX I

Stressful Situation Descriptions

Prior to completing the Brief Cope measure, participants were asked to describe a stressful event or situation that they experienced in the workplace in the last 30 days before responding to the coping strategy statements. The participants were encouraged to complete a text box prompted by the following invitation, “Take a few minutes to think about a work-related event or situation that has been the most stressful for you in the past month. What is meant by stressful is that the situation was particularly challenging for you because it either made you feel uncomfortable, bad, or because it took effort to deal with it. In the space provided, please briefly describe the event or situation (optional).” The following descriptions (de-identified) were provided by the participants in the study:

1. I was speaking to an individual regarding the morning locals. We were laughing because it was the middle of the night and we where both tired and just trying to stay awake. I was told by the manager on duty to get off the phone and stop same timing him or I would be written up.

2. Trying not to blank a job even though you do not have a employees to fill it. Trying to find a guy to work when there is no one is impossible but we are "expected" to do it.

3. Talks of layoffs and bumps from different departments have contributed to the high stress levels in the workplace.

4. Our department may be cut, taking away at least 3 jobs, but despite this, we are required to take on more projects with unrealistic deadlines.

5. Coworkers not doing their jobs; and not getting into trouble; because of their race.

6. Calling transportation in vacancy procedures can be very stressful due to employees attitudes and management. Forcing guys that are not supposed to work is a big issue for me because I feel that they are getting taken advantage of and in some way I am doing it.
7. Worked a desk for 1st time since "training" which was not adequate; the desk had one of its worst days and I felt lost as to what to do.

8. Too much work and not enough time.

9. In my department, the filling of vacancies is not done as needed. On Mondays, for example, the call volume is very high for the amount of people staffed to handle everything needed.

10. Problems with the new computer system.

11. Abusive phone conversation while calling employee to work.

12. Change of procedures and new computer system.

13. Deadlines, too much to do in the short amount of time to get it done.

14. Managers and peers were providing incorrect information for me to base correct decisions on, which was causing me additional work and all the while I was being expected to perform the work of others on account of absenteeism by others.

15. System slow-downs and outages result in telephone and info back-logs, processing delays.

16. The department was short on manpower. I was expected to do my work and others and keep up. I was being given bad information from my peers and managers and continually having to correct my work and remain current on everything I was expected to do and expected myself capable of doing.

17. The employee that worked the prior shift did not complete the work the way it should have been done.

18. I think the biggest challenge is maintaining my composure on a daily basis when dealing with the various disgruntled personalities internally as well as externally.

19. Person is away from desk, their calls roll over, I do the work, person comes back, yells at me about what happened when they were away if I don't tell them. They are never at their desk, don't need to tell them everything that happens in the past if it doesn’t effect them once job is done.

20. There is always a conflict going on between certain people at work. It creates a stressful atmosphere when this happens.
21. The company is changing computer systems. I was totally ignored when I expressed concern about the lack of adequate training being received for the new system. I had to bid on another position to alleviate the stressful situation.

22. Lack of qualified people necessary to fill specific jobs.

23. Trouble coping with life working on call, having little to no time to do things. I like drawing, and staying focused on my body building goals and eating goals being so hard to follow with the weird unset work schedule. Makes me slightly depressed when a week goes by and between gym and work I don’t have any time to enjoy simple things like movies, reading, or even keeping my apartment cleaned, leaving my weekends usually pre-planned with cleaning.

24. Didn’t have enough employees to take high priority transportation through to another area, and managers as well as officers in the field upset.

25. Management is not held to the same standards as clerks. Managers use the Internet for personal use all the time (order golf shoes, plane reservations, process their taxes, read the latest news) and clerks are written up.

26. Receive complaints about situations that are out of my control. Complaintant(s) talk endlessly and do no listen for or wait for a response. They then threaten to go to management because they felt I was not being responsive to their complaint.

27. Working for a younger person with different values and understanding how the job is to be done.

28. Trying to learn a new system as fast as I can.

29. Having to spend a lot of time looking up things on the computer and exceptions.

30. Work load every day on desk.

31. The new computer system is not exactly working efficiently at this time. Implementing a new system is not easy.

32. When a manager gives a directive which is completely opposite to a manager directive from the previous day.

33. Asking that everyone work as a team.

34. Co-worker that does not acknowledge anyone or anything. She is very introverted and just stares at you and doesn't say anything just stares to a point that I am uncomfortable around her as is other employees.
35. The one thing that is possible to control is the time slots being cut to the point that we cannot fill these jobs. Also, excessive absenteeism.

36. The company had implemented a new computer application with little to no training or guidance that affected not only my division, but the managers, officers, and other transportation employees. There was a flood of phone calls to assist all these individuals.

37. I am expected to fix problems, even without knowledge, training, or understanding, it's my job to keep things working.....when the process fails I have to find the problem and fix it...it happens continuously.

38. Inconsistency between our managers, causes me the most stress. Every time you work with a different manager, you receive a different answer, this make it very difficult to do my job.

39. I was exposed to a coworker viewing pornography at work and, when I expressed my displeasure to upper management, the situation was turned on me. Now coworkers blame ME instead of the employee who purposely played the offensive email over and over and over.

40. I can't control the amount of enemies I ended up getting.

41. Schedule.

42. Earlier in the year we were targeted to define exactly how we spend every minute of our work day.

43. Being what I feel is targeted and not having the power to defend myself in any event because it is against company policy.

44. Coming to work and not knowing when you will get to go home.

45. A job abolishment.

46. Management made a big deal about hanging coats on the back of our chairs...some lame excuse that it was for safety.

47. Workplace hostility.

48. I was handed a letter by my supervisor at 1am that I must attend a conference at 7am with upper management. No other information--most stressful situations are like this--not job/task related.
49. Sunday nights into Monday AM every week are stressful, too many vacancies too few people, using an antiquated system that never was up to the task, must fill jobs for transportation operations.

50. Being caught between upper management demands on one hand and refusal to make a decision on the other hand (stressful).

51. Dealing with management that is difficult to work with and caring if the jobs get done.

52. Work load is supposed to be shared by 30 employees, several "slack"ers" redistribute work load unevenly.
APPENDIX J

Faculty Acknowledgment of Data Collection Under Existing IRB

July 23, 2008

To whom it may concern:

I am writing this memo in support of Susan Bennett who successfully collected her dissertation data with transportation workers. Her research was consistent with other research projects that I have conducted with transportation workers and as such, her survey instruments were added as an addendum to my IRB titled, ”Individualized Actigraph Feedback and Fatigue” – project number #03108.

Thank you and please let me know if you have any questions.

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