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## The Moderating Effects of Adaptive Coping Styles and Locus of Control on Stress Outcomes by Reported Level of Masculinity, Technology at Work, and Level of Perceived Stress

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# The Moderating Effects of Adaptive Coping Styles and Locus of Control on Stress Outcomes by Reported Level of Masculinity, Technology at Work, and Level of Perceived Stress

## Abstract

This study investigated the effects of adaptive coping styles and locus of control on reported stress outcome. Findings suggest that perceived stress, time spent using technology at work, and level of masculinity significantly predict job productivity and somatic symptoms. Only perceived stress and level of masculinity significantly predicted sleep quality. Internal Locus of Control and Adaptive coping with initial independent variable composites did not have significant moderation effects. When independent variables were separated, three significant moderations were found. Individual's with high Internal Locus of Control and more time spent using technology at work reported improved sleep quality. Also, when Internal Locus of Control is moderate or high, and individuals endorse high levels of perceived stress, they indicate that they are less productive at work due to health issues. Finally, individuals who have any level of adaptive coping and high masculinity exhibit lowered work productivity due to health issues. By identifying ways to moderate the relationship between the variables that cause stress outcomes; practitioners can tailor interventions to address protective factors. This information can help to provide support to reduce the adverse impacts of stress. This, in turn, could reduce the many costs associated with increased stress and burnout.

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The Moderating Effects of Adaptive Coping Styles and Locus of Control on  
Stress Outcomes by Reported Level of Masculinity, Technology at Work, and  
Level of Perceived Stress

By

Dawn M. Lowe, M.A.

Presented to the Faculty of the Graduate School of

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The Moderating Effects of Adaptive Coping Styles and Locus of Control on  
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This study investigated the effects of adaptive coping styles and locus of control on reported stress outcome. Findings suggest that perceived stress, time spent using technology at work, and level of masculinity significantly predict job productivity and somatic symptoms. Only perceived stress and level of masculinity significantly predicted sleep quality. Internal Locus of Control and Adaptive coping with initial independent variable composites did not have significant moderation effects. When independent variables were separated, three significant moderations were found. Individual's with high Internal Locus of Control and more time spent using technology at work reported improved sleep quality. Also, when Internal Locus of Control is moderate or high, and individuals endorse high levels of perceived stress, they indicate that they are less productive at work due to health issues. Finally, individuals who have any level of adaptive coping and high masculinity exhibit lowered work productivity due to health issues. By identifying ways to moderate the relationship between the variables that cause stress outcomes; practitioners can tailor interventions to address protective factors. This information can help to provide support to reduce the adverse impacts of stress. This, in turn, could reduce the many costs associated with increased stress and burnout.

## TABLE OF CONTENTS

Abstract.....	i
Table of Contents.....	ii
List of Tables.....	v
List of Figures.....	vi
CHAPTER 1. INTRODUCTION.....	1
CHAPTER 2. LITERATURE REVIEW.....	3
Perceived Stress.....	4
Coping.....	5
Adaptive Coping.....	6
Maladaptive Coping.....	6
Gender Differences.....	7
Level of Masculinity.....	8
Locus of Control.....	10
Work-Related Stress.....	11
Gender and Work-Related Stress.....	12
Technology and Stress .....	12
Stress Outcomes.....	13
Stress and Work Productivity.....	14
Stress and General Health.....	15
Stress and Sleep.....	16

Purpose.....	17
CHAPTER 3. METHOD.....	19
Participants.....	19
Mechanical Turk.....	19
Measures.....	20
Demographics.....	21
Patient Health Questionnaire.....	21
Pittsburgh Sleep Quality Index.....	21
The Health and Work Performance Questionnaire.....	22
The Masculine Behavior Scale.....	22
The Brief COPE.....	23
Locus of Control Scale.....	24
The Perceived Stress Scale.....	24
Research Design and Statistical Analysis.....	25
CHAPTER 4. RESULTS.....	26
Hypothesis 1.....	27
Hypothesis 2.....	29
Slopes Analysis.....	35
CHAPTER 5. Discussion.....	40
Hypothesis 1.....	41
Hypothesis 2.....	41
Limitations.....	43
Future Directions.....	45

Conclusion.....	46
References.....	48
Appendix A.....	68
Appendix B.....	70
Appendix C.....	72
Appendix D.....	73
Appendix E.....	75
Appendix F.....	76
Appendix G.....	77
Appendix H.....	79
Appendix I.....	82
VITA.....	83



## List of Tables

Table 1: .....	25
Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Reduction in Job Performance	
Table 2:.....	26
Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Reduction in Sleep Quality	
Table 3.....	27
Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Somatic Symptoms	
Table 4.....	28
Moderations with PTG Composite with Dependent Variable Health and Work Performance	
Table 5.....	29
Moderations with PTG Composite with Dependent Variable Somatic Symptoms	
Table 6.....	30
Moderations with PG Composite with Dependent Variable Sleep Quality	
Table 7.....	31
Moderations with Dependent Variable Sleep Quality	
Table 8.....	32
Moderations with Dependent Variable Somatic Symptoms	
Table 9.....	33
Moderations with Dependent Variable Health and Work Productivity	

## List of Figures

Figure 1: .....	33
Simple Slopes Equation of the Regression of Sleep Quality at Three Levels of Time with Technology	
Figure 2.....	35
Simple Slopes Equation of the Regression of Health and Work Productivity at Three Levels of Perceived Stress	
Figure 3:.....	36
Simple Slopes Equation of the Regression of Health and Work Productivity at Three Levels of Masculinity	

## **CHAPTER I**

### **Introduction**

Stress can cause a negative impact on job performance, health, and overall life satisfaction. Sultan-Taieb, Chastang, Mansouri, and Neidhammer (2013) reported that considerable financial costs could be associated with work-related stress. This type of work-related stress is said to cost the United States over 300 billion dollars annually due to accidents; absenteeism; employee turnover; medical, legal; and insurance costs; and worker's compensation reimbursements (American Institute of Stress, 2018). This can cause a burden to not only organizations but national economies as well. As such, the identification of psychosocial risk factors including level of masculinity, perceived stress, and time spent using technology at work are important factors that have been neglected in research (Sultan-Taieb et al., 2013).

Research on stress and coping in recent years has focused primarily on how specific groups perceive and manage the impacts of stress but have neglected the impact that individual traits may play in these life areas. For example, a recent search of Stress and Coping spanning the last 20 years provided information by minority status (Brown, Swartzendruber, Sales, Rose, & DiClemente, 2014; Capielo, Delgado-Romero, & Stewart, 2015; Hulland,

Feinstein, Davila, & Dyar, 2017; Flenar, Tucker, & Williams, 2017; Lau et al., 2015; Napora, Andruszkiewicz, Basińska, 2017), age (Colman et al., 2016; Cruways, Greenaway, & Haslam, 2015; El-Ghoroury et al., 2012; Hogue, Fry, & Iwasaki, 2018; Rice et al., 2015; Rummel, 2015; Urquijo, Extremera, & Villa, 2015), health conditions (Okamoto, Miyake, Nagasawa, & Yoshihara, 2018; Oswald et al., 2017; Rzeszutek, Oniszczenko, & Kwiatkowska, 2017; Waters et al, 2017), and many other group-specific topics. However, research has yet to fully explored a distinctive way in which stress outcomes are impacted by individual traits such as perceived stress, level of masculinity, or time spent using technology.

Previous research has offered a broad range of ways in which individuals currently experiencing stress might reduce stress outcomes; however, there is no current research into how identifying individual differences may prevent stress outcomes completely. Understanding how individual risk factors impact stress and coping may provide information that proves beneficial in tailoring interventions for individuals rather than a broad range of interventions based on group statistics.

This study attempts to offer solutions for clinicians and human services providers for identifying individual traits that may lead to stress while providing interventions proactively so that people are less likely to experience adverse stress outcomes.

## **CHAPTER II**

### **Literature Review**

While stress and coping are pertinent topics that individual's encounter daily, research on the topics have been neglected in recent year. Most core theories concerning stress and related ideas were developed in the 1980s (Cohen & Williamson, 1988; Lazarus and Folkman, 1984). These studies defined stress and coping and offered discussion on the negative relationship between stress and health. However, recent research has been limited to defining the problem, identifying groups at-risk for negative stress outcomes, and then providing a broad range of ways to manage stress. This may be attributed to factors related to stress and how stress is managed being extremely individualized. It requires an individual to perceive their environment in a stressful way and to also possess specific traits that reduce the individual's ability to cope with the stress effectively.

Research has attempted to rectify this problem by identifying groups who may be more likely to experience adverse stress outcomes; however, studies in this area continue to neglect how individual traits may impact stress outcomes or ways in which stress may be moderated. For instance, current research identifies minority groups that may be at risk for stress outcomes, but it does not address the impact that an individual's perception may have on

negative outcomes. It is imperative that research in the area of stress and coping begin to focus on the individual instead of trying to generalize results based on group traits. The impact of such research may, in fact aid professionals in guiding an individual towards paths that prevent negative stress events as opposed to attempting to intervene after the negative effects are already present.

### **Perceived Stress**

Theories on stress development suggest that perceived stress is a result of exposure to an environmental stimulus (LaMontagne et al., 2010). According to Lazarus and Folkman (1984), stress is the result of an individual's interpreting the connection between themselves and their environment as harmful or aversive. More specifically, perceived stress is caused by a person's perception of an event in their environment, paired with their capacity to cope with that situation effectively. Therefore, it is a person's interpretation of an incident, as well as the ability to effectively use adaptive coping styles and other resources that comprise an individual's perceived level of stress (Lazarus & Folkman, 1984).

Research has demonstrated how perceived stress might affect an individual's quality of life. For instance, stress may contribute to maladaptive behaviors such as smoking, alcohol consumption, drug use, and decreased exercise and sleep (Cohen & Williamson, 1988). The use of these maladaptive behaviors can create a cycle in which the behaviors cause negative situations that lead to more perceived stress and the use of

additional maladaptive behaviors. It is, therefore, important to understand the distinction between adaptive coping and maladaptive coping.

## **Coping**

Lazarus and Folkman (1984) defined coping as the "cognitive and behavioral efforts to master, reduce, or tolerate the internal and/or external demands that are created by a stressful transaction" (p. 843). In a study conducted by Giancola, Grawitch, and Borchert (2009), coping styles were sorted into adaptive coping styles and maladaptive styles. Positive reinterpretation, adequate social support, utilizing active coping, and planning were identified as adaptive coping styles while venting, denial, disengagement, and substance use were considered maladaptive.

Giancola et al. (2009) identified the use of finding the good in situations as indicative of positive reinterpretation. For instance, an individual may choose to view a supervisor's evaluation as an opportunity for growth instead of criticism. On the contrary, venting is complaining about the negative aspects of a circumstance. Additionally, they defined utilizing the support of family and friends as having adequate social support, whereas denial and disengagement are the act of refusing to address situations that are stressful or engaging in procrastination. Active coping and planning were defined as an individual's ability to face a stressful situation directly and create a plan to solve the problem. The final maladaptive coping style identified by Giancola et al. (2009), is the use of licit and illicit substances in an attempt to reduce stress. Individuals use a variety of coping techniques depending on the

amount and/or type of perceived stress that is experienced. Adaptive coping styles aide individuals in reducing their stress and moving through situations in a healthy manner while maladaptive coping styles may increase the amount of perceived stress and worsen a person's experience.

**Adaptive coping.** Adaptive coping styles have been linked to many positive consequences, including better health, improved mental states, and future success (Giancola et al., 2009). Coping mechanisms can drastically affect a person's ability to function socially and to maintain positive emotional well-being. Moreover, the use of more adaptive coping styles has been found to be a predictor of favorable social-emotional adjustment. Giancola et al. (2009) conducted a study of 159 students and concluded that adaptive coping styles lead to positive consequences, while maladaptive coping methods lead to negative consequences. Consequently, it can be postulated that the use of maladaptive coping styles such as self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame could lead to problems with job performance, social relationships, and physical and mental health.

**Maladaptive coping.** Maladaptive coping styles have been found to be predictors of depression, anxiety, and increased stress. In their study on coping styles, Mahmoud, Staten, Hall, and Lennie (2012) sought to establish whether maladaptive coping skills were predictors of increased negative emotions. In this study of 508 students, it was confirmed that the use of maladaptive coping styles could negatively influence an individual's emotional state. The study also indicated that individuals that used maladaptive coping



styles were more likely to experience increased levels of anxiety, depression, and stress.

Additionally, maladaptive coping has been identified as a mediator of the positive relationships between alcohol-related problems and contingent self-esteem (Tomaka, Morales-Monks, & Shamaley, 2013). This study also found that global self-esteem is negatively related to alcohol problems. This study supports the notion that coping is an essential factor in the prevention of low self-esteem and substance use. Moreover, more recent research has indicated that procrastination was negatively correlated with adaptive perfectionism and that maladaptive perfectionism was indicative of lower self-esteem and increased distress (Athulya & Sudhir, 2016). Therefore, understanding areas in which adaptive coping style might moderate the effects of stress outcomes could guide treatment for individuals suffering from the negative consequences of stress.

**Gender differences.** When identifying groups that may be more likely to implement adaptive coping styles to manage perceived stress, one factor that has been the subject of much debate is gender. Almeida and Kessler (1998) found that in general, females report more stressors and more severe perceived stress than men. They also indicated that females report that stress is a negative construct that is unbearable in daily life. Other studies also indicate that female's scores are higher for perceived stress on the Perceived Stress Scale (Cohen & Williamson, 1988; Hewitt, Flett, & Mosher, 1992; Martin, Kazarian, & Breiter, 1995; Örüçü & Demir, 2009). A study

conducted by Folkman and Lazarus (1980) determined that there are gender differences when dealing with stressful life situations. More specifically, men are more likely to use problem-focused active coping styles when managing work-related stress. Lazarus (1991) described problem-focused coping as taking control of the problem and actively working towards a solution. For example, if an individual was having difficulty with a co-worker, they might utilize assertive communication and compromise to manage the situation. However, this study did not find differences between males and females in the use of emotion-based coping techniques. Carver and Vargas (2011) identified emotion-based coping as utilizing cognitive reappraisal processes that may include self-reflection and taking control over one's emotions. Athulya and Sudhir (2016) extended the research on gender differences in coping and found that females are more likely to employ avoidant coping styles than males.

**Level of Masculinity.** Traditionally, gender has been viewed as two completely opposite character traits (Woo & Oei, 2008). Masculinity has notably been identified by goal-directed, self-confident, independent, and assertive behaviors, whereas femininity has been characterized by nurturing, compassion, tenderness, and communication (Woo & Oei, 2008). Other research (Baucom, 1976; Constantinople, 1973; Peterson and Dahlstrom, 1992; Ricciardelli and Williams, 1995), has disregarded the bipolar theory and has shifted to a unidimensional framework in which individuals may possess

both masculine and feminine qualities in differing amounts without regard to their biological sex.

The four gender roles that have been identified include stereotypical masculine, androgynous, stereotypical feminine, and undifferentiated (Baucom, 1976). Individuals with stereotypical masculine identification score themselves high on male-typical traits such as independence and risk-taking and low on feminine characteristics such as nurturance. The opposite holds true for individuals who identify as stereotypical female in that they score high on nurturance and low on masculine traits. Androgynous individuals score high on both scales of masculinity and femininity, whereas those categorized as undifferentiated score low on both measures (Jones, Mendenhall, & Meyers, 2014).

Research has suggested that psychological well-being may be impacted by gender roles. More specifically, masculinity has been paired with achievement stress, whereas femininity was associated with interpersonal stress (Steenbarger & Greenberg, 1990). Additionally, those with more masculine traits have been found to report better psychological well-being. This concept has been labeled as the Masculinity Model (Bassoff & Glass, 1982).

In a study conducted by Woo and Oei (2008), researchers concluded that among Australian and Singaporean groups, significant differences were found on the Low Self-Esteem Scale (LSE) and Gender-Masculine (GM) scales of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2)

Hathaway and McKinley (1989). The researchers found that when divided into one of the four gender categories individuals who reported androgynous or masculine gender identification had the lowest scores on the LSE and higher scores on Ego Strength (ES) indicating that higher masculine traits are associated with improved well-being.

Additional research also supports the Masculinity Model, with findings that supported the notion that psychological well-being can be determined by higher levels of masculinity independent of the number of feminine traits (Whitley 1983, 1985). In other words, individuals who identify as masculine or androgynous were found to report more positive well-being than those who identify as feminine or undifferentiated. Research conducted by Cheng (2005) suggests that individuals who report androgynous tendencies are often more flexible, which may improve their psychological well-being. This is in contrast to stereotypical masculine or feminine individuals in that these individuals are more rigid in the use of gender-specific coping, leading to lessened flexibility. However, Blanchard-Fields and Sulsky (1991) also indicated that those with more feminine qualities reported higher levels of adaptive coping.

### **Locus of Control**

Locus of Control has been identified as another factor that may impact an individual's use of adaptive coping styles. In 1966, Rotter separated individual's perceived amount of control into two types: internal and external. An individual may exhibit an external locus of control when they view a

situation as out of their control. They may perceive experiences were caused by luck or the actions of others. Conversely, internal locus of control is experienced when an individual believes that personal skill or effort is the reason for the outcome of a situation.

Phares (1973) purported that when individuals approach circumstances from the context of internal locus of control, they are more likely to extend their goals after success and tend to set easier goals after failure than individuals who use an external locus of control framework. Anderson (1977) demonstrated that those who utilize an internal locus of control report the use of adaptive coping styles and a reduction in perceived stress. Moreover, when individuals are more successful, they are likely to use an internal locus of control. More recent studies on locus of control continue to support Rotter's original theory. Therefore, Rotter's theory of locus of control continues to be the standard upon which other research is built despite its age.

### **Work-Related Stress**

According to the American Institute of Stress (2018), it is almost impossible to determine the "most" and "least" stressful jobs because individual differences contribute to the amount of perceived stress an individual may experience. It is easy to assume that the use of more adaptive coping styles will enable an individual to manage more work stress.

The American Institute of Stress (2018) reported data collected in the 2000 Integra Survey, which found that about 65% of all workers believe work-

place stress caused problems in their daily life. Another 10% reported that they witnessed physical violence that was created by work-related stress. Additionally, 42% described verbal abuse and yelling that occurred in the workplace. The survey also reported that 29% of workers admitted to yelling at coworkers. Furthermore, workers reported physical pain and discomfort caused by stress in the workplace.

**Gender and Work-Related Stress.** Research in the area of gender differences in stress/burnout to date has been inconsistent. For instance, some researchers suggest there are no gender differences in burnout (Goddard & Patton, 1998; Greenglass, Burke, & Ondrack, 1990; Shaddock, Hill, & van Limbeek, 1998). Other researchers suggest that males suffer from more stress-related burnout than females (Burke, Greenglass, & Schwarzer, 1996; Long & Gessaroli, 1989). Alternately, researchers also report that females experience more burnout than men (Etzion & Pines, 1986; Griffith, Steptoe, & Cropley, 1999). The differences in research outcomes suggest the need for more refined research in the area of gender, job-stress, and coping.

**Technology and Stress.** With modern information and communication technology, occupational demands may be difficult to leave at work. Current technology makes it possible to be reached anytime and anywhere. Bradley (2000) suggests that psychological stress may be increased due to role overload and limited boundaries between an individual's private and professional life. In fact, Sharma and Singh (1999) found that although

people believe that computer technology reduces mental workload, it, in fact, increases mental workload and decreases social support.

A study conducted by Thomée et al. (2007) found that increased computer and cell phone hours per week was correlated with an increase in reported stress and depression. Furthermore, the study found that the number of SMS messages sent or received daily increased the likelihood of prolonged stress. In a more recent study, Thomée (2010) found that use of information and communication technology led to mental overload, disregard of leisure activities, neglect of personal needs, feelings of guilt, social isolation and somatic symptoms. Other reported consequences included vulnerability, misunderstandings, feelings of inadequacy, and changed values.

### **Stress Outcomes**

Stress can have severe consequences both to individuals and organizations. A study conducted by Cooper, Liukkonen, and Cartwright (1996) indicated that workplace stress is correlated with heart disease, cancer, psychosomatic symptoms, migraines, stomach ulcers, and allergies. Furthermore, this study discusses behavioral outcomes of stress including reductions in job-satisfaction, unsafe behavior, increased physical accidents, increased use of licit drugs (tobacco and alcohol) and reduction in healthy lifestyle choices (e.g., proper diet and exercise).

Organizations may also bear the cost of workplace stress. Friedman, Tucker, Neville, and Imperial (1996) reported that stress might cause organizations to suffer due to long-term absenteeism as well as early

retirement due to psychological issues and poor health. Cooper et al. (1996) also suggested that organizations may be burdened with absenteeism, reduced productivity, and increased turnover rates.

**Stress and Work Productivity.** An individual's job performance or ability to successfully complete work demands may be affected by the amount of stress that the individual perceives (Jamal, 1984). Furthermore, the connection was made between the demands of the work situation and the individual's abilities and preparedness (Jamal, 1985). Jamal (2005) described job stress as a person's reactions to areas of the work setting that are perceived as emotionally and physically threatening.

Research has supported a negative correlation between job stress and performance (Roy et al., 1965; Westman & Eden, 1996). This research suggests that job stress negatively impacts job performance and organizational outcomes. More prominent job stress models have suggested a more curvilinear relationship between stress and performance (Ivancevich, Konopaski, & Matteson, 2005; Moss, 1981; Robbins, 2005). This model suggests that low stress could lead to less activation and lackluster performance, whereas higher levels of stress may also lower performance. In looking at both job stress models, it is evident that higher levels of job stress may, in fact, negatively affect an individual's job performance.

Other research postulates that stress should be viewed as a challenge and thus, only positive outcomes in job performance are related to stress (Meglino, 1977). However, there has been little evidence to support this idea



(Cohen, 1980). Yet another hypothesis about the relationship between stress and work performance suggests that there is no true relationship between the two. This research suggests that individuals might ignore their stressors and focus simply on the task at hand (Dubin, Hedley, & Taveggia, 1976; Taveggia & Santos, 2001). Muse et al. (2003) conducted a meta-analysis of job stress and performance literature and found that 46% of the studies supported a negative linear relationship, 13% supported a positive linear relationship, 4% supported a U-shaped/curvilinear relationship, and 12% found no relationship between stress and performance.

**Stress and General Health.** Stress has been shown to affect daily life and increase somatic symptoms, including backaches and headaches (Yates, 1979). Livingston (1982) also found that chronic stress is related to hypertension.

In a study conducted by Cohen et al. (1991), individuals who reported more stressful life events, higher levels of perceived stress, and negative affect had the greatest probability of developing cold symptoms. In another study, individuals exposed to a cold who were experiencing chronic life stressors had a higher chance of getting the cold than those who were not experiencing significant life stressors (Cohen et al., 1998).

Research has also suggested that autoimmune diseases such as Rheumatoid arthritis (Affleck et al., 1997), multiple sclerosis (Mohr et al., 2004), and coronary heart disease (Appels et al., 2000) may be exacerbated by stress. Further research has concluded that there is an association

between stress and the occurrence of cardiovascular disease (Belkic et al., 2004; Rosengren et al., 2004) and stroke (Everson et al., 2001; Surtees et al., 2008; Tsutsumi et al., 2009). Stress is also linked to behaviors that may negatively impact health, including drug use (Radlet, 1981), increased alcohol consumption, and problematic eating habits (Livingston, 1988).

**Stress and Sleep.** A study conducted by Liu et al., (2015) found that perceived stress played a critical negative role in sleep quality. In this study, participants who perceived higher levels of stress in their lives were more susceptible to sleep disturbance. Kashani et al., (2011), found that reports of higher perceived stress correlated with less total sleep time, lower sleep quality scores, increased risk of sleep apnea, and increased sleepiness and fatigue during the day. Several studies support the conclusion that there is a negative relationship between stress and sleep quality (Linton et al., 2015; Van Laethem, Beckers, Kompier, Dijksterhuis, & Geurts, 2013).

Stress has been found to increase or worsen the risk of sleep disturbance and insomnia (Chung & Cheung, 2008; Zunhammer, Eichhammer, & Busch, 2014). Nomura, Nakao, Takeuchi, and Yano (2009) conducted a study with 109 men that indicated that individuals with high occupational stress and low social support were three times more likely to have sleep problems than workers with low job stress and more social support. Liu et al. (2015) found that 33.9% of independent adults reported poor sleep quality. These findings were congruent with previous sleep

research studies (Gómez-Olivé et al., 2014; Léger, Poursain, Neubauer, & Uchiyama, 2008; Morphy et al., 2007).

In an international study, Léger et al., (2008) found that in the general population 56% of individuals in the United States over the age of 15 reported sleep problems; 31% of individuals in Western Europe had sleep problems, and 23% of Japanese individuals had sleep problems. Other studies suggest that between 30–48% of the general population experience insomnia (LeBlanc et al., 2009; Ohayon & Reynolds, 2009).

### **Purpose**

Several adverse effects of stress have been identified including gastrointestinal issues, difficulty with sleep, relationship issues, cardiovascular disease, musculoskeletal disorders, and psychological disorders (National Institute for Occupational Safety and Health [NIOSH], 1999). NIOSH also determined that health care costs are nearly 50% greater for individuals who report high levels of work-related stress.

The current study set out to investigate the effects of adaptive coping styles and locus of control on reported stress outcomes, including decreased job productivity, poor sleep quality, and increased somatic symptoms. Specifically, the purpose of the current study was to determine if adaptive coping and internal locus of control moderate the effects of time spent with technology at work, level of perceived stress, and gender role identification on stress outcomes.

It is hypothesized that 1) perceived stress, time spent using technology at work, and level of masculinity will significantly predict job productivity, sleep quality, and somatic symptoms. Furthermore, it is hypothesized that 2) internal Locus of Control and Adaptive Coping Styles will moderate the effects of perceived stress, time spent using technology at work, and level of masculinity, on job productivity, sleep quality, and somatic symptoms.

By identifying ways to moderate the relationship between stress predictors and outcomes, practitioners may become better equipped to tailor interventions to specifically address protective factors. It will then be possible to provide support to reduce the adverse impacts of stress. This, in turn, will alleviate many of the costs associated with increased stress and burnout.

## **CHAPTER III**

### **Method**

#### **Participants**

Participants included individuals who were 18 years or older and currently employed. A total of 450 participants were recruited via Mechanical Turk (MTurk). After initial screening of data for repeated IP addresses and completion, the total number of participants was 363. Participants were compensated 15 cents via PayPal on MTurk.

IRB approval was requested to ensure all APA ethical guidelines were followed to protect participant's confidentiality, receipt of informed consent, and wellbeing. Demographic analysis of the full sample indicates that 21.8% of participants were age 18-25, 36.7% were age 26-30, 24.5% were age 31-45, 12.7% were age 46-60, and 4.1% were age 60 or older. Furthermore, 59.5% were males, and 40.5% were females. In terms of education, 11.8% indicated High School Diploma or equivalent, 11.3% had an Associate Degree, 59% had a Bachelors Degree, 17.4% had a Masters Degree, and .6% had a Doctorate Degree.

#### **Mechanical Turk**

MTurk is an internet site that can be used for task creation, labor recruitment, compensation, and data collection. Pontin (2007) found that

there are over 100,000 members who reside in over 100 countries that use the site. When using MTurk, individuals may have one of two roles, requesters or task completers. Individuals who create and post the tasks are called requesters, and individuals who complete the work are identified as paid task completers. MTurk requesters create and post tasks along with the amount of compensation the task will pay. Task completers select tasks and are paid upon completion of the task.

MTurk is also a valuable tool for researchers as it provides a large and diverse population from which to sample. Buhrmester, Kwang, and Gosling (2011) found that the demographic profiles of individuals who use MTurk may have more diverse backgrounds than the non-college population of other internet and traditional samples. Furthermore, their study found that data quality from MTurk meets or exceeds common psychometric standards. In a summary of current research on MTurk, Mason, and Suri (2012) supported the use of MTurk for behavioral research. In their summary, they found that individuals who utilize MTurk report similar behavior to individuals who report behavior in laboratory settings.

### **Measures**

Participants were recruited via M-Turk and provided a link to Qualtrics.com. They were provided an informed consent document and completed a demographic questionnaire, the Physical Symptoms Questionnaire (PHQ-15), the Pittsburgh Sleep Quality Index (PSQI), the Health and Work Performance Questionnaire (HPQ), the Masculine Behavior

Scale, the Brief COPE, Rotter's Locus of Control Scale, and the Perceived Stress Scale.

**Demographics.** The demographic survey contained questions about the participant's age, gender, level of education, time spent using technology as well as time spent with others in the workplace, and frequency of health services. Variable *Techscale* was created using a composite score of the time spent with technology responses. While this study is not specifically examining gender or level of education, it may be useful for other researchers to have this data for comparative purposes. Information gathered in the demographics survey was used for descriptive purposes and to determine the time spent using technology based on the research hypotheses. A copy of the demographics survey is attached as Appendix B.

**Patient Health Questionnaire.** The Patient Health Questionnaire (PHQ) is a 15 question self-report measure of somatic symptoms. Individuals rate their somatic symptoms from 0 to 2, with higher scores indicating more severe symptoms. Variable *SomaticTOT* was created using the sum of responses on the PHQ. Cronbach's alpha was calculated at 0.80, and the test-retest reliability was found to be 0.83. (Van Ravesteijn et al., 2009). A copy of the PHQ is provided in Appendix C.

**Pittsburgh Sleep Quality Index.** The Pittsburgh Sleep Quality Index (PSQI) is a self-report measure used to gauge the quality and patterns of sleep in adults (Buysse et al., 1989). The PSQI measures seven areas of sleep including: perceived sleep quality, how long it takes an individual to get

to sleep, how long they sleep, sleep hygiene, disturbance with sleep, use of sleep aids such as medication, and daytime sleepiness. Scores on the PSQI range from 0 to 3 with higher scores indicating more problems with sleep. The sum of scores on the PSQI was used to create variable *GLOBALPSQI*. The PSQI's internal consistency was measured using Cronbach's alpha and was found to be adequate at 0.83 for all seven areas. The PSQI can be found in Appendix D.

**The Health and Work Performance Questionnaire.** The Health and Work Performance Questionnaire (HPQ) is a self-report measure used as a screening tool for the prevalence and treatment of health conditions and how this affects performance in the workplace (Kessler, 2003). The HPQ contains eleven questions regarding health and work performance that are rated on a 5-point Likert scale. Scores from each question are added to provide an overall score with question 1 being reverse scored. Higher scores indicate more problems with health and productivity than lower scores. The HPQ items were coded to create variable *HPQTOT*. The validity and reliability of the HPQ are adequate. Pournk et al., (2012) calculated Cronbach's alpha for physical health 0.74, mental health 0.73, recent physical signs .073, and work performance 0.76. A copy of the HPQ is provided in Appendix E.

**The Masculine Behavior Scale.** The Masculine Behavior Scale (MBS) is a self-report scale designed to measure four behavioral tendencies stereotypically reported more by males than females (Snell, 1989). These



behavioral tendencies include: restrictive emotionality, inhibited affection, success dedication, and exaggerated self-reliance. When scoring the MBS, more extreme positive scores mean that the individual reports more stereotypical masculine traits, while lower scores indicate more feminine traits. Variable *GenderSUM* was created using the reverse of the sum of MBS scores. Each of the four subscales of the MBS were calculated using Cronbach alpha and ranged from .69 to .89 (average=.84). The test-retest reliability was found to be between .48-.70. Pearson correlation coefficients were also calculated by gender and together. Positive correlations between the inhibited affection and restrictive emotionality subscales (.58) as well as the success dedication and exaggerated self-reliance subscales (.28) were found. Furthermore, restrictive emotionality was positively correlated with exaggerated self-reliance. Lastly, females who scored high on the inhibited affection subscale were positively correlated with the exaggerated self-reliance subscale. A copy of the MBS can be found in Appendix F.

**The Brief COPE.** The Brief COPE is a self-report survey that identifies how people respond to stress. Included in the Brief COPE are 14 scales with two items each (Carver, 1997). These scales include; active coping, advanced planning, positive reframing, acceptance, humor, turning to religion, use of social support, use of instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame (Carver, 1997). The reliabilities for each scale have been found to meet or exceed .60 with the exception of the venting, denial, and acceptance scales. The overall

reliability of the Brief COPE is considered to be acceptable. The *COPETOT* scale was created using responses from the Brief COPE. A copy of the Brief COPE is attached as Appendix G.

**Locus of Control Scale.** The Locus of Control Scale contains 23 questions that measure how individuals perceive their locus of control as either internal or external (Rotter, 1966). The scale also includes six “filler” items that are not calculated into the overall score. The “filler” items are intended only to try to make the purpose of the survey ambiguous. Scores on the Locus of Control Scale range from 0 to 23. Individuals who endorse lower scores function from a more internal locus of control, whereas individuals who report high scores have a more external locus of control (Rotter, 1966). For this study, the scores were reversed so that higher scores indicated a more internal locus of control. The *RLOCsum* variable was created using the reverse scores. The internal consistency was found to be acceptable and ranged between 0.65 and 0.79. Test-retest reliability was also found to be acceptable and ranged between 0.49 and 0.83. A copy of Rotter’s (1966) Locus of Control Scale is provided in Appendix H.

**The Perceived Stress Scale.** The Perceived Stress Scale contains 10 self-report questions that measure the amount of stress people perceive in their day to day life Cohen, Kamarack, and Mermelstein (1983). The Perceived Stress Scores are calculated by reversing response values to the four positively stated items and then summing across all scale items. Variable *PSSsum* was created using the responses on the Perceived Stress Scale. A

review of 12 studies on the reliability and validity of the Perceived Stress Scale indicated that in all 12 studies, the 10-item scale was evaluated at  $>.70$  for internal consistency (Lee, 2012). The test-retest reliability was calculated at  $>.70$  in the four studies in which it was tested (Chaaya et al., 2010; Reis et al., 2010; Remor, 2006; Wongpakaran et al., 2010;). See Appendix I for a copy of the Perceived Stress Scale.

### **Research Design and Statistical Analysis**

This study used a nonexperimental design because the purpose was to examine relationships between variables in order to describe specific groups and to inform the treatment of at-risk groups. None of the variables in this study were directly manipulated in any way. To evaluate how well the independent variables of perceived stress, time spent using technology at work, and level of masculinity predicted job productivity, a multiple regression was conducted. Multiple regression analyses were conducted to evaluate how well perceived stress, time spent using technology at work, and level of masculinity predicted job productivity, sleep quality, and somatic symptoms.

After running the multiple regressions, moderation statistics were run to determine if the variables adaptive coping and Internal Locus of Control moderated the effects of independent variables perceived stress, time spent using technology at work, and level of masculinity moderated the dependent variables job productivity, sleep quality, and somatic symptoms.

## CHAPTER IV

### Results

Prior to analyses, the statistical assumptions of normality and linearity were tested. Variables for time spent with technology (*Techscale*), *level of masculinity (GenderSUM)*, *perceived stress (PSSsum)*, *health and productivity (HPQTOT)*, *global sleep quality (GLOBALPSQI)*, and *patient health (SomaticTOT)* were included. Results indicated that all variables were normally distributed except for *SomaticTOT*, which had a leptokurtic distribution ( $SomaticTOT = M= 4.057, SE = .256$ ). Therefore, a LOG10 transformation was conducted for the variable *Adjusted\_SomaticTOT* and resulted in a normal distribution of scores. Thus, this transformation is now used for future analysis.

Results also indicated that linearity was acceptable for all bivariate relationships. Moreover, univariate outliers were tested. Cases were classified as outliers when there was a score above the IQR of 3. One outlier was identified in *GLOBALPSQI*. Cases were also tested for multivariate outliers. Mahalanobis distance were computed and compared to Chi-squared distribution. There were two cases identified as outliers, and these were deleted. The final sample, after testing assumptions, was 360.

## Hypothesis 1

A multiple regression analysis was conducted to evaluate how well-perceived stress, time spent using technology at work, and level of masculinity predicted job productivity. The model was significantly related to job productivity,  $F(3, 356) = 14.75, p < .001$ . The sample multiple correlation coefficient was .12, indicating that approximately 12% of the variance of job productivity can be accounted for by perceived stress, time spent using technology at work, and level of masculinity. Table 1 indicates that perceived stress, time spent using technology at work, and level of masculinity are statistically significant contributors of variance.

Table 1  
*Presents Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Reduction in Job Performance.*

<i>Model</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p=</i>
Constant	21.61	1.73	12.51	.000
PSSsum	.27	.07	.19	.000
Techscale	-.38	.14	-2.84	.005
GenderSUM	.15	.03	4.66	.005

*Note:* PSSsum=perceived stress, Techscale=time spent using technology at work, GenderSUM=level of masculinity

A second multiple regression analysis was conducted to evaluate how well-perceived stress, time spent using technology at work, and level of masculinity predicted a reduction in sleep quality. The model was significantly related to sleep difficulty,  $F(3, 356) = 41.41, p < .001$ . The sample multiple correlation coefficient was .26, indicating that approximately 26% of the

variance of sleep difficulty can be accounted for by perceived stress, time spent using technology at work, and level of masculinity. Table 2 indicates that perceived stress and level of masculinity were significant contributors of variance; however, time spent using technology at work was not a significant predictor. Please note that subsequent moderation analysis included only perceived stress and level of masculinity as time spent using technology at work was not a predictor of sleep difficulty.

Table 2  
*Presents Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Reduction in Sleep Quality.*

<i>Model</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p=</i>
Constant	1.64	.72	2.27	.024
PSSsum	.29	.03	9.78	.000
Techscale	-.01	.06	-.15	.88
GenderSUM	.04	.01	3.10	.002

*Note:* PSSsum=perceived stress, Techscale=time spent using technology at work, GenderSUM=level of masculinity

A third multiple regression analysis was conducted to evaluate how well perceived stress, time spent using technology at work, and level of masculinity predicted somatic symptoms. The model was significantly related to job productivity,  $F(3, 356) = 40.74, p < .001$ . The sample multiple correlation coefficient was .26, indicating that approximately 26% of the variance of sleep difficulty can be accounted for by perceived stress, time spent using technology at work, and level of masculinity. Table 3 indicates

that perceived stress, time spent using technology at work, and level of masculinity are statistically significant contributors of variance.

Table 3  
*Presents Coefficients for Time Spent Using Technology at Work, Level of Masculinity, and Perceived Stress Predicting Somatic Symptoms.*

<i>Model</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p=</i>
Constant	-.22	.17	-1.28	.201
PSSsum	.05	.01	7.51	.000
Techscale	-.03	.01	-2.16	.031
GenderSUM	.02	.01	6.00	.000

*Note:* PSSsum=perceived stress, Techscale=time spent using technology at work, GenderSUM=level of masculinity

## **Hypothesis 2**

Based on the regression outcomes, composite independent variables were created. First, the composite (PTG) was used to conduct moderation analyses to determine if adaptive coping or internal Locus of Control moderated the relationship between the composite and Health and Work Performance. Table 4 shows that the relationship between the composite PTG and Health and Work Performance was not significantly moderated by the use of adaptive coping styles or internal Locus of Control.

Table 4  
*Moderations with PTG Composite with Dependent Variable Health and Work Performance*

Moderations	Coeff	Se	<i>t</i>	<i>p</i>	LLCI	ULCI
PTG x	.000	.000	1.674	.095	.000	.000
COPETOT						
PTG x	.000	.000	-.447	.656	.000	.000
RLOCsum						

Note: DV=Health and Work Performance

The composite PTG was also used to determine if adaptive coping or internal locus of control moderates the relationship between composite PTG and Somatic Symptoms. Table 5 shows that the relationship between the composite PTG and Somatic Symptoms was not significantly moderated by adaptive coping. Table 5 also shows that the relationship between composite PTG and Somatic Symptoms was not significantly moderated by internal Locus of Control.



Table 5

*Moderations with PTG Composite with Dependent Variable Somatic Symptoms*

Moderations	Coeff	se	<i>t</i>	<i>p</i>	LLCI	ULCI
PTG x	.000	.000	1.156	.249	.000	.000
COPETOT						
PTG x	.000	.000	-.898	.370	.000	.000
RLOCsum						

Note: DV=Somatic Symptoms

Since previous regression analysis indicated that time with technology was not a significant predictor of Sleep Quality, a second composite was created using Perceived Stress and Gender Role (composite PG). This composite was used to determine if adaptive coping or internal Locus of Control moderates the relationship between composite PG and Sleep Quality. Table 6 shows that the relationship between the composite PG and Sleep Quality was not significantly moderated by adaptive coping. Furthermore, it shows that the relationship between composite PG and Sleep Quality was not significantly moderated by internal Locus of Control.

Table 6

*Moderations with PG Composite with Dependent Variable Sleep Quality*

Moderations	Coeff	se	T	p	LLCI	ULCI
PG x	.000	.000	1.30	.195	.000	.000
COPETOT						
PG x	.000	.000	.145	.885	.000	.000
RLOCsum						

Note: DV= Sleep Quality

Since moderations using composite scores were insignificant, moderations were conducted using the individual independent variables Perceived Stress, Gender Role, and Time with Technology. Out of the 18 moderations, three were found to be significant. Table 7 shows that the relationship between Time with Technology and Sleep Quality is significantly moderated by internal Locus of Control. Table 9 shows that the relationship between Perceived Stress and Health and Work Productivity is significantly moderated by internal Locus of Control. Finally, Table 9 also shows that the relationship between Gender Role and Health Work Productivity is significantly moderated by adaptive coping.

Table 7

*Moderations with Dependent Variable Sleep Quality*

Moderator		Coeff	se	t	p	LLCI	ULCI
RLOCsum							
Techscal x		-.049	.017	-2.957	.003	-.082	-.017
RLOCsum							
PSSsum x		.007	.010	.667	.505	-.013	.027
RLOCsum							
GenderSU x		-.001	.004	-.214	.830	-.008	.007
RLOCsum							
Moderator							
COPETOT							
Techscal	X	.000	.000	.451	.653	.000	.001
COPETOT							
PSSsum	x	.000	.000	.890	.374	.000	.000
COPETOT							
GenderSU	x	.000	.000	.541	.589	.000	.000
COPETOT							

Note: DV= Sleep Quality

Table 8

*Moderations with Dependent Variable Somatic Symptoms*

Moderator	Coeff	se	t	p	LLCI	ULCI
RLOCsum						
Techscal x	.001	.004	.207	.836	-.007	.009
RLOCsum						
PSSsum x	.003	.003	1.171	.242	-.002	.008
RLOCsum						
GenderSU x	-.001	.001	-1.153	.250	-.003	.001
RLOCsum						
Moderator						
COPETOT						
Techscal X	.000	.000	-1.105	.270	.000	.000
COPETOT						
PSSsum x	.000	.000	-.627	.531	.000	.000
COPETOT						
GenderSU x	.000	.000	1.307	.192	.000	.000
COPETOT						

Note: DV=Somatic Symptoms

Table 9

*Moderations with Dependent Variable Health and Work Productivity*

Moderator	Coeff	se	t	p	LLCI	ULCI
RLOCsum						
Techscal x	.010	.037	.274	.785	-.062	.082
RLOCsum						
PSSsum x	.060	.025	2.414	.016	.011	.109
RLOCsum						
GenderSU x	-.006	.008	-.777	.438	-.023	.010
RLOCsum						
Moderator						
COPETOT						
Techscal X	.000	.001	-.451	.653	-.001	.001
COPETOT						
PSSsum x	.000	.000	-.644	.520	-.001	.000
COPETOT						
GenderSU x	.000	.000	2.153	.032	.000	.000
COPETOT						

Note: DV=Health and Work Productivity

**Slopes Analysis**

Given that RLOCsum moderated the relationship between Time with Technology and Sleep Quality, simple slopes analysis was performed to follow up on the significant moderating effect of Internal Locus of Control

(RLOCsum) on Sleep Quality (GLOBALPSQI). Figure 1 indicates the simple slopes equations of the regression of internal Locus of Control on Sleep Quality at three levels of Time with Technology. When internal Locus of Control is low there is a non-significant positive relationship between Time with Technology and Sleep Quality  $b = .158$ , 95% CI [-.011, .326],  $t = 1.843$ ,  $p = .066$ . Furthermore, when internal Locus of Control is moderate there is also a non-significant positive relationship  $b = .010$ , 95% CI [-.119, .139],  $t = .151$ ,  $p = .880$  between Time with Technology and Sleep Quality. However, when internal Locus of Control is high there is a significant negative relationship between Time with Technology and Sleep Quality  $b = -.187$ , 95% CI [-.364, .011],  $t = -2.09$ ,  $p = .037$ . See Figure 1.

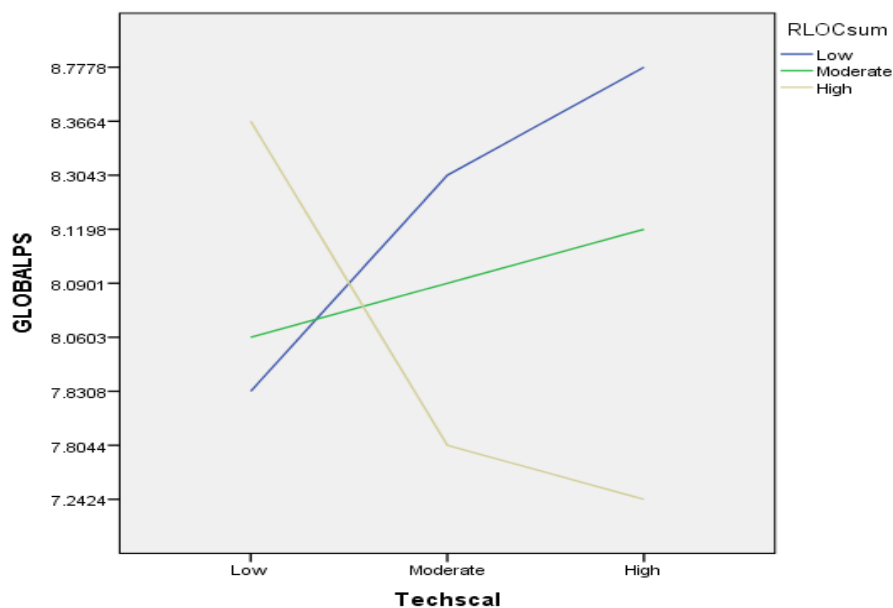


Figure 1. Simple Slopes Equation of the Regression of Sleep Quality at Three Levels of Time with Technology

Since RLOCsum also moderated the relationship between PSSsum and HPQTOT, simple slopes analysis was performed to follow up on the significant moderating effect of Internal Locus of Control (RLOCsum) on Health and Work Performance (HPQTOT). Figure 2 shows the simple slopes equations of the regression of internal Locus of Control on Health and Work Productivity at three levels of Perceived Stress. When internal Locus of Control is low there is a non-significant positive relationship between Perceived Stress and Health and Work Productivity  $b = .123$ , 95% CI [-.096, .343],  $t = 1.105$ ,  $p = .270$ . However, there is a significant positive relationship between Perceived Stress and Health and Work Productivity when internal Locus of Control is moderate  $b = .304$ , 95% CI [.161, .447],  $t = 4.180$ ,  $p = <.001$  and high  $b = .545$ , 95% CI [.319, .771],  $t = 4.743$ ,  $p = <.001$ . See Figure 2.

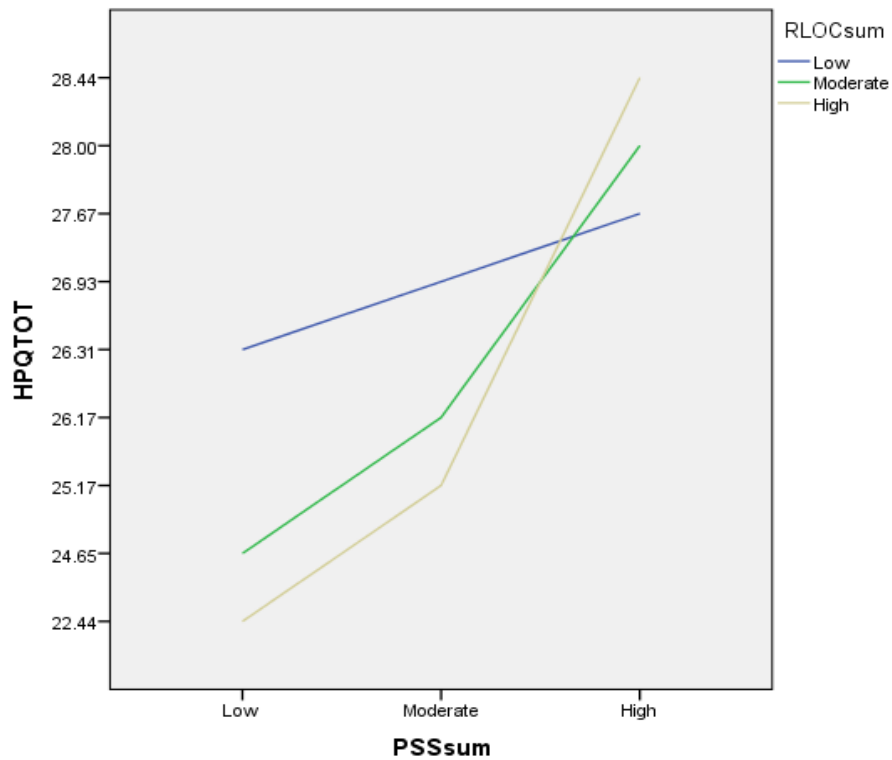


Figure 2. Simple Slopes Equation of the Regression of Health and Work Productivity at Three Levels of Perceived Stress

Finally, because COPETOT moderated the relationship between GenderSUM and HPQTOT, simple slopes analysis was performed to follow up on the significant moderating effect of Adaptive Coping (COPETOT) on Health and Work Performance (HPQTOT). Figure 3 shows the simple slopes equations of the regression of Adaptive Coping on Health and Work Productivity at three levels of Masculinity. Findings suggest that there is a significant positive relationship when Adaptive Coping is low  $b = .120$ , 95% CI [.043, .197],  $t = 3.062$ ,  $p = .002$ , moderate  $b = .171$ , 95% CI [.108, .234],  $t = 5.327$ ,  $p = <.001$ , and high  $b = .216$ , 95% CI [.139, .292],  $t = 5.557$ ,  $p = <.001$ . See Figure 3.



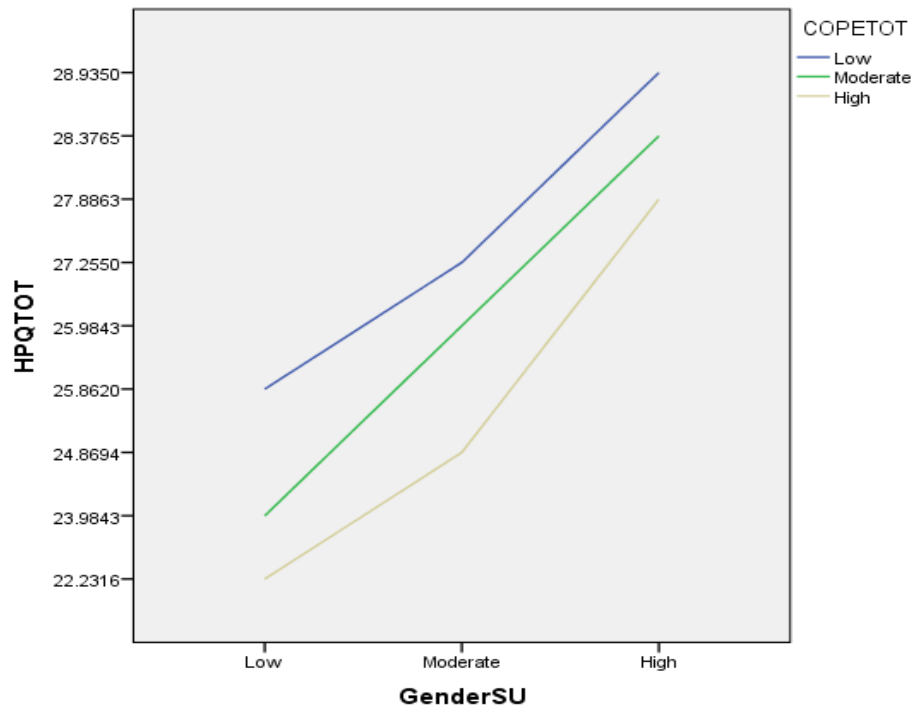


Figure 3. Simple Slopes Equation of the Regression of Health and Work Productivity at Three Levels of Masculinity

## **CHAPTER V**

### **Discussion**

Stress outcomes, including reduced work productivity, somatic symptoms, and poor sleep quality, can have devastating consequences for individuals, employers, and society as a whole. The American Institute of Stress (2018) estimated that approximately 300 billion dollars are lost annually due to accidents; absenteeism; employee turnover; medical, legal; and insurance costs; and worker's compensation reimbursements. Research has suggested several reasons for work-related stress outcomes in individuals including: gender roles (Burke, Greenglass, & Schwarzer, 1996; Etzion & Pines, 1986; Griffith, Steptoe, & Cropley, 1999; Long & Gessaroli, 1989;), time spent working with technology (Thoméé et al. 2007; Thomée et al. 2010), and perceived stress (Cohen & Williamson, 1988).

The current study investigated the relationships between perceived stress, gender roles, and time with technology on health and work productivity, somatic symptoms, and sleep quality. More specifically, it sought to determine if adaptive coping styles and locus of control moderate the relationship between the independent variables and stress outcomes. The hypotheses of this study are as follows: (1) perceived stress, time spent using technology at work, and level of masculinity will significantly predict job

productivity, sleep quality, and somatic symptoms. Furthermore, it is hypothesized that (2) internal Locus of Control and Adaptive Coping Styles will moderate the effects of perceived stress, time spent using technology at work, and level of masculinity on job productivity, sleep quality, and somatic symptoms.

### **Hypothesis 1**

The first hypothesis was partially supported. This study suggests that all three independent variables, time with technology, level of masculinity, and perceived stress, predict the level of health and work productivity reported. Alternately, only perceived stress and level of masculinity were found to predict sleep quality. Time spent working with technology alone was not a significant predictor of sleep quality. Finally, time with technology, level of masculinity, and perceived stress were all found to predict somatic symptoms in this sample significantly.

### **Hypothesis 2**

Based on the findings of the multiple regressions, two composite scores were created. The first included all three independent variables and was labeled PTG. Because only perceived stress and level of masculinity were found to predict sleep quality, a second composite score (PG), including only those two variables, was created. When moderations were conducted with the two composite variables findings, suggest that neither internal Locus of Control or adaptive coping moderated the effects of the combined independent variables.

Given that the composite scores did not provide significant findings, the independent variables were run separately with each stress outcome. Of the eighteen moderations, three had significant findings. Moderation analysis suggests that when an individual has a high Internal Locus of Control, more time spent using technology at work improved the quality of sleep. When individuals work more with technology, they have less interaction with others. Individuals with Internal Locus of Control who work with technology may not have to depend on others as much to complete their work tasks and thus feel more in control. Being independently responsible for work outcomes may, in turn, lead them to feel less stressed and improve their quality of sleep.

Furthermore, when Internal Locus of Control is moderate or high, and individuals endorse high levels of perceived stress, they indicate that they are less productive due to health issues. This finding is not surprising considering that individuals with high Internal Locus of Control may not seek outside support for health issues instead of trying to manage them independently. Another interesting finding suggests that individuals with low Internal Locus of Control and low perceived stress have much lower productivity due to health issues than individuals with moderate or high Internal Locus of Control and low perceived stress. This finding suggests that these individuals may rely more on outside influences to feel healthy and that this influences their overall feeling of health and productivity.

In the third significant moderation, it was found that when an individual has any level of adaptive coping and high masculinity work productivity due to

health issues decreases. This suggests that the more masculine traits individuals endorse, the lower their productivity will be when they have health issues. More masculine individuals are, by definition, less nurturing of others and may be more likely to solve problems strategically. When they feel that they are having health issues, they would be more likely to directly intervene on this issue and rest and take medication to solve the problem.

Findings also suggest that neither Internal Locus of Control or adaptive coping moderate the effects of level of masculinity, perceived stress, or time with technology on somatic symptoms. While somatic symptoms can be exasperated by stress, they may not be directly caused by stress alone. It is possible that when individuals exhibit somatic symptoms, direct medical intervention is necessary.

### **Limitations**

Several limitations may impact the overall interpretation of the study. While study limitations do not discredit a research study, it is important to understand how they may impact results. Awareness of limitations should always be considered when interpreting data provided by the study, formulating future studies, or implementing interventions.

One primary limitation of this study includes the use of Mechanical Turk. Despite the availability to determine if the Workers have previously taken the survey by using their Worker Id, Paolacci, Chandler, and Impeiritis, (2010) point out that it is impossible to determine if a Worker has already taken a similar version of the survey. They also point out that determining

whether a HIT is accepted can be an ethical dilemma. In this research study, all Workers, regardless of having their data used, were compensated. When looking at what data to use, this study excluded repeated IP addresses and incomplete surveys. Anytime data is excluded, a new limitation is created because the data has been manipulated by the experimenter.

The length of time estimated to complete the survey may be considered another limitation of this study. It was estimated to take 20 minutes to complete the survey, which may have been a deterrent for individuals who commonly utilize Mechanical Turk to obtain compensation. Providing a larger compensation amount may have led participants to be more engaged in the process. However, research conducted by Buhrmester, Kwang, and Gosling (2011) found that the amount of compensation did not significantly affect the results of their study only the rate at which survey data was collected.

Another limitation of this study is that demographic profiles of individuals that use MTurk may have a more diverse background than the non-college population (Buhrmester, Kwang, and Gosling, 2011). Given that this study did not collect data on culture or race, it is unknown if diversity affected the outcome. Therefore, it is unclear if this study accurately represents the population of workers in the United States.

A final limitation of the current study is the format in which data was collected. Survey research is known for its inherent limitations, including the ways in which participants who engage in this type of research are similar.

They are self-selecting and therefore may differ from the general public in the way in which they view research. Furthermore, survey research is subject to problems because of the difficulty in analyzing participants' self-reported data, which may not be entirely accurate due to the inaccurate recall of events, over-reporting, inability to correctly self-evaluate, and the possibility of false or inaccurate reporting by participants.

### **Future Directions**

Future studies should identify whether other variables such as home-life stress or chronic illness can be moderated by adaptive coping or Locus of Control. Understanding how to reduce stress effects will impact an individual's overall health, well-being, and work performance. Furthermore, this reduction of stress outcomes may reduce the cost to individuals, employers, and society.

Replication of this study is also recommended. However, it is still advised that participants be solicited from a larger population or other platforms. The use of only participants from Mechanical Turk limited the variety of possible participants. The inclusion of more platforms would provide a larger pool from which to gain more diverse participants. For instance, researchers could consider using face-to-face surveys in the workplace, medical facilities, and/or mental health facilities. Also, alternative survey platforms such as SurveyMonkey, QuestionPro, and KeySurvey could be used in combination with MTurk to reach a broader participant pool.

### **Conclusion**

The overall purpose of this study was to investigate the effects of adaptive coping styles and locus of control on reported stress outcomes, including decreased job productivity, poor sleep quality, and increased somatic symptoms.

The initial hypothesis was partially supported and indicated that perceived stress, time spent using technology at work, and level of masculinity, significantly predict job productivity and somatic symptoms. Only perceived stress and level of masculinity significantly predicted sleep quality. Internal Locus of Control and Adaptive coping with initial independent variable composites did not have significant moderation effects. When independent variables were separated, three significant moderations were found. Individual's with high Internal Locus of Control and more time spent using technology at work improved the quality of sleep. Also, when Internal Locus of Control is moderate or high, and individuals endorse high levels of perceived stress, they indicate that they are less productive due to health issues. Finally, individuals who have any level of adaptive coping and high masculinity exhibit lowered work productivity due to health issues.

By identifying ways to moderate the relationship between the variables that cause stress outcomes, practitioners can tailor interventions to address protective factors. For instance, since individuals with high Internal Locus of Control have difficulty with productivity when they have health issues, clinicians might teach them how to manage symptoms independently so that they have less need for outside intervention. This might include teaching



them how to use a more holistic approach to wellness, such as how to adjust their diet and sleep habits. When they can manage their health, they may ultimately be more productive at work.

Counselors might also use this information to guide therapy. More specifically, counseling for individuals who are experiencing sleep problems might look at how those with Internal Locus of Control might benefit from careers that are less social and more independent. Also, professionals can aid individuals with high masculinity scores in learning how to utilize adaptive coping skills to continue to be productive despite minor health-related problems. Finally, since Locus of Control and adaptive coping do not readily moderate somatic symptoms, the use of other therapies such as Mindfulness may be helpful. This information can help to provide support to reduce the adverse impacts of stress, such as high blood pressure. This, in turn, could reduce the many costs associated with increased stress and burnout.

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## **Appendix A**

### **Informed Consent**

You are invited to participate in a web-based online survey on Differences in Perceived Stress, Locus of Control, and Coping Styles Reported by Career Type and Gender Roles. This is a research project being conducted by Dawn Lowe, a graduate student from Stephen F. Austin State University. It should take approximately 20 minutes to complete.

#### **PARTICIPATION**

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty, however, you will not receive compensation if you do not complete the survey.

#### **BENEFITS**

Upon completion of the survey you will be compensated .15 cents per the terms of Mechanical Turk. Your responses may help us learn more about Coping Styles, Perceived Stress, and Locus of Control. If you would like to have the results of this study you may email me at [lowed@jacks.sfasu.edu](mailto:lowed@jacks.sfasu.edu).

#### **RISKS**

There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

#### **CONFIDENTIALITY**

Your survey answers will be sent to a link at Qualtrics.com where data will be stored in a password protected electronic format. Qualtrics does not collect identifying information such as your name or email address. IP addresses will be gathered to ensure that individuals do not attempt to complete the survey multiple times. After IP addresses are checked for individuality they will be deleted. Therefore, your responses will remain anonymous. No one will be able to identify you or your answers and no one will know whether or not you participated in the study.

#### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact my research supervisor, Dr. Nina Ellis-Hervey via email at [ellishernm@sfasu.edu](mailto:ellishernm@sfasu.edu). or the ORSP at 936-468-6606.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the “Agree” button indicates that

- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older

## **Appendix B Demographic Survey**

1. What is your age?
  - a. 18-25
  - b. 26-30
  - c. 31-45
  - d. 45-60
  - e. 60+
  
2. What is your gender?
  - a. male
  - b. female
  
3. What is the highest level of education you have completed?
  - a. High School Diploma or equivalent
  - b. Associate degree
  - c. Bachelor's degree
  - d. Master's degree
  - e. Doctorate degree
  
4. In your primary occupation, how much time do you spend in direct contact with others?
  - a. less than 25%
  - b. 26%-50%
  - c. 51%-75%
  - d. 76%-100%
  
5. In your primary occupation, how much time do you spend in direct contact with technology?
  - a. less than 25%
  - b. 26%-50%
  - c. 51%-75%
  - d. 76%-100%



Please answer the following to the best of your recollection. If you are unsure, please estimate.

<b>Location and Frequency of Health Services</b>	0= 0-2 1=3-5 2=5 or more
How many times did you visit the hospital/clinic in the last 6 months?	0      1      2
How many times did you visit the private doctor in the last 6 months?	0      1      2
How many times did you visit an emergency room in the last 6 months?	0      1      2
How many times did you have to stay overnight in the hospital in the last 6 months?	0      1      2
How many times did you use a web-based or phone-based health provider in the last 6 months?	0      1      2

**At any time during the past 12 months, how often have you used the following methods to deal with emotions? (select all that apply)**

Method	<input type="checkbox"/> all applicable	0-Never 1-Rarely 2-Moderately 3-Often
Counseling services		0   1   2   3
Psychiatric services		0   1   2   3
Substances (e.g. tobacco, alcohol, illegal drugs)		0   1   2   3
Prescription medication (Prozac, Depakote, Xanax, Risperdal, Abilify, Seroquel, mood stabilizers, antidepressants, anti-anxiety drugs, lithium, Valium, other)		0   1   2   3
Over-the counter medication or supplements (St. John's wort, Benadryl, other)		0   1   2   3
Complementary health approaches such as chiropractic, massage therapy, acupuncture		0   1   2   3
Complementary health approaches such as supplement systems (Plexus, Advocare, Thrive, etc.) or essential oils		0   1   2   3
Other (please specify)_____		0   1   2   3

**Appendix C  
Physical Symptoms  
(PHQ-15)**

**During the past 4 weeks, how much have you been bothered by any of the following problems?**

	Not Bothered At All	Bothered A Little	Bothered A Lot
	(0)	(1)	(2)
<b>a.</b> Stomach pain	0	1	2
<b>b.</b> Back pain	0	1	2
<b>c.</b> Pain in your arms, legs, or joints (knees, hips, etc.)	0	1	2
<b>d.</b> Menstrual cramps or other problems with your periods Mark 0 if this does not apply	0	1	2
<b>e.</b> Headaches	0	1	2
<b>f.</b> Chest pain	0	1	2
<b>g.</b> Dizziness	0	1	2
<b>h.</b> Fainting spells	0	1	2
<b>i.</b> Feeling your heart pound or race	0	1	2
<b>j.</b> Shortness of breath	0	1	2
<b>k.</b> Pain or problems during sexual intercourse	0	1	2
<b>l.</b> Constipation, loose bowels, or diarrhea	0	1	2
<b>m.</b> Nausea, gas, or indigestion	0	1	2
<b>n.</b> Feeling tired or having low energy	0	1	2
<b>o.</b> Trouble sleeping	0	1	2

**Appendix D**  
**Pittsburgh Sleep Quality Index (PSQI)**

**INSTRUCTIONS:**

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

**During the past month,**

1. When have you usually gone to bed?  
\_\_\_\_\_
2. How long (in minutes) has it taken you to fall asleep each night?  
\_\_\_\_\_
3. What time have you usually gotten up in the morning?  
\_\_\_\_\_
4. A. How many hours of actual sleep did you get at night?  
\_\_\_\_\_
- B. How many hours were you in bed? \_\_\_\_\_

Please check the appropriate blank below.

5. During the past month, how often have you had trouble sleeping because you...	Not during the past month (0)	Less than once a week (1)	Once or twice a week (2)	Three or More times a week (3)
a. Cannot get to sleep within 30 minutes	a. _____	_____	_____	_____
b. Wake up in the middle of the night or early morning	b. _____	_____	_____	_____
c. Have to get up to use the bathroom	c. _____	_____	_____	_____
d. Cannot breathe comfortable	d. _____	_____	_____	_____
e. Cough or snore loudly	e. _____	_____	_____	_____
f. Feel too cold	f. _____	_____	_____	_____
g. Feel too hot	g. _____	_____	_____	_____

h. Have bad dreams	h. _____	_____	_____	_____
i. Have pain	i. _____	_____	_____	_____
j. Other reason(s), please describe, including how often you have had trouble sleeping because of this reason(s):	j. _____	_____	_____	_____
6. During the past month, how often have you taken medicine (prescribed or “over the counter”) to help you sleep?	6. _____	_____	_____	_____
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?	7. _____	_____	_____	_____
8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?	8. _____	_____	_____	_____
	<b>Very good (0)</b>	<b>Fairly good (1)</b>	<b>Fairly bad (2)</b>	<b>Very bad (3)</b>
9. During the past month, how would you rate your sleep quality overall?	9. _____	_____	_____	_____

**Appendix E**  
**The Health and Work Performance Questionnaire (HPQ)**

	5 = all of the time 4 = most of the time 3 = some of the time 2 = a little of the time 1 = none of the time				
1. How often was your performance higher than most workers on your job?	5	4	3	2	1
2. How often was your performance lower than most workers on your job?	5	4	3	2	1
3. How often did you do no work at times when you were supposed to be working?	5	4	3	2	1
4. How often did you find yourself not working as carefully as you should?	5	4	3	2	1
5. How often was the quality of your work lower than it should have been?	5	4	3	2	1
6. How often did you not concentrate enough on your work?	5	4	3	2	1
7. How often did health problems limit the kind or amount of work you could do?	5	4	3	2	1
8. In the past 4 weeks, how many days did you miss an entire day of work because of problems with your physical or mental health?	5	4	3	2	1
9. In the past 4 weeks, how many days did you miss an entire day of work because of any other reason?	5	4	3	2	1
10. In the past 4 weeks, how many days did you miss part of a work day because of problems with your physical or mental health?	5	4	3	2	1
11. In the past 4 weeks, how many days did you miss part of a work day because of any other reason?	5	4	3	2	1

## **Appendix F**

### **Masculine Behavior Scale**

**OPINION INVENTORY INSTRUCTIONS:** The items listed below inquire about some of your attitudes, beliefs, and opinions. As such, there are no right or wrong answers, only your responses. For each item you will be asked to indicate how much you agree or disagree with the statement listed in that item. Use the following scale to indicate your degree of agreement/disagreement with each item: A = Agree. B = Slightly agree. C = Neither agree nor disagree. D = Slightly disagree. E = Disagree.

**NOTE:** The letter that best describes your reaction to each statement is the one that you will mark. Be sure to answer every question, even if you are not sure. Also, please be honest in your responses.

1. I spend a great deal of my time pursuing a highly successful career.
2. I don't usually discuss my feelings and emotions with others.
3. I don't devote much time to intimate relationships.
4. I try to be in control of everything in my life.
5. I am very ambitious in the pursuit of a success-oriented career.
6. I am not the type of person to self-disclose about my emotions.
7. I don't involve myself too deeply in loving, tender relationships.
8. I make sure that I "call all the shots" in my life.
9. I devote extensive time and effort to the pursuit of a professional career.
10. I don't often talk to others about my emotional reactions to things.
11. I don't become very close to others in an intimate way.
12. I don't take orders (or advice) from anybody.
13. I do whatever I have to in order to work toward job success.
14. In general, I avoid discussions dealing with my feelings and emotions.
15. I don't often tell others about my feelings of love and affection for them.
16. I don't let others tell me what to do with my life.
17. I work hard at trying to ensure myself of a successful career.
18. I don't often admit that I have emotional feelings.
19. I tend to avoid being in really close, intimate relationships.
20. I don't allow others to have control over my life.

## Appendix G Brief COPE

This questionnaire concerns how you cope with your most stressful experiences. Use the following response choices. Try to rate each item separately in your mind from the others. Make your answers as true for you as you can. Use the following choices:

- 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.	1	2	3	4
2. I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
3. I've been saying to myself "this isn't real."	1	2	3	4
4. I've been using alcohol or other drugs to make myself feel better.	1	2	3	4
5. I've been getting emotional support from others.	1	2	3	4
6. I've been giving up trying to deal with it.	1	2	3	4
7. I've been taking action to try to make the situation better.	1	2	3	4
8. I've been refusing to believe that it has happened.	1	2	3	4
9. I've been saying things to let my unpleasant feelings escape.	1	2	3	4
10. I've been getting help and advice from other people.	1	2	3	4
11. I've been using alcohol or other drugs to help me get through it.	1	2	3	4
12. I've been trying to see it in a different light, to make it seem more positive.	1	2	3	4

13. I've been criticizing myself.	1	2	3	4
14. I've been trying to come up with a strategy about what to do.	1	2	3	4
15. I've been getting comfort and understanding from someone.	1	2	3	4
16. I've been giving up the attempt to cope.	1	2	3	4
17. I've been looking for something good in what is happening.	1	2	3	4
18. I've been making jokes about it.	1	2	3	4
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
20. I've been accepting the reality of the fact that it has happened.	1	2	3	4
21. I've been expressing my negative feelings.	1	2	3	4
22. I've been trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
23. I've been trying to get advice or help from other people about what to do.	1	2	3	4
24. I've been learning to live with it.	1	2	3	4
25. I've been thinking hard about what steps to take.	1	2	3	4
26. I've been blaming myself for things that happened.	1	2	3	4
27. I've been praying or meditating.	1	2	3	4
28. I've been making fun of the situation.	1	2	3	4



**Appendix H**  
**Rotter's Locus of Control Scale**

For each pair of statements, choose the one that you believe to be the most accurate, not the one you wish was most true. Remember, there are no right or wrong answers.

<p>1. a. Children get into trouble because their parents punish them too much.</p> <p>1. b. The trouble with most children nowadays is that their parents are too easy with them.</p>	<p>2. a. Many of the unhappy things in people's lives are partly due to bad luck.</p> <p>2. b. People's misfortunes result from the mistakes they make.</p>
<p>3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.</p> <p>3. b. There will always be wars, no matter how hard people try to prevent them.</p>	<p>4. a. In the long run, people get the respect they deserve in this world.</p> <p>4. b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.</p>
<p>5. a. The idea that teachers are unfair to students is nonsense.</p> <p>5. b. Most students don't realize the extent to which their grades are influenced by accidental happenings.</p>	<p>6. a. Without the right breaks, one cannot be an effective leader.</p> <p>6. b. Capable people who fail to become leaders have not taken advantage of their opportunities.</p>
<p>7. a. No matter how hard you try, some people just don't like you.</p> <p>7. b. People who can't get others to like them don't understand how to get along with others.</p>	<p>8. a. Heredity plays the major role in determining one's personality.</p> <p>8. b. It is one's experiences in life which determine what they're like.</p>

<p>9. a. I have often found that what is going to happen will happen.</p> <p>9. b. Trusting fate has never turned out as well for me as making a decision to take a definite course of action.</p>	<p>10. a. In the case of the well-prepared student, there is rarely, if ever, such a thing as an unfair test.</p> <p>10. b. Many times, exam questions tend to be so unrelated to course work that studying is really useless.</p>
<p>11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.</p> <p>11. b. Getting a good job depends mainly on being in the right place at the right time.</p>	<p>12. a. The average citizen can have an influence in government decisions.</p> <p>12. b. This world is run by the few people in power, and there is not much the little guy can do about it.</p>
<p>13. a. When I make plans, I am almost certain that I can make them work.</p> <p>13. b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow</p>	<p>14. a. There are certain people who are just no good.</p> <p>14. b. There is some good in everybody.</p>
<p>15. a. In my case getting what I want has little or nothing to do with luck.</p> <p>15. b. Many times we might just as well decide what to do by flipping a coin.</p>	<p>16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.</p> <p>16. b. Getting people to do the right thing depends upon ability - luck has little or nothing to do with it.</p>
<p>17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.</p> <p>17. b. By taking an active part in political and social affairs, the people can control world events.</p>	<p>18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.</p> <p>18. b. There really is no such thing as "luck."</p>
<p>19. a. One should always be willing to admit mistakes.</p> <p>19. b. It is usually best to cover up one's mistakes.</p>	<p>20. a. It is hard to know whether or not a person really likes you.</p> <p>20. b. How many friends you have depends upon how nice a person you are.</p>

<p>21. a. In the long run, the bad things that happen to us are balanced by the good ones.</p> <p>21. b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.</p>	<p>22. a. With enough effort, we can wipe out political corruption.</p> <p>22. b. It is difficult for people to have much control over the things politicians do in office.</p>
<p>23. a. Sometimes I can't understand how teachers arrive at the grades they give.</p> <p>23. b. There is a direct connection between how hard I study and the grades I get.</p>	<p>24. a. A good leader expects people to decide for themselves what they should do.</p> <p>24. b. A good leader makes it clear to everybody what their jobs are.</p>
<p>25. a. Many times I feel that I have little influence over the things that happen to me.</p> <p>25. b. It is impossible for me to believe that chance or luck plays an important role in my life.</p>	<p>26. a. People are lonely because they don't try to be friendly.</p> <p>26. b. There's not much use in trying too hard to please people, if they like you, they like you.</p>
<p>27. a. There is too much emphasis on athletics in high school.</p> <p>27. b. Team sports are an excellent way to build character.</p>	<p>28. a. What happens to me is my own doing.</p> <p>28. b. Sometimes I feel that I don't have enough control over the direction my life is taking.</p>
<p>29. a. Most of the time I can't understand why politicians behave the way they do.</p> <p>29. b. In the long run, the people are responsible for bad government on a national as well as on a local level.</p>	

## Appendix I The Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly?                 | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life?     | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and "stressed"?  | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems?         | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way?                                       | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do?       | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life?                              | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things?  | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that were outside of your control?           | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? | 0 | 1 | 2 | 3 | 4 |

## VITA

Dawn Lowe resides in Mabank, Texas. She may be contacted at 999 FM 3080 Mabank, Texas 75147. Dawn graduated from Mabank High School in 1998. In 2005, she received her Bachelor of Science in Interdisciplinary Studies from Texas A&M-Commerce. Dawn went on to obtain her Elementary teaching certificate, ESL certification, and Special Education certification. While teaching, Dawn entered the Counseling Psychology program at The University of Texas at Tyler. She went on to be licensed as a Licensed Psychological Associate in the state of Texas. While working in the community setting, Dawn returned to graduate school at Stephen F. Austin State University in 2015 to pursue her Doctorate in School Psychology. Dawn will receive her Doctor of Philosophy in School Psychology in August 2019.

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This dissertation was typed by Dawn Lowe