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The Relationship of Job Stress to Job Performance in Police Officers

Chidiebere Chikwem
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Walden University

College of Social and Behavioral Sciences

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Chidiebere Chikwem

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Walden University
2017

Abstract

The Relationship of Job Stress to Job Performance in Police Officers

by

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MBA, Webster University, 2010

BS, Imo State University, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy and Administration

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December 2017

Abstract

For the past 3 decades, police officers have been diagnosed with various stress-induced health problems. Police officers are at a greater risk of various environmental health problems due to the stressful nature of their profession. While there is abundant research that explores the relationship between high stress occupations and environmental health, researchers have yet to sufficiently explore the relationships between police officers' job stress and job performance. The purpose of this correlational study was to use Cohen & McKay's conceptualization of the stress-buffering hypothesis to explore whether police officers' physical exercise moderated the negative impact of job stress on their job performance. Data were collected through an online survey administered to police officers from 2 metropolitan police departments in the United States ($n = 200$), and data were analyzed using a hierarchical regression procedure. Findings indicated that approximately 80% of the variance in police officers' job performance is explained by job stress ($p < .001$) indicating a negative relationship between police officers' job stress and job performance. The findings also indicated that police officers' physical exercise was positively related to their job performance. Positive social change implications stemming from study may include recommendations to police department leadership to emphasize the importance of moderating occupational stress through exercise as a method to improve their job performance. These efforts may contribute to improved public safety outcomes in communities in the United States.

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Dedication

This dissertation is dedicated to my family – for we are nothing without family. First, I would like to dedicate this to my earth angel, my wife, and my best friend, Udoka Chikwem. Her consistent encouragement throughout the dissertation process made this possible. I also dedicate this to my children, Jaden, Emmanuela, and Nicole. They are the light that made the path worthwhile. Their understanding during this process was indispensable.

I thank my parents for their hard work and the good examples they set for me. From an early age, I understood the benefits of hard work. I thank them for establishing the importance of education for me and for their continuous insistence that I embrace learning as a way of life. Finally, I dedicate this dissertation to God for guiding me through the process. I am forever grateful.

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Special thanks goes to Dr. James Ibe, Dr. Fredrick Nwosu, and members of my cohort for their friendship, encouragement, and support.

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Chapter 1: Introduction to the Study

Introduction

Many within society and the scientific community agree that police officers are indispensable for public peace, and there is a widespread assumption that policing is an extraordinarily stressful vocation (Gerber, Kellmann, Hartmann, & Pühse, 2010; Lucas, Weidner, & Jaisse, 2012; Sundaram & Kumaran, 2012). Researchers have found that occupational stress associated with police officers' jobs militates against their job performance (Crews & Landers, 1987; Huang, Webb, Zourdos, Acevedo, 2013; Shane, 2010). Consequently, there has been an increase in scientific research investigating the causes and consequences of police officers' job-related stress (Huang et al., 2013; Regehr, LeBlanc, Barath, Balch, & Birze, 2013; Singh & Kar, 2015). Unfortunately, research findings related to stress and job performance have been mixed (Chen, 2009; Shane, 2010; Verhage, Bisschop, & Hardyns, 2013; Wu, 2011). Specifically, some researchers have found a negative relationship between job stress and job performance (Chen, 2009; Wu, 2011), while others have found a positive a relationship between police job stress and police job performance (Chen, 2009; Sundaram & Kumaran, 2012; Wu, 2011).

I undertook this study on the premise that a better understanding of the linkages between police officers' job stress and job performance would add to the body of knowledge and help address the lack of clarity surrounding the issue (Chen, 2009; Gerber et al. 2010; Shane 2010). I used the theoretical lens of the stress-buffering hypothesis to investigate the topic. The following sections provide information on the background of the study, the specific problem addressed by the research, the significance of the study, the purpose of the study, the research questions, definitions central to the study, the study's theoretical framework, the methodological nature of the study, the scope and delimitations of the study, the study's assumptions, and, finally, the study's limitations. The chapter concludes with a brief summary.

Background of the Study

Some scholars have attributed the earliest modern account of stress to the Hungarian-born Hans Selye (Maslach & Schaufeli, 1993; Nageishi, 2016). Selye (1935) initially developed the idea of the general adaptation syndrome, the theory that individuals respond physiologically to stimuli in a series of three physiological stages. Selye's (1956) theories on stress evolved to incorporate a strong link between emotional and physical health, and Selye referred to stress as a "syndrome of just being sick" (p. 14).

As a result of Selye's work, theoretical and empirical research on the factors that cause or influence stress started to emerge across various academic disciplines (Chen, 2009; Grawitch, Barber, & Kruger, 2010; Wu, 2011). This work led to the development of the stress-buffering theory that social support and other variables (e.g., exercise) could ameliorate some of the negative physical and emotional effects of stress (Cohen & Wills, 1985). Due to the many adverse effects that were associated with stress, the stress-buffering hypothesis was an important development in the scholarly research (Lagestad & van den Tillaar, 2014; Randal & Buys, 2013). Addressing the topic of stress in the field of law enforcement, researchers in both psychology and criminal justice disciplines began to investigate the role of stressors and strain in relation to policing (Grawitch et al., 2010).

Policing is one of the foundational activities that allow civil society to exist (Lentz & Chairs, 2007). However, while it is an activity vital to any modern society, policing is a stressful occupation (Gül & Delice, 2011; Shane, 2010). As a result of their job, "police officers are exposed to stressful events more often than other workers" (Acquadro Maran, Varetto, Zedda, & Ieraci, 2015). These high levels of occupational stress can result in stress-induced health problems for police officers (Lagestad & van den Tillaar, 2014; Randal & Buys, 2013). According to research on police officer stress, 25% to 30% of all police officers are diagnosed with various stress-induced health problems (Van Hasselt et al., 2008). Yet, in spite of these findings, serious research gaps remain, especially regarding the relationship between stress and police job performance (Chen, 2009; Grawitch et al., 2010; Louw & Viviers, 2010; Shane, 2010).

Statement of the Problem

Extensive research has indicated that policing is among the most stressful occupations (Gul, 2008; Gül & Delice, 2011; Shane, 2010), and police officers are at high risk of various stress-induced physical health problems (Gül & Delice, 2011; Lagestad & van den Tillaar, 2014; Randal & Buys, 2013; Summerlin, Ohme, Stern, & Valentine, 2010). However, Manzoni and Eisner (2006) noted that the relationship between police officers' job stressors and their overall job performance is not well enough understood and deserves more attention from scholars and practitioners. Even though the organizational literature has provided theoretical models linking police officers' job stressors and their job performance (McCreary & Thompson, 2006), few studies have used these models (Shane, 2010). Typically, studies involving police officers' job stress have utilized general job stress models. However, it is methodologically inappropriate for researchers to use general job stress measures when job stress measures that have been uniquely developed for police research are available (McCreary & Thompson, 2006).

Previous researchers have deepened scholarly knowledge of stress-related problems in the police force (Acquadro Maran et al., 2015). However, the limited scholarly understanding of the connection between police officers' job stress and job performance represents an important, yet neglected, research gap (Chen, 2009; Grawitch et al., 2010; Louw & Viviers, 2010). In this investigation, I sought to fill this gap by using the conceptual lens of the stress-buffering hypothesis to examine the moderating effect of exercise on the relationship between police officers' stress and their job performance. In my literature review, I found no researchers that had used the stress-buffering hypothesis as a theoretical underpinning to investigate the nature of the links between police officers' job stress, exercise, and their operational and organizational job performance.

Purpose of the Study

Previous studies have significantly contributed to scholarly knowledge of stress theory and research (Chen, 2009; Grawitch et al., 2010). However, critical research gaps still remain, especially in relation to police officers (Grawitch et al., 2010; McCreary & Thompson, 2006). Furthermore, findings from prior empirical studies pertaining to the

relationship between job stress and job performance are mixed and varied (Wu, 2011). For these reasons, to better understand the links between job stress and job performance among police officers, scholars have called for more research (Chen, 2009; Grawitch et al., 2010; Louw & Viviers, 2010; Shane, 2010). The purpose of this quantitative, non-experimental, survey-based correlational study was to use the stress-buffering hypothesis as a conceptual framework to investigate the relationships between police officers' job performance, job stress, and physical exercise (Gerber et al., 2010). Specifically, the purpose of this study was to investigate the relationship between police officers' job performance (the dependent variable) and police officers' job stress (the independent variable). The purpose of the research was also to explore the moderating affect exercise has on the relationship between job stress and job performance. The study's purpose was accomplished by investigating the three research questions presented in the following section.

Research Questions and Hypotheses

In line with the purpose of this study, I developed the following three research questions and associated hypotheses.

RQ1: Does the stress-buffering hypothesis predict that police officers' job stress is negatively related to their job performance?

H₀1: The stress-buffering hypothesis does not predict that police officers' job stress is negatively related to their job performance.

H₁1: The stress-buffering hypothesis predicts that police officers' job stress is negatively related to their job performance.

RQ2: Does the stress-buffering hypothesis predict that exercise is positively related to police officers' job performance?

H₀2: The stress-buffering hypothesis does not predict that exercise is positively related to police officers' job performance.

H₁2: The stress-buffering hypothesis predicts that exercise is positively related to police officers' job performance.

RQ3: Does the stress-buffering hypothesis predict that police officers' physical exercise moderates the relationship between job stress and job performance?

H₀₃: The stress-buffering hypothesis does not predict that police officers' physical exercise moderates the relationship between job stress and job performance.

H₁₃: The stress-buffering hypothesis predicts that police officers' physical exercise moderates the relationship between job stress and job performance.

Theoretical Framework

Stress affects all human beings in various forms and degrees, and as a result, the study of stress has become interdisciplinary. Due to the interdisciplinary nature of stress research, many relevant theories have emerged from different academic disciplines (Agnew, 1992; McCreary & Thompson, 2006; Patterson, 2003; Selye, 1974, 1978). In this study, I utilized the stress-buffering hypothesis (Cassel, 1976; Cobb, 1976) as the theoretical framework.

The stress-buffering hypothesis was developed based on the reasoning that people who have strong social ties in the human environment are, to a reasonable extent, insulated from the potential negative effects of stressful events (Anderson, Litzenberger, & Plecas, 2002; Cassel, 1976; Cobb, 1976). According to the stress-buffering hypothesis, strong social ties ameliorate the effects of stress on a given dependent variable. Following the development of the stress-buffering hypothesis, extensive research was conducted on the buffering effects of various predictor variables on various outcome variables across many different academic disciplines (Cohen & McKay, 1984; Cohen, Gottlieb, & Underwood, 2000; Freeman & Rees, 2008; van den Berg, Maas, Verheij, Groenewegen, 2010).

Researchers continue to suggest that social support has the potential to alleviate psychological responses to stress that are life threatening (Cohen et al., 2000). However, researchers have not demonstrated that exercise can also act as a buffer for the negative effects of job stress on police officers' job performance. This research will address that gap using the stress-buffering hypothesis. Figure 1 presents the study's conceptual framework.

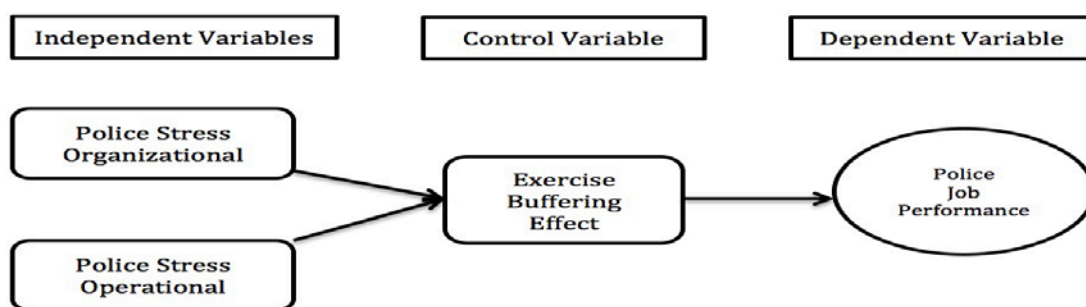


Figure 1. The study's conceptual framework.

Nature of the Study

In this study, I used a quantitative, non-experimental, predictive research design to gather data from police officers using survey questionnaires. As Johnson and Christensen (2000) argued, when independent variables involved in a study are not subject to researcher manipulation, a non-experimental research design is appropriate. The chosen research method allowed me to quantitatively understand the nature and direction of the relationship between police officers' job stress (the independent variable) and their job performance (the dependent variable) while also examining the moderating influence of exercise on the relationship. Job stress was measured using the Police Stress Questionnaire (PSQ), and two sub-constructs of operational stress (PSQ-op) and organizational stress (PSQ-org) were identified. A hierarchical multiple regression analysis was used to examine the relationships between variables. The methodology used to conduct the study is discussed in more detail in Chapter 3, and the results of the statistical analysis are presented in Chapter 4. The following section discusses the scope and delimitations of the present study.

Definition of Terms

Stress. In 1936, Hans Selye defined stress as “the non-specific response of the body to any demand for change” (Selye, 1974, p. 207).

Principal component analysis (PCA). As Field (2005) writes, “principal component analysis is a multivariate technique for identifying the linear components of a set of variables” (p. 792). As used in this study, the set of variables whose linear components would be identified and would be the Independent Variable (PSQ-org & PSQ-op).

Assumptions

In this study, several methodological assumptions were made. The first assumption was that respondents would answer the survey questions honestly. I assumed that the information elicited from the respondents was true and accurately represented the events in their police departments with regard to the specific questions posed on the survey questionnaire. As the questionnaire specifically asked the respondents for their unbiased opinions and participation in the study was voluntary, I assumed that the respondents would answer any questions honestly. There are no known scientific methods to validate the sincerity of participants' survey responses; however, I assumed that response bias would not pose a significant threat to the validity of the research.

In addition to the assumption of honesty on the part of the participants, there were also several methodological assumptions related to the use of the statistical techniques when analyzing the data. Because a hierarchical multiple regression statistical technique was used for this study, the assumptions underlying this technique were checked. These assumptions included the non-singularity of matrices, normality of residuals, homoscedasticity, and multicollinearity. These statistical assumptions and their tests are discussed in greater detail in Chapter 3.

Scope and Delimitations of the Study

The scope of the present study was to examine the relationships between three key variables (see Gerber et al., 2010): police officers' job stress, police officers' job performance, and police officers' physical exercise activities. However, additional deliberate decisions were made to further clarify and narrow the study's scope. These delimitations helped provide boundaries and aided in maintaining a narrow focus for the research.

The first delimitation was to only survey police officers within two metropolitan police departments in the southern US. While this may limit the generalizability of the research, this delimitation provided a target population that was more likely to share similar experiences with stress and perceptions of job performance. The second delimitation was the decision to survey police officers as opposed to a wider range of law enforcement officers (e.g., police chiefs, police administrators, corrections officers, or

other state and federal law enforcement personnel). These delimitations helped focus the scope of the research exclusively on the experiences of police officers in large metropolitan environments, providing more targeted insights into job stresses related to their particular law enforcement roles.

Limitations

There are always research issues that are beyond the control of the researcher. Thus, as with any questionnaire-based, cross-sectional research design, this correlational study had some obvious limitations. One example of a limitation relates to the sample being drawn from a specific population rather than other equally-likely populations. Specifically, in this study I aimed to target key organizational informants within law enforcement (i.e., police officers). However, it was equally likely that police chiefs could provide the same or even superior data on the issues of interest. Consequentially, even within the same population in the same organization, the data I elicited to answer the research questions was dependent on the individual participants surveyed. I did not anticipate that this limitation degraded the design of this study because I closely followed the approach used by previous studies in this area (see Gerber et al., 2010). It was nonetheless important to note that the research questions I answered and the hypotheses results were dependent on the sample population that was used. Future research may address this limitation by sampling a different population.

Another inherent limitation of the research was that correlation cannot be equated with causation. That is, the study cannot demonstrate that causality flows from police officers' stress to police officers' job performance. Even if such a demonstration occurred, there would still be the problem of endogeneity, or reversed causality. To address this issue, endogeneity requires that lagged values of police job performance be entered as one of the right-hand-side variables in a longitudinal research design to mitigate the confounding effects of potential reverse causality. However, even if a causal link cannot be demonstrated by the research, having a better understanding of the correlations between police officers' job stress and their performance is important first step in furthering the body of knowledge on the topic.

Significance of the Study

This study represents a contribution to the field of study on police job performance, a topic of importance to scholars, practitioners, and society as a whole (Shane, 2010). By undertaking this study, I extend past research that has included mixed findings and addressed an existing research gap. Specifically, this study is significant because it (a) advances theory, (b) advances professional practice in policing, and (c) contributes to positive social change.

Significance to Theory

The present study's findings have theoretical implications with respect to stress-performance theory, building upon work by Shane (2010) that hypothesized a negative predictive impact of police job stress on police job performance. The present study constituted a contribution towards theory-building on police stress-performance relationships in several ways. First, the study expanded scientific inquiry by directly investigating relationships between job stress and job performance in police officers. Second, it helped to clarify scholarly debate over the link between job stress and job performance among police officers being negative, positive, or U-shaped (Wu, 2011). Third and finally, the outcome of this study can assist in setting the agenda for future research into police-related stress-performance linkages, as subsequent researchers may use the findings of this study in the process of theory building (Churchill, 1979; Hunt, 2000).

Significance to Practice

The present study has a dual impact in relation to practical significance as it has the potential to influence both academic practice and managerial administration. With respect to the academic practice, this study significantly contributes to scholarly empirical knowledge of how organizational and operational stress jointly impact police officers' job performance, as current research either focuses on either organizational or operational sources of police stress, but not both (e.g., Shane, 2010).

With respect to the managerial administration, the findings of this study add to decision makers' (e.g., policymakers, political leaders, and administrators) understanding of job-related stress among police officers. These decision makers are responsible for the

operations and policy development of law enforcement agencies. Thus, the study holds the practical potential to improve the quality of life for the police officers through job satisfaction improvements. The study also has practical significance as the findings may lead to more effective policing through the provision of police-specific resources to promote exercise-related lifestyle improvements. This potential practical significance is supported by research indicating that exercise offers desirable stress-relieving benefits (Burton, Hoobler, & Sheuer, 2012).

Significance to Social Change

The present study had a great deal of significance in relation to social change. First, the study provided information that can positively affect law enforcement training. For example, the findings of this study will allow police officers and administrators to understand the strategic importance of physical exercise and institute training programs within police departments that incorporate exercise elements. This can, in turn, reduce job-related stress among police officers and improve overall job performance.

Second, the study highlighted the need for continual education on the negative effects of job stress in relation to police job performance. A better understanding of the importance of exercise may lead to the allocation and distribution of public and private funds to offer additional access to physical fitness facilities (as stress buffers) for police officers, resulting in positive multiplier effects on all societal areas affected by the police profession. This can improve social issues such as community and social cohesion, hyper-aggression, violence, and poor health outcomes (Ammons, 2005; Gershon, Barocas, Canton, Li, & Vlahov, 2008; Johnson, Todd, & Subramanian, 2005).

Third, and finally, armed with the strategic information that physical exercise can buffer the negative effects of job stress on police job performance, police officers are better positioned to engage healthier lifestyle choices. This results in social improvements both at the individual level and at the societal level as less-stressed police officers perform better than their more highly-stressed and burnt out colleagues. In these ways, the outcome of this study has contributed to social change.

Summary

In summary, my objective in this study was to quantitatively explore the relationships between police officers' job stress, job performance, and exercise. Using the stress-buffering hypothesis, the goal was to determine if exercise had a significant moderating effect on the relationship between job stress and job performance. My focus in pursuing the findings was to make a positive contribution towards social change and benefit society as a whole by highlighting factors that may help improve police job performance.

Chapter 2: Literature Review

Introduction

The purpose of this study was to empirically investigate the nature of the links between job stress and job performance of police officers. With the study, I sought to add to past research, which has shown mixed findings on the links between police officers' job stress and job performance (Chen, 2009; Jo & Shim, 2014; Shane, 2010; Wu, 2011). In Chapter 1, I provided a basic introduction to the study. In Chapter 2, I present an examination of the scholarly literature on topics related to job stress among police officers, issues impacting job performance, and the stress-buffering effects of exercise.

Chapter 2 begins with a discussion of the search strategy I used to gather materials for the literature review. This includes the identification of the key library databases and search engines I used for the search. Next, I review the theoretical foundations for the study and then discuss major peer-reviewed studies relevant to the study. Further, I evaluated examples of contemporary scenarios where stress seems to have impacted job performance. I also discuss questions as to whether policing is a stressful occupation or whether the approach of some police departments creates stress. During the literature review process, I considered the relationships between job control, job stress, personality traits, environment, and psychological factors. Oftentimes, there is confusion between occasional pressures or challenges and stress. This called for the identification of what constitutes stress within a given occupational group and what could be outside the scope of stress.

Literature Search Strategy

Compelled by the need to more fully understand the nature of the links between police job stress and job performance, I searched various database sources for empirical research on police job stress and job performance linkages. I searched a wide range of databases during the literature review, and examples of the databases I used include Criminal Justice Abstracts, EBSCO Host, Web of Science, and Science Direct. I also searched Google Scholar to locate forthcoming and in-press peer-reviewed articles on the present study's subject matter. The scope of my Google Scholar search included articles published in English anywhere in the world. Search terms included but were not limited

to: *police stress, police stress research, police stress-job performance, police stress empirical research, law enforcement stress, police stress buffers, police stress and exercise, and physical exercise training for police*. I found that there was limited scholarly research on the link between police job stress and job performance in peer-reviewed journals; however, I did find fairly extensive materials in non-academic police-related publications.

Theoretical Foundation

An important first step when proposing research is the selection of theoretical foundation for the study. The choice of theoretical founding often depends on the researcher's perspective of the phenomenon under study. However, many perspectives exist as to the definition, origin, and causes of stress (Grawitch et al., 2010; Shane 2010). Fortunately, researchers have made efforts to establish a theoretical foundation for the study of stress in interdisciplinary contexts (Hart & Cooper, 2001) and in the specific context of policing (Shane, 2010; Summerlin et al., 2010).

Stress-Buffering Hypothesis

The theoretical framework I chose as the foundation for this study was the stress-buffering hypothesis. Buffering refers to the resources and personality mix that protect a person from adverse situations or help a person to successfully deal with difficult situations (Randal & Buys, 2013; Witteveen et al., 2010). Such resources include a caring family, a spiritual fraternity, or similar supportive relationships that provide a parachute of care when needed (Cohen & Wills, 1985). Such buffering can serve to protect a person against the stressful outcomes of an event (Cohen & Wills, 1985).

The stress-buffering hypothesis is attributed to the pioneering work of John Cassel and Sidney Cobb (Anderson et al., 2002). According to Cohen and Wills (1985), people who have adequate social support will react to stress more positively than those who do not. Social support refers to interpersonal resources that emotionally support a person during adverse life circumstances. Adverse circumstances include loss of a loved one, loss of job, and anxiety over the possibility of such losses, job insecurity, lack of opportunity for career advancement, and unrealistic performance expectations.

Anderson et al. (2002), Cassel (1976), and Cobb (1976), all independently concluded that the key conceptual platform of the stress-buffering hypothesis is that people who have strong social ties in the human environment are, to a reasonable extent, insulated from the potential pathogenic effects of stressful events. As a result of the research by Anderson et al. (2002), Cassel (1976) and Cobb (1976), extensive research was undertaken to examine the buffering effects of other predictor variables on various outcome variables across a multitude of academic disciplines (e.g., Cohen et al., 2000; Cohen & McKay, 1984; Freeman & Rees, 2008; van den Berg et al., 2010). Using the stress-buffering hypothesis as a theoretical framework, I theorized that exercise acts as a moderator that ameliorates the effects of police job stress (the independent variable) on police job performance (the dependent variable).

In my literature review, I found numerous studies showing social support as a potential alleviator of psychological responses to stressful events (Cohen et al., 2000). However, researchers have not yet demonstrated that police officers' physical exercise can buffer the effects of their job stress on their job performance. Thus, this remains an open question, which I sought to answer in the present study. Figure 2 shows the process whereby the stress-buffering hypothesis is used to predict the moderating effect of exercise on the relationship between police officers' job stress and police officers' job performance.

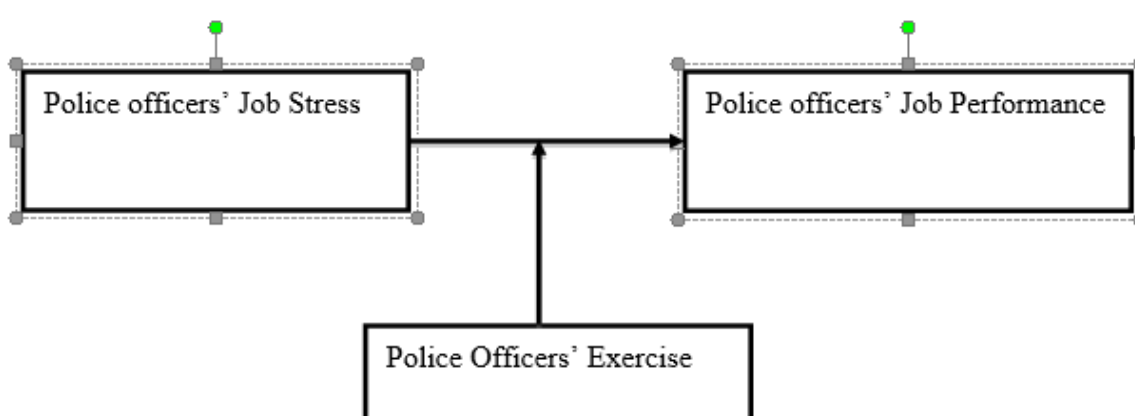


Figure 2. Moderation effects of police officers' exercise.

Previous research has shown that the conceptual diagram in Figure 2 is the standard framework to graphically illustrate the link between the variables pertinent in a typical stress-buffering hypothesis (Berg, Hem, Lau, & Ekeberg, 2006; Cassel, 1976;

Cohen et al., 2000; Cohen & McKay, 1984; Gerber et al., 2010; Mitchell, Evans, Rees, & Hardy, 2013). These research efforts have made contributions to scholarship on the theory of stress-buffering hypothesis. Notably, however, none of these past research efforts investigated whether police officers' exercise buffers the relationship between police officers' job stress and their job performance. The single exception was Gerber et al.'s (2010) investigation of buffering effects of exercise and fitness against stress among Swiss police and emergency response service officers.

Exercise and the Stress-Buffering Hypothesis

The foundation of research linking exercise with the stress-buffering hypothesis is anchored on a notion articulated by Gerber et al. (2010) that "Sport and exercise psychologists generally see exercise as an emotion-oriented coping strategy that provides stressed individuals with a time-out from daily stresses" (p. 287). Consequently, empirical research has demonstrated that exercise has mood-enhancing effects especially in the case of individuals who initially felt low and irritated prior to exercise (Ekkekakis & Acevedo, 2006). However, Gerber and Pühse (2009) noted that previous research on exercise using the theory of stress-buffering hypothesis tends to focus on the desirable stress-buffering effects of physical exercise than the actual mechanism driving the desirable outcome.

Research on exercise that employed the theory of the stress-buffering hypothesis began to be prominent in the 1980s (Gerber et al., 2010). In a landmark study, Kobasa, Maddi, and Puccetti (1982) sampled 137 male business executives and found that exercise counteracted stressful events to prevent illness. Similarly, Brown (1991) found that both exercise and objectively assessed aerobic fitness moderated the stress and illness interaction so that active and fit individuals reported better health and fewer health-center visits when exposed to stress. Along the same line of research, partial support for the stress-buffering hypothesis was demonstrated in the U.S. National Health Interview Surveys (as cited in Zuzanek, Robinson, & Iwasaki, 1998). Additionally, in a study on college students, it was found that exercise inhibited the development of physical symptoms and anxiety associated with minor stressors, although no moderation effects were found when major life events and aerobic fitness were used as predictor

variables (Carmack, de Moor, Boudreaux, Amaral-Melendez, & Brantley, 1999).

Lochbaum, Lutz, Sell, Ready, and Carson (2004) suggested that strenuous exercise was associated with lower levels of psychosomatic complaints when respondents encountered increased stress. There has also been evidence suggesting that exercise alleviates depressive and psychosomatic complaints when individuals were under stress (Ensel & Lin, 2004). In similar research, Kaluza, Keller, and Basler (2001) found that exercise protected against back pain and psychological symptoms when employees of a university hospital were exposed to heightened occupational stress.

There is also longitudinal evidence to suggest that the stress-buffering hypothesis has empirical relevance. For example, in a 3-wave longitudinal study, empirical evidence was found that exercise had a significant buffering effect on the relationship between life events and somatic complaints (Howard, Cunningham, & Rechnitzer, 1984). Another study provided empirical evidence suggesting that male business executives suffering from high stress levels had fewer concurrent and prospective illnesses conditional on their engagement in more exercise activities (Ouellette Kobasa, Maddi, Puccetti, & Zola, 1985). Another study found that exercise mitigated depression from unemployment stress for 20 months or longer (Fuchs & Appel, 1994).

General Strain Theory

Although not used for this study, Agnew's (1992) general strain theory is also applicable to the study of police stress, as shown by Gibson et al.'s (2001) research. Agnew (1992) viewed strain as emanating from three subcategories: (a) the failure to achieve positively-valued goals, (b) the loss of positively-valued stimuli, and (c) the presence of negatively-valued stimuli. Agnew conceptualized strain as a condition that may render some people uncomfortable, and how people react to strain is conditional on a few variables. First, coping skills play a critical role. If people are unable to cope with the strain by enlisting some coping strategies such as communicating how they are feeling, the negative emotions can lead to violence or other forms of crimes. However, Vold et al. (2002) noted that strong family bonds help insulate people from the impulse to commit crimes.

Gibson et al. (2001) used the general strain theory to examine domestic violence

among Baltimore police officers. Because general strain theory has been traditionally used to examine juvenile crime, Gibson et al. asserted that their study was the first study using general strain in relation to domestic violence among police officers. The goal of their study was to measure negative emotions such as depression and anger and to measure stress in relation to domestic violence incidents. While Gibson et al.'s research does suggest that general strain theory can be utilized to study stress-related police behavior, I determined that the stress-buffering hypothesis was a better fit for a theoretical framework. In the next section of the literature review, I will discuss relevant scholarly literature related to the study's topical focus.

Review of the Topical Literature

Personality and Stress

Researchers have argued that the way in which individuals handle stressful situations has to do with the personality of the individual. Personality has been defined as a combination of all the attributes that make a person unique (Witteveen et al., 2010). Personality is reflected in the way a person thinks, feels, and responds to people and events, and these factors combine to form the person's character (Witteveen et al., 2010). The link between personality and job stress suggests that it is important to have a way to ensure police officers have the right personality to adequately handle the stresses of their job.

Freud (1958) attempted to explain personality based on the structure of the mind. Freud divided the mind into three components: the id, ego, and superego. According to Freud (1958), these three components work together to regulate behaviors that define an individual's personality and ability to respond to adverse situations. Taking a slightly different approach, Erikson (1968) proposed the idea that a person's ego identity is shaped by biology, unique psychological needs, interests, and environmental factors, and in turn, these factors govern personality formation.

Based on Erickson's (1968) approach, elements of personality formation can also be described in terms of adaptation to a person's environment (including stress factors), identity, perceptions, physiological characteristics, and bodily limitations. Erickson explained that identity involves feelings of self-sameness that are both subjective and

possess continuity. Developmental tasks in personality formation involve ontogenetic processes like the weakening of emotional attachment to parents, the achievement of autonomy, and the diversification of emotional investments (Schoeppe & Havighurst, 1952). Personality also affects attitudes toward life challenges and motivation, two components of interest when studying job stress or performance evaluation.

Stressors in Policing

Extant literature on police stress has established that there are different categories of police stress. Interest in the development of police stress theory has dominated the focus of police stress research for over 2 decades leading to the development of police stress models (Copes, 2005; McCreary & Thompson, 2006; Slate, Johnson, & Colbert, 2007; Spielberger, Westberry, Grier, & Greenfield, 1981). Slate et al. (2007) identified four classifications of stressors applicable to policing, “1) stress extrinsic to the organization, 2) occupational stress which is job/task related, 3) personal stress, and 4) organizational stress. Of these four classifications---organizational stress is the major culprit of stress” (p. 103).

It has been well documented in the occupational literature that the nature of police work is stressful, and sources of stress in policing have been broadly categorized (Mayhew, 2001). Some scholars consider police work to be one of the most stressful occupations (Tanigoshi, Kontos, & Remley, 2008; Waters & Ussery, 2007). Based on an examination of earlier studies, Hart and Cotton (2003) concluded that organizational stress is much more significant and damaging than operational or occupational stress related to the nature of police work. While operational factors such as occupational exposure to bodily fluids (Wald, 2009) and the need to intervene in critical incidents to prevent violence (Patterson, 2003) are clearly stressful, research has indicated that these stressors are significantly upwardly moderated by organizational factors (Mayhew, 2001; Patterson, 2003).

The development of post-traumatic stress disorder (PTSD), which is the most frequently investigated consequence of trauma in police officers (Wald, 2009), has been occurring mostly within the work environment (Gershon et al., 2009; Wald, 2009). Additionally, police stress has been linked to health problems, anti-social behavior, and

suicidal ideation (Collins & Gibbs, 2003; Gershon et al., 2009). Some causes of occupational stress for police officers include paramilitary structures, operational issues associated with tasks such as protecting people, rescuing traumatized people, role conflicts, and dangerous work demands (Gershon et al., 2009).

Beyond the above factors, external systems have been implicated as sources of police stress including, but not limited to, the criminal justice system, public perceptions, and press media coverage (Mayhew, 2001; Wald, 2009). Additionally, personal life stressors have also been implicated as sources of police stress (Wald, 2009). Critical incidents, defined as adverse events that result in a range of symptoms from exhaustion to progressive mental illness, have also been identified as sources of police stress (Gershon et al., 2009).

Jointly, the above-mentioned factors have been linked in scholarly research to PTSD symptoms in police officers, including measurable physical and physiological symptoms (Wald, 2009; Gershon et al., 2009). Indeed, police officers are exposed to a high degree of work stress in the form of disasters and intentional violence against human beings (Mayhew, 2001; Patterson, 2003). Consequently, studies have linked police work to conditions such as vicarious traumatization, secondary traumatic stress, traumatic countertransference, burnout, and the so-called compassion fatigue (Hickman, Fricas, Strom, & Pope, 2011).

Due to the nature of police work, officers' interaction with the public can sometimes be tense and stressful. There are differences of opinion about how individual characteristics affect police officers' ability to cope with stress. A clearer understanding of the relationship of a police officer's individual characteristics and his/her job environment can predict whether an individual police officer is capable of handling occupational stress (Wald, 2009). The importance of personal characteristics highlights the fact that the ability to cope with stress varies from individual to individual (Wald, 2009).

Organizational Stress

Organizational stress appears to be the most potent and damaging type of stress to both police officers and police organizations as it triggers the greatest negative social

impact on the community (Slate et al., 2007; Stevens, Muller, & Kendall, 2006).

Organizational stress is directly associated to the practices and culture of the department or agency where the police officers work. Organizational culture includes internal and external politics, quality of management, public support and image, promotional and career advancement, and enrichment (McCreary & Thompson, 2006; Slate et al., 2007; Stinchcomb, 2004).

Early research into the general causes of stress among police officers found that for entry-level police officers, the organizational factors causing stress are just as important as the inherent physical dangers of the job (Spielberger et al. 1981).

Organizational factors can affect the morale, productivity, stress levels, and performance of officers. The culture typology within police departments should be evaluated because culture influences hiring, grooming, promotion, and performance evaluation. Five specific aspects of culture that affect an organization are direction, pervasiveness, strength, flexibility, and commitment.

Organizational culture can be defined as “the set of values, norms and beliefs shared by members of an organization” (Nahavandi, 2006). Organizational factors are closely tied to the culture of police organizations. There is no single definition of organizational culture. However, the importance of organizational culture lies in its ability to provide an organization with a latent reservoir of energy to meet goals and overcome challenges. Organizational culture draws from four elements: consistency, mission, adaptability, and involvement/participation (Denison, 1990). Some organizations pride themselves in a culture of excellence, resilience, or innovation, and when faced with a challenge, the organization draws from these values to overcome.

There are many factors that can influence culture within an organization. These include change of leadership, economic recession or slump, workforce diversity, technology, and adaptability. These factors can also influence job-related stress. Stress among the police force may be caused by unreasonable expectations from ranking officers, lack of protection for officers who get injured in the line of duty, lack of adequate resources for job requirements, work distribution strategies or politics, and

discriminatory career advancement practices (McCreary & Thompson, 2006). These factors affect job performance in both substantive and peripheral ways.

Some stressful situations can be managed simply by a change of attitude, perception, or routine. Others require changes in the way an organization conducts business. For example, stressful events in policing can be controlled by changing the settings where stress happens or changing attitudes that amplify the effects of a stressful setting (Brough, 2004). An example of a setting that enables stress is when officers face disproportionately severe disciplinary actions for minor infractions. Another example of how stress can be created by setting is when officers are expected to operate under conditions where the workload is too large for the staff strength.

Buker and Wiecko (2007) examined the applicability of occupational stress on the Turkish National Police to determine whether there was a commonality of the conditions and consequences of stress in police departments throughout the world. However, their results raised more questions than answers and thus encouraged further study into the different categories of stress and the effect police department size has on stress. Buker and Wiecko's findings did however, indicate that organizational stress seems to have universal damaging effects on police officers.

Generally, it is agreed by numerous scholars that working conditions play a major role in occupational stress. This suggests that some inherently stressful jobs can be made less stressful by instituting provisions that cushion workers from stress. For example, provisions could be made to mitigate against job insecurity and suspicious or non-supportive employee groupings. A relaxed and positive employee support system is important to ameliorating stress (Gibson, Swatt, & Jolicoeur, 2001).

Most occupational police stress is caused by working in environments where the demands, expectations, and pressures far exceed the officer's ability, knowledge, or training (Vold, Thomas, & Snipes, 2002). Thus, many police departments invest a lot of resources in training to reduce performance failures related to a lack of personnel knowledge and ability. Job-related stress is greatly reduced when responsibilities are matched by knowledge and abilities.

Research has shown that increases in job stress are reflected in the lower job

performance levels among police officers (Gibson et al., 2001). The research indicates that seemingly insignificant events may be the trigger for declines in performance.

Psychologists advise that an awareness of changes in an individual's life can be key to managing stressful working conditions and improving job performance.

It should be acknowledged that not all police officers see their occupation as stressful (Vold et al., 2002). This difference can be linked to both personality differences among individuals and culture difference within different police departments. In some departments, officers may worry about inflexible work schedules, leave/vacation policies, promotion, and career path flexibility. In other departments, the stressors may be quite different. Success in resolving stress-related issues helps create less stressful work environment and high performing teams.

Gibson et al. (2001) attempted to measure the impact of social support and spirituality as coping factors to see if the variables were correlated with lower levels of domestic violence among police officers. Gibson et al. also measured sources of stress, overall job satisfaction, and the overall nature of the job. Results of the study showed that social support plays a role in reducing stress, but in contrast, social support and spirituality were not jointly significant in preventing domestic violence (Gibson et al., 2001).

Swatt, Gibson, and Piquero (2007) used the general strain theory as a conceptual platform to examine police stress in relation to alcohol consumption. In Swatt et al.'s study, the researchers predicted that the negative effects of work stress were positively associated with alcohol consumption. The results of the study showed that work stress is positively associated with negative emotions. An interesting finding, however, was that female officers were more likely to experience anxiety and depression from work stress than males. In terms of alcohol consumption, white male officers were more likely to consume alcohol to cope with stress, whereas females and non-whites did not consume alcohol in high amounts as a result of increased stress (Swatt et al., 2007).

It is noteworthy to recognize that an officers' stress level is capable of impacting family and colleagues in both direct and subtle ways. Major life setbacks or critical events like quelling riots, responding to active shooter scenarios, or other high-energy

activities keep members of a police department on edge and can be a source of stress among officers and their loved ones (Angew, 1992). Studies suggest that after engaging in high-stress policing activities, it is important for officers have access to programs or activities that offer an opportunity for relaxation and emotional decompression.

Gächter, Savage, and Torgler (2011) concluded that the stress levels of police officers in high-crime areas are comparatively higher than the stress levels of officers working in low-crime areas. Yet, there has been minimal research conducted on stress levels of police officers in low-crime areas. In their study, Gächter et al. assumed that police officers in low-crime areas would encounter the same criminal elements as police officers in high-crime areas. However, in low-crime areas, police officers have fewer interactions with criminal offenders, a fact that was assumed to reduce police stress levels. However, Gächter et al. noted that while police in low-crime areas were assumed to face the same criminal elements as police in high-crime areas, it was expected that the two groups of officers faced very different organizational stressors based on where they worked. The study by Gächter et al. supported earlier work by Anderson et al. (2002), who argued that understanding the organizational structure and subculture within a police department is more stressful than patrolling the streets.

Dai, Frank, and Sun (2011) suggested that individual police officers react, manage, and cope with stress differently depending upon their life experiences. As a result of different life experiences, coping behaviors learned to deal with stress can be positive or negative. Individual differences also contribute to what is perceived as a stressor. Some police officers are more attuned to different kinds of policing duties than others (Dai et al., 2011). A prolonged streak in an unexciting role can even become a source of stress for some individuals.

Dai et al. (2011) suggested that job stressors can be divided into categories based on their work content or work context. Sources, levels, context and contents of job stress can be identified and investigated on the basis of how it affects different groups (Dai et al., 2011). Such groups may be based on gender, race, socio-economical grouping, or demography.

Work content ideas include tasks monotony, variety in responsibilities, expected work pace, work load, working hours, flexible working hours, hostile supervision, non-supervision, task-master approach, and other negative factors related to work environment (Dai et al., 2011). Dai et al. argued that these variables that must be considered when measuring the impact of stress on work performance. Problematic shift schedules, lengthy work hours, and favoritism in task allocations are some of the issues suggested to cause stress in the workplace (Dai et al., 2011).

Work context relates to the conditions of employment and prospects associated with the occupation. Some jobs are riskier than others, but have parachutes that serve as incentives for the worker (Dai et al., 2011). Such incentives may be in the form of time-in-grade promotions, insurance, education and training incentives.

One of the ways work context affects processes in an organization is the disparity in productivity expectations, measurements, and performance ratings from department to department. In task-oriented work environments like a police department, officers are often eager to demonstrate skill, knowledge, and commitment (Carroll, 2004). Other aspects of work context that apply to police officers include the attention paid to punctuality, professionalism, and ownership by the department leadership. The attitude associated with assignments can affect morale, productivity, physical well-being and performance of the officers.

Work design can help individuals work effectively in functional groups where they form social alliances that transcend the workplace (Robbins, 2005). Such interactions promote deep connections that positively impact productivity and the well-being of those involved. Work context can also benefit from high ethical principles in job design, work processes, promotions, and officers' welfare programs. Compliance to the ethical standards of policing should be the responsibility of all members of the department (Carroll, 2004; Robbins, 2005). Many of the incidents that bring bad publicity, low morale, and high stress levels to members of a police force can be traced to negligence, disregard for ethical principles, and a lack of professionalism.

Within any police department, officers should view themselves as stakeholders in a society that values responsible policing. Other stakeholders include the general public,

the community, congress, other law enforcement groups, and the natural environment (Carroll, 2004). Taking this view, the negative impact that stress can have on police officers' job performance becomes a concern for society as a whole.

Stress can also arise from whether a police department's activities are local, regional, or national in nature. The geographic range of a department is important because of the levels of impact and scrutiny that can result from actions or inaction. Police officers' activities should, therefore, be monitored to ensure that they are compliant with relevant civil rights laws (Dutton, Cameron, & Quinn, 2003). This can include determining whether arrests are made lawfully, whether officers provide equal protection to all neighborhoods, whether there are any questions regarding evidence tampering, and whether police departments implement ethical standards in their day to day operations.

Husted and Allen (2006) noted that identifying core strategic goals is vital to organizations, and those goals must first be articulated before they can be implemented (see also Ansoff, 1980; Dutton et al., 2003; Mahon & Waddock, 1992). According to Ansoff (1980), an issue is of strategic importance based on its "impact on the ability of the enterprise to meet its objectives" (p. 133). If objectives related to causes of human rights' groups or environmentalists arise, best practice would be to add the objectives to the organization's strategic decision agenda (Mahon & Waddock, 1992) and then ensure that practice aligns with relevant codes of social responsibility. In this way, stress from the misalignment of job contexts, performance, and job satisfaction could be avoided.

Environmental stress factors that affect police officers while on duty include vibration from construction or other sources, chronic noise from loud music, thermal stress, smoke or other forms of air pollution, pungent chemical smells, intensive dust levels, and associated variants of these listed items. Stress also arises from the perception that support is lacking when officers put their lives on the line to restore law and order. Oftentimes, there is a perception that society has a negative or hostile disposition towards the police. However, this perception may arise as the result of a vocal group whose views are not in consonance with those of the larger society. However, critical advocacy against police affects morale among individual police officers. The associated distortion of

accounts of reported events, negative press reviews, and over-analysis by experts and pseudo-experts overwhelm the tremendous goodwill the police enjoy from society as a whole.

Police Stress and Stressors

The impact of stress on police officers varies depending upon the types of stressors that are encountered. At times, stress can even seem to arise from no cause at all. Hickman et al. (2011) stated that “stress is induced by a nonspecific stressor which prepares the body for fight or flight response” (p. 239). Policing has evolved in relation to the complexity of criminal activity. Complexities of criminal activity refer to variations of behaviors within the socially and politically defined categories of ethnicity, socioeconomics, culture, and social structure (Andrews & Bonta, 2010). As a result of this process of evolution, the notion of a police officer as someone who serves and protects has expanded to include the responsibility to provide social services (Jaramillo, Nixon, & Sams, 2005). Police are now frequently required to assist with child/citizen welfare issues, community meetings, and organizational demands (Jaramillo et al., 2005).

Adams and Buck (2010) suggested that police officers experience high levels of stress as they engage with violent citizens in emotionally-charged environments with external stimuli that may endanger personal safety. Thus, the physiological interpretation of the emotional response can lead to changes in behavior, psychological reaction, and reasoning. However, not all police officers experience stress in the line of duty. Research has indicated that police officers who utilize support services provided by police department psychologists are better at coping with stress in comparison to police officers who do not use these support mechanisms (Morash, Kwak, & Haarr, 2006).

Occupational Stress

Annual in-service training prepares police officers for the challenges of police work, but it does not address the stressors of policing (Sundaram & Kumaran, 2012). Police work does not adhere to a constant routine when interacting with citizens, and this often creates emotional, physical, and psychological stress for police (Sundaram & Kumaran, 2012). Police officers typically respond to a continuous series of service calls, and this nonstop psychological stimulation can trigger emotional stress (Lucas et al.,

2012). Emotional stress, defined as anxiety related to bodily responses from traumatic experiences, is common among police officers (Lucas et al., 2012). Examples of issues police officers may encounter on any given day include a 911 call to assist an elderly person with a flat tire, a domestic violence case that requires medical attention, or even assisting another police officer during a high-speed car chase.

McCarty, Zhao, and Garland (2007) used multivariate tests to analyze elevated levels of stress among police officers and found that constant contact with suspects and the unpredictable incidents inherent in policing produce elevated levels of stress. In their study, a convenience sample of 1,100 police officers volunteered to participate out of a population of 2,500 police officers. McCarty et al. found that police exhibited high levels of stress as well as anxiety, fear, depression, and anger.

While the link between job tasks and stress is well documented among police officers, research has shown that internal department conflicts create another source of stress (Sundaram et al., 2012). Police officers are subject to extreme work demands such as constant management changes, intense public scrutiny, overwhelming workloads, and lack of supportive resources, yet they are required to maintain high performance levels. Adu-Gyamfi (2014) argued that these types of demands faced by police officers can be unhealthy. Adu-Gyamfi specifically noted that pressures related to workload, work hassles, and organizational climate do not produce an atmosphere that is conducive to healthy work relationships in policing environments.

The nature of police work has changed so much that it is imperative to keep officers up to date about challenges associated with their job responsibilities. This involves training programs that address occupational stress and other forms of challenges that impact job performance. However, scholars have acknowledged that the causes and prevention of job stress are not adequately understood (Adams & Buck, 2010). The fact remains that different factors, events, and circumstances create stress for different individuals. Such differences may be attributable, in part, to environment, upbringing, religious beliefs, faith, or a person's general outlook on life. Stress can also be caused by fear of the unknown or anxiety about expectations from society, family, or even one's self. Regardless of the cause, work-related stress can be dangerous within any occupation

(McCarty & Skogan, 2013). However, it has been suggested that police officers are exposed to a greater level of occupational stress than other types of workers.

As with causes of stress, responses to stress and specific stress triggers differ from individual to individual. Stress responses may be borne out of fear or courage. When faced with a dangerous situation, some individuals faint while others become excited. Violanti (2011) recommended that people should work in occupations that suit their stress tolerance profile. It could be argued that many police officers, understanding the rigorous psychological demands of their profession, are drawn to police work because they have more robust stress responses than most people. However, that may not always be the case, and further investigation would be needed to verify the existence of differences in stress response between police officers and civilians.

According to the National Institute of Occupational Safety and Health (2014), work stress is “defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the workers” (What is Job Stress, para 1). Evaluating a police officer’s job requirements using this definition may provide a more complex view of the connections between job performance, an officer’s capabilities, available resources, and the officer’s needs. In the context of policing, job performance that is based on capabilities directly relates to how an individual officer views motivation, duty, and danger. All these factors are impacted by the officer’s psychological stability.

Parkes (2003) argued that the distinction between job control and psychological demands must be recognized, as each factor is capable of affecting both workers and organizations differently. Shift workers have a higher propensity for occupational stress (Parkes, 2003). As many police officers qualify as shift workers, this also adds to the higher than normal stress levels officers must deal with.

Physical Stress

It has been well established that physical stress continues to be one of the most common reasons for burnout reported by police officers. Burnout associated with policing has been defined as a prolonged response to chronic emotional and interpersonal stress (McCarty & Skogan, 2013). McCarty and Skogan used a standard multiple

regression analysis to examine a sample of 2,078 sworn police officers from 12 police agencies. The findings revealed that 27% of police officers felt physical stress after 2 to 3 days of police patrol. The findings suggested that physical stress may result in injury to police officers or suspects, and physical stress levels may also vary based on community factors.

Another physically demanding aspect of policing is the constant change in work schedules, which can cause irregular sleeping patterns (Violanti, 2011). Policing is a 24 hour per day, 365 days a year occupation. At times, police officers are asked to work extended hours, and the daily shifts of police officers are frequently not compatible with other non-policing occupations. In research on police stress, Violanti (2011) found an association between stress and shift work in a cross-sectional survey of 460 police officers. Within Violanti's sample group, 251 participants (54.6%) were shift workers, and these individuals exhibited higher levels of stress compared to other participants. The exposure to irregular working hours can quickly induce stress, fatigue, and lack of awareness among police officers (Violanti, 2011).

Violanti (2011) also found evidence suggesting that shift work rearranges natural sleep patterns, which can lead to interference with circadian rhythms. Furthermore, over an extended period of time, irregular working hours and a lack of sleep cause the human body to release a stress hormone called Cortisol (Spielberger et al., 1981). Cortisol can cause shocking changes in the body and create problems with a person's immune system; over time, this can result in the development of various diseases (Spielberger et al., 1981). To address the potential health consequences of the physical demands of police work, some police departments provide flexible working hours and have scheduling policies that help officers manage their stress and work-life balance.

Adu-Gyamfi (2014) explored the influence of job stress on job satisfaction in relation to a convenience sample of Ghanaian police (Adu-Gyamfi, 2014). Specifically, Adu-Gyamfi analyzed the influence of an officer's physical environment, role ambiguity, role overload, supervisor support, and coworker social support on job satisfaction among a sample of 200 police officers. Adu-Gyamfi's regression analysis suggested that role ambiguity and physical environment were negatively related to job satisfaction, but the

relationship was nonsignificant. Coworker support influenced job satisfaction only moderately, and the relationship between supervisor support and job satisfaction was positive but nonsignificant. Conversely, there was a positive significant relationship between coworker support and job satisfaction. Adu-Gyamfi recommended that police department administrators should pay more attention to the psychological and physiological needs of their police officers in order to improve their job satisfaction.

Unfortunately, the positive influence of co-worker support can be mitigated by personal commitment to the police force's common goals, department size and composition, and leadership style. This occurs as there may be officers in the group whose personalities do not completely align with the larger group's interests (Adu-Gyamfi, 2014). Additionally, some officers may also be engaged in practices directly opposed to group goals (e.g., corruption).

There had been accusations against some police officers in the police department studied by Adu-Gyamfi. The accusations included the profiling of certain categories of individuals and uneven policing within the department's area of responsibility. Factors such as these can result in negative publicity, which, in turn, stresses both the department and its officers.

The levels and types of co-worker support prevalent among the police officers in the study included both positive and negative aspects. Sometimes co-worker support included behaviors that were contrary to the department's mandate and/or the law. These aspects vary in impact both in terms of job content and context; however, examples of negative support behaviors included some officers covering up the improprieties of others and suppressing or withholding exculpatory evidence.

In some police departments, co-worker support is fragmented and functions primarily along the lines of race, religious beliefs, or other personal divisions. Such divisive groupings can undermine not only overall group cohesion within a department but also the professionalism of individual group members. A work environment that reduces job stress should foster a culture of inclusion that works for all officers (Nabeel, Baker, McGrail, & Flottemesch, 2007).

Inclusion models and theories can be defined based on two distinct levels: the

individual and the collective. Together the collective and individual elements of inclusion are the building blocks of inclusion theories (Anderson, 2009). Such models, when implemented, can provide platforms for social interaction that assist in mediating police officers' interactions with the public and their peers. In terms of relating to peers, efforts to encourage inclusion are important for fostering conditions in which everyone has the opportunity to contribute their ideas as well as to feel safe, appreciated, valued, engaged, and excited in the workplace. Every police officer has personal attributes that define parts of their individuality. Such attributes may include gender, age, race, marital status, educational attainment, religion, and political affiliations. These attributes can be factors that affect inclusion or exclusion on an individual level or group level.

Another study explored the correlation between physical activity, fitness, and injury among a cross-section of active-duty members of the Minneapolis Police Department (Nabeel et al., 2007). Participants were surveyed on their levels of fitness, physical activity, and prevalence of injury, and chronic pain within the previous year. Nabeel et al.'s results demonstrated that officers with the highest self-reported fitness levels were less likely to experience sprains, back pain, and chronic pain than those who considered themselves less physically fit. Officers who were the most physically active were about a third as likely to report back pain and less than half as likely to report chronic pain as those who engaged in less activity. Officers with a BMI greater than 35 were three times more likely to report back pain than those where the BMI fell within the normal range of 18-25.

Overall, police officers engaged in higher levels of physical activity and those who were more physically fit, had a lower prevalence of musculoskeletal injuries and chronic pain (Nabeel et al., 2007). However, in a study that correlated exercise and stress, Siu, Cooper, and Leung (2000) found that the association between occupational stress and health was largely independent of respondents' exercise levels. Thus, Siu et al. suggested that while exercise and physical health were related, there was no significant correlation between exercise and its resultant improved physical condition and stress.

Gerber et al. (2010) attempted to test the theory of the stress-buffering hypothesis by addressing the research design flaws that limited the validity and reliability of

previous research on the topic. Gerber et al. noted that some studies used small rather than large samples of respondents. A small sample size may have led to the underestimation of “the role of exercise by predominantly using small samples with less than 300 participants” (Gerber & Pühse, 2009, p. 287).

Gerber et al. (2010) also noted that previous research had used instruments with questionable psychometric values. Gerber et al. explained that they placed “a special emphasis ... on using validated measures of exercise and stress” to address this issue (p. 287). Gerber et al. also avoided the use of single measures of stressors such as widowhood or unemployment. Finally, Gerber et al. used measures that captured the subjectivity of stress appraisals.

Beyond addressing the methodological limitations and assumptions in the literature, Gerber et al. (2010) also focused on gaps in the body of knowledge when developing their hypotheses. Gerber et al. hypothesized that there would be a negative relationship between stress and health and between exercise and stress. They also hypothesized that exercise would be positively associated with health. In their study, Gerber et al. also predicted that exercise would be a stronger buffer against stress compared to perceived fitness levels and that vigorous exercise would have the strongest buffering effect on stress levels.

Gerber et al. (2010) used a Pearson product moment correlation analyses to determine “that stress was significantly correlated with all health indicators” (p. 289). They also found that individuals who experienced high levels of stress perceived “their general health status less favorably, suffered more from somatic and psychological complaints, and were slightly more often absent from work” (p. 289).

Gerber et al. (2010) did not find strong support for the hypothesized link between exercise and stress. They did find a positive relationship between exercise and health; however, the relationship was weak. Gerber et al.’s findings more strongly supported the role of exercise as a buffer against stress than perceived fitness, and moderate levels of exercise were found to be the most effective in terms of their ability to buffer stress.

The conclusions drawn by Gerber et al. (2010) in regards to the stress-buffering hypothesis were noteworthy, especially their conclusion that while fitness and health are

related, actual regular physical activity appears to provide more benefits in terms of the individual being able to buffer stress than the passive quality of good health and fitness. In addition, the literature suggests that moderate exercise has a particularly strong potential to mitigate stress. This is also in accordance with research on leisure activities that indicated that cultural and social activities can be as important for stress relief as physical activities (Iwasaki, Mannell, Smale, & Butcher, 2005). Overall, Gerber et al. (2010) and Iwasaki et al. (2005) concluded that exercise is a more potent anti-stress coping mechanism than fitness because while fitness and health are related, in the face of stress, exercise appears to be a stronger coping resource. These outcomes indicate that moderate intensity exercise has a strong potential to lessen the effects of stress.

Job Performance

Some general studies of job performance have attributed the level or quality of job performance of individuals in an organization to the type of leadership provided in that given organization. Other studies specific to policing have related stress to how it affected the performance of individual police officers within the parameters of job expectations within their police organizations. The results of these two types of studies taken together suggest that job performance can be improved by providing better leadership, which will, in turn, yield improved job performance of police officers through the management of stress. Thus, overall it can be concluded that improved leadership may also be correlated to improved stress management among individual officers within a police department.

In terms of leadership, performance tends to improve when the leader is more of a coach than a manager (Nabeel et al., 2007). This, in turn, implies that police department leadership that embraces a coaching paradigm will work with officers to address the issues that cause stress and undermine both wellness and job performance. Parameters of policing jobs that can be adjusted to reduce stress and enhance the performance of the officers involved include responsiveness, a sense of purpose, task orientation, communication management, sharing of responsibilities, and promotion of innovation.

A shared sense of commitment and purpose is necessary to generate the enthusiasm and commitment needed to meet the organization's performance objectives.

However, such enthusiasm and commitment can only be maintained in a work environment where everyone has the opportunity to be authentic and to feel safe, appreciated, valued, engaged, and excited about group goals. As each individual has personality traits or other attributes that define how they interact or contribute to group goals (Anderson, 2009), strong leadership is critical to building the appropriate organizational culture that will support behaviors that result in responsible policing.

However, leadership must also maintain the basic bureaucratic support functions of the organization that allow members of the organization to believe that they will be treated fairly. In order to achieve this, leadership must acknowledge and maintain conditions that include worker-friendly management of the grievances and complaints of officers. For example, in January 2016, the police department in the city of Memphis, Michigan was closed down because of problems associated with leadership, professionalism, and code of conduct. The official reason was that there was no clarity regarding the chain of command.

Economic and political factors outside the control of police departments may also impact morale, stress levels, and job performance. These factors usually are related to economic downturns putting pressure on public sector budgets or laws and political structures that do not adequately prevent political meddling with police processes. A consequence of the 2008 recession was that resources in the public sector in the U.S. were constrained, with resulting adverse effects on the budgets of many governments and their various departments. Policing was not immune to these consequences, and this put a disproportionate weight on police leadership in affected jurisdictions to rely more heavily than normal on the discipline and professionalism of their police officers and their command posts to sustain policing activities in the face of dwindling resources.

In the U.S., dwindling resources have forced counties in some states to limit the number of officers employed, even when it meant that officers were over-worked and had limited chances for career advancement. Some police departments were entirely staffed by officers who worked part-time. Despite their careers being designated as occupationally stressful, police officers' job security is dependent on the financial health of the counties in which they worked.

In the US, there is generally a prevailing belief among workers that job performance leads to job security. However, the financially precarious state of police departments has added to job insecurity and stress among police officers. Pfeffer and Veiga (1999) suggested that unlike previous generations of workers, even by 1998, workers had no guarantee of job security.

For a police chief, their ultimate purpose is to keep the public they serve safe. The work environment they foster must be constructed in such a manner that officers can maintain their individuality and still interface productively with their team, which in turn requires the group quality known as team spirit. For team spirit to be created and maintained, all members of a workgroup must understand the chain of command, actively acknowledge and accept it, and take an interest in fellow group members (Adu-Gyamfi, 2014). This creates an environment in which people can appreciate and learn from their differences (Adu-Gyamfi, 2014). Superior officers must also understand and be sensitive to the challenges of managing individual differences in a group environment and provide avenues for people to feel needed and appreciated in order to help manage stress.

In the U.S., many states and counties have expressed regret that the economic downturn forced them to lay-off parts of their workforces. However, in recent years, the economic circumstances of many counties have improved as the labor force's unemployment rate has declined by 2017 to near historic lows. This should address the issue of job security in relation to job stress for police officers and allow police department leadership to focus instead on the sources of job stress related to performance and job circumstances previous research has identified.

Another cause of stress for police officers is the potential for departmental closures or reorganizations due to allegations of corruption or unprofessional conduct by police officers (Sundaram & Kumaran, 2012). Not only does corruption or unprofessional conduct adversely affect the police department directly accused of such behaviors, but the bad publicity such departments garner can and does dampen morale and heighten stress levels at many other police departments as news is widely disseminated in today's world. A recent example of a police department that was closed as a result of misconduct includes the 2014 closing of the Lincoln Heights Police Department in Ohio, which was

closed due to litigation against the city of Lincoln Heights brought on by the conduct of police officers.

Some might argue that in the U.S. there appears to be a trend of poor performance within some police departments driven at least in part by inefficient hiring policies that place nepotism above safety and professionalism. Another accusation commonly made against police officers in the U.S. is racism. This is particularly problematic when such accusations are made against officers after they have made arrests where a suspect was injured or where the officer was involved in a shooting incident.

Scholars have suggested that proper motivation and good leadership are the correct solutions for reducing stress and improving the performance of police officers. Some states and counties utilize financial incentives such as free health insurance in order to motivate staff. Other motivational approaches include selective hiring, expansion of job responsibilities, and cross training. Officers can also be motivated by expanding growth opportunities within the department and providing each officer with a supportive team environment where both job responsibilities and accountability are shared. However, the most important motivational approaches appear to be to offer job security and a stimulating work environment (Pfeffer & Viega, 1999).

Treatment of stress as it affects a police officer's performance first must identify the sources of stress in conjunction with changes in human reliability. Moreover, it is important to understand human psychology as it affects actions, behaviors, and character. Lack of appreciation for the demands of policing is a tremendous source of stress for many police officers. They complain of a lack of rewards for good job performance, insufficient training, and excessive paperwork (Pfeffer et al., 1999). Furthermore, the criminal justice system creates additional stress, as court appearances interfere with officers' work assignments, personal time, and vacation schedules. Without accounting for these stressors, it is difficult to adequately treat stress among police officers.

Police officers may also find court decisions stressful. For example, court decisions granting bail, probation, or parole to high-risk individuals may be perceived by officers as premature. The sense of frustration with such decisions may in some cases become acute when convicted offenders are released from prison only to resume their

criminal behaviors. Police officers are affected daily by the many traumas of the victims and witnesses with whom they interact. They are also subjected to the sinusoidal rises of adrenalin associated with dangerous occupations. Finally, many police departments are short-staffed, forcing individual officers to work longer hours with less flexible schedules. This further impacts police officers' ability to use nonwork time to mitigate stress.

Every individual faces stressful situations at some points in their lives, and some level of stress is inevitable. Some stress can even be helpful in terms of its ability to improve one's cardiovascular system. However, it is a long-held belief that performance quality will increase up to a certain stress level and, thereafter, quality declines (Yerkes & Dodson, 1908). Survival demands the ability to absorb nonoptimal levels of stress from time to time. This reality is more pronounced for police officers because they come in contact with socially aberrant behaviors, criminal activities, and victims' traumatic pain and suffering on a daily basis. Compounding the stress that many police officers already face, it has become common in many jurisdictions for police officers to face a general public that is suspicious of police activities and the police officers themselves to the point of outright hostility.

Stress, when not well managed, can lead to heart disease, digestive disorders, high blood pressure, ulcers, headaches, and lung disease. The stress induced by police work is often inherent to the tasks or responsibilities of the job. This occupational stress can be exacerbated by poorly-conceived departmental rules, regulations, or standard operating procedures. Stress may even be caused by an officer's personal or family issues that are complexified by job demands (Sundaram et al., 2012).

Police officers' stress is exacerbated by many fundamental characteristics of police work. An example of one major stressor is the need to adapt periodically to differing waking and sleeping periods and the associated changes in biorhythms caused by scheduled shift rotations. Such shift changes can cause fatigue, boredom, or burnout, which reduce productivity. The burdens of enforcing the law and upholding ethical standards are both contributing factors to police stress.

The conditions faced by police officers can heighten their sense of guilt, increase threats to their physical wellbeing, or threaten their perceived sense of safety, both for themselves and in extreme cases, even for extended family members. While the desire to serve and protect is a major motivator for many officers, exposure to trauma, violence, murder, and other criminal acts take their toll on the sanity of some police officers (Gerber et al., 2010). In order to mitigate the consequences of such conditions, police officers are provided with relevant training opportunities to help them manage stress effectively.

As a result of changing societal expectations and increased accountability, more officers have been put on administrative leave or terminated within the last 5 years than within the previous 50 years (Iwasaki et al., 2005). Changes in public perceptions and expectations both of the police and policing have been intertwined with and are accelerated by advances in information technology. This technology has allowed information about police activities and abuses to spread at once rapidly and widely via the means of social media and the Internet. The ubiquity of digital camera technology has exacerbated the change. Devices such as cell phones as well as altogether new categories of devices such as tablets, dashcams, and bodycams on the police themselves are now ubiquitous. This change not only makes documenting unprofessional policing behavior easier, it also leads to calls for increased accountability for such behavior.

The increased scrutiny and changes in social attitudes toward policing have led to many more investigations of police activity in recent years. Investigations or rumors of impending investigations create added anxiety in the lives of police officers and their colleagues. When an investigation is taking place within an officer's own department, the uncertainty about how their colleagues will testify or how their family members would react also raises officers' stress levels. This type of uncertainty adversely affects job performance and departmental morale.

In addition to all the other causes of stress, certain categories of police officers face more stress due to being older, female or members of a visible minority group. Women officers can find themselves under tremendous pressure from supervisors, peers, and the public who are skeptical about women officers' suitability to be involved in

police work. Even white male officers in a precinct with predominantly black officers can find they are treated as a minority (Sundaram & Kumaran, 2012). Following shifts in attitudes toward policing, more and more officers even face disapproval from family and friends due to their choice of occupation.

Most research into the relationship between stress and job performance leans heavily towards the adverse impacts of stress. However, there have been arguments that individuals experiencing stress can also experience positive consequences. The experience of stress can make some individuals more focused, and some officers perform at their best when motivated by looming deadlines or clearly identifiable milestones. However, a continuously overwhelming workload, unrealistic deadlines, inflexible work schedules, and inadequate remuneration can be likely to contribute to a sense of frustration and increased levels of stress (Iwasaki et al., 2005).

Summary of the Literature Review

In this literature review, I examined theory and empirical research on the topic of stress. Stress has been studied from an interdisciplinary perspective largely because it is an issue that in some way affects a majority of individuals (Selye, 1974, 1978, 1984). The literature review focused primarily on theory and research related to the stress-buffering hypothesis and how police officers experience stress as a result of their unique occupational demands. I also reviewed research on the stress-buffering effects of exercise. The exact mechanism whereby exercise triggers a stress-buffering reaction remains elusive to scientists (Selye, 1974), but research has clearly indicated that exercise produces significant stress-buffering effects. In the present study, I used the stress-buffering hypothesis to investigate the stress-buffering effects of exercise on the relationship between police officers' job stress and their job performance. In Chapter 3, I present information on the methodology used to conduct the study.

Chapter 3: Research Method

Introduction

The purpose of this study was to test the hypothesized negative link between police officers' job stress and job performance, controlling for differences in their stress-buffering capabilities resulting from physical exercise. A secondary research objective was to empirically test the number of factors underlying the two broad categories of the PSQ (McCreary & Thompson, 2006). This issue merited further investigation as there have been mixed findings reported in the literature regarding the underlying factorial components of the PSQ (Shane, 2010).

In the first section of this chapter, I present the research design and rationale. In the second section, I discuss the population, sample, and sampling procedures. The third section includes a discussion of my procedures for the recruitment of participants and data collection. In the fourth section, I examine instrumentation and the operationalization of constructs. Finally, I conclude with a discussion of my data analysis plan and threats to validity

Research Design and Rationale

The first step in choosing a research design is to settle on a definition of the problem (Singh, 2007). Thus, rather than selecting a research technique and forcing it to fit the problem, I allowed potential solutions to the problem to dictate the best methodology for use in this study. This was in alignment with advice by Babbie (2010), who noted that the research problem should dictate the methodology rather than vice versa.

As the purpose of this study was to investigate the extent to which two components of police stress (organizational and operational) were individually and jointly related to police officers' job performance when controlling for the effect of physical exercise, a quantitative methodology was appropriate. The dependent variable of interest was police officers' job performance, and the independent variables were the two components of police stress proposed by McCreary and Thompson (2006). Police officers' physical exercise acted as a control variable.

A control variable, also referred to as a moderating variable, is an independent variable that may mask the influence of the independent variable on the dependent variable, if left uncontrolled. If a moderating variable is left uncontrolled within a study, it can be considered a confounding variable (Yarnold, 2015). Specifically, in relation to the stress-buffering hypothesis, the problem of uncontrolled, confounding variables relates to the fact that there are differences in the capacity of individuals to deal with stressors (Luria & Torjman, 2009; Meurs & Perrewé, 2011).

Individual differences in the ability to deal with stress have been observed in the context of lifestyle stress-buffers such as physical exercise activities (Brown, 1991; Burton et al., 2012). Differences have also been observed in the context of nationality (Glazer, Stetz, & Izso, 2004). The research indicates that it is possible for differences in the ability to handle stress to be influenced by a range of cultural variations (Jaramillo et al., 2005). Any of these factors could be considered moderating or confounding variables.

Wu (2011) noted that previous research has been inconsistent with regard to the link between job stress and job performance among police officers. Recognizing the potential for physical exercise to influence this relationship, I designed this study to respond to the call for more research focused on the link between police officers' job stress and job performance, but by factoring in the role of exercise, I avoided the risk that the results would be misleading. Failure to methodologically control for the confounding variable effect induced by police officers' physical exercise activities could have distorted the hypothesized inverse relationship between police job stress and police job performance.

Methodology

Population

I followed the research guideposts Shane (2010) provided on organizational stressors and police job performance to draw a sample of police officers from police departments in City A. In order to protect the identities of the police officers who participated in the study, the questionnaires did not require participants to disclose any personal information or data pertaining to their identities or their city of location. I also

used numeric identifiers to code survey questionnaires in order to maintain strict anonymity and protect participants.

Sampling and Sampling Procedure

I surveyed two southern U.S. metropolitan police departments to gather data for this study. I used a random sampling approach to ensure that all police officers in the department had an equal chance of being selected for the study. This sampling approach has been utilized by other researchers examining similar research topics (Grawitch et al., 2010; Shane, 2010; Summerlin et al., 2010). The metropolitan police departments that served as the study's sample frame employed active police officers (men and women) of varying ages, races, and other demographic characteristics. The police departments could be considered characteristic of typical southern U.S. metropolitan police departments. Appendix A contains the letter I used to invite police officers in the two chosen departments to participate in the study.

Participation in the survey was voluntary, and prior to participating in the survey, the participants' explicit consent was requested and received. Participants were informed that they could refuse to answer any question and that they were free to withdraw from the study at any time without being penalized. I explained to the participants that the study would survey their perceptions of their daily work experience, and the participants consented to allow me access to their performance data. These methodological considerations were in alignment with previous research (see Grawitch et al., 2010; Shane, 2010; Summerlin et al., 2010). On completion of the data collection, I tallied the data, assigning each participant an identification number so that the original survey could be shredded for confidentiality. To assure that the participants were not individually identified, I also stored the final data in the aggregate form. Police officers, not their departments, were the unit of analysis in this study.

Finally, it is well established that the robustness of a sample size and the response rate derived from that sample are two intricately-intertwined, critical requirements that must be established to assure confidence in the results of the study. Accordingly, I ensured that the sample was robustly large enough to yield a response rate equal to or greater than previous quantitative studies on police stress and job performance. I also

utilized the G*Power sample size software program to compute the appropriate sample and effect size (see Faul et al., 2007). It should be clearly stated that I used the G*Power software program to estimate the sample size prior to data collection. Furthermore, prior to the distribution of the survey to the participants, I was granted approval to conduct my study from the Institutional Review Board of Walden University (IRB Approval No: 10-10-16-0280944).

Instrumentation and Operationalization of Constructs

This study was survey-based utilizing structured questionnaires. I used published instruments in the public domain. Different instruments were used to collect data on the dependent, independent, and control variables. A brief description of each instrument is provided in the following sections.

Dependent Variable Instrumentation

The dependent variable of this study was police officers' job performance. Following other research in police job performance, I used a composite measure of 11 performance indicators (see Bostrom, 2003; Shane, 2010). The composite measure included items related to participants' job performance such as number of arrests, citations, reports completed, and citizen complaints. Consequently, I used a linear combination of the 11 items as the index of police job performance (see Shane, 2010).

Following Shane's (2010) recommendations, I sought to obtain access to archival data on the participants' job performance with special assistance from police chiefs in the departments where participants worked. However, the police chiefs refused to grant me access to this data. I then asked each police officer to provide perceptual data on each of the 11 items listed in the composite measure of police performance (Summerlin et al., 2010). These items were (a) arrests, (b) citations, (c) self-initiated investigations, (d) self-initiated stops, (e) reports completed, (f) citizenship complaints, (g) administrative complaints, (h) sick hours, (i) on duty injuries, on (j) duty motor vehicle accidents, and (k) failure to appear in court.

Independent Variables (PSQ-org and PSQ-op): Instrumentation

Two components of police stress, PSQ-org and PSQ-op, served as the independent variables in the study. These components were derived from the

questionnaire developed by McCreary and Thompson (2006) and have been widely used in scholarly research on police stress (Shane, 2010; Summerlin et al., 2010). Each of the two police stress questionnaires measured stress using 20, 7-point Likert-type questions as detailed in Shane (2010). The questionnaires used to collect the data are presented in Appendix B.

The data from the PSQ-org and the PSQ-op were subjected to factor analyses. Then, the factor scores elicited were linearly combined to become the index for PSQ-org and PSQ-op, and the independent variables for the study (see Shane, 2010). This statistical analysis strategy underscored the obvious fact that if the raw PSQ-org and PSQ-op data were used, rather than their factor scores, the analysis could be confounded by multicollinearity.

Control Variable

Brown (1991) and Burton et al. (2012) both examined how the frequency of weekly physical exercise buffered the negative effects of workplace stress. I followed the approach of these researchers to operationalize the control variable of exercise as the average number of weekly physical exercise sessions. Researchers have noted that self-reports of physical exercise have been demonstrated to be consistent with objective measures of physical exercise (Gerber et al., 2010; Brown, 1991). Thus, this approach was considered acceptable.

Data Analysis

This section contains a discussion of the activities required to accomplish the data analysis for this study. The section begins by describing the steps taken to prepare the data for statistical analysis and the resulting descriptive statistics. Then a discussion of the steps taken during the hypothesis testing is presented.

Descriptive Statistics

The first step in the data analysis process was to examine the raw data using SPSS statistical software to ensure that all cells in the SPSS spreadsheet contained the desired entries. I then computed descriptive statistics. This included measures of central tendency (mean, median, etc.). These statistics were reported in numbered tables.

Following the cleaning of the data and the calculation of the descriptive statistics but prior to the hypothesis testing, principal component analysis (PCA) was used to verify the number of underlying components in the PSQ. Other researchers have suggested that organizational stress and operational stress are two components that underlie the PSQ (McCreary & Thompson, 2006). Shane (2010) combined these two components to form the PSQ index. Similarly, I combined both components and subjected the participants' scores to a factor analysis to verify that the factor scores linearly combined to form an index for the independent variables of the study (see Shane, 2010).

I utilized PCA for two reasons. First, Likert-type items, like those found in the PSQ-org and PSQ-op can cause multicollinearity when used in multiple regression analyses. Therefore, to mitigate the undesirable effects of multicollinearity, factor scores were used in the regression analysis instead of the raw data. Eydurán et al. (2010) and Sakar, Keskin, and Unver (2011) established that factor scores are free from the confounding effects of multicollinearity. Thus, using this approach, I was able to ensure that a robust test of the hypotheses was conducted.

Second, it is well established in the scholarly literature on police stress and police job performance that the number of empirical dimensions underlying the police stress construct is still uncertain (Irniza, Emilia, Muhammad Suhainizam, & Nizam Isha, 2014; McCreary & Thompson, 2006; Shane, 2010). Shane (2010) empirically demonstrated that the organizational stress category of the police stress questionnaire is comprised of six different underlying factors. As the PSQ has dual categories (i.e., PSQ-org and PSQ-op), if one category has six underlying factors, then it follows that a combination of both categories of the PSQ will contain more than six factors. Only empirical scrutiny of both PSQ-org and PSQ-op data has the potential to answer this important question.

Hypothesis Testing

The study was guided by three research questions. Each research question was answered by testing a pair of hypotheses. The research questions and hypotheses were as follows:

RQ1: Does the stress-buffering hypothesis predict that police officers' job stress is negatively related to their job performance?

H₀1: The stress-buffering hypothesis does not predict that police officers' job stress is negatively related to their job performance.

H₁1: The stress-buffering hypothesis predicts that police officers' job stress is negatively related to their job performance.

RQ2: Does the stress-buffering hypothesis predict that exercise is positively related to police officers' job performance?

H₀2: The stress-buffering hypothesis does not predict that exercise is positively related to police officers' job performance.

H₁2: The stress-buffering hypothesis predicts that exercise is positively related to police officers' job performance.

RQ3: Does the stress-buffering hypothesis predict that police officers' physical exercise moderates the relationship between job stress and job performance?

H₀3: The stress-buffering hypothesis does not predict that police officers' physical exercise moderates the relationship between job stress and job performance.

H₁3: The stress-buffering hypothesis predicts that police officers' physical exercise moderates the relationship between job stress and job performance.

Hypothesis 1 tested the proposition that police officers' job stress was negatively related to police officers' job performance. This hypothesis was tested using the framework of a multiple regression, as shown in Equation 1.

$$PJP = b_0 + b_1FS_1 + b_2FS_2 + \dots + b_w WNE + e$$

Equation 1. Multiple regression framework.

In Equation 1, PJP represented the dependent variable of police job performance, b_0 was defined as the constant term, F represented factor scores, b_1 referred to the coefficient on FS_1 , b_2 represented the coefficient on $FS_2 \dots$, which, in turn, referenced other factor scores.

The acronym WNE referred to the weekly number of exercise sessions, and e referred to white noise error term. Focusing on the multiple regression framework presented in Equation 1, if $b_1 + b_2 + \dots$ are negative, individually and jointly with the associated individual t statistics and the joint f statistic being -2 or less than -2, then the null hypothesis would be rejected and the alternative hypothesis would be retained.

Importantly, the ellipse in Equation 1 denoted that I do not know in advance the number of factor scores underlying the PSQ-org and PSQ-op data until the PCA was complete. The number of factor scores may be greater than the two included in Equation 1 above. Whatever the number of factors scores turns out to be, they would be the index for the data on the independent variable (PSQ-org & PSQ-op).

Hypothesis 2 was a test of the proposition that police officers' frequency of exercise was positively related to police officers' job performance. Using the framework of Equation 1, if the coefficient (b_w) of police officers' weekly number of exercise sessions (WNE) was positive and the associated t statistic was large enough to be statistically significant, then the null hypothesis would be rejected and the alternative hypothesis would be retained.

I used Hypothesis 3 to test the proposition that police officers' exercise should moderate the relationship between police officers' job performance and police officers' job stress under the stress-buffering hypothesis. I tested this moderation hypothesis using hierarchical moderated regression analysis (HMRA). The framework for this analysis is presented in Equation 2.

$$PJP = b_0 + b_m(FS_1 + b_2FS_2 + \dots) * WNE + e$$

Equation 2. HMRA framework.

In Equation 2, PJP represented the dependent variable of police job performance, b_0 referred to the constant term, F stood for factor scores, b_1 referred to the coefficient on FS_1 , b_2 represented the coefficient on FS_2, \dots , which, in turn, represented other factor scores unknown until the PCA was performed. The acronym WNE stood for the weekly number of exercise sessions, and b_m represented the coefficient on the cross products term between stress and exercise. The white noise error term was represented by e .

In Equation 2, if the coefficient (b_m) of the interaction term between police officers' job stress and police officers' weekly number of exercise sessions was positive, and the associated t statistic was greater than or equal to 2, then the null hypothesis would be rejected, and the alternative hypothesis would be retained. It is imperative to mention that some researchers have entered some demographic variables as covariates in their

police research models (see Shane, 2010). In this study, I gathered data on some demographic variables and investigated whether these variables would improve the robustness of the models. If the variables did not improve the models, I did not enter them.

Threats to Validity

External Validity

In this study, one of the ways that threats to external validity arose was through selection bias. Selection bias occurs when the sample that is studied does not adequately represent the population that the researcher hopes to study. When selection bias occurs, it is difficult (if not impossible) to argue that the results of the study can be generalized to the wider population from which the sample was drawn (Bagozzi, 1980; Bagozzi et al., 1991). However, because the present study did not involve a non-probability convenience sample of police officers, there were no significant threats to external validity. However, extrapolation is only possible to populations of police officers similar to that from which the sample was drawn. I mitigated the potential effects of sample selection bias by establishing that the sample was randomly drawn from a population of police officers with similar characteristics. Previous empirical research on police stress and job performance linkages used non-probability or convenience sampling (e.g., Shane 2010).

Internal Validity

The concept of internal validity is relevant to the intention to investigate cause-and-effect (Churchill, 1979; O'Leary-Kelly & Vokurka, 1998). However, as this study was not concerned with cause-and-effect, internal validity was not relevant. However, the internal consistency or reliability of the instruments used in this study had previously been verified using Cronbach's Alpha coefficient indices, a common method used by researchers to demonstrate reliability (Carmines & Zeller, 1979; O'Leary-Kelly & Vokurka, 1998; Pedhazur & Schmelkin, 1991).

Construct Validity

Schwab (1980) noted that construct validity represented "the correspondence between a construct (conceptual definition of a variable) and the operational procedure to measure or manipulate that construct" (p. 5). The measurement instrument I used for this

study was borrowed from previous researchers investigating linkages between police stress and police job performance (McCreary & Thompson, 2006; Shane, 2010; Summerlin et al., 2010). This allowed me to ensure that the measurement instrument was scientifically well developed. The use of a previously designed and validated instrument also enhances confidence in the psychometric properties of the borrowed instrument (Churchill, 1979).

O’Leary-Kelly and Vokurka (1998) suggested that “establishing construct validity involves the empirical assessment of the adequacy of a measure, and requires that three essential components be established; unidimensionality, reliability, and validity” (p. 390). Thus, by following past research (e.g., Dinev & Hart, 2004), this study empirically established unidimensionality, face validity, content validity, and construct validity by ensuring that the factor loadings of the principal component analysis (PCA) were greater than 0.7 and greater.

Ethical Procedures

The dedication to following ethical procedures is a significant concern involving all aspects of research in natural settings where human subjects are studied (Manita et al., 2011). In the present study, to ensure the protection of the participants, I followed ethical standards as set forth by Walden University. By agreeing to complete the questionnaires, the participants in the study provided consent and indicated their willingness to voluntarily participate in the study. The questionnaire explicitly asked the participants not to mention their name or other identifying information when completing the questionnaires. The participants were assured of strict confidentiality and anonymity of the data they provided, and following the completion of the study, copies of the executive summary were made available to them at no cost. By taking these steps, I endeavored to treat the participants ethically.

Summary

The study’s purpose was to quantitatively investigate the nature of the relationship between police officers’ job stress and job performance, controlling for variations in police officers’ physical exercise. This chapter included information on the research design and its rationale and a discussion of the research methodology used to

conduct the study. Specific attention was given to defining the population of interest, identifying the sampling frame and sampling procedures, and outlining the procedures used to collect and analyze the data. Chapter 4 includes a discussion of the results of the data analysis.

Chapter 4: Results

Introduction

The purpose of this quantitative, non-experimental, survey-based correlational study was to use the conceptual framework of the stress-buffering hypothesis to investigate the relationships between three key variables: police officers' job performance, police officers' job stress, and police officers' physical exercise. Three research questions were developed to test the relationships between the variables under study. I examined the following research questions by testing their related hypotheses using the frameworks of Equation 1 and Equation 2.

RQ1: Does the stress-buffering hypothesis predict that police officers' job stress is negatively related to their job performance?

H₀1: The stress-buffering hypothesis does not predict that police officers' job stress is negatively related to their job performance.

H₁1: The stress-buffering hypothesis predicts that police officers' job stress is negatively related to their job performance.

RQ2: Does the stress-buffering hypothesis predict that exercise is positively related to police officers' job performance?

H₀2: The stress-buffering hypothesis does not predict that exercise is positively related to police officers' job performance.

H₁2: The stress-buffering hypothesis predicts that exercise is positively related to police officers' job performance.

RQ3: Does the stress-buffering hypothesis predict that police officers' physical exercise moderates the relationship between job stress and job performance?

H₀3: The stress-buffering hypothesis does not predict that police officers' physical exercise moderates the relationship between job stress and job performance.

H₁3: The stress-buffering hypothesis predicts that police officers' physical exercise moderates the relationship between job stress and job performance.

In this chapter, I present the procedures I used to gather data for the study. Then the results of the data analysis are presented. The chapter concludes with a summary of the results in relation to the research questions and hypotheses.

Data Collection

I surveyed two southern, metropolitan police departments in the US to provide data for this study. My methodology and data collection procedures were in keeping with the practices of others who have conducted similar research (Grawitch et al., 2010; Shane, 2010; Summerlin et al., 2010). I designated the two police departments as Police Department A and Police Department B. The chiefs of the two police departments aided in the distribution of the survey questionnaires.

Prior to the collection of the data, I carefully considered how to draw a robust random sample from each of the two populations. To attain this purpose, a robust sample size was determined using the G*Power sample computation software program (Faul et al., 2007). The results of the G*Power sample calculation are presented in Table 1. Based on the G*Power calculation, with an actual power of 0.95, the minimum required sample size was 153. To ensure that I would obtain enough completed survey responses, I chose to increase my sample size to 200.

The next step after determining the minimum sample size was to conduct a simple random sampling of the population from each of the police departments. Following this method, I drew a random sample of 101 individuals from the population of 177 police officers in Police Department A and invited them to complete the survey. I then drew a random sample of 104 police officers from Police Department B and invited them to complete the survey. This procedure yielded a robust sample of 205. However, upon removing incomplete surveys, the final sample size I used for this study was 200.

Table 1.

*Sample Size Computation Results Using G*Power 4.0*

Input Parameters		Output Parameters	
Effect size	0.15	Noncentrality parameter	22.95
A error prob.	0.05	Critical F	2.0
Power (1- err prob.)	0.95	Numerator df	7
Number of tested predictors	7	Denominator df	145
Total number of predictors	7	Total sample size	153
		Actual Power	0.95

Note. Analysis: A priori: Compute required sample size for F test Linear Multiple Regression: Fixed Model, R^2

The initial data collection efforts started on October 10, 2016. I contacted the police chiefs of the two police departments and obtained their written consent. Each police chief agreed to put a questionnaire collection box in their department. This allowed the police officers who had been randomly selected to participate in the study to deposit their completed survey questionnaires in the collection box in their department. The boxes remained under the supervision of the police chiefs until all the surveys had been completed and I collected the paper surveys. To ethically protect the participants, the questionnaires did not ask any information pertaining to police officers' identities or their city of location. When processing the data, I gave each data point a numeric identifier to ensure strict anonymity was maintained and the police officers participating in study were protected.

I retrieved the completed survey questionnaires from the locked boxes in both police departments approximately 3 weeks after the start of the data collection. As shown in Figure 3, a total of 177 police officers worked in Police Department A, and 101 police officers completed the survey instrument. A total of 137 police officers worked in Police Department B, and 104 police officers completed the survey. The police chiefs stated that the population of each police department does not remain constant. This fluctuation is due to natural attrition occurring when officers resign, retire, or leave for various other reasons, and new officers are hired. For these reasons, the total populations of the police department were taken as approximate continuous numbers.

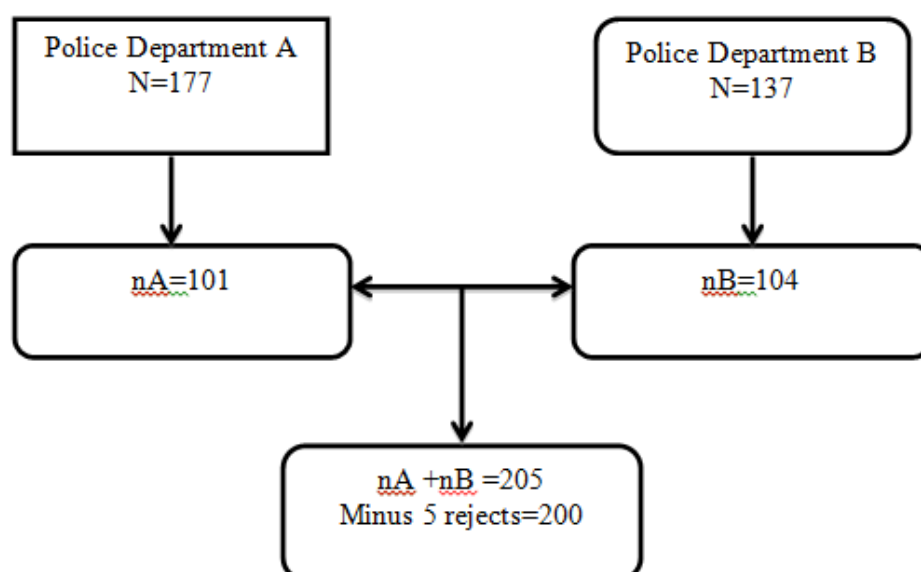


Figure 3. Samples from the two police departments.

Results of the Data Analysis

Descriptive Statistics

Descriptive statistics were run on the data to help characterize the participants and the data set. In this subsection, I present the descriptive statistics related to the personal characteristics of the participants and the variables examined in the study. Personal data was collected to identify participants by gender, race, age, education, and marital status. Table 2 presents a distribution of the sample based on gender.

Table 2.

Distribution of the Sample by Gender

Gender	N	%	Cumulative %
Male	134	67	67
Female	61	30.5	97.5
Prefer not to say	5	2.5	100
Total	200	100	

The sample was predominantly male ($N = 134$, 67%). Of the 200 participants, only 61 were female. Five participants chose not to answer the question about gender. The next personal characteristic that helped identify participants was race. Table 3 presents the distribution of the sample based on race.

Table 3.

Distribution of the Sample by Race

Race	N	%	Cumulative %
White	51	25.5	25.5
Latino	26	13	38.5
African American	48	24	62.5
Native American	26	13	75.5
Asian Pacific Islander	20	10	85.5
Other	29	14.5	100
Total	200	100	

As part of the study, participants were asked to indicate their race. Choices available to the participants included *White, Latino, African American, Native American, Asian Pacific Islander, and Other*. The largest group of participants was White (25.5%) followed closely by African American (24%). The smallest group was Asian Pacific Islanders with 20 participants. The next demographic characteristic that was measured was age. Table 4 presents the distribution of the sample based on age.

Table 4.

Distribution of Sample by Age

Age	N	%	Cumulative %
18-24	51	25.5	25.5
25-34	87	43.5	69
35-44	50	25	94
45-54	12	6	100
55 and older	0	0	
Total	200	100	

When measuring for age, participants were divided by age into five groups. Age categories included individuals aged 18-24, 25-34, 35-44, 45-54, and 55 and older. The largest section of the participant group was between the ages of 25 and 34. There were no participants in the group of 55 and older. After age, the next demographic characteristic was education level. The distribution of the sample based on education level is presented in Table 5.

Table 5.

Distribution of the Sample by Education

Education Level	N	%	Cumulative %
High School Diploma/GED	67	33.5	33.5
Trade Technical/Vocational	53	26.5	60
Some College - No Degree	10	5	65
Associates Degree	10	5	70
Bachelor's Degree	22	11	81
Master's Degree	10	5	86
Professional Degree	18	9	95
Doctoral Degree	10	5	100
Total	200	100	

Participants could choose from eight categories when selecting their level of education. Choices included, *High School Diploma/GED, Trade Technical/Vocational, Some College No Degree, Associate Degree, Bachelor's Degree, Master's Degree, Professional Degree, and Doctoral Degree*. The largest group of participants possessed a high school diploma or a GED as their highest level of education. The next largest group of participants had attended a trade, technical, or vocational school.

The final demographic category that was measured was marital status. Participants were asked to indicate whether they were single, divorced, married, separated, or widowed. The results are presented in Table 6. The sample was fairly evenly distributed between participants who were single, divorced, or married. Only 9.5% of the sample were widowed.

Table 6.

Distribution of Sample by Marital Status

Marital Status	N	%	Cumulative %
Single	46	23	23
Divorced	48	24	47
Married/Domestic Partner	48	24	71
Separated	39	19.5	90.5
Widowed	19	9.5	100
Total	200	100	

Following the analysis of the sample's demographic characteristics, I computed the descriptive statistics of the study's variables. This included the dependent variable, police job performance, the independent variable, police stress, and the control variable, police exercise. Table 7 presents these descriptive statistics.

Table 7.

Descriptive Statistics for the Constructs

Construct	N	Minimum	Maximum	Mean	Std. Deviation
PJP	200	30.00	65.00	55.1700	7.23414
PSQ	200	121.00	279.00	231.8700	39.55726
Exercise	200	2.00	7.00	6.0690	1.29298

Note. PJP = police job performance, PSQ = a combination of organizational and operational job stress.

Police job performance functioned as the dependent variable in the study. Police job performance was measured as a continuous variable with interval properties necessary for use in a parametric multiple regression analysis. Police officers' organizational and operational job stress were measured jointly as a single variable, and the responses of each respondent were summed (PSQ). Police exercise served as the control variable, and it was hypothesized that exercise would have buffering effects on the relationship between job stress on police job performance. Exercise was measured as a continuous count variable as the number of exercise sessions per week.

Assumption Testing

The next step in the data process was to test the assumptions of the data that would enable the hypothesis testing to be complete. First, the data set was examined for the presence of any influential outliers. No influential outliers were found among the values of the variables of police officers' job performance and police officers' job stress.

Next, I examined the normality of the residuals. It is noted in the literature that in order to ensure that the data is normally distribution, researchers must observe the residual values (not the unobserved errors) (Field, 2013; Francis, 2013). Therefore, SPSS was used to examine the extent of normality of the residuals in the study. Specifically, normality was evaluated in framework of a p-p plot of standardized residuals as well as a histogram (Field, 2013; Francis, 2013). These results are presented in Figure 4. Similarly, the histogram of the dependent variable (police job performance) is shown in Figure 5.

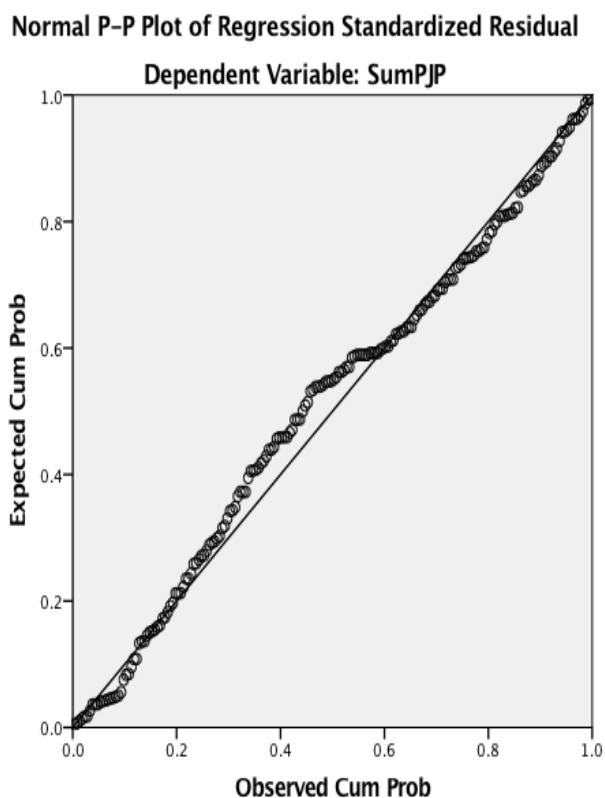


Figure 4. Normal p-p plot for police job performance.

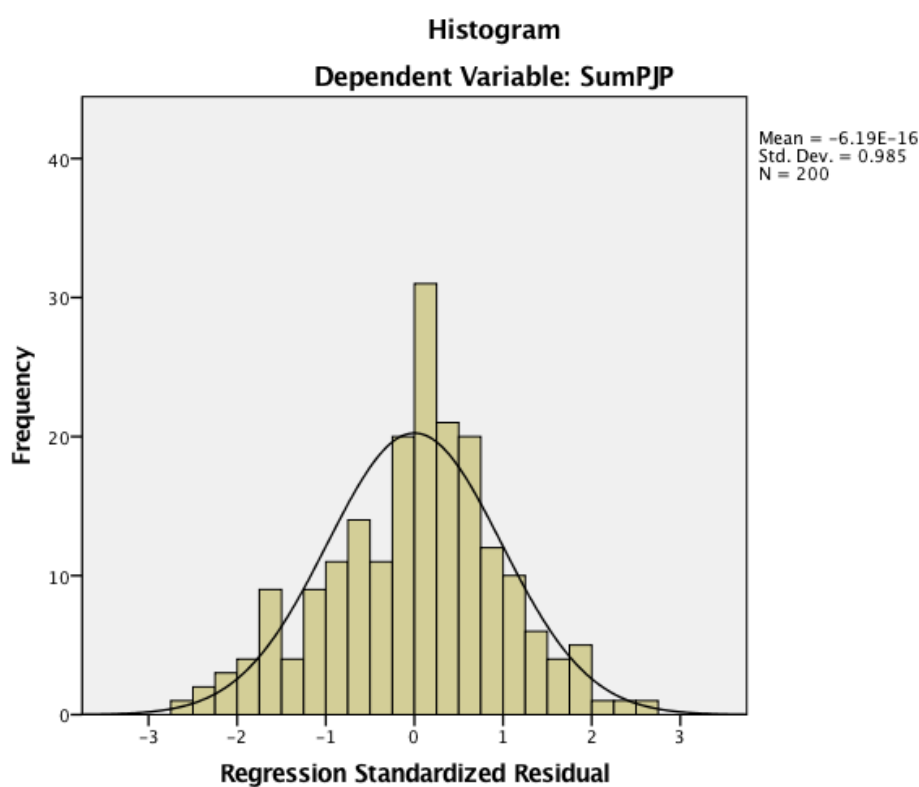


Figure 5. Histogram for police job performance.

The normal p-p plot in Figure 4 and the histogram in Figure 5 suggest no serious departure from normality. Thus, the degree of non-normality was insignificant, and did not cast doubt on the regression coefficients of the multiple regression estimations.

Furthermore, because multiple regression is robust to a large sample size (Lin, Jiang, &

Lam, 2013), confidence in the results of the study was high. Additionally, even if there was a slight violation of normality, that was not deemed serious enough to undermine the regression results. As such, no attempt was made to transform the data (Field, 2013). Overall, log and square root transformations commonly used in the literature (Francis, 2013) failed to radically improve the results of the estimation.

The next step was to check the data for multicollinearity. I found evidence that multicollinearity was absent in the data as confirmed by (a) an examination of bivariate correlations and scatterplots between each pair of the independent variables, and (b) the SPSS output on the variance inflation factor (VIF) shown in Table 8. Both the tolerance tests and VIF tests were within the acceptable range (Field, 2005).

Table 8.

Collinearity Statistics Coefficients

Model	Tolerance	VIF
1 (Constant)		
Factor Score 1	.593	1.68
Factor Score 2	.988	1.012
Factor Score 3	.902	1.109
Factor Score 4	.654	1.529
Factor Score 5	.963	1.038
2 (Constant)		
Factor Score 1	.477	2.236
Factor Score 2	.973	1.028
Factor Score 3	.865	1.156
Factor Score 4	.642	1.557
Factor Score 5	.963	1.038
Exercise	.702	1.424

Note. Dependent variable: Job performance.

After checking for multicollinearity, I then check for heteroscedasticity. I confirmed that heteroscedasticity was absent as the bivariate distribution of the data was reasonably and evenly spread within the regression line of best fit. Additionally, a second check was performed using scatterplots between the dependent variable and each of the independent variables.

A Durbin-Watson test of autocorrelation was then conducted. The problem of autocorrelation arises mainly with time series data (Francis, 2013). The computed Durbin-Watson coefficient was 1.99. Specifically, this is a test of whether there was serial correlation between errors in the regression model. It also tested whether adjacent residuals (observed residuals) were correlated to ascertain if the unobserved errors were correlated. Thus, the Durbin-Watson test allowed me to test the assumption of independent errors.

Importantly, the Durbin-Watson test statistics lies in the range of 0-4. A value of 2 suggests that the residuals were uncorrelated. A value greater than 2 would mean that adjacent residuals were negatively correlated, but a value below 2 would indicate that adjacent residuals were positively correlated. As the value of adjacent residuals for the present study was 1.99, the empirical evidence suggests that there was no autocorrelation in the dataset.

The final step prior to testing the hypotheses was to test the assumption of linearity of the data. The linearity assumption is a pivotal assumption of multiple regression analysis. This assumption was examined using scatterplots and correlation between the dependent variable and each of the independent variables. Further, this linearity assumption was checked and was also supported by the absence of bivariate outliers in the data set (Field, 2013; Francis, 2013).

Component Factor Analysis

As discussed in Chapter 3, it was imperative to first empirically ascertain the number of subdimensions that characterize the data in the 40-item PSQ. This was done to mitigate the potential effects of multicollinearity on a multiple regression analysis. Specifically, I conducted a principal component factor analysis to transform the Likert data from the 40-item scale into factor scores. This allowed the factor (component) scores, which are free from multicollinearity artifacts, to be used in the hierarchical multiple regression to test the study's hypotheses (Eyduvan et al., 2010; Sakar et al., 2011).

Prior to conducting the principal component analysis (PCA), I ran a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.813) and Bartlett's test of

sphericity ($\chi^2 = 107610/780, p < 0.000$). The results indicated that the 40-item data set was not an identity matrix, and the data should be subjected to a principal component factor analysis (Field, 2005). The statistics supporting the adequacy of the data for the principal component factor analysis are presented in Table 9. Field (2005) noted that PCA results are always massive and oversized. Table 10 presents the communalities of the PCA.

Table 9.

Results of KMO and Bartlett's Tests

KMO Measure of Sampling Adequacy	Bartlett's Test of Sphericity Approximate Chi-Square	df	Sig.
.813	10761.458	780	.000

The PCA extraction in Table 10 appeared to be encouraging, with the smallest loading of 0.181 corresponding to PSQ38. However, because the communality extracted for PSQ38 was less than 0.5, it was dropped (Dinev & Hart, 2004; Matheson, Rimmer, & Tinsley, 2014). The variance extraction results, including the number of components extracted in the PCA are reported in Table 11. Following the PCA extraction results in Table 10, Table 11 detailed the factorial solution of the PCA.

Using the criteria of a varimax rotation and Eigenvalues greater than 1.00, a five-factor solution explained 74.99% of the variance in the PSQ data set ($\alpha = .93$). These values from the PCA component matrix are presented in Table 12. Additionally, a scree plot was used to substantiate the number of factorial components. This was an accepted procedure to verify the number of factorial components based on the literature (Dinev & Hart, 2004; Matheson et al., 2014). The scree plot of the five-factor PCA solution is presented in Figure 6. As seen in Figure 6, the elbow of the PCA scree plot showed a distinct and clear break at the five-factor point, confirming that the 40-item PSQ data set had a five-factor solution.

Table 10.

PCA Communalities

Item	Initial	Extraction	Item	Initial	Extraction
PSQ1	1.000	.808	PSQ21	1.000	.735
PSQ2	1.000	.790	PSQ22	1.000	.752
PSQ3	1.000	.750	PSQ23	1.000	.774
PSQ4	1.000	.865	PSQ24	1.000	.768
PSQ5	1.000	.815	PSQ25	1.000	.779
PSQ6	1.000	.772	PSQ26	1.000	.747
PSQ7	1.000	.777	PSQ27	1.000	.786
PSQ8	1.000	.737	PSQ28	1.000	.756
PSQ9	1.000	.693	PSQ29	1.000	.781
PSQ10	1.000	.714	PSQ30	1.000	.839
PSQ11	1.000	.774	PSQ31	1.000	.817
PSQ12	1.000	.790	PSQ32	1.000	.782
PSQ13	1.000	.753	PSQ33	1.000	.804
PSQ14	1.000	.791	PSQ34	1.000	.838
PSQ15	1.000	.797	PSQ35	1.000	.737
PSQ16	1.000	.790	PSQ36	1.000	.733
PSQ17	1.000	.757	PSQ37	1.000	.648
PSQ18	1.000	.822	PSQ38	1.000	.181
PSQ19	1.000	.720	PSQ39	1.000	.561
PSQ20	1.000	.742	PSQ40	1.000	.721

Note. Extraction method: Principal component analysis.

Table 11.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.254	40.635	40.635	16.254	40.635	40.635	13.679	34.198	34.198
2	5.778	14.445	55.080	5.778	14.445	55.080	5.851	14.627	48.825
3	4.971	12.427	67.507	4.971	12.427	67.507	5.474	13.685	62.510
4	1.685	4.212	71.718	1.685	4.212	71.718	3.613	9.032	71.542
5	1.309	3.273	74.991	1.309	3.273	74.991	1.380	3.449	74.991
6	.941	2.352	77.343						
7	.909	2.273	79.616						
8	.815	2.037	81.653						
9	.782	1.956	83.609						
10	.689	1.723	85.332						
11	.627	1.569	86.900						
12	.521	1.302	88.202						
13	.465	1.163	89.365						
14	.458	1.145	90.510						

(continued)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
15	.394	.985	91.495						
16	.367	.918	92.412						
17	.345	.863	93.275						
18	.322	.806	94.081						
19	.281	.703	94.784						
20	.267	.667	95.451						
21	.209	.523	95.974						
22	.203	.507	96.481						
23	.174	.434	96.915						
24	.163	.409	97.324						
25	.153	.384	97.707						
26	.144	.359	98.066						
27	.123	.307	98.373						
28	.113	.283	98.656						
29	.104	.259	98.916						
30	.076	.191	99.107						

(continued)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
31	.072	.180	99.287						
32	.055	.139	99.426						
33	.051	.128	99.554						
34	.048	.120	99.674						
35	.034	.086	99.760						
36	.029	.073	99.833						
37	.028	.070	99.903						
38	.017	.044	99.946						
39	.012	.030	99.977						
40	.009	.023	100.000						

Note. Extraction method: Principal component analysis.

Table 12.

Component Matrix

Item	Component				
	1	2	3	4	5
PSQ1	.732	.173	-.151	.468	-.015
PSQ2	.860	-.001	-.116	-.154	.117
PSQ3	.837	.042	.021	-.220	-.001
PSQ4	-.187	.875	.242	-.002	-.078
PSQ5	-.178	.867	.127	-.007	.125
PSQ6	.834	.061	-.116	.171	-.174
PSQ7	.842	.030	-.108	-.232	.043
PSQ8	.817	.087	.043	-.244	.027
PSQ9	.795	-.017	-.096	.227	-.008
PSQ10	.832	.009	-.036	-.143	.005
PSQ11	.324	-.251	.752	.190	-.059
PSQ12	.295	-.186	.813	.071	-.051
PSQ13	.264	-.145	.811	-.068	.011
PSQ14	.768	.186	-.169	.372	.017
PSQ15	.867	-.005	-.129	-.121	.123
PSQ16	.858	.102	.044	-.201	.003
PSQ17	-.165	.824	.205	-.054	-.077
PSQ18	-.181	.873	.123	-.051	.098
PSQ19	.821	.041	-.092	.131	-.136
PSQ20	.819	.069	-.129	-.226	.013
PSQ21	.826	.114	.048	-.135	.140
PSQ22	.817	.078	-.091	.265	-.005
PSQ23	.851	.085	-.011	-.204	-.014
PSQ24	.364	-.150	.761	.177	-.060
PSQ25	.291	-.255	.791	-.054	-.017
PSQ26	.234	-.119	.823	-.020	.010
PSQ27	.745	.164	-.174	.416	-.028
PSQ28	.852	.048	-.094	-.123	.060
PSQ29	.841	.089	.085	-.244	.006
PSQ30	-.184	.868	.208	-.003	-.092
PSQ31	-.182	.852	.168	.053	.162
PSQ32	.834	.073	-.149	.208	-.122
PSQ33	.872	.061	-.096	-.116	.128
PSQ34	-.180	.861	.241	-.029	-.073
PSQ35	.335	-.187	.758	.080	-.088
PSQ36	.804	.077	-.143	-.227	.094
PSQ37	-.080	-.088	.212	.210	.738
PSQ38	-.075	-.280	-.230	.204	-.047
PSQ39	-.124	-.089	.062	.113	.722
PSQ40	.630	.275	-.110	.486	-.002

Note. Extraction method: Principal Component Analysis.

a. Five components extracted.

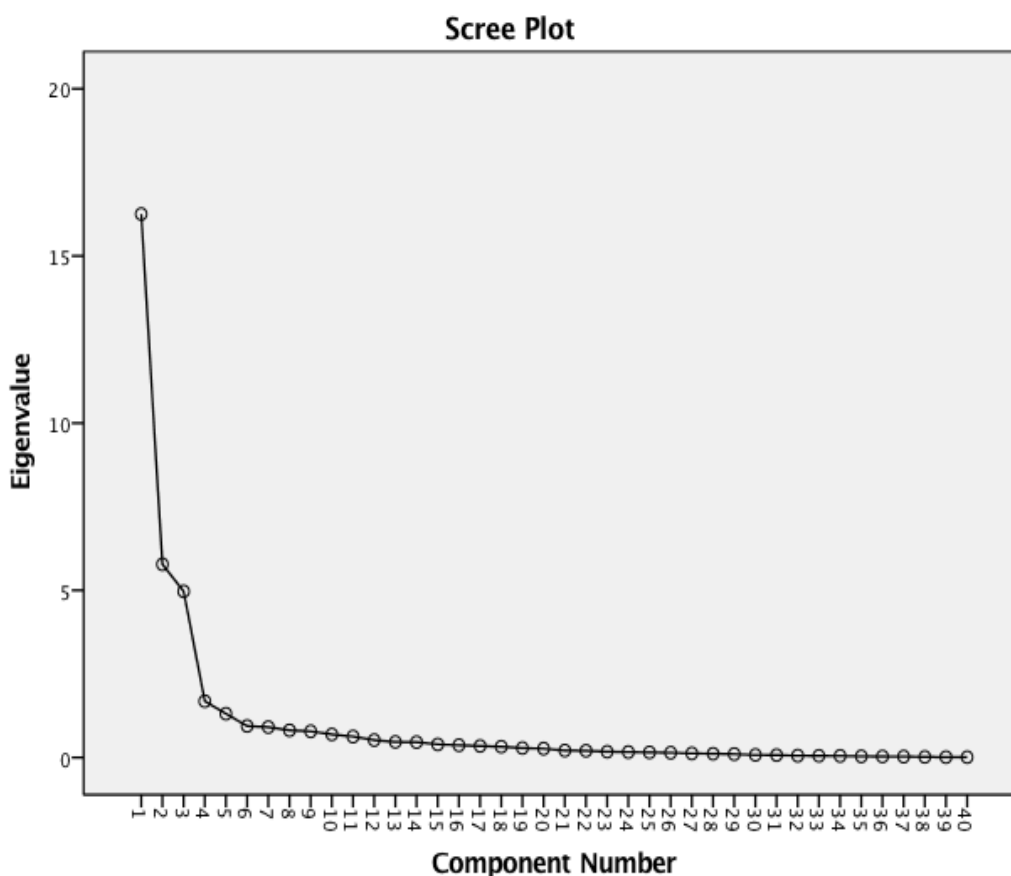


Figure 6. Scree plot of the principal component analysis.

Research Question 1. The hypotheses used to test Research Question 1 were as follows:

H₀₁: The stress-buffering hypothesis does not predict that police officers' job stress is negatively related to their job performance.

H₁₁: The stress-buffering hypothesis predicts that police officers' job stress is negatively related to their job performance.

These hypotheses were investigated using the framework of a hierarchical multiple regression presented in Equation 1:

$$PJP = b_0 + b_1FS_1 + b_2FS_2 + \dots + b_wWNE + e$$

In Equation 1, PJP equaled police officers' job performance, b_0 represented the constant term, FS represented factor scores as the new independent variable derived from the PCA, $b_1 - b_5$ referred to the coefficients of FS_1 to FS_5 , WNE represented the weekly number of exercise sessions, and e represented the white noise error term.

During the model estimation process to test the hypotheses, a 2-step sequential hierarchical multiple regression analysis was performed using SPSS to answer Research Question 1 and test the corresponding hypotheses. The results of the 2-step sequential hierarchical multiple regression analysis are shown in Table 13. To avoid any unnecessary confusion regarding statistical terms, it should be noted that in the literature, Model 1 and Model 2 can sometimes also be referred to as Block 1 and Block 2 (Field, 2013; Hayes, 2013).

Technically, the predictor variables involved in Model 1, police officers' job stress factor scores, were considered constants. Therefore, using the framework of change statistics (See Table 13), the empirical question hinged on moving from a null model to Model 1 to determine the r-squared change associated with police job stress. A second consideration was whether the r-squared change value was statistically significant at conventional levels.

Table 13.

SPSS Model Summary

Model	1	2
R	.892	.904
R-Squared	.795	.817
Adjusted R-Squared	.790	.811
Std. Error of Estimate	3.31	3.14
Change Statistics		
R-Squared Change	.795	.022
F Change	150.8	22.99
df1	5	1
df2	194	193
Sig. F Change	.000	.000

Durbin-Watson = 1.99

Model 1 predictor variables = Constant, police job stress factor scores

Mode 2 predictor variables = Constant, police job stress factor scores & exercise

Moving from a null model to Model 1, the r-squared change associated with police job stress was .795. Thus, approximately 80% of the variance in the dependent variable (police job performance) was explained by police job stress. Therefore, Null Hypothesis 1 was rejected. As police job stress was statistically shown to have a positive

influence on police job performance, Alternative Hypothesis 1 was retained. For a negative relationship to exist between police job stress and police job performance, the r-squared change would have had to be less than zero. This was not technically feasible. Conclusively, the result indicated that police job stress positively influenced police job performance.

Research Question 2. The second set of hypotheses tested the proposition that police officers' exercise was related to police officers' job performance. The hypotheses used to test Research Question 2 were as follows:

H₀₂: The stress-buffering hypothesis does not predict that exercise is positively related to police officers' job performance.

H₁₂: The stress-buffering hypothesis predicts that exercise is positively related to police officers' job performance.

Importantly, the word positive is underscored according to the theory of stress-buffering hypothesis (Gerber et al., 2010). Using the framework of Equation 1, if and only if, the coefficient (b_w) for police officers' weekly number of exercise (WNE) is positive, with the associated *t*-statistic being substantially large enough to be statistically significant, then Null Hypothesis 1 would not be upheld. If the null hypothesis is rejected, Alternative Hypothesis 1 would be retained.

The empirical evidence supporting the rejection of Null Hypothesis 1 is presented in Table 13. To test the hypotheses for Research question 2, I computed the r-squared value when moving from Model 1 to Model 2 to determine if the value was significant. The r-squared change value that resulted when moving from Model 1 to Model 2 was .022. This r-squared change of .022 was associated only with the entry of exercise in the model as evidenced in Table 13. Even though the r-squared change may appear small in magnitude, it was highly statistically significant ($p < .001$) at the conventional levels.

Research Question 3. The hypotheses used to test Research Question 3 were as follows:

H₀₃: The stress-buffering hypothesis does not predict that police officers' physical exercise moderates the relationship between job stress and job performance.

H₁₃: The stress-buffering hypothesis predicts that police officers' physical exercise moderates the relationship between job stress and job performance.

Research Question 3 was used to investigate whether the stress-buffering hypothesis correctly predicted that police officers' physical exercise moderated the relationship between the independent variable (i.e., police officers' job stress) and the dependent variable (police officers' job performance). The hypothesis that exercise provides buffering effects that ameliorate job stress and enhance job performance was the underlying foundation of this study.

In the empirical literature, moderation has been established in one of two ways (Hayes, 2013). One of the ways moderation is tested is based on the statistical significance of the moderating variable. In the present study, this method was used to the statistical significance of exercise as a moderating variable. As shown in Table 13, the r-squared change statistic attributable to exercise was .022, and this r-squared change statistic was highly statistically significant ($p < 0.001$). Therefore, the null hypothesis that exercise does not buffer the effect of stress on police officers' job performance was rejected. Instead, the data analysis indicated that police officers' physical exercise does buffer the undesirable effects of job stress on job performance. Obura and Anyango (2016) used the same approach to establish the presence of moderation effects in an advanced econometric study.

Summary

I examined three key research questions and tested sets of hypotheses addressing the links between exercise, police officers' job stress, and police officers' job performance. Answering Research Question 1 involved testing the proposition that police officers' job stress is related to their job performance. This was investigated using the framework of a hierarchical multiple regression. Empirical evidence indicated that police job stress does influence police job performance.

Answering Research Question 2 entailed testing the proposition that police officers' exercise is positively related to police officers' job performance. The positive nature of this relationship is underscored according to the stress-buffering hypothesis (Gerber et al., 2010). Accordingly, empirical evidence found that police officers' exercise

was positively related to their job performance. Thus, as exercise levels increased, job performance improved. I concluded that exercise positively impacted police job performance in line with the stress-buffering hypothesis.

Finally, Research Question 3 was answered by determining whether the stress-buffering hypothesis correctly predicted that police officers' physical exercise moderates the relationship between the independent variable (police officers' job stress) and dependent variable (police officers' job performance). I found empirical evidence suggesting that police officers' physical exercise does buffer the relationship between job stress and job performance. The results of the data analysis are examined in greater detail in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

For several decades, the impact of job stress on police officers' job performance has been given considerable attention by empirical researchers across the globe (Gerber et al., 2010). The purpose of this quantitative, non-experimental, survey-based, correlational study was to use the conceptual framework of the stress-buffering hypothesis to investigate the relationships between three key variables: police officers' job performance, police officers' job stress, and police officers' physical exercise. I aimed to quantitatively investigate the hypothesized influence of police officers' job stress on their job performance, taking into account the proposition that physical exercise buffers the negative effects of job stress on police officers' job performance.

In this chapter, I discuss the implications of the findings in the context of the body of knowledge on the topic. First, I reintroduce the research questions and hypotheses. Next, I present my interpretation of the findings. This is followed by a discussion of the findings of the study in relation to other research. Then, I discuss the limitations of the study and make recommendations for practice and future research. I close the chapter by drawing conclusions about the impact of the research.

Research Questions and Hypotheses

The following research questions were answered by testing individual sets of hypotheses. Hypotheses were tested using the frameworks of Equation 1 and Equation 2 that I presented in Chapter 3.

RQ1: Does the stress-buffering hypothesis predict that police officers' job stress is negatively related to their job performance?

H₀1: The stress-buffering hypothesis does not predict that police officers' job stress is negatively related to their job performance.

H₁1: The stress-buffering hypothesis predicts that police officers' job stress is negatively related to their job performance.

RQ2: Does the stress-buffering hypothesis predict that exercise is positively related to police officers' job performance?

H₀2: The stress-buffering hypothesis does not predict that exercise is positively related to police officers' job performance.

H₁2: The stress-buffering hypothesis predicts that exercise is positively related to police officers' job performance.

RQ3: Does the stress-buffering hypothesis predict that police officers' physical exercise moderates the relationship between job stress and job performance?

H₀3: The stress-buffering hypothesis does not predict that police officers' physical exercise moderates the relationship between job stress and job performance.

H₁3: The stress-buffering hypothesis predicts that police officers' physical exercise moderates the relationship between job stress and job performance.

Interpretation of Findings

My central research objective was to empirically investigate a proposition anchored in the stress-buffering hypothesis that police officers' physical exercise will act as a moderating variable and buffer the negative effect of police officers' job stress (independent variable) on their job performance (dependent variable). Focusing on this overall research objective, I discuss the key findings of this study.

Overall, there were three key findings in this study. First, I found empirical evidence indicating that police officers' job stress had a negative influence (relationship) on their job performance. Approximately 80% of the variance in police officers' job performance (dependent variable) was explained by police officers' job stress (independent variable). Thus, police officers' job stress was a statistically significant predictor of their job performance. When viewed through the conceptual lens of the stress-buffering hypothesis, the impact of job stress on job performance was negative so that the desirable practical effect of police exercise was to moderate or dampen this negative effect by lessening job stress and improving job performance.

Second, I found empirical evidence that police officers' physical exercise was positively related to police officers' job performance. This led me to conclude that police exercise would enhance job performance under the tenets of the stress-buffering hypothesis (see Gerber et al., 2010). The third and final finding was related to the most important research question: Does the stress-buffering hypothesis predict that police

officers' physical exercise should moderate the relationship between the independent variable (police officers' job stress) and the dependent variable (police officers' job performance)? Based on the results of the data analysis, I concluded that police officers' physical exercise moderated the negative effect of police officers' job stress on their job performance.

Comparison of Study Findings with Similar Studies

A key finding was that police officers' physical exercise moderated the relationship between job stress and job performance. Foundational research related to exercise and the stress-buffering hypothesis is anchored in the notion that regular physical activity is generally viewed "as an emotion-oriented coping strategy that provides stressed individuals with a time-out from daily stresses" (Gerber et al., 2010, p. 287). Consequently, empirical researchers have demonstrated that exercise has mood-enhancing effects, especially in the case of individuals who initially felt low and irritated prior to exercise (Ekkekakis & Acevedo, 2006).

There is little empirical research on the stress-buffering effects of physical exercise in relation to police officers' job stress or job performance (Adu-Gyamfi, 2014). Only a few empirical studies have used police officers as a target population when testing the stress-buffering hypothesis. Overall, however, these studies do support the findings of the present study. For example, in a related study, Adu-Gyamfi (2014) examined whether there was a relationship between job stress and job satisfaction using a non-random sample of Ghanaian police officers. Adu-Gyamfi's study yielded results that corroborate the outcome of the present study. Adu-Gyamfi found a statistically significant relationship between police job stress and job performance with job satisfaction acting as a moderating variable. Consequently, Adu-Gyamfi recommended that law enforcement administrators pay more attention to the psychological and physiological needs of police officers in order to improve job satisfaction, reduce job stress, and enhance officers' job performance. Other empirical studies also based on the stress-buffering hypothesis corroborated the outcome of the present study in relation to the moderating effects of exercise (Gerber et al. 2010; Gerber & Pühse, 2009).

Some research suggests that the benefits of exercise can have long lasting impacts. In a three-wave longitudinal study, researchers found that exercise had a significant buffering effect on the relationship between life events and somatic complaints (Howard et al., 1984). Benefits of exercise were apparent not only during the first wave of data collection, but throughout the study and again during the third wave of testing roughly 4 years after the study had begun (Howard et al., 1984). While the present study was not longitudinal in nature, it is possible that the buffering effects of exercise may have a longitudinal impact on police officers' job stress. Further research could be conducted to examine this link.

Previous research into the general causes of stress among police officers has shown that for entry-level police officers, the organizational factors that cause stress are just as important as the inherent physical dangers of the job itself (Spielberger et al., 1981). The conclusions drawn by Spielberger et al. were later corroborated (Martelli, Martelli, & Waters, 1989). Steven (2005) also found that a reduction in organizational sources of stress would lead to higher morale and productivity among police officers. Overall, the damaging effects of organizational and operational stressors to police officers have been well documented in the literature (Slate et al., 2007). The present study supports these findings.

Limitations of the Study

As with any other empirical study, this study has some understandable limitations that can be addressed in further studies by changing or modifying the research design and objectives. For example, I followed the extant literature on police stress and used a cross-sectional research design even though a longitudinal design is superior in the sense that it allows researchers to document change over time. A longitudinal study would have added valuable insights into the extent to which exercise was able to moderate the relationship between police officers' job stress and their job performance. However, due to the time constraints of this research process, a longitudinal study was not possible.

Another limitation was that I extracted data on police officers' job stress by using respondents' perceptual ratings. Thus, to the degree that perceptions are subjective beliefs, the data are not as reliable as metric or objective data. Another unavoidable

design limitation for this study was the limited generalizability of the findings. Officers from two metropolitan police departments were surveyed as part of this research.

However, the experiences of officers in those police departments may not be generalizable to officers in other areas of the US or in other departments in suburban or rural areas. This limitation can be remedied by replicating this study using different police departments. If that is done, then scholars would have a better understand of the degree that characteristics such as the geographic location, administrative structure, or size of a police department influence the outcomes of the study.

Recommendations

When contemplating the impact of research, recommendations can often be drawn directly from the findings, from an examination of the limitations of the study, and also from identified gaps in the literature (Chenhall, 2003). With this in mind, the results of this study suggest that law enforcement administrators can offer exercise programs within departments to help police officers decrease their stress levels and improve their job performance. Specifically, the findings of the study suggest that physical exercise can be used to help police officers who are dealing with excessive levels of job stress. It is also possible that law enforcement administrators may want to monitor job performance levels in an effort to address stress-related performance problems that can arise following particularly stressful on-the-job events. Understanding that physical exercise can, in fact, buffer the negative effects of police officers' job stress on their job performance may even encourage police administrators to make more strategic investments in areas that will promote police officers' participation in physical exercise routines. The positive benefits of such efforts may not only improve outcomes for individual officers but for a variety of stakeholders. The benefit to local communities via improved policing also has the potential to enhance positive social change.

Implications of Study: Social Change

The capstone objective of this study was to ensure that the findings would make a positive contribution towards social change via benefits to societal stakeholders through improvements in police officers' health and job performance. Specifically, law enforcement administrators and other policy makers will be able to make more informed

decisions based on the outcome of this research. Understanding the linkages between organizational and operational stressors that negatively impact police officers' job performance is an important first step in being able to address stress factors and promote healthier behaviors. The research also provided a better understanding of the moderating effect of physical exercise in relation to the negative impacts of job stress on police officers' job performance. Improvements in police officers' job performance will be directly beneficial to society, thus demonstrating the study's contribution to positive social change.

Future Research

Several suggestions for future research can be made based on this study. For example, a replication of the study using similar police organizations in different regions in the US and in other countries would provide cumulative evidence for theory building. It also would provide insights for scholars and practitioners regarding cultural differences related to the impacts of job stress. Cumulative research efforts are necessary to enhance empirical understanding of the underlying dimensions the police officers' job stress construct. Even though this is a desirable objective, a definitive number of dimensions has not, to date, been established.

Conclusions

This study was used to investigate whether physical exercise can buffer the negative effects of police officers' job stress on their job performance. Even though researchers have not yet identified the exact mechanism whereby police officers' physical exercise triggers the stress-buffering effect, previous research has clearly demonstrated that exercise has stress-buffering effects (e.g., Gerber et al. 2010). In line with these studies, the results of the data analysis indicated that there were statistically significant benefits to exercise, and that while job stress negatively impacted job performance, this negative effect could be moderated with regular exercise.

References

- Acquadro Maran, D., Varetto, A., Zedda, M., & Ieraci, V. (2015). Occupational stress, anxiety and coping strategies in police officers. *Occupational Medicine*, *65*, 466-473. doi:10.1093/occmed/kqv060
- Adams, G. A., & Buck, J. (2010). Social stressors and strain among police officers: It's not just the bad guys. *Criminal Justice and Behavior*, *37* 1030-1040. doi:10.1177/0093854810374282
- Adu-Gyamfi, J. (2014). Young people's participation in the formulation and implementation of Ghana's youth policy. *Youth Voice Journal*, *4*, 3-28. Retrieved from <https://youthvoicejournal.com/>
- Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*, 47-87. doi:10.1111/j.1745-9125.1992.tb01093.x
- Ammons, J. (2005). Batterers with badges: Officer-involved domestic violence. *Women Lawyers Journal*, *90*, 28-39. Retrieved from <http://www.nawl.org/p/cm/ld/fid=82>
- Anderson, G. S., Litzenberger, R., & Plecas, D. (2002). Physical evidence of police officer stress. *Policing: An International Journal of Police Strategies & Management*, *25*, 399-420. doi:10.1108/13639510210429437
- Anderson, P. (2009). Intermediate occupations and the conceptual and empirical limitations of the hourglass economy thesis. *Work, Employment and Society*, *23*, 169-180. doi:10.1177/0950017008099785
- Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). New York, NY: Routledge.
- Ansoff, H. I. (1980). Strategic issues management. *Strategic Management Journal*, *1*, 131-148. doi:10.1002/smj.4250010204
- Babbie, E. R. (2010). *The practice of social research* (12th ed.). Belmont, CA: Cengage Learning.
- Bagozzi, R. P. (1980). Performance and satisfaction in an industrial sales force: An examination of their antecedents and simultaneity. *Journal of Marketing*, *44*(2), 65-77. doi:10.2307/1249978

- Bagozzi, R. P., Yi, Y. & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36, 421-458.
doi:10.2307/2393203
- Berg, A. M., Hem, E., Lau, B., & Ekeberg, O. (2006). An exploration of job stress and health in the Norwegian police service: A cross sectional study. *Journal of Occupational and Medical Toxicology*, 1, 26-30. doi:10.1186/1745-6673-1-26
- Bostrom, M. D. (2003). *The impact of higher education on police officer work habits* (Unpublished doctoral dissertation). Hamline University, St. Paul, MN.
- Brough, P. (2004). Comparing the influence of traumatic and organizational stressors on the psychological health of police, fire, and ambulance officers. *International Journal of Stress Management*, 11, 227-244. doi:10.1037/1072-5245.11.3.227
- Brown, D. (1991). *Human universals* (1st ed.). New York City, NY: McGraw-Hill.
- Buker, H., & Wiecko, F. (2007). Are causes of police stress global: Testing the effects of common police stressors on the Turkish National Police. *Policing: An International Journal of Police Strategies & Management*, 30, 291-309.
doi:10.1108/13639510710753270
- Burton, J. P., Hoobler, J. M., & Sheuer, M. L. (2012). Supervisor workplace stress and abusive supervision: The buffering effect of exercise. *Journal of Business Psychology*, 27, 271-279. doi:10.1007/s10869-011-9255-0
- Carmack, C. L., de Moor, C., Boudreaux, E., Amaral-Melendez, M., & Brantley, P. J. (1999). Aerobic fitness and leisure physical activity as moderators of the stress-illness relation. *Annals of Behavioral Medicine*, 21, 251-257.
doi:10.1007/BF02884842
- Carroll, A. B. (2004). Managing ethically with global stakeholders: A present and future challenge. *Academy of Business Executives*, 18(2), 114-120.
doi:10.5465/AME.2004.13836269
- Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology*, 104, 107-123. doi:10.1093/oxfordjournals.aje.a112281

- Chen, Y.-F. (2009). Job stress and performance: A study of police officers in central Taiwan. *Social Behavior and Personality, 37*, 1341-1356.
doi:10.2224/sbp.2009.37.10.1341
- Churchill, G. A. (1979). A paradigm for developing better measures of marketing construct. *Journal of Marketing Research, 16*, 64-73. doi:10.2307/3150876
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300. doi:10.1097/00006842-197609000-00003
- Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). *Social support measurement and intervention: A guide for health and social scientists*. New York, NY: Oxford University Press.
- Cohen, S., & McKay, G. (1984). Social support, stress and the buffering hypothesis: A theoretical analysis. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of psychology and health* (pp. 253-267). Hillsdale, NJ: Erlbaum.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357. doi:10.1037/0033-2909.98.2.310
- Collins P. A., & Gibbs, A. C. C. (2003). Stress in police officers: A study of the origins, prevalence and severity of stress-related symptoms within a county police force. *Occupational Medicine, 53*, 256-264. doi:10.1093/occmed/kqg061
- Copes, H. (2005). *Policing and stress*. Upper Saddle, NJ: Pearson/Prentice Hall.
- Crews, D. J., & Landers, D. M. (1987). A meta-analytic review of aerobic fitness and reactivity to psychosocial stressors. *Medicine & Science in Sports & Exercise, 19*, S114-S120. doi:10.1249/00005768-198710001-00004
- Dai, M., Frank, J., & Sun, I. (2011). Procedural justice during police-citizen encounters: The effects of process-based policing on citizen compliance and demeanor. *Journal of Criminal Justice, 39*, 159-168. doi:10.1016/j.jcrimjus.2011.01.004
- Denison, D. R. (1990). *Corporate culture and organizational effectiveness*. New York, NY: John Wiley.
- Dinev, T., & Hart, P. (2004). Internet privacy concerns and their antecedents: Measurement validity and a regression. *Behavior & Information Technology, 23*, 413-422. doi:10.1080/01449290410001715723

- Dutton, J., Cameron, K., & Quinn, R. E. (Eds.). (2003). *Positive organizational scholarship*. San Francisco, CA: Berrett-Koehler.
- Ekkekakis, P., & Acevedo, E. O. (2006). Affective responses to acute exercise: Toward a psychobiological dose response model. In E. O. Acevedo & P. Ekkekakis (Eds.), *Psychobiology of physical activity* (pp. 91-110). Champaign, IL: Human Kinetics.
- Ensel, W. M., & Lin, N. (2004). Physical fitness and the stress process. *Journal of Community Psychology, 32*, 81-101. doi:10.1002/jcop.10079
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York, NY: Norton.
- Eyduran, E., Topal, M., & Sonmez, A. Y. (2010). Use of factor scores in multiple regression analysis for estimation of body weight by several body measurements in brown trouts (*Salmo trutta fario*). *International Journal of Agricultural & Biology, 12*, 611-615. Retrieved from <http://www.fspublishers.org>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavioral Research Methods, 39*, 175-191. doi:10.3758/BF03193146
- Field, A. (2005). *Discovering statistics using SPSS* (4th ed.). London, England: Sage.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London, England: Sage.
- Francis, R. (2013). *Report of the Mid Staffordshire NHS Foundation Trust public inquiry: Executive summary*. London, England: The Stationery Office. Retrieved from <https://www.gov.uk/government/publications/report-of-the-mid-staffordshire-nhs-foundation-trust-public-inquiry>
- Freeman, P., & Rees, T. (2008). The effects of perceived and received support on objective performance outcome. *European Journal of Sport Science, 8*, 359-368. doi:10.1080/17461390802261439
- Freud, A. (1958). Adolescence. *The Psychoanalytic Study of the Child, 13*, 255-278. Retrieved from <http://www.tandfonline.com/toc/upsc20/current>

- Fuchs, R., & Appel, E. (1994). Belastungsregulation durch sport. [Stress regulation through exercise participation]. In R. Schwarzer & M. Jerusalem (Eds.), *Gesellschaftlicher umbruch als kritisches lebensereignis. Psychosoziale krisenbewältigung von übersiedlern und ostdeutschen* (pp. 227-240). Weinheim, Germany: Juventa.
- Gächter, M., Savage, D. A., & Torgler, B. (2011). The relationship between stress, strain and social capital. *Policing: An International Journal of Police Strategies & Management*, 34, 515-540. doi:10.1108/13639511111157546
- Gerber, M., Kellmann, M., Hartmann, T., & Pühse, U. (2010). Do exercise and fitness buffer against stress among Swiss police and emergency response service officers? *Psychology of Sport and Exercise*, 11, 286-294.
doi:10.1016/j.psychsport.2010.02.004
- Gerber, M., & Pühse, U. (2009). Review article: Do exercise and fitness protect against stress-induced health complaints? A review of the literature. *Scandinavian Journal of Public Health*, 37, 801-819. doi:10.1177/1403494809350522
- Gershon, R. R. M, Barocas, B., Canton, A. N., Li, X., & Vlahov, D. (2009). Mental, physical, and behavioral outcomes associated with perceived work stress in police officers. *Criminal Justice and Behavior*, 36, 275-89.
doi:10.1177/0093854808330015
- Gibson, C. L., Swatt, M. L., & Jolicoeur, J. R. (2001). Assessing the generality of general strain theory: The relationships among occupational stress experienced by male police officers and domestic forms of violence. *Journal of Crime and Justice*, 24(2), 29-57. doi:10.1080/0735648X.2001.9721133
- Glazer, S., Stetz, T. A., & Izso, L. (2004). Effects of personality on subjective job stress: A cultural analysis. *Personality and Individual Differences*, 37, 645-658.
doi:10.1016/j.paid.2003.10.012
- Grawitch, M. J., Barber, L. K., & Kruger, M. H. (2010). Role identification, community socio-economic status demands, and stress outcomes in police officers. *Anxiety, Stress, & Coping*, 23, 165-180. doi:10.1080/10615800902935542

- Gul, S. K. (2008). Police job stress in the USA. *Turkish Journal of Police Studies*, 10(1), 1-13. Retrieved from <https://www.pa.edu.tr/>
- Gül, Z. & Delice, M. (2011). Police job stress and stress reduction/coping programs: The effects on the relationships with spouses. *Turkish Journal of Police Studies*, 13(3), 19-38. Retrieved from <https://www.pa.edu.tr/>
- Hart, P. M., & Cooper, C. L. (2001). Occupational stress: Toward a more integrated framework. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial and organizational psychology: Personnel psychology* (Vol. 2, pp. 93-114). London, England: Sage.
- Hart, P. M., & Cotton, P. (2003). Conventional wisdom is often misleading: Police stress within an organizational health framework. In M. F. Dollard, A. H. Winefield, & H. R. Winefield (Eds.), *Occupational stress in the service professions* (pp. 103-141). London, England: Taylor & Francis.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: Guilford.
- Hickman, M. J., Fricas, J., Strom, K. J., & Pope, M. W. (2011). Mapping police stress. *Police Quarterly*, 14, 227-250. doi:10.1177/10986111111413991
- Howard, J. H., Cunningham, D. A., & Rechnitzer, P. A. (1984). Physical activity as a moderator of life events and somatic complaints: A longitudinal study. *Canadian Journal of Applied Sport Sciences*, 9(4), 194-200.
- Huang, C.-J., Webb, H. E., Zourdos, M. C., & Acevedo, E. O. (2013). Cardiovascular reactivity, stress, and physical activity. *Frontiers in Psychology*, 4, 1-12. doi:10.3389/fphys.2013.00314
- Hunt, S. D. (2000). *A general theory of competition*. Thousand Oaks, CA: Sage.
- Husted, B. W., & Allen, D. B. (2006). Corporate social responsibility in the multinational enterprise: Strategic and institutional approaches. *Journal of International Business Studies*, 37, 838-849. doi:10.1057/palgrave.jibs.8400227

- Irniza, R., Emilia, Z. A., Muhammad Suhainizam, S., & Nizam Isha, A. S. (2014). A psychometric properties of the Malay-version Police Stress Questionnaire. *Malaysian Journal of Medical Sciences*, 21(4), 42-50. Retrieved from <http://www.mjms.usm.my/>
- Iwasaki, Y., Mannell, R. C., Smale, B. J. A., & Butcher, J. (2005). Contributions of leisure participation in predicting stress coping and health among police and emergency response services workers. *Journal of Health Psychology*, 10, 79-99. doi:10.1177/1359105305048557
- Jaramillo, F., Nixon, R., & Sams, D. (2005). The effect of law enforcement stress on organizational commitment. *Policing: An International Journal of Police Strategies and Management*, 28, 321-336. doi:10.1108/13639510510597933
- Jo, Y., & Shim, H. S. (2014). Determinants of police job satisfaction: Does community matter? *International Journal of Law, Crime and Justice*, 43(2), 1-7. doi:10.1016/j.ijlcj.2014.09.002
- Johnson, B., & Christensen, L. (2000). *Educational research: Quantitative and qualitative approaches*. Boston, MA: Allyn & Bacon.
- Johnson, L. B., Todd, M., & Subramanian, G. (2005). Violence in police families: Work family spillover. *Journal of Family Violence*, 20, 3-12. doi:10.1007/s10896-005-1504-4
- Kaluza, G., Keller, S., & Basler, H.-D. (2001). Beanspruchungsregulation durch sport? (Exercise as a coping strategy with stress?). *Zeitschrift für Gesundheitspsychologie*, 9, 26-31. doi:10.1026//0943-8149.9.1.26
- Kobasa, S. C., Maddi, S. R., & Puccetti, M. C. (1982). Personality and exercise as buffers in the stress illness relationship. *Journal of Behavioral Medicine*, 5, 391-404. doi:10.1007/BF00845369
- Lagestad, P., & van den Tillaar, R. (2014). Longitudinal changes in the physical activity patterns of police officers. *International Journal of Police Science and Management*, 16, 76-86. doi:10.1350/ijps.2014.16.1.329

- Lentz, S. A., & Chaires, R. H. (2007). The invention of Peel's principles: A study of policing 'textbook' history. *Journal of Criminal Justice*, 35(1), 69-79. Retrieved from <https://econpapers.repec.org/article/eeejjust/>
- Lin, Q., Jiang, C., & Lam, T. (2013). The relationship between occupational stress, burnout, and turnover intention among managerial staff from a Sino-Japanese joint venture in Guangzhou, China. *Journal of Occupational Health*, 55, 458-467. doi:10.1539/joh.12-0287-OA
- Lochbaum, M. R., Lutz, R. S., Sell, S., Ready, A., & Carson, T. (2004). Perceived stress and health complaints: An examination of the moderating roles of personality and physical activity. *Perceptual and Motor Skills Journal*, 99, 909-912. doi:10.2466/pms.99.3.909-912
- Louw, G. J. & Viviers, A. (2010). An evaluation of a psychosocial stress and coping model in the police work context. *South African Journal of Industrial Psychology*, 36(1), 442-452. doi:10.4102/sajip.v36i1.442
- Lucas, S. J. E., Ainslie, P. N., Murrell, C. J., Thomas, K. N., Franz, E. A., & Cotter, J. D. (2012). Effects of age on exercise-induced alterations in cognitive executive function: Relationship to cerebral perfusion. *Experimental Gerontology*, 47, 541-551. doi:10.1016/j.exger.2011.12.002
- Lucas, T., Weidner, N., & Janisse, J. (2012). Where does work stress come from? A generalizability analysis of stress in police officers. *Psychological Health*, 27, 1426-1447. doi:10.1080/08870446.2012.687738
- Luria, G., & Torjman, A. (2009). Resources and coping with stressful events. *Journal of Organizational Behavior*, 30, 685-707. doi:10.1002/job.551
- Mahon, J. F., & Waddock, S. A. (1992). Strategic issues management: An integration of issue life cycle perspectives. *Business & Society*, 31, 19-32. doi:10.1177/000765039203100103
- Manita, R., Lahbari, H., & Elommal, N. (2011). The impact of qualitative factors on ethical judgments of materiality: An experimental study with auditors. *International Journal of Business*, 16, 231-243. Retrieved from <http://ijbr-journal.org/domains/IJBR-JOURNAL/Default.aspx>

- Manzoni, P., & Eisner, M. (2006). Violence between the police and the public: Influences of work-related stress, job satisfaction, burnout, and situational factors. *Criminal Justice and Behavior, 33*, 613-645. doi:10.1177/0093854806288039
- Martelli, T., Martelli, K., & Waters, L. K. (1989). The Police Stress Survey: Reliability and relation to job satisfaction and organizational commitment. *Psychological Reports, 64*, 267-73. doi:10.2466/pr0.1989.64.1.267.
- Maslach, C., & Schaufeli, W. B. (1993). Historical and conceptual development of burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 1-16). Philadelphia, PA: Taylor & Francis.
- Matheson, C. M., Rimmer, R., & Tinsley, R. (2014). Spiritual attitudes and visitor motivations at the Beltane Fire Festival, Edinburgh. *Tourism Management, 44*, 16-33. doi:10.1016/j.tourman.2014.01.023
- Mayhew, C. (2001). *Occupational health and safety risks faced by police officers* (Trends and issues in crime and criminal justice, No. 196). Canberra, Australia: Australian Institute of Criminology. Retrieved from <http://www.aic.gov.au/publications/current%20series/tandi/181-200/tandi196.html>
- McCarty, W. P., & Skogan W. G. (2013). Job-related burnout among civilian and sworn police personnel. *Police Quarterly, 16*, 66-84. doi:10.1177/1098611112457357
- McCarty, W. P., Zhao, J., & Garland, B. E. (2007). Occupational stress and burnout between male and female police officers: Are there any gender differences? *Policing: An International Journal of Police Strategies & Management, 30*, 672-691. doi:10.1108/13639510710833938
- McCreary, D. R., & Thompson, M. M. (2006). Development of two reliable and valid measures of stressors in policing: The operational and organizational police stress questionnaires. *International Journal of Stress Management, 13*, 494-518. doi:10.1037/1072-5245.13.4.494

- Meurs, J. A., & Perrewé, P. L. (2011). Cognitive activation theory of stress: An integrative theoretical approach to work stress. *Journal of Management*, *37*, 1043-1068. doi:10.1177/0149206310387303
- Mitchell, I., Evans, L., Rees, T., & Hardy, L. (2013). Stressors, social support, and tests of the buffering hypothesis: Effects on psychological responses of injured athletes. *British Journal of Health Psychology*, *19*, 486-508. doi:10.1111/bjhp.12046
- Morash, M., Kwak, D.-H., & Haarr, R. (2006). Gender differences in the predictors of police stress. *Policing: An International Journal of Police Strategies & Management*, *29*, 541-563. doi:10.1108/13639510610684755
- Nabeel, I., Baker, B. A., McGrail, M. P., Jr., & Flottemesch, T. J. (2007). Correlation between physical activity, fitness, and musculoskeletal injuries in police officers. *Minnesota Medicine*, *90*(9), 40-43. Retrieved from <http://www.mnmed.org/news-and-publications/mn-medicine-magazine>
- Nageishi, Y. (2015). A critical review of Selye's stress theory: The statistical analyses of Selye's own experimental data disprove it. *Psychology*, *6*, 1786-1794. doi:10.4236/psych.2015.614175
- Nahavandi, A. (2006). *The art and science of leadership* (4th ed.). Upper Saddle River, NJ: Pearson.
- National Institute for Occupational Safety and Health. (2014). *Stress...at work*. Retrieved from <https://www.cdc.gov/niosh/docs/99-101/default.html>
- Obura, J., & Anyango, C. (2016). Moderating effect of interest rates on relationship between foreign exchange rate fluctuation and performance of Nairobi securities exchange market. *Universal Journal of Accounting and Finance*, *4*(2), 27-34. doi:10.13189/ujaf.2016.040201
- O'Leary-Kelly, S. W., & Vokurka, J. R. (1998). The empirical assessment of construct validity. *Journal of Operations Management*, *16*, 387-405. doi:10.1016/S0272-6963(98)00020-5

- Ouellette Kobasa, S. C., Maddi, S. R., Puccetti, M. C., & Zola, M. A. (1994). Effectiveness of hardiness, exercise and social support as resources against illness. In A. Steptoe & J. Wardle (Eds.), *Psychosocial processes and health: A reader* (pp. 247-260). Cambridge, England: Cambridge University Press.
doi:10.1017/CBO9780511759048.019
- Parkes, K. R. (2003). Shiftwork and environment as interactive predictors of work perceptions. *Journal of Occupational Health Psychology, 8*, 266-281.
doi:10.1037/1076-8998.8.4.266
- Patterson, G. T. (2003). Examining the effects of coping and social support on work and life stress among police officers. *Journal of Criminal Justice, 31*, 215-227.
doi:10.1016/S0047-2352(03)00003-5
- Perez, D. W., & Shtull, P. R. (2002). Police research and practice: An American perspective. *Police Practice Research, 3*, 169-187.
doi:10.1080/15614260220150573
- Pfeffer, J., & Veiga, J. F. (1999). Putting people first for organizational success. *Academy of Management Executive, 13*(2), 37-48. doi:10.5465/AME.1999.1899547
- Randall, C., & Buys, N. (2013). Managing occupational stress injury in police services: A literature review. *International Public Health Journal, 5*, 413-425. Retrieved from https://www.novapublishers.com/catalog/product_info.php?products_id=9861
- Regehr, C., LeBlanc, V. R., Barath, I., Balch, J., & Birze, A. (2013). Predictors of physiological stress and psychological distress in police communicators. *Police Practice and Research, 14*, 451-463. doi:10.1080/15614263.2012.736718
- Robbins, S. P. (2005). *Managing and organizing people* (11th ed.). Upper Saddle River, NJ: Pearson-Prentice Hall.
- Sakar, E., Keskin S., & Unver, H. (2011). Using of factor analysis scores in multiple linear regression model for prediction of kernel weight in Ankara walnuts. *The Journal of Animal & Plant Sciences, 21*, 182-185. Retrieved from <http://www.thejaps.org.pk/>

- Schoeppe, A., & Havighurst, R. J. (1952). A validation of development and adjustment hypotheses of adolescence. *Journal of Educational Psychology, 43*, 339-353.
doi:10.1037/h0052774
- Schwab, D. (1980). Construct validity in organizational behavior. *Research in Organizational Behavior, 2*, 3-43. Retrieved from
<https://www.sciencedirect.com/journal/research-in-organizational-behavior>
- Selye, H. (1935). A syndrome produced by diverse nocuous agents. *Nature, 10*(2), 32.
doi:10.1038/138032a0
- Selye, H. (1956). *The stress of life*. New York, NY: McGraw-Hill.
- Selye, H. (1974). *Stress without distress*. New York, NY: J. B. Lippincott.
- Selye, H. (1978). *The stress of life* (Revised editing). New York, NY: McGraw-Hill.
- Selye, H. (1984). *The stress of life* (Paperback edition). New York, NY: McGraw-Hill.
- Shane, J. M. (2010). Organizational stressors and police performance. *Journal of Criminal Justice, 38*, 807-818. doi:10.1016/j.jcrimjus.2010.05.008
- Singh, K. (2007). *Quantitative social research methods*. Los Angeles, CA: Sage.
- Singh, S., & Kar, S. K. (2015). Sources of occupational stress in the police personnel of North India: An exploratory study. *Indian Journal of Occupational & Environmental Medicine, 19*, 56-60. doi:10.4103/0019-5278.157012
- Siu, O., Cooper, C., & Leung, T. (2000). Three-wave trend study of managerial stress in Hong Kong: The role of type A behavior and exercise. *International Journal of Stress Management, 7*, 153-157. Retrieved from
<http://www.apa.org/pubs/journals/str/>
- Slate, R. N., Johnson, W., & Colbert, S. (2007). Police stress: A structural model. *Journal of Police and Criminal Psychology, 22*, 102-112. doi:10.1007/s11896-007-9012-5
- Spielberger, C. D., Westberry, L. G., Grier, K. S., & Greenfield, G. (1981). *The Police Stress Survey: Sources of stress in law enforcement* (Human Resource Institute Monograph Series Three, No. 6). Tampa, FL: University of South Florida.
- Stevens S., Muller, J. & Kendall, E. (2006). Addressing organizationally induced stress in a police jurisdiction: An Australian case study. *International Journal of Police Science & Management, 8*, 198-204. doi:10.1350/ijps.2006.8.3.198

- Stinchcomb, J. B. (2004). Police stress: Could organizational culture be the culprit. *Law Enforcement Executive Forum*, 4(3), 151-163. Retrieved from <http://iletsbeiforumjournal.com/>
- Summerlin, Z., Ohme, K., Stern, N., & Valentine, C. (2010). Disparate levels of stress in police and correctional officers: Preliminary evidence for a pilot study on domestic violence. *Journal of Human Behavior in the Social Environment*, 20, 762-777. doi:10.1080/10911351003749169
- Sundaram, M. S., & Kumaran, M. J. (2012). A study on the frequency of occupational stress among grade I police constables. *International Journal of Business Management & Economic Research*, 3, 590-691. Retrieved from www.ijbmer.com
- Swatt, M. L., Gibson, C. L., Piquero, N. L. (2007). Exploring the utility of general strain theory in explaining problematic alcohol consumption by police officers. *Journal of Criminal Justice*, 35, 596-611. Retrieved from <https://econpapers.repec.org/article/eeejcjust/>
- Tanigoshi, H., Kontos, A. P., & Remley, T. P., Jr. (2008). The effectiveness of individual wellness counseling on the wellness of law enforcement officers. *Journal of Counseling and Development*, 86, 64-74. doi:10.1002/j.1556-6678.2008.tb00627.x
- van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. (2010). Green space as a buffer between stressful life events and health. *Social Science & Medicine*, 70, 1203-1210.
- Van Hasselt, V. B., Sheehan, D. C., Malcolm, A. S., Sellers, A. H., Baker, M. T., & Couwels, J. (2008). The Law Enforcement Officer Stress Survey (LEOSS): Evaluation of psychometric properties. *Behavior Modification*, 32, 133-151. doi:10.1177/0145445507308571
- Verhage, A., Bisschop, L., & Hardyns, W. (2013). Introduction to special issue. *European Journal of Policing Studies*, 2, 349-351. Retrieved from <http://www.maklu-online.eu/en/crime/ejps/>

- Violanti, J. M. (2011). Police organizational stress: The impact of negative discipline. *International Journal of Emergency Mental Health and Human Resilience*, *13*, 31-36. Retrieved from <https://www.omicsonline.org/international-journal-of-emergency-mental-health-and-human-resilience.php>
- Vold, G., Thomas, B., & Snipes, J. (2002). *Theoretical criminology* (5th ed.). New York, NY: Oxford University Press.
- Wald, J. (2009). The psychological consequences of occupational blood and body fluid exposure injuries. *Disability and Rehabilitation*, *31*, 1963-1969.
doi:10.1080/09638280902874147
- Waters, J. A., & Ussery, W. (2007). Police stress: History, contributing factors, symptoms and interventions. *International Journal of Police Strategies Management*, *30*, 169-188. doi:10.1108/13639510710753199
- Witteveen, A. B., Huizink, A. C., Slottje, P., Bramsen, I., Smid, T., & Van Der Ploeg, H. M. (2010). Association of cortisol with posttraumatic stress symptoms and negative life events: A study of police officers and firefighters. *Psychoneuroendocrinology*, *35*, 1113-1118. doi:10.1016/j.psyneuen.2009.12.013
- Wu, Y.-C. (2011). Job stress and job performance among employees in the Taiwanese finance sector: The role of emotional intelligence. *Social Behavior and Personality*, *39*, 21-32. doi:10.2224/sbp.2011.39.1.21
- Yarnold, P. R. (2015). Optimal statistical analysis involving a confounding variable. *Optimal Data Analysis*, *4*, 87-103. Retrieved from <https://odajournal.com/>
- Yerkes, R. M., & Dodson, J. D. (1908). The relations of strength of stimulus to rapidity of habit-formation. *The Journal of Comparative Neurology and Psychology*, *18*, 459-482. doi:10.1002/cne.920180503
- Zuzanek, J., Robinson, J. P., & Iwasaki, Y. (1998). The relationships between stress, health, and physically active leisure as a function of life-cycle. *Leisure Sciences*, *20*, 253-275. doi:10.1080/01490409809512286

Appendix A: Letter of Invitation to Participate in Research Study

Walden University
Department of Public Policy and Administration
Invitation to participate in a Research Study

Title: Job Stress and Job Performance Relationships of Police Officers.

Committee Chair: Dr. Heather Mbaye
Principal Investigator: Chidiebere Chikwem

I. Purpose:

You are invited to participate in my dissertation research study. The purpose of the study is to investigate the amount of the variance in police officers' job performance is explained by police officers' job stress, and police officers' physical exercise. A total of 240 participants will be recruited for this study. Participation will require 15 minutes of your time, one time only.

II. Procedures:

If you decide to participate, you will fill out the following questionnaire, which will require 15 minutes of your time.

III. Risks:

In this study, you will not have any more risks than you would in a normal day of life.

IV. Benefits:

Participation in this study may not benefit you personally. Overall, we hope to gain information about how reduction in police occupational stress will help improve police job performance and increase motivation in a lifestyle of physical exercise activities.

V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

VI. Confidentiality:

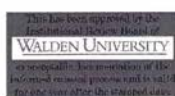
We will keep your records private to the extent allowed by law. Dr. Heather Mbaye and Chidiebere Chikwem will have access to the information you provide. Information may also be shared with those who make sure the study is done correctly (Walden University Institutional Review Board). We do not request your name, so it will not be in our study records. The information you provide will be stored on a personal laptop and will be secured by a log-in password. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally.

VII. Contact Persons:

Contact Dr. Heather Mbaye at heather.mbaye@waldenu.edu or Chidiebere Chikwem at chidiebere.chikwem@waldenu.edu if you have questions, concerns, or complaints about this study. You can also call if you think you have been harmed by the study. You can talk about questions, concerns, offer input, obtain information, or suggestions about the study. You can also contact Walden University IRB at IRB@waldenu.edu if you have questions or concerns about your rights in this study. Walden University's approval number for this study is 10-10-16-0280944 and it expires October 9, 2017.

Please keep this form for your records.

If you agree to participate in this research, please complete the following questionnaire.



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Appendix B: Questionnaire Survey Instrument

Hello Police Officer:

My name is Chidiebere Chikwem. I am a PhD student at Walden University. This survey is for my doctoral degree dissertation only. Thank you for your willingness to complete this survey. There is no right or wrong answer, but your sincere opinion is highly appreciated. Thank you very much for your time!

Gender:

- Male Female Prefer not to answer

Race/Ethnicity (Check one that apply)

- White African-American Asian/ Pacific Islander
 Latino/Latina Native American Other

Age Group

- 18-24 25-34 35-44 45-54 55 and older

Highest Level of Education completed

- High School Diploma/GED Some College, No Degree
 Trade/Technical/Vocational Training Associate Degree
 Bachelor's Degree Master's Degree
 Professional Degree Doctorate Degree

Marital Status:

- Single Married/Domestic Partnership Widowed
 Divorced Separated

Typical Police Officers Activities

Below is a list of items that describe some of the different aspects of doing police officer work. For each item, please indicate the number of times you have performed or been involved in the activity in the past six months.

Police Officers' Jobs	Number of times involved in the past six (6) months
Arrests	
Citations	
Self-initiated investigations	
Self-initiated stops	
Reports completed	
Citizen complaint	
Administrative complaint	
Sick hours	
On-duty injuries	
On-duty motor vehicle accidents	
Failure to appear in courts	

Exercise Activities

In the box provided below, please indicate the number of hours you perform these physical exercises in a typical week.

Physical Exercises	Hours per week
Running/Jogging	
Walking	
Dancing	
Weightlifting	
Cycling	
Swimming	
Skipping	
Yoga	
Pull-ups/Push-ups	
Other, please specify:	

Organizational Stress

Below is a list of items that describe different aspects of being a police officer. After each item, please circle how much stress it has caused you over the past 6 months, using a 7-point scale that ranges from "no stress at all" to "a lot of stress."

No stress at all			Moderate stress			A lot of stress
1	2	3	4	5	6	7

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Dealing with co-workers | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. The feeling that different rules apply to different people (e.g. favoritism) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Feeling like you always have to prove yourself to the organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Excessive administrative duties | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Constant changes in policy / legislation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Staff shortages | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Bureaucratic red tape | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Too much computer work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Lack of training on new equipment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Perceived pressure to volunteer free time | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Dealing with supervisors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Inconsistent leadership style | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Lack of resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Unequal sharing of work responsibilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. If you are sick or injured your co-workers seem to look down on you | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Leaders over-emphasize the negatives (e.g. supervisor evaluations, | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Internal investigations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Dealing the court system | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. The need to be accountable for doing your job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. Inadequate equipment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Operational Stress

Below is a list of items that describe different aspects of being a police officer. After each item, please circle how much stress it has caused you over the past 6 months, using a 7-point scale (see below) that ranges from "No Stress At All" to "A Lot Of Stress":

No stress at all			Moderate stress			A lot of stress
1	2	3	4	5	6	7

1. Shift work	1	2	3	4	5	6	7
2. Working alone at night	1	2	3	4	5	6	7
3. Over-time demands	1	2	3	4	5	6	7
4. Risk of being injured on the job	1	2	3	4	5	6	7
5. Work related activities on days off (e.g. court, community events)	1	2	3	4	5	6	7
6. Traumatic events (e.g. MVA, domestics, death, injury)	1	2	3	4	5	6	7
7. Managing your social life outside of work	1	2	3	4	5	6	7
8. Not enough time available to spend with friends and family	1	2	3	4	5	6	7
9. Paperwork	1	2	3	4	5	6	7
10. Eating healthy at work	1	2	3	4	5	6	7
11. Finding time to stay in good physical condition	1	2	3	4	5	6	7
12. Fatigue (e.g. shift work, over-time)	1	2	3	4	5	6	7
13. Occupation-related health issues (e.g. back pain)	1	2	3	4	5	6	7
14. Lack of understanding from family and friends about your work	1	2	3	4	5	6	7
15. Making friends outside the job	1	2	3	4	5	6	7
16. Upholding a "higher image" in public	1	2	3	4	5	6	7
17. Negative comments from the public	1	2	3	4	5	6	7
18. Limitations to your social life (e.g. who your friends are, where you	1	2	3	4	5	6	7
19. Feeling like you are always on the job	1	2	3	4	5	6	7
20. Friends / family feel the effects of the stigma associated with your job	1	2	3	4	5	6	7