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Police stress and depressive symptoms: role of coping and hardiness

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Abstract

Purpose —Chronic exposure to occupational stress may lead to depressive symptoms in police officers. The association between police stress and depressive symptoms and the potential influences of coping and hardiness were evaluated. The paper aims to discuss this issue.

Design/methodology/approach —Stress level was assessed in the Buffalo Cardio-Metabolic Occupational Police Stress Study (2004–2009) with the Spielberg Police Stress Survey. The frequency and severity of events at work were used to calculate stress indices for the past year. The Center for Epidemiologic Studies Depression (CES-D) Scale was used to measure depressive symptoms during the past week. Linear regression was used to evaluate the association between the stress indices and depressive symptom scores. Models were adjusted for age, sex, race,

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smoking status and alcohol intake, and stratified by median values for coping (passive, active and support seeking) and hardiness (control, commitment and challenge) to assess effect modification.

Findings —Among the 388 officers (73.2 percent men), a significant positive association was observed between total stress and the CES-D score ($\beta = 1.98$ (SE = 0.36); $p < 0.001$). Lower CES-D scores were observed for officers who reported lower passive coping ($\beta = 0.94$ (SE = 0.45); $p = 0.038$) and higher active coping ($\beta = 1.41$ (SE = 0.44); $p = 0.002$), compared with their counterparts. Officers higher in hardiness had lower CES-D scores, particularly for commitment ($\beta = 0.86$ (SE = 0.35); $p = 0.016$) and control ($\beta = 1.58$ (SE = 0.34); $p < 0.001$).

Originality/value —Results indicate that high active coping and hardiness modify the effect of work stress in law enforcement, acting to reduce depressive symptoms.

Keywords

Coping; Stress; Depression; Police officers; Hardiness

Introduction

Depression is estimated to affect 6.7 percent of adults in the USA (U.S. National Institute of Mental Health, 2018); many of whom are working age adults. The costs associated with depression in the USA in general and in the workplace are significant (Kessler, 2012; Insel, 2008; Luppá et al., 2007). Depression has also been linked to costs associated with chronic diseases (Welch et al., 2009; Wulsin et al., 2005; Egede, 2010). Police are at high risk for depression symptoms due to the occupational stressors in police work that involve physical and psychological threat (e.g. unintentional and intentional injury on the job or critical incidents) and organizational challenges (e.g. departmental policies and procedures, inadequate support from supervisor or excessive paperwork) (Gershon et al., 2002; Gershon et al., 2009). Positive skills such as coping and hardiness may help police officers address symptoms of depression or make them more resilient (Kobasa, 1979; Johnsen et al., 2013; Bartone et al., 2013). Previous research indicates these factors can help mitigate symptoms of distress and posttraumatic stress symptoms, it is of interest to further explore the potential protective effects that these factors may have on symptoms of depression (Kobasa, 1979; Escolas et al., 2013; Eschleman et al., 2010).

With a combination of sustained exposures to critical incidents and routine work stressors, high levels of stress are ubiquitous in law enforcement and may be associated with depressive symptoms (Waters and Ussery, 2007; Webster, 2013; McEwen, 2004). The feasibility of heart rate measurement across the work shift has been demonstrated (Hickman et al., 2011). A combination of heart rate and physical activity data during the work shift indicated that police officers experience anticipatory stress prior to the work shift and high levels of stress prior to and during critical incidents (Anderson et al., 2002). An association has been demonstrated prospectively between perceived occupational stress and depressive symptoms in a study of police recruits during the first year of police service (Wang et al., 2010). In addition, the prevalence of depression and depressive symptoms has been found to be higher in police than in the general population. Among a group of Taiwanese police officers, the estimated rate of depression was 4 percent compared with estimates of 0.9 and

2.8 percent in the general population (Chen et al., 2006). Other first responders may have similar problems with depression; a review identified prevalence estimates for depression of 16 and 26 percent among disaster workers who responded to the events on September 11, 2001 and 21 percent for firefighters (Kleim and Westphal, 2011). A study of emergency ambulance personnel reported that 10 percent of workers reported probable clinical levels of depression (Bennett et al., 2004).

The nature of the association between occupational stress and depression or depressive symptoms with probable protective factors has not been fully explored in an occupational context. Previous research suggests that certain styles of coping and resiliency factors, such as hardiness, may help to reduce the negative effects of stress. Coping skills can mitigate the effects of stress on psychological well-being; positive coping involves decisive steps to resolve stress rather than engaging in denial and avoidance (Maddi, 2004; Maddi et al., 2002). Hardiness is a set of attitudes or beliefs about oneself that provides courage and motivation to endure stressful changes and turn potential disasters into opportunities.

Coping is cognitive and behavioral efforts that an individual employs to deal with stress (Litman and Lunsford, 2009; Lazarus, 1993). The use of positive coping behaviors such as planning, seeking support or acceptance is associated with fewer symptoms of distress (Cohen and Lazarus, 1979; Acquadro Maran et al., 2015). In contrast, negative coping behaviors such as self-blame, denial or disengagement are associated with psychological distress (Kaur et al., 2013; Acquadro Maran et al., 2015). In police officers from a large, urban police department the impact of coping on both perceived work stress and health, including depression was studied, and negative or avoidant coping mechanisms coincided with higher levels of perceived work stress and depression (Gershon et al., 2009). In a sample of more than 6,000 first responders, approach coping was related to better well-being and avoidance coping was related to a decrease in well-being, a construct based upon self-perceived health, sleep, self-esteem, confidence and energy levels (Arble and Arnetz, 2017). Given the rapidly aging US workforce, the impact of work stress on the health of aging police officers (50 years and older) has been studied and maladaptive coping behaviors were among the most important risk factors associated with perceived work stress, which in turn was significantly associated with depression (Gershon et al., 2002).

Hardiness is a personality trait that indicates how an officer might interpret and react to an incident (Kobasa, 1979). Hardiness is composed of three cognitive styles including commitment, control and challenge. Commitment is the tendency to find meaning or purpose in an event. Control is the idea that one can manage the stressful event, and challenge is the idea that a stressful event is an opportunity for growth. Hardy individuals are generally more resilient to stressful events, because they are more likely to feel that they can influence their lives in a positive manner. Hardiness has been found to be associated with success in highly stressful academic and military programs (Johnsen et al., 2013). In addition, among male and female officers, as commitment and control increased symptoms of depression decreased (Andrew et al., 2008). Similarly, among male officers as control increased, depression symptoms decreased (Andrew et al., 2013).

A large disparity was identified in the prevalence of depressive symptoms among urban police officers in the Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) Study that was nearly twice that in the general US population (12.0 percent vs 6.8 percent) (Hartley et al., 2011). Despite having a lower percentage of individuals usually at risk for depression (women, individuals with chronic medical conditions and the unemployed), approximately 60 percent of participating police officers were 40–59 years of age, an age group with the highest prevalence of depression compared to other age groups (Marcotte et al., 1999; Hartley et al., 2011; U.S. National Institute of Mental Health, 2018; Satcher, 2000; Pratt and Brody, 2008), but little research has evaluated how they might moderate symptoms of depression. Thus, the purpose of this study was to evaluate the cross-sectional association between occupational stress and depressive symptoms in Buffalo police officers, and to assess whether styles of coping and hardiness, a resiliency component, may act as protective modifiers in this association. The hypothesis is that high coping and hardiness will be associated with fewer symptoms of depression given high work stress.

Materials and methods

Study population

This cross-sectional study involved participants from the BCOPS Study who reported levels of occupational stress, depressive symptoms and their coping strategies, hardiness and demographic characteristics. Participants were police officers in Buffalo, New York, a midsized, urban police department. Data were collected at The Center for Health Research, School of Public Health Professions, University at Buffalo, State University of New York from 2004 through 2009 (Violanti et al., 2006). Informed consent was obtained from all the participants in the study, which was approved by the Internal Review Boards of State University of New York at Buffalo and the National Institute for Occupational Safety and Health. A total of 464 officers were examined and officers who did not provide complete information on occupational stress and depressive symptoms ($N = 52$) or who were retired ($N = 24$) were excluded from the analysis. The final sample for analysis included 388 officers (73.2 percent men).

Occupational stress

The 60-item Police Stress Survey (S-PSS) developed by Spielberger et al. (1981) was used to evaluate the perceived severity and frequency of occurrence of 60 specific stressors encountered by police officers. Participants assigned a stress rating to each event on a scale of 0–100 (0= no stress, 100= maximum stress) regardless of occurrence and reported the frequency of occurrence of each event over the past year (total frequency in the past year). In addition to total scores, the S-PSS also includes three subscales: administrative and organizational pressure that includes satisfaction with departmental policies and procedures, fairness of rewards, performance and the judicial system; physical and psychological threat that includes dangerous experiences and situations; and lack of support that includes political pressures and relationships with supervisors and fellow officers. The subscales have acceptable internal consistency scores (Cronbach's $\alpha > 0.90$) (Spielberger et al., 1981; Martelli et al., 1989).

The stress rating and frequency were used to calculate stress indices that measured event impact: index for the past year (rating \times frequency in past year). These indices were calculated for the total (total index for past year) as well as for the three subscales (administrative and organizational pressure index for the past year, physical and psychological threat index for the past year and lack of support index for the past year) (Spielberger et al., 1981). An index for the past month can also be calculated, but only the index for the past year was used in the present study because depressive symptoms that may be associated with stress exposure may require a longer period of exposure to develop.

Depressive symptoms

The Center for Epidemiologic Studies Depression (CES-D) scale was used to assess symptoms of depression (Radloff, 1977). The CES-D consists of 20 items that are self-rated on a four-point Likert-type scale according to how often each symptom occurred in the past week: 0 (rarely or none of the time (less than one day)), 1 (some or little of the time (one to two days)), 2 (occasionally or a moderate amount of the time (three to four days)) and 3 (most of the time (five to seven days)). After reverse coding selected items, the sum of the scores represents the overall CES-D score that ranges from 0 to 60. A score of 16 or higher is generally considered indicative of depression (McDowell and Newell, 1996). The CES-D has acceptable reliability (Chronbach α of 0.85) (Radloff, 1977).

Coping strategies

The Brief COPE (Carver, 1997) is a shortened version of the COPE inventory (Carver et al., 1989), which was developed to provide a theory-guided measure of coping. The Brief COPE consists of 28 items that measure 14 aspects of coping: active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement and self-blame. Each item has four possible responses: 0 (I have not done this at all); 1 (I have done this a little bit); 2 (I have done this a medium amount); and 3 (I have done this a lot). The score for each aspect of coping is the sum of the responses from two paired items.

Other studies have demonstrated the usefulness of reducing these 14 aspects of coping into a shorter list of theoretically meaningful constructs (Lester et al., 2007; Welbourne et al., 2007). Using a factor analysis with an orthogonal varimax rotation, we found that preliminary BCOPS data resulted in three factors similar to those identified by Welbourne et al. (2007): “active” (active coping, planning, positive reframing and acceptance); “passive” (self-distraction, denial, substance abuse, behavioral disengagement, venting and self-blame); and “support seeking” (instrumental support and emotional support). These scales had good internal consistency with α coefficients ranging from 0.70 to 0.79. The score for each factor is represented by the average score of the items. Humor and religion emerged as two single factors and were not used in this analysis.

Hardiness

The Dispositional Resilience Scale (DRS-15) was used to measure hardiness, a personality trait that may influence one’s perception of a critical incident, life stress or traumatic event (Bartone, 1995). Hardiness is thought to have three components: control, commitment and

challenge. Control refers to the tendency to believe that one is capable of managing stressful situations. Commitment is the tendency to find meaning and purpose in potentially stressful situations. Challenge reflects the tendency to perceive change and stressful events as opportunities for personal growth (Maddi, 1990). Participants respond on a four-point scale indicating the applicability of each of 15 items: 0 (not at all true); 1 (a little true); 2 (quite true); 3 (completely true). Negative items are reverse coded, and a score for each component is obtained by summing appropriate items. The overall hardiness score is the sum of scores for all 15 items. The three-week test-retest coefficient has been reported to be 0.78, indicating high reliability for the DRS-15 (Bartone, 2007). Analysis of hardiness may be done using either the three components (separately) or the overall score as long as the overall score is strongly related to the dependent variables of interest (Funk, 1992). We used all four scores in our study.

Statistical analysis—Descriptive statistics were calculated to characterize the study population. Potential confounders (age, sex, race/ethnicity, smoking status and alcohol intake) were selected based on associations in the literature and/or their associations with the stress or depressive symptom scores in the study sample as evaluated by analysis of variance or Pearson correlation. Individual officer's stress indices were transformed into standard scores (*z*-scores) to express them in terms of standard deviation units away from the mean score and to facilitate comparison of the results. Unadjusted and multivariable adjusted linear regression models were used to assess the association between *z*-scores for the stress indices and depressive symptom scores. Models were then stratified on the median values for coping strategies and hardiness scores to examine associations within strata and to assess effect modification. The cut-point for statistical significance was set at 0.20 for effect modification to take into consideration the reduced power often associated in testing interaction terms. All analyses were performed using SAS, version 9.4 (SAS Institute Inc., 2008).

Results

Demographic, physical, lifestyle and psychosocial characteristics for the 388 participants are shown in Table I. The average age was 41.5 years and the majority of participants were male (73.2 percent), married (74.4 percent), had at least some college education (89.0 percent), were never smokers (60.1 percent), Caucasian (79.9 percent) and held the rank of police officer (69.8 percent). Antidepressant medication use was reported by 8.1 percent of the participants and the mean CES-D score was 7.8.

Statistically significant positive associations were identified in the linear regression models involving the standardized stress component scores and depressive symptoms (Table II). Adjustment for potential confounders resulted in subtle differences compared with results from the unadjusted models. A one standard deviation increase in the total stress component resulted in a nearly two unit increase in the CES-D score ($\beta = 1.98, p < 0.001$) (Figure 1). Associations were also significant with the three other stress components, but the increase in the CES-D score was higher with lack of support ($\beta = 2.42, p < 0.001$) and was lower with administrative and organizational pressure ($\beta = 1.73, p < 0.001$) and with physical and psychological threat ($\beta = 1.48, p < 0.001$).

Among models stratified on the median value for each coping strategy (passive, active and support seeking), statistically significant effect modification was observed in the adjusted association between stress and CES-D scores when stratified by passive and active coping strategies (Table III). Adjusted mean CES-D scores for officers with low passive coping had an increase of less than one unit in the CES-D score per standard deviation increase in any of the stress components, except for lack of support, while officers with higher passive coping had an increase of two units or more in the CES-D score. The increase in CES-D scores for officers who reported high active coping ranged from 0.92 to 1.96, while officers who reported low active coping ranged from 2.33 to 3.54. Effect modification was not present with support seeking. The associations between stress and depressive symptoms were of similar strength for officers with low and high support seeking.

Stratification of associations between stress and depressive symptoms by hardiness revealed effect modification. For each stress component, officers with higher overall hardiness had a smaller increase in CES-D scores than officers with lower hardiness, with the exception of physical and psychological threat (Table IV). There was no effect modification by control, commitment or challenge with physical and psychological threat. Officers with high commitment also had the lowest CES-D score increases across all stress components. Effect modification was present between adjusted models for low and high control, but with smaller differences in the mean CES-D scores. Statistically significant positive associations between stress and depressive symptoms were identified in the groups of officers with low and high challenge, but effect modification was not identified because the magnitude of the associations was similar in both groups.

Discussion

Exposure to critical incidents and routine work stressors may predispose police officers to depressive symptoms. As such, this study evaluated the association between occupational stress during the past year and depressive symptoms during the past week in urban police officers, and whether coping and hardiness were protective modifiers in this association. The results indicate a positive association between occupational stress indices and depression symptoms and that the relationship is modified by high passive coping, and active coping as well as the commitment and control hardiness dimensions, but not the challenge dimension.

Our results show that work stress, including physical/psychological threat, administrative/organizational pressure and lack of support are associated with higher symptoms of depression. These results support previous research that work stress is associated with feelings of stress or depression in police (National Institute of Justice, 2012; Violanti and Aron, 1993; Violanti et al, 2014). Police frequently experience physical or psychological threats throughout their working lives, including motor vehicle accidents, shootings, seeing dead bodies; all of which can be associated with feelings of posttraumatic stress or depression (Marmar et al, 2006; Carlier et al, 2000). Administrative pressure includes factors such as low salary, public apathy and lack of recognition. These factors can reduce an officer's sense of trust with the organization, increase their feelings of stress and reduce their sense of meaning (Violanti, 2014). Similarly, lack of support by administration or coworkers is associated with less trust and higher levels of anxiety (Violanti, 2014; National Institute of

Justice, 2012). Our results indicate that this may also be associated with symptoms of depression in officers.

Our results indicate that coping and hardiness may act as protective factors in the association between some work stressors and depressive symptoms. Positive coping strategies such as humor, social support or planning can buffer the effects of work stress (Acquadro Maran et al., 2015; Brown et al., 1996; Coyne and Downey, 1991), while negative coping such as self-blame or avoidance is often associated with maladaptive stress and feelings of distress (Acquadro Maran et al., 2015; Zeidner and Saklofske, 1996). A study of aging police officers (50 years and older) by Gershon et al. (2002) emphasizes maladaptive coping behaviors as a risk factor associated with perceived work stress and the association of perceived work stress with depression suggesting the importance of using appropriate coping strategies in experienced police officers (Gershon et al., 2002). Likewise, our data demonstrate that in older officers (40–59 years old), maladaptive coping (high passive coping and low active coping) was associated with higher depressive symptom scores, except for passive coping and lack of support. Similarly in their study of a large, urban police department, Gershon et al. (2009) found that negative or avoidant coping mechanisms coincided with higher levels of perceived work stress and adverse health outcomes (Gershon et al., 2009). In contrast, a study that evaluated distress and coping in police officers found that positive coping including humor and planning were associated with less distress (Acquadro Maran et al., 2015). These results support our findings that showed that high active coping was associated with fewer symptoms of depression.

Previous research has also found that hardiness can mitigate negative psychological reactions following a traumatic incident (Eschleman et al., 2010; Paton, 2003). In our population, stratification by hardiness also revealed effect modification with higher hardiness being more protective. Commitment had the greatest effect in terms of moderating the association; those with high commitment had the lowest depressive symptom scores overall. Control also modified the association, but effect modification was not identified with the challenge hardiness component. This is consistent with other studies that have found that commitment is associated with success, coping, high academic performance and fewer symptoms of depression and PTSD (Andrew et al., 2008; Eschleman et al., 2010; Escolas et al., 2013; Sheard, 2009). People with high commitment are more likely to find meaning in an event, have a strong sense of commitment to goals and involvement with other people, which may help them better cope with stress (Fyhn et al., 2016; Johnsen et al., 2013; Kobasa, 1979). Similarly, a high sense of control indicates that the officer feels like they can manage the stress. This is also consistent with other research that indicates that a sense of control increases a sense of esteem and worth as well as life satisfaction and personal growth, which likely buffers symptoms of depression (Eschleman et al., 2010).

Problems associated with sustained or chronic occupational stress are not limited to police officers. Avoidance coping was related to a decrease in self-perceived well-being in a sample of more than 6,000 first responders (Arble and Arnetz, 2017). A range of first responders may benefit from the use of coping strategies and hardiness (Kleim and Westphal, 2011). Similar prevention and intervention programs could be designed for the common stressors that first responders experience and then tailored to the needs of the specific occupations.

There may be other risk and protective factors to consider in the association between occupational stress and depression in police officers. Wang et al. (2010) demonstrated longitudinal associations in police officers. Not only did greater perceived work stress in the first year of police service predict greater depression symptoms after one year of follow-up, but greater childhood trauma exposure and lower self-worth during training did too. These factors could be assessed prior to police service and at least be partially addressed with training to enhance resilience (Wang et al., 2010). The declining protective capacity of resilience in the longitudinal study by van der Meulen et al (2018) may indicate that more frequent training may be beneficial to possibly avoid declining effectiveness. While not in the scope of this study, other protective factors may also be helpful such as social support and gratitude in the relationship between occupational stress and symptoms of depression in police officers (McCanlies et al., 2018). Further, a meta-analysis on perceived police stress identified consistent findings that increased social support is related to decreased perceived stress, regardless of the source of support (Webster, 2013). Indeed these factors could be considered in addition to coping and hardiness to protect against the influences of occupational stress on police officers.

In general, police officers must restrain the release of emotions at work that are a product of exposure to continuous pressure and traumatic events (Waters and Ussery, 2007). In addition, police officers may underreport depressive symptoms associated with work stressors (Greinacher et al., 2019). Although coping skills and hardiness may benefit police officers at any career stage, police recruits and young officers may benefit most. The mindset and coping strategies of police recruits and early career officers can be important factors in their adjustment to police work and future mental health status. After four years of follow-up, resilience in early career police officers in urban departments was predicted by higher levels of reported positive emotion assessed prior to exposure to active duty stressors (Galatzer-Levy et al, 2013). After one year of service, mindfulness predicted lower levels of depression in police recruits (Williams et al, 2010). These studies suggest that police recruits may benefit from a focus on self-awareness and evaluation of emotional status during academy training and self-assessment tools to assist with the adjustment to stressors in the workplace. It has been suggested that police educators could teach trainees about the health risks of chronic exposure to critical incidents and introduce them to positive coping skills and resilience (Papazoglou and Andersen, 2014). Nevertheless, police culture is commonly recognized as an obstacle to the effective use of prevention and treatment programs related to occupational stress (Waters and Ussery, 2007), indicating need for more focused efforts to successfully tailor programs for this occupation.

Among the strengths of this study is the use of standardized instruments to measure occupational stress, depressive symptoms, coping and hardiness. The stressors were also police-specific and should have provided a more valid representation of levels of stress experienced by the officers. Among the limitations, the cross-sectional study design prevents investigation of a causal relationship between stress and depressive symptoms. The results may not be generalizable to police officers working in departments of other sizes or localities. Heart rate was not considered as a measure of stress in this study (Hickman et al., 2011). However, data on heart rate and physical activity and self-report data have had general correspondence (Anderson et al., 2002).

Conclusion

Police officers routinely experience work stress from physical/psychological threat, administrative/organizational pressure and lack of support which may contribute to depressive symptoms. Active styles of coping and the commitment and control dimensions of hardiness may be viable protective factors associated with reducing the adverse effects of occupational stress and depressive symptoms in law enforcement. Early training on coping skills may help young officers manage the effects of work stressors more effectively while they gain experience in police work. While hardiness is a personality trait, it may be beneficial for officers to become familiar with the concept in the context of police work. The investigation of the effects of these potential protective factors over time in a longitudinal study of police officer stress and psychosocial outcomes will help develop knowledge about the causal nature of this association and information on which to design interventions.

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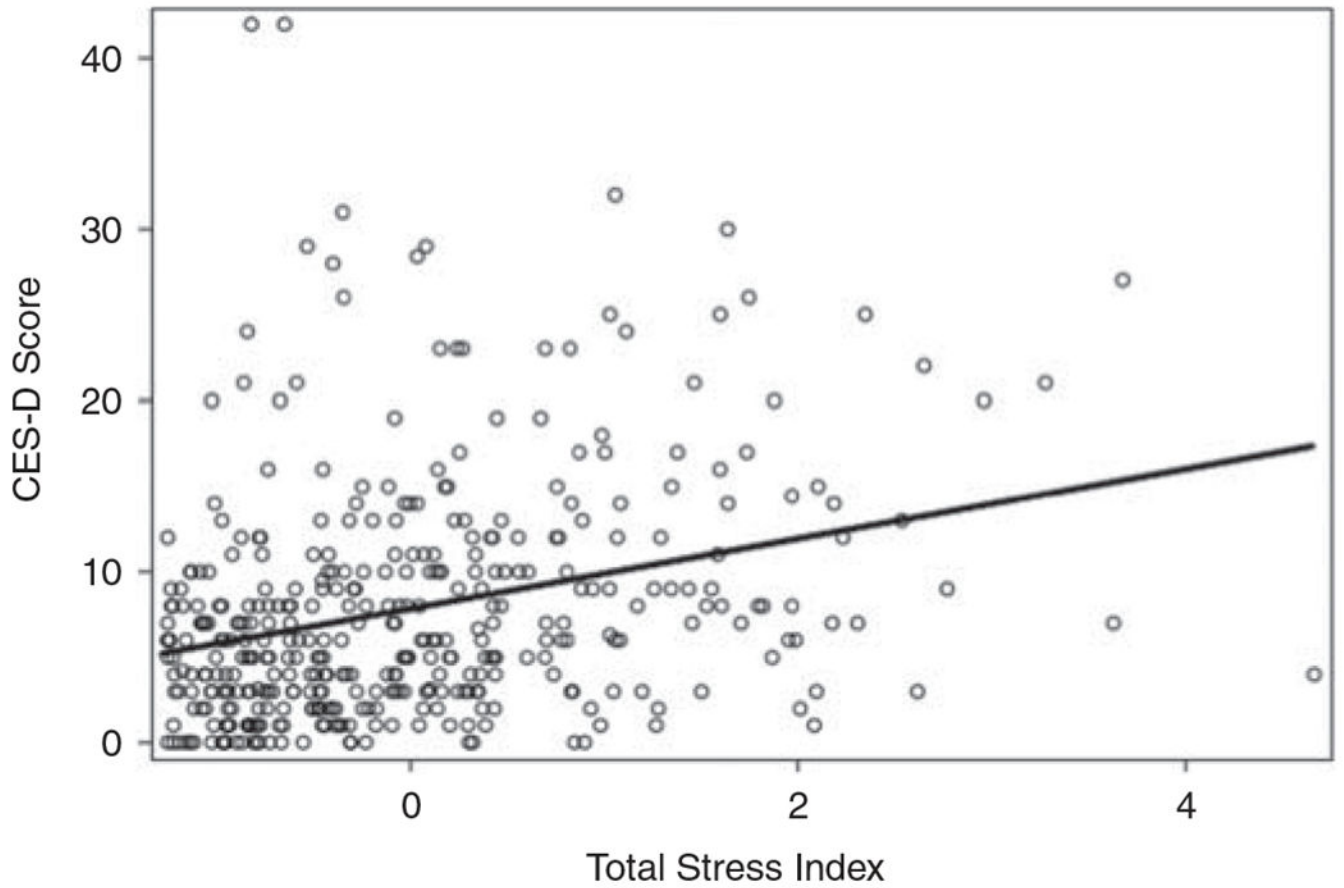


Figure 1.
Predicted mean CES-D scores by Spielberger police stress index (z-score)
Notes: Adjusted for age, sex, race/ethnicity, alcohol intake and smoking status. p -value < 0.001

Table I.

Demographic, physical, lifestyle and psychosocial characteristics

Characteristics ^{a,b}	Total (n=388) N (%)
<i>Age group (years)</i>	
20–40	157 (40.5)
40–50	175 (45.1)
≥50	56 (14.4)
<i>Sex</i>	
Male	284 (73.2)
Female	104 (26.8)
<i>Marital status</i>	
Single	45 (11.8)
Married	285 (74.4)
Divorced	53 (13.8)
<i>Education</i>	
High school/GED	42 (11.0)
College < 4 years	214 (55.9)
College ≥4 years	127 (33.1)
<i>Smoking status</i>	
Current	64 (16.8)
Former	88 (23.1)
Never	229 (60.1)
<i>Police service (years)</i>	
0–9	99 (25.8)
10–14	87 (22.7)
15–19	85 (22.1)
≥20	113 (29.4)
<i>Rank</i>	
Police officer	268 (69.8)
Sergeant/lieutenant	51 (13.3)
Captain/detective	65 (16.9)
<i>Race</i>	
Caucasian	303 (79.9)
African American	76 (20.1)
<i>Antidepressant medication</i>	
Yes	31 (8.1)
No	357 (91.9)
Mean (SD)	
Age (years)	41.5 (6.9)
Alcohol (drinks/week)	5.6 (9.6)
BMI (kg/m ²)	29.3 (4.7)

Characteristics ^{a,b}	Total (n=388) N (%)
Physical activity/week (METS)	283.9 (44.3)
<i>Spielberger police stress indices (past year)</i>	
Total	304.2 (242.5)
Administrative/organizational pressure	331.7 (287.4)
Physical/psychological threat	291.3 (239.5)
Lack of support	278.8 (275.8)
CES-D score (past week)	7.8 (7.0)

Notes:

^a Values are numbers and percentages for categorical variables.

^b Values are means and standard deviations for continuous variables

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Table II.

Associations between scores for Spielberger police stress and CES-D symptoms

Stress components	Unadjusted β (SE) ^a	<i>p</i> -value	Adjusted β (SE) ^{a,b}	<i>p</i> -value
Total	2.05 (0.34)	(< 0.001)	1.98 (0.36)	(< 0.001)
Administrative/organizational pressure	1.78 (0.34)	(< 0.001)	1.73 (0.36)	(< 0.001)
Physical/psychological threat	1.60 (0.35)	(< 0.001)	1.48 (0.37)	(< 0.001)
Lack of support	2.46 (0.33)	(< 0.001)	2.42 (0.34)	(< 0.001)

Notes:

^a β (SE) estimated after transforming stress indices into *z*-scores for purposes of cross-component comparison.^b Adjusted for age, sex, race/ethnicity, alcohol intake and smoking status

Table III. Associations between scores for Spielberger police stress and CES-D symptoms, stratified by Brief COPE components

Stress components	Low passive coping (N= 150)		High passive coping (N= 196)		Low active coping (N= 172)		High active coping (N= 177)	
	Unadjusted β (SE) ^a	p-value	Adjusted β (SE) ^{a,b}	p-value	Unadjusted β (SE) ^a	p-value	Adjusted β (SE) ^{a,b}	p-value
Total	0.76 (0.40)	(0.057)	0.94 (0.45)	(0.038)	2.36 (0.49)	(< 0.001)	2.43 (0.52)	(< 0.001)
Administrative/organizational pressure	0.61 (0.39)	(0.121)	0.76 (0.44)	(0.087)	2.01 (0.50)	(< 0.001)	2.10 (0.54)	(0.0002)
Physical/psychological threat	0.64 (0.40)	(0.111)	0.77 (0.45)	(0.089)	2.01 (0.50)	(< 0.001)	1.99 (0.43)	(0.0003)
Lack of support	1.18 (0.45)	(0.010)	1.34 (0.49)	(0.007)	2.57 (0.46)	(< 0.001)	2.68 (0.48)	(< 0.001)
Total	2.89 (0.52)	(< 0.001)	3.13 (0.57)	(< 0.001)	1.52 (0.42)	(< 0.001)	1.41 (0.44)	(0.002)
Administrative/organizational pressure	2.20 (0.53)	(< 0.001)	2.33 (0.59)	(< 0.001)	1.42 (0.43)	(0.001)	1.32 (0.46)	(0.005)
Physical/psychological threat	2.77 (0.53)	(< 0.001)	3.00 (0.59)	(< 0.001)	1.12 (0.42)	(0.009)	0.92 (0.44)	(0.040)
Lack of support	3.44 (0.51)	(< 0.001)	3.54 (0.55)	(< 0.001)	1.97 (0.43)	(< 0.001)	1.96 (0.44)	(< 0.001)
Total	2.33 (0.50)	(< 0.001)	2.67 (0.53)	(< 0.001)	1.99 (0.45)	(< 0.001)	1.76 (0.50)	(0.001)
Administrative/organizational pressure	1.85 (0.50)	(0.0003)	2.14 (0.54)	(0.0001)	1.75 (0.46)	(0.0002)	1.48 (0.52)	(0.005)
Physical/psychological threat	2.12 (0.53)	(< 0.001)	2.45 (0.57)	(< 0.001)	1.73 (0.44)	(0.0001)	1.48 (0.49)	(0.003)
Lack of support	2.75 (0.47)	(< 0.001)	2.93 (0.47)	(< 0.001)	2.36 (0.47)	(< 0.001)	2.23 (0.52)	(< 0.001)

Notes:

^a β (SE) estimated after transforming stress indices into z-scores for purposes of cross-component comparison.

^b Adjusted for age, sex, race/ethnicity, alcohol intake and smoking status.

^c p-interaction from adjusted model. Brief COPE components were stratified at the median values: 1.5 (passive coping), 4 (active coping) and 3.5 (support seeking). The low category includes values less than the median and the high category includes values greater than or equal to the median. Passive coping consists of self-distraction, self-blame, denial, substance use, behavioral disengagement and venting. Active coping consists of active coping, planning, positive reframing and acceptance. Support seeking consists of instrumental and emotional support

Table IV. Associations between, scores for Spielberger, police stress and, CES-D symptoms, stratified by hardness components

Stress components	Low hardness (N=209)		High hardness (N=173)		p-value interaction ^c
	Unadjusted β (SE) ^a	Adjusted β (SE) ^{a,b}	Unadjusted β (SE) ^a	Adjusted β (SE) ^{a,b}	
Total	2.16 (0.51)	1.98 (0.54)	1.59 (0.41)	1.76 (0.41)	0.052
Administrative/organizational pressure	1.81 (0.50)	1.62 (0.54)	1.32 (0.42)	1.44 (0.43)	0.073
Physical/psychological threat	1.64 (0.51)	1.38 (0.55)	1.38 (0.42)	1.59 (0.42)	0.164
Lack of support	2.76 (0.50)	2.70 (0.52)	1.88 (0.38)	1.99 (0.39)	0.039
	Low commitment (N=210)		High commitment (N=173)		
Total	2.80 (0.51)	2.68 (0.56)	0.78 (0.36)	0.86 (0.35)	0.046
Administrative/organizational pressure	2.40 (0.51)	2.33 (0.56)	0.56 (0.37)	0.63 (0.36)	0.068
Physical/psychological threat	2.20 (0.52)	1.90 (0.59)	0.76 (0.35)	0.85 (0.35)	0.288
Lack of support	3.38 (0.49)	3.22 (0.52)	0.92 (0.35)	0.97 (0.35)	0.001
	Low control (N=167)		High control (N=216)		
Total	2.52 (0.60)	2.14 (0.66)	1.52 (0.33)	1.58 (0.34)	0.058
Administrative/organizational pressure	2.46 (0.62)	2.11 (0.69)	1.12 (0.34)	1.14 (0.34)	0.029
Physical/psychological threat	1.62 (0.61)	1.05 (0.66)	1.49 (0.34)	1.54 (0.34)	0.543
Lack of support	3.14 (0.57)	3.06 (0.60)	1.74 (0.33)	1.84 (0.33)	0.010
	Low challenge (N=216)		High challenge (N=166)		
Total	1.99 (0.42)	1.86 (0.45)	2.07 (0.59)	2.04 (0.62)	0.872
Administrative/organizational pressure	1.72 (0.42)	1.61 (0.45)	1.78 (0.61)	1.82 (0.64)	0.959
Physical/psychological threat	1.68 (0.43)	1.51 (0.46)	1.41 (0.58)	1.32 (0.62)	0.566
Lack of support	2.19 (0.42)	2.10 (0.42)	2.85 (0.56)	2.80 (0.59)	0.720

Notes:

^a β (SE) estimated after transforming stress indices into z-scores for purposes of cross-component comparison.

^b Adjusted for age, sex, race/ethnicity, alcohol intake and smoking status.

^c p-interaction from adjusted model. Hardiness and its components were stratified at the median values: 28 (hardiness), 10 (control), 10 (commitment) and 8 (challenge). The low category includes values less than the median and the high category includes values greater than or equal to the median. Hardiness affects how one might interpret a critical incident, life stress or traumatic event. It consists of

commitment, the tendency to find meaning and purpose in potentially stressful events; control, the tendency to believe one is capable of managing the stressful event; and challenge, the tendency to see stressful events as an opportunity for growth

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