Crime Prevention Research Review

No. 8

Effects of Stress Management Training on Physiological, Psychological and Behavioral Outcomes among Police Officers and Recruits

George T. Patterson

Irene W. Chung

Philip G. Swan

Silberman School of Social Work
Hunter College
City University of New York

COPS
COMMUNITY ORIENTED POLICING SERVICES
U.S. DEPARTMENT OF JUSTICE

THE CAMPBELL COLLABORATION

Suggested citation:

Patterson, George T., Irene W. Chung, and Philip G. Swan. 2013. *Effects of Stress Management Training on Physiological, Psychological, and Behavioral Outcomes among Police Officers and Recruits*. No. 8 of Crime Prevention Research Review. Washington, D.C.: U.S. Department of Justice, Office of Community Oriented Policing Services.

The opinions contained herein are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice. References to specific agencies, companies, products, or services should not be considered an endorsement by the author(s) or the U.S. Department of Justice. Rather, the references are illustrations to supplement discussion of the issues.

The Internet references cited in this publication were valid as of the date of this publication. Given that URLs and websites are in constant flux, neither the author(s) nor the Office of Community Oriented Policing Services can vouch for their current validity.

The Campbell Collaboration Crime and Justice Group (www.campbellcollaboration.org/ccjg) is an international network of researchers that prepares, updates, and rapidly disseminates systematic reviews of high-quality research conducted worldwide on effective methods to reduce crime and delinquency and improve the quality of justice.

ISBN: 978-1-932582-69-7

January 2013

Cover: © arindambanerjee / Shutterstock.com

Contents

Acknowledgments 2

Introduction. 3

Summary of Systematic Review Methods 7
- Objectives 8
- Inclusion criteria 8
- Pilot study 9
- Selection of studies 9

Data Analysis 11

Results 13
- Description of eligible studies. 14
- Physiological outcomes 15
- Psychological outcomes 16
- Behavioral outcomes 16
- Meta-analysis results. 17
- Qualitative results 18

Conclusion. 19
- Implications for policy and practice 22

Studies Included in the Review. 25

References 29

Tables. 35

Acknowledgments

The authors would like to thank the National Policing Improvement Agency, Campbell Collaboration Crime and Justice Group, and George Mason University for funding this systematic review and David B. Wilson for his assistance with the meta-analysis. We also acknowledge the assistance of Daniel Schmidt with the study selection process and references and Professor Marvie Brooks, instruction librarian, John Jay College of Criminal Justice (CUNY) New York, New York, for assisting with the search strategy.

> Law enforcement organizations provide many types of interventions to help both veteran police officers and recruits manage stress…

Introduction

Introduction

Over a period of more than 35 years, John M. Violanti has conducted extensive research investigating the unique stressors experienced in law enforcement as well as strategies for coping with stress. Police officers perceive stressful work events differently based on rank, years of police experience, age, and race (Violanti and Aron 1995). Police recruits, because they are in academy training, experience less work stress even though the police academy training environment has been described as a source of stress (Violanti 1992). Examples of stressful events specific to police work include shift work (Violanti 1984), chronic organizational stress (Stinchcomb 2004), and traumatic incidents (Patterson 2001).

Additional stress outcomes specific to police include suicide (Violanti 1996a), psychological distress (Violanti and Aron 1993), traumatic stress (Violanti 1996b), illegal drug use (Gorta 2009), alcohol use (Violanti, Marshall, and Howe 1985), and symptoms that are physiological (headaches, stomachaches, backaches, ulcers, and heart attacks) or psychological (anxiety, depression, flashbacks, and panic attacks) (Stinchcomb 2004).

A report from the National Institute of Mental Health (NIMH 2002) suggests that law enforcement officers, as first responders to traumatic incidents, disasters, and mass violence, require different training, knowledge, and skills from other trauma specialists due to the form of early intervention they provide. The report further suggests that training should be provided to law enforcement officers in order to help them recognize the mental health implications of providing early intervention to victims and survivors on their own psychological wellbeing.

Moreover, Dunning (1988) asserts that training for emergency workers should include research findings focused on psychological injury because linking psychological injury with more commonly accepted forms of duty-related injury, such as back and knee injuries, increases the likelihood of follow-through by rescue workers. Dunning (1988, 289) further suggests that such training should also include techniques for rehabilitation and resolution of traumatic stress similar to the attention given to work-related physical injury; thus "psychological injury is…not singled out as something unusual or more serious but is seen as something that can normally happen in the course of performing one's job."

Law enforcement officers also consider exposure to trauma as a normal part of their job and expect it, whereas other types of workers and victims of unexpected traumatic incidents do not anticipate the event, providing an additional reason why law enforcement officers need different training content from other types of workers and trauma victims (Beaton and Murphy 1995). Indeed, Westerink (1990) found that within one year after being hired, officers experienced a wide range of traumatic incidents. Situations involving the death or injury of children were reported as the most traumatic, followed by the removal of body parts.

In addition to work stress, law enforcement personnel also experience stressful life events such as dealing with the death or health problems of a relative or close friend (Patterson 2002). These events also have the potential to affect officers' physiological, psychological, and behavioral wellbeing as well as their job performance.

Researchers have used different approaches to investigate the physiological, psychological, and behavioral stress outcomes that police officers and recruits experience. Using heart rate data and observations of physical activity during police officers' shifts as outcomes to distinguish between physical and psychosocial stress, Anderson, Litzenberger, and Plecas (2002) found that officers experienced both types of stress while at work; however, they experienced more stress before and during responding to traumatic incidents. Wirth et al. (2011) used cortisol responses after waking to assess the relationship between waking cortisol responses and shiftwork among police officers.

Gershon et al. (2009) investigated symptoms of physical and behavioral stress among police officers. The authors found physical symptoms of stress were chronic lower back pain, foot problems, migraine headaches, and chronic insomnia, in that order. Behavioral symptoms included drinking alcohol, smoking tobacco, and aggressive and physical behavior with pets, other officers, spouses or significant others, and children. Psychological symptoms included burnout, depression, somatization, lack of energy, self-blame, and lack of interest in things.

LeBlanc et al. (2008) utilized biological and psychological stress outcomes to examine the relationship between coping strategies and job performance in response to a stressful scenario among police recruits, whereas Yoo, Eisenmann, and Franke (2009) used measures of self-reported physical activity, perceived stress, and metabolic syndrome factors (body mass index, blood pressure, and blood profile) to assess the affects of stress and physical activity/inactivity on metabolic syndrome factors.

Numerous interventions have been described to help police officers and recruits cope with stressful events. For example, Berking, Meier, and Wupperman (2010) suggested that the use of emotion-regulation training and skills as a component of interventions designed to help officers regulate their emotional responses to their work was beneficial.

Although officers' use of stress management programs as prevention or treatment approaches have been underutilized as a result of confidentiality and other aspects of police culture (Waters and Ussery 2007), law enforcement organizations provide many types of interventions to help both veteran police officers and recruits manage stress, the most common of which is training designed to help recognize signs of stress along with ways of coping (Finn 2000; Sewell 1999).

Examples of stress management interventions used in law enforcement include the use of spot checking and scanning, positive self-talk, deep breathing, anchoring, cognitive rehearsal and desensitization, progressive muscle relaxation, meditation, imagery and biofeedback, goal setting, stress debriefing, time management, financial planning, visual-motor behavior rehearsal (VMBR), critical incident stress management (CISM), physical fitness, progressive relaxation, biofeedback, social support, and eye movement desensitization and reprocessing (EMDR) (Addis and Stephens 2008; Anderson, Swenson, and Clay 1995; Brandt 1993; Carlier et al. 1998; Chapin et al. 2008; Ellison and Genz 1983; Everly, Flannery, and Mitchell 2000; Shipley and Baranski 2002; Webb and Smith 1980; Wilson et al. 2001).

What are the effects of officer stress management interventions on stress outcomes?

Summary of Systematic Review Methods

Summary of Systematic Review Methods

Objectives

The objectives of this systematic review were to identify, retrieve, evaluate, and synthesize the existing evidence investigating stress management intervention outcomes provided to veteran police officers and recruits. The review question is: What are the effects of officer stress management interventions on stress outcomes?

Inclusion criteria

Including studies in this systematic review required that several criteria be met regarding population characteristics, sampling strategies, interventions, study methods and designs, data analysis, and outcome results. The criteria included:

1. A population consisting of veteran police officers, police recruits, and/or civilian (non-sworn) police personnel; however, other populations (such as firefighters) could be included if data collected from police officers and recruits were able to be analyzed separately

2. A randomized controlled trial (RCT), random assignment to conditions, or quasi-experimental design that included a control group; this methodological criterion is based on what Lipsey and Wilson (2001, 9) refer to as "best evidence"

3. Any type of stress management intervention with physical or psychosocial components

4. Quantitative outcome data; however, studies that utilized qualitative methods (focus groups and interviews) were included in the review if these data were part of a mixed methods study that met the inclusion criteria

5. Published or non-published studies conducted in any geographic location

Pilot study

Prior to beginning data collection from retrieved studies, a pilot study was completed to test the coding protocols (coding form and codebook). The pilot study also assisted the two reviewers with testing procedures to resolve disagreements regarding study relevance decisions. The two reviewers met frequently to discuss and resolve coding differences and modify the coding form. The coding form was developed to record publication, sampling, population, intervention, measurement, design, and outcome data characteristics. In some instances, these characteristics were specific to law enforcement, such as officers' rank. The protocol titled *Stress Management Training and Development Programs for Police Officers and Recruits* (see Patterson and Chung 2010) is available at The Campbell Library website (www.campbellcollaboration.org/lib/download/703/).

Selection of studies

Several search methods were used to identify studies, including (1) searching electronic databases and Internet websites; (2) hand searching journals, books, and conference proceedings; (3) visually scanning reference lists from relevant studies; (4) contacting organizations and authors of relevant studies; and (5) searching citations. The search was conducted over a 10 month period between August 1, 2009 and May 31, 2012.

> Mixed methods studies using qualitative methods [were included] to provide contextual information to the quantitative data.

Data Analysis

Data Analysis

The meta-analysis was performed using the computer software program Comprehensive Meta-Analysis Version 2.2.050 (Borenstein et al. 2009). Multiple outcomes and time points reported in the retrieved studies were not treated as independent, and multiple outcomes were averaged. However, effect sizes were not averaged across different outcome types. Effect sizes were calculated and analyzed separately based on outcome type (physiological, psychological, and behavioral). The majority of studies included data that were used to calculate effect sizes from reported means, standard deviations, and sample sizes, although a few studies reported Cohen's d- and t-test results that were used to calculate effect sizes.

Mixed methods studies using qualitative methods (focus groups and interviews) that met the inclusion criteria were included in this systematic review to provide contextual information to the quantitative data. The themes that emerged from these data were summarized. Two studies met this criterion as shown in Table 1 on pages 36–39.

> Officers perceived a lack of trust toward the law enforcement organization's involvement in their health issues…

Results

Results

Description of eligible studies

The total number of titles and/or abstracts identified from the search strategy and screened was 678. Of these titles and abstracts, 25 studies were retrieved. Upon closer examination, 13 of the 25 studies were excluded due to the lack of either pre- or post-test data or the absence of separate outcome data for police officers.

Table 1 on pages 36–39 provides a description of the 12 primary studies included in the systematic review that were published between 1984 and 2008. Combined, these studies comprised a total sample size of 906 participants. Seven studies contained samples comprising only police officers; two studies reported samples of police officers and civilian personnel; one study reported a sample of police officers and recruits; one study included a sample of police officers and significant others; and one study included a sample of police recruits. Ten studies reported the participants' gender—401 were male and 91 were female. Eleven studies reported the participants' age—the average age was 34.48 (SD = 3.57).

The years of experience police officers reported was described in seven of the 12 studies—the average years of police experience was 10.77 (SD = 4.00) (years of police experience were calculated only for veteran police officers). Among the samples, the rank police officers' held was described in three studies and included (1) below the rank of sergeant; (2) police officer, detective, and administrative officers; and (3) deputy chiefs, commanders, lieutenants, sergeants, and police officers.

As indicated in Table 1, the types of interventions provided to police officers and recruits were quite varied. Among the 12 primary studies, 11 provided a citation for the prior work establishing the basis for the intervention, and 10 specific interventions were identified:

1. Stress management program
2. Stress reduction program
3. Stress inoculation
4. Brief interventions
5. Counseling

6. Nutrition and physical conditioning
7. Circuit weight training
8. Eye movement desensitization and reprocessing (EMDR)
9. Visual-motor behavior rehearsal (VMBR)
10. Writing intervention

One study (Gersons et al. 2000) investigated an intervention as treatment for police officers diagnosed with posttraumatic stress disorder (PTSD) and required that police officers participating in the treatment have previous exposure to a PTSD event, meet the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) criteria for PTSD, not have comorbid disorders, and not have taken any psychotropic medication 4 weeks prior to participating in the study. The remaining 11 studies investigated interventions intended to either reduce stress outcomes or assess outcomes. As such, it was difficult to assess whether the interventions were intended as preventative or treatment interventions.

The duration of the interventions was relatively brief, ranging from 35 minutes to 24 hours. These time frames were spread over a 1- to 16-week period. The average length of the interventions was 10.95 hours (SD = 7.33).

Physiological outcomes

The number of outcomes reported among the 12 primary studies ranged from one to 20, with an average of eight outcomes per study. Two studies (McCraty et al. 1999; Short et al. 1984) reported physiological outcomes such as heart rate variability, blood pressure increase, strength improvement, physical fitness measures (height, weight, waist size, biceps diameter, and chest size), and weight gain/loss. Among these two studies, data were not reported for all the physiological outcomes that were discussed.

Psychological outcomes

All of the studies measured psychological outcomes even though data were not reported for each outcome discussed in many of the studies. The following examples illustrate the wide range and diversity of standardized instruments used in the studies to measure an array of psychological outcomes such as anxiety, depression, and perceived levels of stress: a police officers questionnaire, the Coulson Police Job Stress Discussionaire (CPJSD), a police stress inventory (PSI), the Profile of Mood States (POMS), the Tennessee Self-Concept Scale (TSCS), the State-Trait Anger Expression Inventory (STAXI), the Posttraumatic Stress Diagnostic Scale (PTDS), the Personal and Organizational Quality Assessment (POQA), the Hopkins Symptom Checklist, the Perceived Stress Scale, a health and fitness questionnaire, the Maslach Burnout Inventory, and the Depression Anxiety Stress Scales.

Behavioral outcomes

Four studies described behavioral outcomes (see Table 1). However, data were not provided in all four of those studies. A single study reported the number of alcoholic drinks consumed as behavioral outcomes (Richmond et al. 1999), whereas the remaining studies reported behavioral outcomes that were work-related. Therefore, drinking behavior was eliminated from the analysis, resulting in three studies (McCraty et al. 1999; Norvell and Belles 1993; Shipley and Baranski 2002) reporting behavioral outcomes that were used in the analysis. Examples of behavioral outcomes include the number of sick hours and vacation hours used, number of complaints filed and disciplinary actions employed, number of accidents, times tardy, number of injuries, behaviors observed during a live-fire scenario, and self-ratings of work performance.

Meta-analysis results

Although stressful events have the potential to affect physiological, psychological, and behavioral wellbeing negatively, all 12 primary studies examined psychological stress outcomes, whereas only three studies examined behavioral outcomes, and two examined physiological outcomes.

Near null effects were found among the physiological, psychological, and behavioral outcomes. Given that effect sizes range from -1 (a very strong negative effect size) to +1 (a very strong positive effect size), the overall effect was near zero for each outcome. For instance, as Table 2 on page 40 shows, among the physiological outcomes the column labeled Hedge's g shows effect sizes of 0.030 and 0.324. The overall effect is 0.196, representing a very small effect. Among the psychological outcomes shown in Table 3 on page 40, 12 effect sizes were calculated, representing each of the 12 studies. These effect sizes range from -0.485 to 0.975. The overall effect is 0.038, representing a near zero effect. Finally, Table 4 on page 41 shows the effect sizes for behavioral outcomes. These were -0.695, 0.041, and 0.194. The overall effect was -0.176, representing a very small negative effect.

The meta-analysis results suggest that stress management interventions had no significant effect on physiological, psychological, and behavioral outcomes. Effect sizes were also calculated for several officer subgroups, and one study characteristic (attrition) theorized to influence intervention outcomes. These moderator variables were (1) duration of the stress management intervention, (2) type of stress management intervention (physical exercise or psychosocial intervention), (3) study population (recruit, veteran police officer, and civilian), (4) gender, (5) years of police experience, and (7) attrition. Too few studies reported officers' rank to include it as a moderator variable. The moderator analyses results contained too few studies to show any significant differences across the studies.

In sum, these results do not provide evidence to support the efficacy of stress management interventions for police officers or recruits. The weakness of the research designs and the low number of studies included in the meta-analysis should be considered when interpreting these results.

Qualitative results

Wilson et al. (2001) conducted clinical interviews and structured exit interviews with police officers and their significant others. In their study, the results of the clinical interviews included descriptions of stressful work and life events that became the focus of the stress management interventions. The structured exit interviews elicited responses in the following areas that were not examined using the standardized instruments:

> *Have you been in therapy after the stress management program, did you refrain from discussing your experience in the study with others, have you noticed any differences in yourself as a result of this stress program, have others noticed any changes, how do you rate the program in terms of organization, convenience, friendliness of staff, and recommendations for doing things differently. (Wilson et al. 2001, 188)*

The following themes emerged from these questions: officers' significant others observed positive changes in their officer spouses following participation in EMDR, officers who participated in the EMDR stress management intervention referred their friends to the treatment, and spouses expressed an interest in participating in EMDR themselves.

The qualitative data collected in the study conducted by Richmond et al. (1999) suggests that officers perceived a lack of trust toward the law enforcement organization's involvement in their health issues and that drinking alcohol was a private matter unless it interfered with job performance. Police officers described police work stress as promoting alcohol use as a coping and bonding strategy among officers. Officers were pleased by the interest expressed from the organization regarding their health and use of alcohol; however, they expressed a lack of trust concerning why the organization was interested in their health and alcohol use.

Officers believed that health-related issues should be managed by officers themselves rather than the organization, and interventions that focused on alcohol use were not viewed positively unless other health issues where simultaneously addressed. Officers also recognized the impact of promotions, traumatic events, and the repetition involved in their work on perceptions of stress. Use of alcohol was viewed as supported by police occupational culture; officers felt pressure to drink excessively, and drinking alcohol was not viewed as a maladaptive coping strategy.

> It is imperative to determine which components of stress management interventions are effective.

Conclusion

Conclusion

Numerous studies describe the sources of stress that police officers and recruits experience, coping strategies, and approaches to investigating physiological, psychological, and behavioral stress outcomes. Most of this literature consists of descriptive cross-sectional studies and asserts the need for stress management interventions to help officers cope with stress. However, few rigorous outcome studies have been conducted that are designed to investigate the efficacy of stress management interventions given to police officers and recruits.

Law enforcement organizations provide a wide variety of stress management interventions developed to help police officers and recruits manage stress, yet evaluation methods seldom utilize randomized controlled trials, which are the best methods for demonstrating program effectiveness. Consequently, the need exists to conduct a review of the available evidence.

The purpose of this systematic review was to examine the research question: What are the effects of officer stress management interventions on stress outcomes? Because police officers experience numerous stressful work and life events, this is an important question that warrants examination.

Twelve studies were found that met the inclusion criteria. Richardson and Rothstein (2008) observed that when a specific population is the focus of stress management intervention outcomes, reviews are likely to include a small number of studies. The primary studies included in this systematic review provided a great deal of information regarding the components of the 10 interventions that were quite varied. Most of the interventions do not appear to be a part of an ongoing training program or program evaluation effort by the law enforcement organizations participating in the studies and thus appear to be a part of a one-time study.

The wide variety of intervention components made it difficult to code the components and consequently to disentangle which components of the stress management interventions were likely to be effective. It was also unclear among the primary studies which types of stress were the focus of the interventions. Giga, Cooper, and Faragher (2003) noted that stress management interventions have a wide range of objectives, methods, and structures and are provided to different populations of workers. Some interventions focus on organizational factors (policies and the physical work environment), whereas others focus on individual factors (workers' attitudes and behaviors).

In order to guide organizations in implementing interventions and contribute to the literature describing the effectiveness of stress management interventions, it is imperative to determine which components of stress management interventions are effective (van der Hek and Plomp 1997). Among the studies included in the review, it was also difficult to assess whether the interventions were primary, secondary, or tertiary interventions. The treatment provided to officers experiencing PTSD (Gersons et al. 2000) was the only tertiary intervention found among the primary studies.

Our results indicate that stress management interventions had no significant effect on physiological, psychological, or behavioral outcomes. Although stress can contribute to psychological, behavioral, and physiological outcomes, all of the primary studies examined psychological stress outcomes, whereas only three studies examined behavioral outcomes, and two examined physiological outcomes. Near null effects were found for psychological, behavioral, and physiological outcomes. Moderator analyses also did not to find any differences across the studies in terms of subgroups or study characteristics.

Given the weakness of the research designs, we cannot conclude that the stress management interventions are effective or ineffective. There are several possible explanations regarding these findings, such as (1) the low quality of the primary studies, (2) the varied aims of the interventions, (3) methodological issues including the diversity in standardized instruments used to measure outcomes, and (4) the small sample size among the primary studies.

Our review included three of 10 studies (Norvell and Belles 1993; Shipley and Baranski 2002; Short et al. 1984) identified in a prior systematic review investigating the affects of stress management interventions for police personnel (see Peñalba, McGuire, and Leite 2009). The authors did not conduct a meta-analysis, stating that the diversity among study participants, intervention types, and outcomes made it impossible to conduct the analysis. Taken together, our findings and the findings reported by Peñalba, McGuire, and Leite (2009) highlight the low quality of retrieved studies and the diversity among participants, interventions, and outcomes. Giga, Cooper, and Faragner (2003) asserted that such diversity among studies may contribute to conflicting findings reported in the literature. Indeed, multiple classifications of coping, measurement strategies, and methods used to investigate work stress and interventions have been reported (Dewe and Cooper 2007).

Implications for policy and practice

The meta-analysis results alone do not offer implications for law enforcement policy and practice relative to stress management interventions. However, the characteristics and methodological quality of the retrieved studies included in the systematic review, as well as excluded studies, do offer a number of implications for law enforcement policies and practices:

- More systematic evaluations of stress management interventions provided to police officers and recruits are necessary that examine predisposing factors and specify the aims of the interventions, types of stress addressed, and whether the interventions are intended as primary, secondary, and tertiary interventions.

- Stress management interventions for police officers and recruits should focus on specific types of stress (organizational and life stressors), and the type of stress that is the focus of the intervention should be described in studies.

- Stress management program content should be developed based on a thorough literature review and ideas obtained from officers similar to the approach used by Wilson et al. (2001) and the law enforcement administration.

- Increase collaboration between law enforcement, mental health experts, and researchers when developing, implementing, and evaluating stress management interventions.

- Increase research funding to conduct rigorous multi-site program evaluations with the aim of developing best practice approaches for stress management interventions provided to law enforcement personnel.

- Improve law enforcement organizational support for randomized controlled trial (RCT) studies that can rule out extraneous factors and provide greater evidence of intervention effectiveness. This requires organizations to abandon current evaluation methods that assess participant satisfaction with program content, instructors, and materials. Although RCTs are not always feasible in law enforcement settings, particularly during recruit academy training, an alternative intervention can be provided to the control group.

- More qualitative data are needed to contextualize participants' experiences with the intervention through mixed methods studies. The results of such studies can add to the body of knowledge on participants' perceptions and experiences with interventions that are not measured using standardized instruments. These data can help guide the implementation, monitoring, and evaluation of interventions.

- Change law enforcement cultural views of excessive use of alcohol and other forms of maladaptive coping toward a view that encourages adaptive forms of coping.

Studies Included in the Review

Studies Included in the Review

Ackerley, D.G. 1986. "The Effects of a Stress Management Program on Police Personnel." Ph.D. dissertation, University of Missouri—Columbia. ProQuest (ID 303496319).

Coulson, J.E. 1987. *The Effectiveness of a Stress Reduction Program for Police Officers*. Ph.D. dissertation, University of North Texas. ProQuest (ID 303591680).

Digliani, J.A. 1994. "Stress Inoculation Training: The Police." *Dissertation Abstracts International* 56 (04B).

Gersons, B.P.R., I.V.E. Carlier, R.D. Lamberts, and B.A. van der Kolk. 2000. "Randomized Clinical Trial of Brief Eclectic Psychotherapy for Police Officers with Posttraumatic Stress Disorder." *International Society for Traumatic Stress Studies* 13 (2): 333–347. doi:10.1023/A:1007793803627.

Ireland, M., J.M. Malouff, and B. Byrne. 2007. "The Efficacy of Written Emotional Expression in the Reduction of Psychological Distress in Police Officers." *International Journal of Police Science & Management* 9 (4): 303–311. doi:10.1350/ijps.2007.9.4.303.

McCraty, R., D. Tomasino, M. Atkinson, and J. Sundram. 1999. *Impact of the HeartMath Self-Management Skills Program on Physiological and Psychological Stress in Police Officers*, no. 99–075. Boulder Creek, CA: HeartMath Research Center, Institute of HeartMath.

Norvell, N., and D. Belles. 1993. "Psychological and Physical Benefits of Circuit Weight Training in Law Enforcement Personnel." *Journal of Consulting and Clinical Psychology* 61 (3): 520–527.

Richmond, R.L., L. Kehoe, S. Hailstone, A. Wodak, and M. Uebel-Yan. 1999. "Quantitative and Qualitative Evaluations of Brief Interventions to Change Excessive Drinking, Smoking and Stress in the Police Force." *Addiction* 94 (10): 1509–1521.

Shipley, P., and J. V. Baranski. 2002. "Police Officer Performance under Stress: A Pilot Study on the Effects of Visuo-Motor Behavior Rehearsal." *International Journal of Stress Management* 9 (2): 71–80. doi:10.1023/A:1014950602826.

Short, M.A., S. DiCarlo, W. P. Steffee, and K. Pavlou. 1984. "Effects of Physical Conditioning on Self-Concept of Adult Obese Males." *Physical Therapy* 62 (2): 194–198.

Tanigoshi, H., A.P. Kontos, and T.P. Remley. 2008. "The Effectiveness of Individual Wellness Counseling on the Wellness of Law Enforcement Officers." *Journal of Counseling and Development* 86:64–86.

Wilson, S.A., R.H. Tinker, L.A. Becker, and C.R. Logan. 2001. "Stress Management with Law Enforcement Personnel: A Controlled Outcome Study of EMDR Versus a Traditional Stress Management Program." *International Journal of Stress Management* 8 (3): 179–200.

References

References

Addis, N., and C. Stephens. 2008. "An Evaluation of a Police Debriefing Programme: Outcomes for Police Officers Five Years after a Shooting." *International Journal of Police Science and Management* 10:361–373.

Anderson, G.S., R. Litzenberger, and D. Plecas. 2002. "Physical Evidence of Police Officer Stress." *Policing: An International Journal of Police Strategies & Management* 25 (2): 399–420.

Anderson, W., D. Swenson, and D. Clay. 1995. *Stress Management for Law Enforcement Officers*. Englewood Cliffs, NJ: Prentice Hall.

Beaton, R., and S. Murphy. 1995. "Secondary Traumatic Stress in Crisis Workers: Research Implications." In *Compassion Fatique*, edited by C. Figley, 51–81. New York: Brunner Mazel.

Berking, M., C. Meier, and P. Wupperman. 2010. "Enhancing Emotion-Regulation Skills in Police Officers: Results of a Pilot Controlled Study." *Behavior Therapy* 41:329–339.

Borenstein, M., L. Hedges, J. Higgins, and H. Rothstein. 2009. *Comprehensive Meta Analysis*, version 2.2.050 [computer software]. Englewood, NJ: Biostat.

Brandt, D.E. 1993. "Social Distress and the Police." *Journal of Social Distress and the Homeless* 2:305–313.

Carlier, I.V.E., R.D. Lamberts, J.J. van Uchelen, and B.P.R. Gersons. 1998. "Disaster-Related Posttraumatic Stress in Police Officers: A Field Study of the Impact of Debriefing." *Stress Medicine* 14:143–178.

Chapin, M., S.J. Brannen, M.I. Singer, and M. Walker. 2008. "Training Police Leadership to Recognize and Address Operational Stress." *Police Quarterly* 11:338–352.

Dewe, P., and C.L. Cooper. 2007. "Coping Research and Measurement in the Context of Work Related Stress." In *International Review of Industrial and Organizational Psychology 2007*, vol. 22, edited by G.P. Hodgkinson, J.K. Ford, G.P. Hodgkinson, and J.K. Ford, 141–191. New York: John Wiley & Sons Ltd.

Dunning, C. 1988. "Intervention Strategies for Emergency Workers." In *Mental Health Response to Mass Emergencies: Theory and Practice*, edited by M. Lystad, 284–307. New York: Brunner/Mazel, Inc.

Ellison, K.W., and J.L. Genz. 1983. *Stress and the Police Officer*. Springfield, IL: Charles C. Thomas.

Everly, G.S., R.B. Flannery, and J.T. Mitchell. 2000. "Critical Incident Stress Management (CISM): A Review of the Literature." *Aggression and Violent Behavior* 5:23–40.

Finn, P. 2000. On-the-Job Stress in Policing—Reducing It, Preventing It. *National Institute of Justice Journal,* January: 18–24.

Gershon, R.R.M., B. Barocas, A.N. Canton, X. Li, and D. Vlahov. 2009. "Mental, Physical, and Behavioral Outcomes Associated with Perceived Work Stress in Police Officers." *Criminal Justice and Behavior* 36 (3): 275–289.

Giga, S.I., G.L. Cooper, and B. Faragher. 2003. "The Development of a Framework for a Comprehensive Approach to Stress Management Interventions at Work." *International Journal of Stress Management* 10 (4): 280–296.

Gorta, A. 2009. "Illegal Drug Use by Police Officers: Using Research and Investigations to Inform Prevention Strategies." *International Journal of Police Science & Management* 11 (1): 85–96.

LeBlanc, V.R., C. Regehr, R.B. Jelley, and I. Barath. 2008. "The Relationship between Coping Styles, Performance, and Responses to Stressful Scenarios in Police Recruits." *International Journal of Stress Management* 15 (1): 76–93.

Lipsey, M.W., and D.B. Wilson. 2001. *Practical Meta-Analysis*. Thousand Oaks, CA: Sage Publications, Inc.

Lovibond, S.H., and P.F. Lovibond. 1995. *Manual for the Depression Anxiety Stress Scales*, 2nd ed. Sydney: Psychology Foundation.

NIMH (National Institute of Mental Health). 2002. *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*. NIH Publication No. 02-5138, Washington, D.C.: U.S. Government Printing Office.

Patterson, G.T. 2001. "Reconceptualizing Traumatic Incidents Experienced by Law Enforcement Personnel." *The Australasian Journal of Disaster and Trauma Studies*. Retrieved from www.massey.ac.nz/~trauma/.

———. 2002. "Development of a Law Enforcement Stress and Coping Questionnaire." *Psychological Reports* 90:789–799.

Patterson, G.T., and I. Chung. 2010. "Stress Management Training and Development Programs for Police Officers and Recruits." Retrieved from http://campbellcollaboration.org/lib/download/949/.

Peñalba, V., H. McGuire, and J.R. Leite. 2009. *Psychosocial Interventions for Prevention of Psychosocial Disorders in Law Enforcement Officers*. The Cochrane Library, issue 4. Retrieved from www.thecochranelibrary.com.

Richardson, K.M., and H.R. Rothstein. 2008. "Effects of Occupational Stress Management Intervention Programs: A Meta-Analysis." *Journal of Occupational Health Psychology* 13 (1): 69–93.

Sewell, J.D. 1999. "Administrative Concerns in Law Enforcement Stress Management." In *Stress Management in Law Enforcement*, edited by L. Territo and J.D. Sewell, 361–369. Durham, NC: Carolina Academic Press.

Shipley, P., and J.V. Baranski. 2002. "Police Officer Performance under Stress: A Pilot Study on the Effects of Visuo-Motor Behavior Rehearsal." *International Journal of Stress Management* 9 (2): 71–80.

Stinchcomb, J.B. 2004. "Searching for Stress in all the Wrong Places: Combating Chronic Organizational Stressors in Policing." *Police Practice and Research* 5 (3): 259–277.

van der Hek, H., and H.N. Plomp. 1997. "Occupational Stress Management Programmes: A Practical Overview of Published Studies." *Occupational Medicine* 47 (3): 133–141. doi:10.1093/occmed/47.3.133.

Violanti, J.M. 1984. "Shift Work may be Hazardous to Your Health." *Trooper* 3:14–16.

———. 1992. "Coping Strategies among Police Recruits in a High-Stress Training Environment." *Journal of Social Psychology* 132 (6): 717–729.

———. 1996a. *Police Suicide: Epidemic in Blue*. Springfield, IL: Charles C. Thomas.

———. 1996b. "Trauma Stress and Police Work." In *Traumatic Stress in Critical Occupations: Recognition, Consequences and Treatment*, edited by D. Paton and J.M. Violanti, 87–112. Springfield, IL: Charles C. Thomas.

Violanti, J.M., and F. Aron. 1993. "Sources of Police Stressors, Job Attitudes, and Psychological Distress." *Psychological Reports* 72:899–904.

———. 1995. "Police Stressors: Variations in Perception among Police Personnel." *Journal of Criminal Justice* 23 (3): 287–294.

Violanti, J.M., J.R. Marshall, and B. Howe. 1985. "Stress, Coping, and Alcohol Use: The Police Connection." *Journal of Police & Administration* 13 (2): 106–110.

Waters, J.A., and W. Ussery. 2007. "Police Stress: History, Contributing Factors, Symptoms, and Interventions." *Policing: An International Journal of Police Strategies & Management* 30 (2): 169–188.

Webb, S.D., and D.L. Smith. 1980. "Stress Prevention and Alleviation Strategies for the Police." *Criminal Justice Review* 5:1–15.

Westerink, J. 1990. "Stress and Coping Mechanisms in Young Police Officers." *Australian Police Journal* 44:109–113.

Wilson, S.A., R.H. Tinker, L.A. Becker, and C.R. Logan. 2001. "Stress Management with Law Enforcement Personnel: A Controlled Outcome Study of EMDR Versus a Traditional Stress Management Program." *International Journal of Stress Management* 8 (3): 179–200.

Wirth, M., J. Burch, J. Violanti, C. Burchfiel, D. Fekedulegn, M. Andrew, H. Zhang, D.B. Miller, J.R. Herbert, and J.E. Vena. 2011. "Shiftwork Duration and the Wakening Cortisol Response among Police Officers." *Chronobiology International* 28 (5): 446–457.

Yoo, H.L., J.C. Eisenmann, and W.D. Franke. 2009. "Independent and Combined Influence of Physical Activity and Perceived Stress on the Metabolic Syndrome in Male Law Enforcement Officers." *Journal of Occupational and Environmental Medicine* 51 (1): 46–53.

Tables

Table 1. Characteristics of Included Studies

Author	Sample size and description	Methods	Intervention components
Ackerley (1986)	Total: 49 Police officers and civilian personnel	Random block design and focus groups	The stress process, physical education, relaxation training, dietary programming, cognitive restructuring, sleep and biological cycles, communication skills, coping, and exercise program
Coulson (1987)	Total: 63 Police officers and recruits	Quasi-experimental	Stress inoculation, cognitive-behavioral approach, stress awareness, and stress control
Digliani (1994)	Total: 51 Police officers	Quasi-experimental	Conceptualization, skills acquisition and rehearsal, and application and follow-through
Gersons, Carlier, Lamberts, and van der Kolk (2000)	Total: 42 Police officers	Random	Psychoeducation, imaginary guidance, writing assignments and mementos, domain of meaning or integration, and farewell ritual
Ireland, Malouff, and Byrne (2007)	Total: 67 Police officers	Random	Writing intervention
McCraty, Tomasino, Atkinson, and Sundram (1999)	Total: 59 Police officers and civilian personnel	Random	HeartMath stress and emotional self-management techniques (freeze-frame technique, coherent communication, and heart lock-in), and scenarios (building search, high-speed pursuit, and domestic violence)

Study outcomes	Length of intervention	Intervention type	Age	Country
Psychological: social stress, burnout (emotional exhaustion, depersonalization, and personal accomplishment), job satisfaction, quality of family life, coping, and internal-external locus of control Behavioral: indicators of job performance (sick hours taken, number of vacation hours taken, complaints filed against, complaints filed, number of disciplinary actions taken, number of accidents, times tardy, and number of injuries)	24 hours	Stress management program	32	United States
Psychological: mood disturbance (tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment)	10 hours	Stress reduction program	32	United States
Psychological: trait anxiety, personal stress, self-efficacy, and trait anger	10 hours	Stress inoculation training	37.6	United States
Psychological: phobic anxiety, anxiety, depression, somatization, obsessive compulsive, interpersonal sensitivity, hostility, sleeping problems, psychoticism (SCL-90 scales), and co-morbid disorder as per DSM-III-R Behavioral: return to work	16 weekly sessions, 60 minutes per session	Brief Eclectic Psychotherapy (BEP), a combination of cognitive-behavioral and psycho-dynamic approaches	35	Netherlands
Psychological: stress, anxiety, and depression (Depression Anxiety Stress Scale DASS, Lovibond and Lovibond 1995)	4 work days, 15 minutes each day Total: 1 hour	Writing intervention	35.85 (SD = 8.95) for TG; 38.83 for entire sample	Australia
Psychological: coping skills, family relationships, work performance, interpersonal skills, stress, emotional wellbeing, and physical stress symptoms Physiological: heart rate variability and blood pressure Behavioral: training officer ratings and self-ratings of work performance	4–6 hours (5 hours average)	HeartMath stress and emotional self-management techniques	39	United States

Table 1. Characteristics of Included Studies *(con't)*

Author	Sample size and description	Methods	Intervention components
Norvell and Belles (1993)	Total: 29 Police officers	Random	Initial circuit weight training, no individualized training following initial instruction, and circuit machines
Richmond, Kehoe, Hailstone, Wodak, and Uebel-Yan (1999)	Total: 355 Police officers	Quasi-experimental	Health assessment, alcohol intervention, brief advice, and self-help materials
Short, DiCarlo, Steffee, and Pavlou (1984)	Total: 45 Police officers	Random	Physical fitness instruction and conditioning
Shipley and Baranski (2002)	Total: 54 Police recruits	Random	Progressive relaxation (breathing exercise and systematic relaxation of major muscle groups), imagery/mental rehearsal (energizing cue words, positive self-statements, and imagery), and scenario (live fire)
Tanigoshi, Kontos, and Remley (2008)	Total: 51 Police officers	Random	Indivisible self model, wellness plans, and prevention plans
Wilson, Tinker, Becker, and Logan (2001)	Total: 62 Police officers and significant others	Random, clinical interviews, and structured exit interviews	Eye movement desensitization and reprocessing (EMDR)

Study outcomes	Length of intervention	Intervention type	Age	Country
Psychological: psychological symptom patterns (somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychotism), distress (global severity, positive symptom distress, and positive symptom total), perceived stress, satisfaction with nature of work, pay, promotional opportunities, and characteristics of supervision and co-workers Physiological: common physical symptoms, cardiovascular fitness (discontinuous step test), strength improvement (one-repetition maximum-strength measure), physical fitness measures (height, weight, waist size, biceps diameter, and chest size), and grip strength	16 hours	Circuit weight training	32.84	United States
Behavioral: alcohol consumption and cigarette smoking Psychological: stress Physiological: exercise and weight gain/loss	35 minutes	Brief interventions	33.2	Australia
Psychological: self-concept (physical self, personal self, social self, identity, self-satisfaction, behavior, and self-criticism)	12 hours	Nutrition and physical conditioning program	Not reported (age range: 29–52)	United States
Psychological: cognitive state anxiety, somatic state anxiety, and self-confidence Behavioral: job performance self-rated and facilitator-rated	30 minutes	Visuo-motor behavior rehearsal (VMBR)	27	Canada
Psychological: wellness (essential self, social self, physical self, creative self, and coping self), willingness to change	5 hours	Individual wellness counseling	35	United States
Psychological: personal and job stress (subjective disturbance, stress, state-trait anger, and coping), marital adjustment, PTSD, and general psychological functioning	6 hours	EMDR stress management program	36.8	United States

Table 2. Physiological Outcomes

Studyname	Outcome	Time point	Statistics for each study						
			Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
McCraty et al.	Combined	Combined	0.324	0.260	0.068	-0.185	0.833	1.247	0.213
Short et al.	Combined	Combined	0.030	0.295	0.087	-0.549	0.609	0.102	0.919
			0.196	0.195	0.038	-0.187	0.578	1.003	0.316

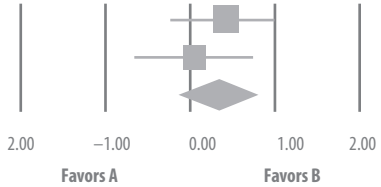


Table 3. Psychological Outcomes

Study name	Outcome	Time point	Statistics for each study						
			Hedges´s g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Short et al.	Combined	Combined	-0.022	0.295	0.087	-0.599	0.556	-0.073	0.942
Tanigoshi et al.	Combined	Combined	0.095	0.278	0.077	-0.450	0.640	0.342	0.732
Ackerley	Combined	Combined	-0.110	0.282	0.080	-0.663	0.443	-0.390	0.696
Coulson	Combined	Combined	-0.341	0.305	0.093	-0.939	0.257	-1.117	0.264
Digliani	Combined	Combined	-0.170	0.279	0.078	-0.717	0.377	-0.608	0.543
Gersons et al.	Combined	Combined	-0.485	0.312	0.097	-1.097	0.126	-1.556	0.120
Ireland et al.	Combined	Combined	0.018	0.176	0.031	-0.327	0.363	0.102	0.919
McCraty et al.	Combined	Combined	0.054	0.259	0.067	-0.453	0.561	0.209	0.834
Norvell et al.	Combined	Combined	-0.317	0.370	0.137	-1.043	0.409	-0.855	0.392
Richmond et al.	Psy stress	Combined	0.028	0.107	0.011	-0.182	0.238	0.258	0.796
Wilson et al.	Combined	Posttest	0.975	0.268	0.072	0.449	1.500	3.636	0.000
Shipley et al.	Psy anxiety	Posttest	0.462	0.272	0.074	-0.072	0.995	1.697	0.090
			0.038	0.098	0.010	-0.155	0.230	0.384	0.701

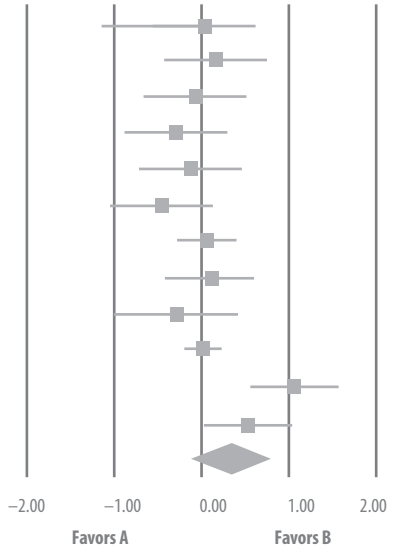
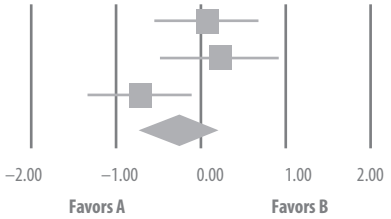


Table 4. Behavioral Outcomes

Study name	Outcome	Time point	Statistics for each study						
			Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
McCraty et al.	Combined	Combined	0.041	0.258	0.067	-0.465	0.546	0.158	0.875
Norvell et al.	Combined	Combined	0.194	0.368	0.135	-0.526	0.915	0.528	0.597
Shipley et al.	Combined	Posttest	-0.695	0.277	0.077	-1.238	-0.153	-2.512	0.012
			-0.176	0.277	0.077	-0.719	0.367	-0.635	0.525

Hed es's g and 95% CI



U.S. Department of Justice
Office of Community Oriented Policing Services
145 N Street, N.E.
Washington, DC 20530

To obtain details on COPS programs,
call the COPS Office Response Center at 800.421.6770.

Visit COPS Online at **www.cops.usdoj.gov**.

January 2013
e081225702
ISBN: 978-1-932582-69-7