Preparing People for Climate Change in the Pacific Northwest

Portland State University
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Enhancing Resilience Within Emergency Response and Disaster Preparedness Organizations -- Lessons Learned
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http://www.nwcphp.org/
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The opinions expressed herein are solely my own and do not necessarily reflect the official views of these supporting entities.
**Goal:** To present and describe practical and empirically based strategies to identify, mount, implement and evaluate workforce resiliency interventions for First Responders.

**Objectives**

1. To list and describe “lessons learned” consulting with First Responder Organizations as well as evaluating programs designed to enhance resilience in First Responders.

2. To consider some implications of these lessons for developing resiliency programs for First Responder organizations.
First Responder Workforce Resilience:

The capacity of First Responders and First Responder organizations to continue to function both physically and psychologically despite various exposures.
September 5, 2017

Smoke and Fires Light Up the Pacific Northwest

Caveats

► Our collective crystal balls regarding the nature and extent of the actual impacts of climate change-related stressors on First Responder Organizations in the Pacific Northwest are mostly “cloudy”

► Still, it is probably safe to assume that First Responder and Disaster Preparedness Organizations will bear the brunt of climate change-related stressors in the PNW (and elsewhere)
Caveats, continued

- My presentation will focus almost exclusively on the “soft” capabilities of First Responder Organizations—that is, the workers themselves and their leaders -- as opposed to the “hard capabilities” (the infrastructure and equipment), and...

- Finally, my conclusions and recommendations are based on my research, observations and consultations with mostly public sector First Responder Organizations – which may or may not generalize to other types of organizations in other Industries or sectors of our economy.
Lesson 1

The vast majority of First Responders are already “resilient” – however measured – especially when you consider the nature and extent of their line of duty exposures.
Prevalence of PTSD in First Responders and Veteran Samples*

* The data for this chart was compiled from the following sources: Corneil et al., 1999; Bennett et al., 2004; CDC, 2004; Hoge et al., 2004; Galatzer-Levy, et al, 2011; Lilly & Allen, 2015.
Firefighters’ Secondary Post-trauma Symptoms Following 9/11

Randal D. Beaton, L. Clark Johnson, Shirley A. Murphy, & Marcus Nemuth (2004)

Traumatology, 10, 7-16

This project was supported by Grant R-18-OHO3559 from the National Institute for Occupational Safety and Health of the Centers for Disease Control
Terrorist attacks on the World Trade Center in NYC on Sept. 11, 2001, left 343 NYC firefighters dead.

The assumption is that the “fire service family” is very close-knit.

The rationale for the current study is based on the hypothesis that secondary trauma was a potential outcome for firefighters across the U.S.
IES Data were obtained from five “temporal groups”:

- The day before 9/11, n = 24
- 1 or 2 days after 9/11, n = 52
- One week after 9/11, n = 93
- Two weeks after 9/11, n = 21
- One month after 9/11, n = 54
Impact of Events Total Score

Beaton et al., J. Traumatology, 2004
Implications of Lesson #1 for First Responder Workforce Resiliency Programs

► Since most First Responders are already “resilient” there is a “high bar” for resiliency interventions

► Offer on-line resources (e.g., psychoeducational materials) that can be accessed “anonymously”

► Offer Resilience Program to entire workforce to enhance and preserve their resilience
Lesson 2

Targets for Workforce Resiliency Programs are not always obvious
Sources of Occupational Stress Among Firefighter/EMTs and Firefighter/Paramedics and Correlations with Job-related Outcomes

Randal D. Beaton, PhD, Shirley A. Murphy, RN, PhD, FAAN

Abstract

Introduction/Objective: This paper reports the results of an initial effort to develop and test a measure of the various sources of job-related stress in firefighter and paramedic emergency service workers. Methods: A 57-item paper and pencil measure of occupational stressors in firefighter/Paramedical Technicians (EMT’s) and firefighter/paramedics was developed and administered by anonymous mail survey. Results: More than 2,000 (50% rate of return) emergency service workers completed and returned the surveys. The responses of 1,730 firefighter/EMTs and 253 firefighter/paramedics were very similar in terms of the degree to which job stressors were bothersome. A factor analysis of replies yielded 14 statistically independent “Occupational Stressor” factors which together accounted for 66.3% of the instrument’s variance. These Sources of Occupational Stress (SOSOS) factor scale scores essentially did not correlate with a measure of the social desirability test-taking bias. Finally, SOSOS factors were identified that correlated with job satisfaction and work-related morale of the respondents. Conflict with administration was the job stressor factor that most strongly correlated with reports of low job satisfaction and poor work morale in both study groups. Conclusion: The findings suggest that firefighter and paramedic job stress is very complicated and multi-faceted. Based on this preliminary investigation, the SOSOS instrument appears to have adequate reliability and concurrent validity.

Introduction

Over the past decade, a burgeoning line of research has explored some of the occupational stressors of firefighter and paramedic emergency service professionals. Past studies have suggested that paramedics and firefighters/paramedics are subjected to extraordinary, duty-related demands and, as a consequence, are at risk to “burn out” and/or to succumb to various physical and mental stress-related disorders. However, much of this research has focused on traumatic events or critical incidents such as catastrophic disasters with massive numbers of casualties. Critical incidents usually involve overwhelming exposure to injured and mutilated and/or dead and dying victims. Furthermore, most study designs of emergency services stress primarily have been descriptive in nature.

In addition to critical incidents, a multitude of other sources of occupational stress are likely to be encountered by professional paramedics and firefighter personnel. For example, Mitchell and Bray identified stressors that were task-related, intrinsic, and unique to paramedics and firefighters, such as driving an emergency vehicle at high speed and rendering technologically sophisticated aid at the scene of an accident/catastrophe. Other potential firefighter and paramedic job stressors include: 1) realistic fears of personal injury, disablement, and death; and emotional strain associated with conveying news of a tragedy to survivors (i.e., family and friends); and 3) having to operate complex and occasionally malfunctioning or improperly maintained equipment. These latter job stressors of firefighters and paramedics have received very little study.

Paramedics and firefighters also are exposed to various organizational and leadership stressors that are shared with other employees groups including disagreements, power struggles, and other conflicts with their chief executive officers, their immediate superiors, and/or with their coworkers. The latter may include personality conflicts with team members and/or a lack of camaraderie. The former may include management/labor strife. In most Fire Departments, like most “white collar” corporate organizations, there is a pyramidal hierarchy of authority. But the implications, inten-
SOOS Factors

Mean Impact

N ~ 2000

Sleep Disturbance
Wage/Benefit/RIF
Management/Labor...
Personal Safety...
Substandard...
Job Skills Concerns
Family/Financial Strain
Past Incidents
Co-Worker Conflict
Poor Health Habits
Conveying Tragedy
Second Job Stress
Discrimination

Beaton & Murphy, 1993
Which Workplace Stressors Actually “Predict” Job Dissatisfaction in Firefighters?

- Management/labor conflict  p < .001
- Sleep disturbance  p < .001
- Tedium  p < .001
- Past critical incident  p < .05
- Discrimination  p < .05
- Conveying tragedy  p < .05

Both firefighters & paramedics

Beaton & Murphy, 1993
9-1-1 Police Call/Dispatch Volume Data

Dispatched Incidents -- Law Enforcement

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Low Control

- Mandatory overtime
- Shift work

Bureaucratic Fishbowl

- Extraordinary scrutiny and electronic surveillance of your work
Common Chronic Physical Stress Complaints of 9-1-1 Telecommunicators

- Neck tension
- Shoulder pain
- Headaches
Trapezius

Figure 6.5. Attachments of the right and left trapezius muscles, rear view.
Shoulder stretch

Standing or sitting for long periods of time can take a toll on your muscles. To prevent or reduce stiffness and pain, try simple office stretches throughout the day. Perform these stretches several times throughout the day to help keep your muscles from feeling sore and tight.

Start by stretching the back of your shoulder:

► Place one hand under your elbow.
► Lift your elbow and stretch it across your chest. Don't rotate your body as you stretch.
► Hold the stretch for 15 to 30 seconds. You'll feel tension in the back of your shoulder.
► Relax and slowly return to the starting position.
► Repeat the stretch with the other arm.
Implications of Lesson #2 for First Responder Workforce Resiliency Programs

To develop effective resilience programs – needs assessment(s) must first be conducted

► Anonymous surveys
► Attend professional conferences
► Ride-alongs and snoop-alongs- observe and listen, listen, listen
► Aim: “organizational diagnoses”
Lesson 3

Culture, Culture, Culture

► Primacy of Organizational Culture Considerations for developing, mounting, and implementing Workforce Resilience Programs

► “It’s the way we do things around here” (Anon. First Responder)
“To understand Europe you have to be a genius...
“... or French.”

Madeleine Albright, former U.S. Ambassador to the U.N.
“You can observe a lot by watching.”*

*Berra, 1998*
9-1-1 Telecommunicators are (Mostly Female)

“New Collars”

- Organizational/occupational culture in flux
- Did not exist 50 years ago; invented to serve as vital first link in emergency response system
- Technology is rapidly evolving and ever changing
- Even competing national organizations: NENA and APCO
“O.K., now—on three, I’m going to toss a second job in there!”
Implications of Lesson #3 for Workforce Resilience Interventions

To develop and offer relevant and meaningful Organizational level Resiliency Programs you must understand and honor the organization’s “culture” (or subcultures)

► The organization’s cultures consists of the policies, norms, “ways of doing business ” and “sacred cows”

► Leadership “buy-in” and peer involvement at every level and every stage in the process in critical

► Who are going to believe “a cop whose been there” or a psychologist?
Lesson 4

Importance of Leadership
OUTCOMES OF A LEADERSHIP INTERVENTION FOR A METROPOLITAN FIRE DEPARTMENT1,2,3

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Summary.—Poor leadership can contribute to job dissatisfaction and employees’ “burnout.” Perceived lack of leadership skills is also a source of stress for supervisors. This study evaluated the efficacy of a brief, multicomponent leadership intervention provided for fire service supervisors in an urban fire department. Ratings by 51 line firefighters and 8 first-line supervisors documented improvements in their immediate supervisors’ performance at 3 mo. postintervention. Self-reports by line firefighters also showed improvements in perceptions of their ability to attain career goals, which were sustained at 9 mo. postintervention. There were also improvements on certain stress-related symptoms indices reported by the sample of firefighter supervisors at both the 3-mo. and 9-mo. follow-ups. No significant changes on any of these measures, obtained at comparable time points, were observed in a (nonequivalent) control sample of firefighters and their first-line supervisors in an “untreated” urban fire department.

Effective leadership in any hierarchical organization contributes significantly to organizational success. Yet most professional fire service officers in the United States have received little formal management training (Gist & Woodall, 1995). In this paper we examined the benefits of a brief, multicomponent leadership training intervention offered to a sample of first-line fire service supervisors in an urban fire department. Subjective and objective outcome measures were obtained from line firefighters and first-line supervisors prior to this intervention, e.g., baseline, and at 3 and 9 months post-

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2We express our gratitude and acknowledge the expert consultation provided by Dr. Fred Fiedler, Professor Emeritus, Department of Psychology at the University of Washington on this project and in the preparation of this manuscript.
3Address enquiries to R. Beaton, Department of Psychosocial and Community Health, School of Nursing, University of Washington, PO Box 357263, Seattle, WA 98195-7263.
Leadership Intervention Study
(Beaton et al., 2001)

- Two hour psycho-educational CBT stress management for fire service officers
- Leader Match Training: two types of leaders
- **Improvements In Department Leadership Ratings Were Linked To:** Temporary decreases in GI symptoms and recollection of past critical incidents in line firefighters
NIOSH Demonstration Project Outcomes: Absenteeism Monthly Count Means:
Feb ’96 through Feb. ’04 (3 Month Median Smoothing – Tukey, EDA)
Understanding Workplace Stress: Stress in the 9-1-1 Workplace

Modular Toolkit:
Research shows that overtime is often associated with stress.

Long hours cause:

- Fatigue
- Physical discomfort
- Lack of time for family
- Sleep dysomnias
- Burnout

http://www.nwcphp.org/docs/911-toolkit/resources/resources.html#operations-4
“Bad” Mandatory Overtime

On the other hand, mandatory overtime is a “toxic stressor.” It has all the negatives of overtime work.

Plus it also decreases employees’ control over their jobs and makes it difficult to predict and plan for responsibilities outside work.
Mandatory Overtime
Best Practices from Call Centers

► Communicate expectations
► Ask for volunteers first
► Be flexible
► Give telecommunicators a say
Lesson 5
Organizational Resilience

Fitness is an Integral Component of Resilience in Fire Service
TACOMA FIRE DEPARTMENT
WELLNESS/FITNESS PROGRAM
October 2002 through September 2004

(Lewis, et al., 2005)
Wellness-Fitness Outcomes: On the Job Injuries (Lewis, et al., 2005)
Wellness-Fitness Outcomes: Tacoma Fire Department

Groups Defined by Total Fitness GPA @ Baseline
Red Line = Average US Citizen Fitness GPA

(Lewis, et al., 2005)
Burnout & Exercise in Firefighters

Mean Burnout Scale

Age (Grouped into decade)

Sedentary
Infrequent
Frequent

(Beaton, 2001)
Findings indicate a consistent relationship of self-reported sedentary behavior with mortality and with weight gain.
911 Operators Log Calls — and Miles — in Oregon Treadmill Study

Implications of Lesson #5 for First Responder Workforce Resilience

- Exercise associated with improved “mental fitness” in all age groups
- Fitness programs increase fitness in those “least fit” and may decrease OJI’s and absenteeism
- 9-1-1 Telecommunicators may benefit from “anti-sedentary” resilience interventions
Lesson 6

Training Matters
Instrument Development and Evaluation of Domestic Preparedness Training for First Responders

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Keywords: bioterrorism; chemical, nerve agents; domestic preparedness; first responders; nuclear events; terrorist attacks; weapons of mass destruction

Abstract

Introduction: In the wake of domestic terrorists attacks on 11 September 2001 and subsequent bioterrorism events employing anthrax, there no longer can be any debate about the potential for attacks employing Nuclear, Biological, or Chemical (NBC)/Weapons of Mass Destruction (WMD). As one way of acknowledging this long standing threat and, in a concerted effort to mitigate the effects of possible future domestic NBC/ WMD terrorist attacks, the USA Department of Defense (DOD) and other US governmental agencies already had mounted an effort to provide Domestic Preparedness Training for First Responders in urban centers throughout the USA.

Methods: A paper and pencil questionnaire specifically designed to evaluate the effectiveness of Domestic Preparedness Training for Emergency First Responders has been developed. An earlier version of this instrument was piloted with a convenience sample of firefighters and paramedics (n = 78) in a northeast state. Based on replies to the pilot questionnaire, a pool of 27 items based on the objectives and content of the NBC/WMD Domestic Preparedness Awareness and Operations courses (plus additional background and appraisal competency items) were selected for inclusion in a Domestic Preparedness Questionnaire (DPQ).

Results: This paper first describes the essential psychometric properties of the DPQ based on replies from baseline and follow-up samples (n = 206 and n = 240 respectively) of urban firefighters and paramedics employed by a metropolitan city in a northeast state. The DPQ was employed to evaluate the outcomes of Domestic Preparedness training provided to a sample of urban fire-service personnel. The DPQ documented significant improvements in a group of "DP trained" urban firefighters (n = 80) both in their awareness and operations content knowledge as well as in their perceived competency to respond to acts of biological, chemical, or nuclear terrorism "in their own community" at four months post-training. A comparison group of "Not DP trained" firefighters (n = 78) showed no statistically significant changes on these DPQ indices, suggesting that the documented improvements in the "DP trained" firefighters on the DPQ were not due to "testreactivity" or to "historical" factors.

Conclusion: The findings support the DPQ has adequate inter-item and test-retest reliability, possesses concurrent validity, and appears to be a sensitive measure of the Domestic Preparedness Training provided for urban firefighters and paramedics First Responders.


July - September 2002

http://pdm.medicine.wisc.edu Prehospital and Disaster Medicine
DPQ mean total scores (and ± 95% confidence intervals) at pre-training and at four months post-training in both DP-Trained (yes) and Not-DP-trained (no) sampled.
Mean perceived competency to respond to nuclear terrorist events (and \( \pm 95\% \) confidence intervals) at pre-training and at four months post-training in both DP-Trained (yes) and Not-DP-Trained (no) samples.
Disaster Behavioral Health for Public Health Preparedness

http://www.nwcphp.org/training/opportunities/online-courses/disaster-behavioral-health
Implications of Lesson #6 for First Responder Workforce Resilience

- Training, education and exercises increase task relevant knowledge, technical skills and resilience
- Training and exercises increase perceived confidence and resilience
- Enhanced knowledge, skill mastery and confidence may improve performance in real events and serve as protective factors to preserve resilience
Summary and Conclusions

1. Workforce Resilience Programs can include multilevel approaches; e.g., organization policy and/or individual interventions

2. Effective Workforce Resilience Trainings can be provided via a number of formats including “live” in-person presentations and on-line, web-enabled “interactive” modules

3. Follow-up studies are needed to document long-term efficacy of Workforce Resilience Programs
Special thanks to participating First Responders and First Responder Organizations, and to Professor Meischke (UW School of Public Health), PI

NIOSH-funded project (1 R01OH010536) “Multi-tasking to Hyper-tasking: Investigating the Impact of Next Generation 9-1-1.”