Resilience and Health Promotion in High-risk Professions: A Pilot Study of Firefighters in Canada and the United Kingdom

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Abstract: This study, conducted by researchers from Canada and England in collaboration with four fire rescue services, explored Canadian and UK firefighters’ experiences of distress, coping, and resilience related to workplace traumatic events. Questions addressed in the research included: Are firefighters resilient? How do firefighters define resilience? Does stress education enhance/sustain resilience? A cross-sectional, mixed methods study design was used with a qualitative theoretical drive supplemented with quantitative measures to compare and contrast firefighters’ phenomenological cross-cultural experiences. Research outcomes include: a variety of diverse and intricate definitions for resilience reflecting the complexity of the concept of resilience yet demonstrating cultural commonalities across both countries; a range of reactions to critical incidents that generally fell into one or more domains: emotional, cognitive, physical, behavioural, and ‘spiritual’; a range of strategies that are implemented to cope with stress reactions—overwhelmingly ‘talking’ about the incident, reactions, and coping mechanisms is most helpful; personal and organizational attributes that assist in managing stress and stressful events within the culture of the fire service; and health promoting strategies for building resilience. The study recommendations, utilizing a health promotion lens, offer guidance in planning for, and responding to, traumatic events in high-risk professions.

Keywords: Interdisciplinary, Health promotion, Resilience, Firefighters

Introduction

This article highlights the study process and key outcomes of resilience research undertaken with three Fire Rescue Services (FRS) in Canada and one FRS in England. The unique interdisciplinary study was conducted by a research team from both countries comprised of firefighters from each of the participating FRS, and academics from psychology and nursing in universities in both countries. Much previous research into the psychological health of firefighters has focused on possible disease outcomes such as post-traumatic stress disorder; notably more recent research (Hawker, Durkin, and Hawker 2011) has begun to look at post-traumatic growth in emergency services. This project sought cross-disciplinary insights into strengths and capacities of firefighters, and considers resilience to be foundational to psychological health in the FRS.

The phenomenon of resilience has been suggested as a contributing factor to mental health—in individuals and communities—following traumatic events. The aims of this study were to identify firefighters’ understanding and definitions of resilience, and to explore firefighter perceptions of stress and coping. Key questions for the study included: How do firefighters define resilience? Are the definitions congruent with current theories of resilience? Are firefighters resilient? What coping strategies are commonly used by firefighters following stressful events?

A large body of the resilience literature focuses on children and adolescents, and there are few studies on resilience in high-risk occupations. Bonanno and his teams have focused on survivors of the World Trade Centre disaster (see for example: Bonanno et al 2006; Bonnano, Rennicke, and Dekel 2005) and adults who are bereaved of a spouse (Bonanno, Moskowitz, Papa, and Folkman, 2005), while other researchers have recently focused on nurses, police, and military (Warelow and Edwards 2007; Paton et al 2008; Adams, Camarillo, Lewis, and McNish 2010). The specifics of the psychological impact of occupations such as emergency services has been the subject of debate across disciplines (see for example: Antai-Otong 2001; Barkway 2006; Luthans, Avey, Avolio, Norman, and Combs 2006; Nucifora, Langlieb, Siegal, Everly, and Kaminsky 2007; Wright 2003); overall there is agreement that first responders are in high-risk professions but there is no solid evidence about best practices for mitigating those occupational risks. Historically the variable of interest in stress research has been
illness or disease such as post-traumatic stress disorder or PTSD (see for example Boals & Schuettler 2009; Bryant and Harvey 1995; Wagner et al 1998) using randomized controlled trials to explore the illness trajectory; this dominant illness paradigm pervades the literature and is very useful for those who provide disease treatment, but does not address the evidence of reasonably low incidence of PTSD in emergency services (Del Ben, Scotti, Chen, and Fortson 2006; Haslam and Mallon 2003) and the coping capacities of firefighters, nor does it address the dearth of literature on resilience in high-risk professions. Despite calls for paradigmatic shifts to re-look at resilience as more than the simple absence of psychopathology and to consider cross-disciplinary, strengths-based, positive language and theory (Murphy, Durkin, and Joseph 2011), strong research links to illness and pathology imbue resilience studies.

Researchers note resilience is not simply the absence of psychopathology, but a broader, deeper concept; Tusaie and Dyer (2004) suggest that resilience research requires that a dynamic interactive approach be taken, and Richardson (2002) notes that the stress research paradigm has shifted from a reductionist, problem-oriented approach to one that is focused on nurturing strengths. Bonanno (2004) suggests that we have underestimated the resilience capacity of people, including firefighters, to survive and thrive in the aftermath of trauma. There have been increasing calls for studies whose variables of interest include health, resilience, and coping (Atkinson, Martin, and Rankin 2009; Bonanno, Papa, Lalande, Westphail, and Coifman 2004; Deahl et al. 1998; Jeannette and Scoboria 2008; Seligman and Csikszentmihalyi, 2000) with theoretical drives that consider factors from other perspectives such as phenomenology, grounded theory, and mixed methods. Figley (2010), and Bonanno et al. (2005, 2010) insist on the need for increased research into resilience across multiple contexts and events, research which will underpin evidence-informed occupational health policy and practice.

The understanding and definition of resilience in the literature is closely linked to the conceptual framework of ‘health promotion’. Health promotion is articulated as a health-focused, strengths-based concept that facilitates, supports, and educates through participation, collaboration, and empowerment (Lindsey and Hartrick 1996) and is not an end-point but a process that facilitates health. Firefighters are notable in their health-focused language; they describe levels and components of ‘distress’ (Blaney 2005) instead of symptoms of disease. As well, firefighters describe ways of coping with work-related stressors that reflect a breadth and depth of health promoting strategies incorporating ‘social support, personal coping, and meaning-making’ (Blaney, 2009), endorsing outcomes that are salutogenic rather than pathogenic (Antonovsky, 1996). Firefighters have been found to be overwhelmingly supportive of peer-led CISM and trauma support programs (Lawrence and Barber 2004); outcomes explicated CISM as a framework for a service matrix that includes pre-incident stress education, group intervention immediately following a traumatic event, and referral for longer-term mental health care if needed (Blaney 2009; Hawker, Durkin, and Hawker 2011). Firefight perspectives are key to understanding resilience and coping, and in the development of strategies to enhance resilience in the FRS.

**Research Process**

In this study, participant sampling was purposeful and drawn from the FRS in Canada and England who had previously expressed interest in participating. There were criteria for participation such as the FRS must be comprised of career/whole-time(C/W) and volunteer/retained duty (V/R) firefighters, participation must be available to all members of the FRS, each FRS must have a stress management program such as Critical Incident Stress Management (CISM), etc. All procedures were approved by the Research Ethics Board at Vancouver Island University which is the principal
investigator’s home university; consent to acknowledge and name the participating FRS and members of the advisory team was provided; any information that might identify individuals has been removed.

A cross-sectional, mixed methods study design was used, driven by a qualitative approach and supplemented with quantitative measures; three questionnaires were used. The Stress and Coping Questionnaire (SCQ) which had been co-created with firefighters and used in several previous studies of firefighters (Blaney 2003, 2006), captured demographic information and narrative perspectives in answer to questions such as firefighters’ preferred coping strategies, strategies that are least helpful, definitions of critical incidents, awareness of CISM and stress education in their FRS, definitions of resilience, etc. Resilience was measured with the 25-item Resilience Scale (RS-25) (Wagnild and Young 1993; Wagnild 2010); this scale has been used extensively with other populations but never with firefighters. Coping was measured using the Brief COPE questionnaire (Carver 1997, 2007) which is one of the most widely used measures in coping research.

**Overview of Findings**

In total, 575 questionnaire packages were distributed; 266 were returned with useable data, a 46% return rate. The SCQ showed that demographics were consistent across both countries with the majority of respondents being male with 12 female firefighters responding – a number that is reflective of the numbers of female firefighters in fire services overall; respondents ranged in age from 35-44, worked in operations/fire suppression and/or multiple roles such as leadership, operations, dispatch, with 5-7 years experience although respondents with less than a year and more than 25 years service were represented, and the majority (58.6%) worked as C/WT with 37% working in the V/RDS. More Canadian firefighters were aware of CISM education programs; 37% of Canadian and 29.6% of UK firefighters had used the CISM program following the last critical incident and lack of trust was frequently cited as the reason for not using the CISM processes.

Firefighters in both countries defined resilience in two parts: an ‘ability’ to cope, recover, carry on, bounce back, protect, function, move on, or otherwise deal with stressors, and an ‘immunity’ or capacity to withstand challenges utilizing innate capacities such as mental toughness, focused, positive outlook, reframing events, etc. The diversity and depth of definitions reflects the complexity of the concept of resilience that is found in the literature, and the hopeful optimistic language used by firefighters in their definitions is congruent with current literature on post-traumatic growth (Bonanno et al. 2010; Durkin and Joseph 2009). The definitions also align with resilience literature that notes resources must be in place to support ‘bounce back’ (Cocking 2012); resources in the FRS include a culture of support for one another, formal and informal ‘peer’ support programs, education on stress and coping in the FRS, etc.

Generally, firefighters recognize the risks of the job, however Canadian firefighters were better able to articulate the inevitable ‘normal & expected reactions’ to stress that are physical, emotional, cognitive, behavioural, and/or spiritual (Blaney 2009) in nature. Contextually, many Canadian FRS are responsible for medical aid calls and are trained ‘medical first responders’ whereas in the UK, medical calls are largely managed by the ambulance service; medical aid calls with their inherent exposure to injured adults, children and pets have been noted to be significant stressors for firefighters (Brown, Mulhern, and Joseph 2002).

Firefighters articulated ‘what works’ to cope after a critical incident as a range of strategies that they implement but overwhelmingly they find ‘talking’ about the incident, their reactions, and their coping mechanisms to be most helpful; they talk to peers and family most frequently which has implications particularly for family members as to their readiness and sense of capacity to hear emotionally laden material from their loved ones. However, verbally ventilating stress reactions and articulating coping strategies has been shown to be effective in decreasing feelings of distress in
firefighters (Blaney 2009) and when done in a supportive and somewhat structured manner is a way of enhancing social support post-incident. Firefighters’ use of social support as a primary coping strategy in times of stress correlates with other research (see for example Blaney 2009; Bonanno 2004; Regehr et al. 2005; Thoits 1995), and supports the need for a ‘matrix’ of services that includes firefighter families.

Canadian firefighters more often choose ‘exercise’ as a way to ventilate stress secondary to ‘talking about it’. Physical and psychological fitness were themes that arose throughout the research as key to maintaining overall mental health and for mitigating critical incident stress reactions. There was no correlation with age, gender, length of service, or number of traumatic incidents experienced in relation to exercise as the chosen coping strategy. Firefighters did however note the relationship between exercise as a chance to ‘blow off’ or ventilate stress and lower levels of distress described as ‘feeling better’. As well, some Canadian firefighters noted the need for ‘healthy lifestyle’, ‘good eating habits’, ‘balance between work and home’ indicating an orientation towards overall health promotion. On the other hand, UK firefighters say ‘humour’ is the second most effective mechanism for coping with stressful events. They describe ‘black humour’, ‘sick humour’, ‘kidding around’, and ‘humorous banter’ as ways of expressing humour, although some respondents noted they are uncomfortable with the black humour yet are reluctant to challenge what is seen as a cultural coping style. As well, many Canadian and UK firefighters note that ‘experience’ helps after bad incidents ‘I’ve been through this before, I know I’ll get through this’, ‘been doing this for many years which helps’. Others describe ‘emotionally distancing myself from the event/victims’, ‘staying focused and not getting involved with the victims’, ‘focusing on the task at hand’, ‘getting the job done’. Although some authors think emotional distancing is a harmful strategy, there is evidence that this in fact may be an adaptive mechanism (Coifman et al. 2007; Regehr et al. 2002) in the FRS.

Another difference in coping mechanisms between the two countries is the use of alcohol; a number of UK firefighters stated that going for a beer/drink after work is helpful while others claimed heavy alcohol use after critical incidents. Those who noted they like going for a beer afterwards may also be alluding to the social connections that occur when at the pub, and perhaps the change in mental focus and/or verbal ventilation that occurs when out for a beverage. This is an area that needs further study; increased alcohol use is not in keeping with other research into coping in the modern fire service (Blaney 2009; Durkin and Bekerian 2000; McMahon 2010), nor is it congruent with the experiences of the project advisory team who note a significant cultural shift away from alcohol use in the FRS – ‘in the last five years our service has seen a significant push at all levels away from social and pub style events to improving or creating fitness centres, participation in fire fit challenges...’ (G. Spriggs, personal communication).

Firefighters were also clear about what is least helpful in coping such as ‘not talking’, ‘bottling it up’, ‘ignoring it’ as well as other less helpful techniques such as ‘criticism about the incident’, ‘management critique’, and ‘outsiders trying to talk to you about it’. These comments are again consistent with a ‘health promotion’ orientation to stress in the fire service (Blaney 2009); the FRS is a high-risk profession yet firefighters have strategies for coping with the stress.

The narrative comments were generally consistent with the Resilience Scale and Brief COPE scores although differences between the two countries are more evident with the empirical scales. For example there are significant differences in resilience scores between UK and Canadian firefighters, indicating an underpinning of resilience in both FRS, but the difference in scores seem to show that Canadian firefighters better integrate healthier strategies into their lives/practice.

Firefighters are resilient; out of a possible score of 175, firefighters scored between 127 and 141, considered moderately high (Wagnild 2010). Canadian firefighters scored higher overall than UK firefighters; the difference in scores between the UK and Canada is statistically significant, but there
was no correlation between age, gender, length of service, type of service (C vs. V), and resilience scores. Overall, there is a foundation upon which to build/enhance resilience, individually and organizationally in both countries.

The difference in coping scores is also notable with Canadian firefighters using more adaptive strategies such as active coping and positive reframing than UK firefighters who tend to disengage; disengagement is generally considered a less adaptive strategy, but it is used frequently in the emergency services and may actually be adaptive for firefighters (Bonanno et al. 2004). UK firefighters use humour adaptively but also use alcohol and other less adaptive mechanisms to cope after critical events. The coping style profiles therefore suggest that Canadian respondents were generally using more adaptive, hence ultimately healthier, forms of coping than were the UK respondents. One explanation may be the proactive, ongoing CISM education provided to the Canadian FRS participating in this study, resulting in a more overt culture of health. Verbal ventilation or ‘talking’ is evident in both the resilience and coping scores for both countries giving further weight to health promotion, peer support, and CISM programs that support verbal ventilation, resilience, and health.

Other findings noted issues of stigma and vulnerability were evident in a few UK firefighters’ comments about stress reactions and critical incident stress being for the ‘weak’ but also provided evidence of an overall lack of awareness of the ‘normal and expected’ reactions that all human beings have to stressful situations. Stigmatizing vulnerability is not restricted to the FRS but is also prevalent in other emergency services (Halpern et al. 2008). Outcomes highlight the need for education about the normal and expected stress reactions that can, through resilience and healthy coping strategies, be managed by the majority of firefighters; education will also decrease the stigmatization of vulnerability and help build trust within the organisation (Brunsden, Hill, and Maguire, 2012).

As well, critical incident stress management in a health promotion context is advocated by firefighters as one vehicle for enhancing resilience (Blaney 2009). Although two different models of CISM were used by the participating Canadian and UK FRS, in this study firefighters noted the strengths and gaps of both models. In the UK model, the focus is on the intervention ‘Critical Incident Stress Debriefing’ (CISD) which occurs days after the incident, and a process known as the ‘hot debrief’ which occurs informally immediately after the incident ends. The strengths of this model were articulated as: having a process available and available quickly (hot debrief), and having an opportunity for a more formal ‘chat’ (CISD) than those that occur naturally over a cup of tea post-incident. Challenges with this model include the inclination for both processes to become derailed by a culture of machismo and/or by a slide into operational discussions; a lack of awareness of available post-event services; a lack of awareness of normal and expected reactions, with a resulting culture of stigma associated with perceptions of ‘weakness’ when experiencing those reactions; and a delay in service availability (CISD).

The CISM model used by the participating Canadian FRS was founded on Mitchell’s (1983) model of CISD but expands upon his later comprehensive model of CISM (Mitchell and Everly 1997) and visualizes CISM as a matrix of prevention, intervention, and postvention or follow-up services (Blaney 2003). Preventatively, there is a primary focus on education with a learner-centered curriculum developed specifically for emergency service providers; education is offered at least annually and more frequently if there are new recruits or if requested. CISM education comprises three components: an in-depth (6-day) experiential peer support training program which is offered through a local university’s continuing education centre; introduction/overview of CISM, a short 15-60 minute curriculum designed to be delivered by peers to FRS personnel; and family education, recently developed curriculum that can be delivered by peers to FRS family members. Education is specific to adult learners and is experiential, conceptual, and health focused (Belknap 2008; Dinkelman and Schekel 2003; Mangold 2007; McAllister and McKinnon 2009). Examples of the intervention
component of the model include individual and group “defusing” and group “debriefing” following Mitchell’s protocol but with a heavier emphasis on ‘inquiry’ into reactions and coping rather than lecturing about potentially negative outcomes. Also, rather than focusing on describing the incident in detail with the risk of increasing distress, the defusing and debriefing processes in this model focus on education about stress reactions by contextualizing them as normal and expected, as well as eliciting coping strategies (individual and shared) and inviting participants to describe how they will action those strategies. In the post-vention component of the model, peers are also informed of the resources external to the FRS that can be accessed in the event that firefighters continue to experience distress. Also part of post-vention is the family education component, which is 1-4 hours in length, and offers stress, coping, and resilience information to firefighters’ significant others.

Overall, the model reflects requirements of firefighters: social support (structured conversation/verbal ventilation with the group; inquiry-based); information about potential expected reactions and articulation of personal coping strategies; an opportunity to make/find meaning through peer conversations; options for follow-up services, and information for families who frequently are the primary post-incident support. Firefighters from Canada were more aware of the CISM program in their FRS, and were aware of the frequency of education sessions. The strengths of the model were articulated as: having a process readily available and accessible either one-to-one or team support; having a number of trained peer support personnel available to choose from and who were aware of incidents quickly hence able to reach out to affected personnel in a timely manner; trust in the peers and the CISM process, and recognition that CISM differs from operational discussions; experience that CISM ‘works’ to decrease distress. Challenges with the model were few with two firefighters (both with less than a year’s experience) noting that they had not yet had introductory CISM education.

Recommendations for Action

The study recommendations arose directly from the responses of firefighters, were common to both countries, and were described in detail in a comprehensive research report provided to each of the participating FRS. Highlights include: capitalizing on existing resilience resources within the FRS; operating across all ‘levels’ of the FRS: individual, hierarchal, organizational, cultural; ensuring contextual relevance of resilience processes such as ‘health’ (vs. illness) focus and increasing stress education opportunities using a health promotion approach; ensuring critical incident stress services are peer-based and remain stress-focused (not operational); and having a clear plan for evaluation of stress outcomes, and agreement about what outcomes are relevant to resilience/coping in the FRS. Specific strategies for actioning the recommendations were discussed in post-research meetings with each FRS.

It is known that education is foundational to increasing trust, de-stigmatizing mental health, and building resilience, and this was a consistent theme of discussion and a focus for capitalizing on the existing resources within the FRS. There are a number of stress education programs available to FRS globally that are learner-centered, experiential, and transformational, and are based on principles of teaching/learning and stress management as opposed to organization-specific content; the curriculum can be shared across the services providing a cost-effective foundation for stress education. An example of such curriculum is found within the CISM program utilized by the Canadian FRS participating in this research.

Conclusions
The research questions were answered by this study: overall, firefighters are resilient as demonstrated by their resilience scores, and they use a variety of ‘healthy’ coping mechanisms to address the challenges to psychological health inherent in the FRS. Interdisciplinary research provided multiple lenses from which to view concepts of workplace health, and allowed for rich analysis and realistic yet evidence-informed recommendations. Foundational to resilience theory is the focus on health, strengths, and capacities; firefighter resilience and adaptive coping can be supported and enhanced. CISM programs, particularly education, are valued but success, and utilisation, of CISM programs comes with caveats. Immediate future research will include moving beyond the ‘pilot’ of this research to include a more in-depth examination of the meaning ‘resilience’ has to firefighters in the context of psychological health and safety, a larger sample size across both countries, examination of the relationship between resilience education and resilience and coping scores, and examination of the relationship between a peer-led comprehensive CISM program and resilience scores.

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