

## **The Ability of Firefighting Personnel to Cope With Stress**

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The purpose of this study was to identify the effectiveness of the coping strategies and resources that firefighters use to deal with personal and workplace stressors. One hundred and fifteen firefighting personnel from 4 fire departments in Illinois and Indiana participated. The Coping Resources Inventory for Stress (CRIS) Scale measured stress levels and coping strategies. The results showed that firefighters who were not physically fit, who lacked social support, and who were unable to control tension and structure daily activities experienced feelings of low confidence. The findings from this study can provide fire department administrators and company officers with ways to address stress in the ranks of the fire department. Future research should be conducted to identify the workplace and personal stressors of firefighting personnel and develop interventions to combat these stressors.

**Key Words:** Fire fighters, stress, coping, emergency personnel, paramedics, emergency medical technicians, coping strategies, tension, social support, black humor, internal stress, external stress.

### **Introduction**

Firefighting personnel experience stress each day in their work settings. Their ability to cope with stress affects their capacity to function effectively in emergency situations. Society has a stake in the ability of firefighting personnel to carry out their responsibilities effectively. Given the threat of natural disasters, the threats from terrorist attacks, mass casualties, and major environmental incidents, society depends on the services of firefighting personnel who work long hours with little relief in these situations. Fire departments and the personnel working in those settings need to understand the stress involved and identify and develop effective coping strategies.

Since the attacks in Oklahoma City, the Twin Towers, and the Pentagon, fire departments have seen the extreme effects of stress on firefighting personnel. One study has now contributed to the understanding of life changes in response to the physical and psychological stress experienced by firefighting personnel after these attacks (North et al., 2002). Even before these infamous attacks, Galloucis, Silverman, and Francek (2000) recognized that stress has a negative impact on an individual's ability to function. Physical and psychological life stressors compound the occurrence of major illnesses, including cancer, diabetes, leukemia, and myocardial

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infarctions. In addition, psychological distress is prevalent among individuals who have experienced a traumatic life event (Rabkin & Struening, 1976).

A number of researchers (e.g., Baker & Williams, 2001; Regehr, Hill, & Glancy, 2000; Sirratt, 2001) have examined the possible relationship between stress and cognitive functioning among emergency services personnel. Regehr et al. described the symptoms among emergency care workers ranging from depression and a lack of cognitive functioning to second-guessing judgment on an emergency scene. They also found that emergency personnel have recurring nightmares, flashbacks, and loss of appetite after responding to traumatic incidents.

Firefighting personnel also are exposed to stressful situations; traumatic incidents; and environmental extremes, such as heat, cold wind, and noise, all of which require adaptive measures (i.e., personal coping strategies; Lazarus & Folkman, 1984). Working under adverse conditions may increase the amount of stress that firefighting personnel experience while they are performing emergency work on scene. For example, the Cerritos air crash of 1986 was a mass casualty event that caused extreme stress and psychological distress among the firefighting personnel who responded to the scene (Hokanson & Wirth, 2000).

Theorists have studied stress for many years. Orner (1995) studied the effects of stressors and distressors on firefighters and ambulance personnel. Orner found that firefighting personnel experience negative thoughts, depression, and intrusive and adverse psychological reactions, depending on the duration of exposure to a traumatic incident. Other factors that affect firefighting personnel include the size of a fire being fought; the amount of time fighting a fire; and being witness to child abuse, murders, mass casualties, and infant deaths.

After involvement in a disaster or a traumatic incident, firefighting personnel may be at risk for acute stress disorder leading to posttraumatic stress disorder (PTSD). Firefighting personnel may experience increased rates of psychiatric symptoms, including depression, anxiety, loss of appetite, lack of sleep, and constant worry or fear, after witnessing or experiencing a traumatic event. These symptoms can lead to a significant increase in psychiatric problems and may require professional intervention (Clohessy & Ehlers, 1999). Firefighting personnel are confronted with occupational and daily life stressors as they try to balance their work in life-saving efforts with the needs and demands of family life. Even though they face stress every day, little is known about how they cope.

The data collected from firefighting personnel working in the very intense environments

of Oklahoma City and New York City have contributed to the knowledge related to their ability to cope with stress. Those two incidents, however, are not typical of the situations that firefighting personnel face daily. Society has a vested interest in understanding how most firefighting personnel cope with stress because these men and women protect communities, schools, businesses, and homes.

Currently, more than one million volunteer and 185,000 professional, full-time firefighters serve in more than 21,000 fire departments (Carter, 1998). Naturally, fire departments are concerned about the effects of stress on the ability of firefighting personnel to function optimally. Firefighting personnel are impacted by mental exhaustion, a lack of medical attention during a fire, inappropriate driving at high rates of speed, 24-hr shifts, interrupted sleep, a lack of regular meals, and lengthy absences from home. As a result, firefighting personnel are at risk of experiencing psychological stress because of the demands of their profession. Firefighters do not have a uniform number of callouts throughout jurisdictions. Firefighting personnel in metropolitan areas may have a different workload from rural fire departments, which may experience significantly fewer emergency calls (Bowman, 1999).

### **Theoretical Framework**

The central themes expressed in Lazarus and Folkman's (1984) theory of stress and coping focused on stress transitions, social change, and the ways in which people cope with them effectively. Environmental stressors and ecological factors may increase the amount of stress that individuals experience (Lazarus & Folkman, 1984). Previous research has identified the relationship between stress and the environment. For example, Altman and Wohlwill (1977) theorized that levels of stress are dependent upon the combined impact of environmental, social, and physical stressors. Lazarus (1966) further emphasized that phenomena in the environment (e.g., extreme weather conditions) may lead to the development of stressors. For example, an environmental incident may cause a positive or a negative outcome for the person involved; however, stress may still be the outcome (Holmes & Masuda, 1974).

The theory of stress and coping stressors was first identified in the earlier work of Lazarus and Cohen (1977). They identified three types of stressors:

1. **Mass casualty stressors** (e.g., natural disasters, major catastrophes, incarceration, and other uncontrollable phenomena) affect a large number of people or victims.

2. **Major changes** affect a single person or a group of people. In this case, a disaster may impact one person or a group of people, but the event is not as disturbing.
3. **Daily hassles** are the small, day-to-day situations or events that irritate or distress people. Examples include a sick pet, too much responsibility, and loneliness.

Firefighting personnel may experience one or all of these stressors during an emergency or afterwards.

Firefighting personnel use diverse methods to combat stressors. Lazarus and Folkman (1984) defined coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Their theory conceptualizes that coping is a process that a person employs to handle stressors. An individual who is dealing with a stressor may cope through self-atomization, that is, the person adapts to the stressor and does not require psychological effort to do so. Another method of coping is to assume that a situation will turn out for the better, regardless of how bad the current conditions may be.

Coping styles may range from attempting to minimize the stressor, accepting presently stressful conditions, or trying to control the stressful environment around the situation (Lazarus & Folkman, 1984). Klinger (1977) echoed this model by suggesting that individuals experience increased concentration and effort while first responding to a stressor. However, anger and frustration may occur if the stressor persists, eventually leading to depression, feelings of hopelessness, and negative thoughts. Lazarus and Folkman’s theory of stress and coping identified ways in which individuals are affected in the environment by stressors, how they encounter life’s daily stressors, and how coping styles may be differentiated depending on the situational aspects of the stressors. These techniques, which can be manipulated into the environment of the firefighting profession, served as the foundation of this study.

### **Literature Review**

The literature review included studies that focused on (a) the affect of internal and external sources on firefighters’ cognitive abilities, and (b) the ability of firefighters to cope with the stressors that they face while on the emergency scene and after the emergency has subsided. Classic and recent studies regarding cognitive ability and coping methods were compared and contrasted.

### ***Strategy for Searching the Literature***

Thirty-six literature citations on firefighters' ability to cope with stress were identified. Not all of the literature pertained to firefighters; some included emergency workers and isolated incidents. After an initial search of the databases, the researcher used firefighting, emergency medical technician, and paramedic as the primary keywords to find other related journal articles mentioning firefighters, coping abilities, and the ways in which coping abilities are related to stress. Other subtopics, such as humor, substance abuse, physical fitness, music, critical incident stress management (CISM), and critical incident stress debriefing (CISD) also were searched. Several of the subtopics yielded few results; however, the researcher did find several current and relevant articles on CISM and CISD. The same search identified lists of references and materials that the researcher subsequently used to support this study.

### ***Work-Related Stress***

Other work-related factors can lead to stress, distress, and burnout. The contributions of unrelenting ambient noise, role ambiguity, uncertainty of one's job performance, and hazardous work environments may contribute to intrapersonal conflict (Maslach, 1982). Firefighting personnel may experience physical and emotional problems after returning from an emergency call or returning home for 48 hours. For example, secondary trauma is a concept that describes the effects of stress experienced by public health workers involved with traumatized individuals (Figley, 1995). The workers will visualize, conceptualize, and revisit the scene of an accident through the details told by another person. Sleep disturbances, illusive imagery, a change in attitude toward the world, and arousal are signs and symptoms of secondary trauma (Chrestman, 1995).

Hume (1966) noted that firefighting personnel experience emotional empathy, the process of sharing the experiences and feelings of another. This finding was supported by Carlier, Lamberts, and Gersons (2000), who concluded that police personnel who have to deal with rape victims, cases of abuse, murders, and other traumatic incidents are more likely to experience a higher incidence of PTSD. In their qualitative study, Fullerton, McCarroll, Ursano, and Wright (1992) concluded that firefighters have an increased likelihood of experiencing psychological distress because they identify with the victims of traumatic incidents.

The amount of literature supporting the evidence of stress among firefighting personnel was obvious. Although much of the literature discussed environmental factors, physical fatigue,

and other situations and conditions requiring assistance after a traumatic event, there was a lack of literature on the coping resources available to support firefighting personnel. The Coping Resources Inventory for Stress (CRIS) Scale was used to identify the coping strategies that firefighters and paramedics use to decrease stress. This measurement assesses firefighters' coping strategies and identifies intrapersonal or interpersonal conditions within the environment that interfere with their health and well-being. The CRIS identifies the ability of firefighting personnel to deal with personal and workplace stressors.

### **Research Design and Approach**

A quantitative, nonexperimental descriptive survey research design was used to investigate how firefighters use coping resources to deal with personal and workplace stressors. Descriptive research designs explore the attributes of a group of participants and have the following limitations: (a) The findings are limited to the initial group being studied, (b) no generalizations can be made from the study, and (c) any similarities between the specific group being studied and another group cannot be assumed (Neutens & Rubinson, 1997).

Given the size of the sample (115 participants), time was a consideration. Personal interviews and focus groups, both of which are used in qualitative inquiry, are time-consuming and resource-intensive strategies. Moreover, the availability of an instrument that has been widely used and has an established validity and reliability was another reason that the researcher utilized a quantitative approach. The CRIS Scale, which is described in more detail later in the paper, has been used to assess stress in psychotherapy and training; it was adapted for use in this study (Matheny, Curlette, Aycock, Pugh, & Taylor, 1987).

### **Population, Setting, and Sample**

The target population for this study included all firefighting personnel working in small or midsized fire departments in the Midwest. According to the definition of fire department size used in this study, the maximum number of firefighting personnel in small fire departments is 50; the maximum in midsized departments is 200 firefighting personnel. Four fire departments were selected as the setting for this study. Three were classified as small fire departments, and one was classified as midsized. The departments, all of which were urban and rural entities located in northern Illinois, northwestern Indiana, and southeastern Indiana, were representative of small

and midsized fire departments in the Midwest. The departments had between 40 and 200 firefighting personnel serving areas with populations of 50,000 to 100,000 people.

The convenience sample included all firefighting personnel employed by the four fire departments in this study. Each department employs males and females who are exposed regularly to tragedy, traumatic events, and daily life stressors. The firefighting personnel are stationed throughout their respective cities or towns and are required to remain at their assigned stations for 24-hr shifts. The firefighters perform all tasks and duties together because the departments function as autonomous units.

### **Instrumentation**

The CRIS Scale measures six concepts to assess a person's coping resources. Form B comprises 120 questions that measure the concepts of physical health, tension control, structuring, social support, acceptance, and confidence (Matheny et al., 1987). Each concept is measured by 20 questions. The second part of the survey collects demographic data. For the purposes of this study, the researcher utilized this part to describe the characteristics of the sample. The objective was to develop a group profile for each fire department (Matheny et al., 1987). The resources can pinpoint areas of weakness and deficits within specific groups, thus allowing the firefighters to choose selected areas of training to strengthen areas that may be deficient.

The CRIS comprises yes/no responses. Each variable, which is dichotomous because it has only two categories, is nonorderable and discrete. Numeric values are assigned to each of the 120 questions (6 concepts x 20 questions per concept): zero for no response, 1 for a yes response, and 2 for a no response. The responses from each section indicate the strength of the respondent's coping resources.

### **Data Collection**

CRIS booklets and scan forms were obtained from Matheny et al. (1987), the developers of the instrument. Once the materials were received, they were organized into individual packets: informed consent forms, directions for taking the CRIS, booklets, scan forms, and pencils. The packets, flyers, and a locked box were delivered to each of the four fire departments. The participants were able to pick up the packets, which were located on a table beneath the flyer,

and complete the survey at their convenience. The completed surveys were placed in the locked boxes, and only the researcher had keys to the boxes. The participants completed the survey individually, in a group in one location at the firehouse, or at home. The participants were informed of the reason for the study and the intended use of the results, and they were assured that the researcher would share the results with them upon completion of the study. The completed CRIS booklets were collected from the locked boxes over the course of 3 working days. Because the participants worked 24-hr shifts, this schedule facilitated the collection of the CRIS from three different groups of firefighting personnel while each group was working a 24-hr shift.

### **Analysis of the Results**

The scores for the six concepts were calculated using mean scores, standard deviations (SD), Pearson Product Moment Correlations, and *t* tests. As mentioned previously, Form B of the CRIS Scale comprises 120 questions that measures six concepts: physical health, tension control, structuring, social support, acceptance, and confidence (Matheny et al., 1987). Each concept is measured by 20 questions. The Scale uses a 3-point Likert scale to measure the responses: 0 (*no response*), 1 (*yes*), and 2 (*no*). Fifty-four questions were yes responses, and 66 were no responses, giving a total of 186 points. The combination of correct yes and no responses in each section indicated the strength of the coping resources. A higher score indicated more positive coping strategies.

The survey also collected demographic data from the participants to develop group profiles for the four participating fire departments (Matheny et al., 1987). The demographic section included five items: gender, age, race and ethnic group, marital status, and occupational status. All of the firefighting personnel who completed the survey were males. Because of the small number of females who are professional firefighters, the researcher assumed that these male participants accurately represented the target population.

### **Scores on Six CRIS Concepts**

The concept of **physical health**, which showed that daily life activities were not affected and disabilities were few, showed a mean score of 39.46 for the firefighters. This score fell below the mean score of 75.65 in Table 1. This score indicated a low level of physical activity

and healthy perceptions.

The concept of **tension control** in this research showed a mean score of 49.26 for the firefighters. The mean score of 56.15 indicated a lack of coping skills among the firefighting personnel and their ability to lower their stress levels.

The concept of **structuring**, or having the capabilities of time management, setting goals, planning, and using one's self energy to schedule daily tasks, showed a mean score of 51.91 for the firefighters. In this instance, the firefighting personnel had scored below the mean of 69.85, which revealed that planning, goal setting, and using self-motivated energy were low among the departments.

The concept of **social support**, or having a loving relationship with someone; the availability of family members, friends; and the ability to confide in someone, showed a mean score of 53.91 for the firefighters. The score fell below the average mean score of 75.65. Social support from friends, family, and coworkers fell far below the mean average.

The concept of **acceptance**, not expecting too much from oneself, measures how a participant views the world, environment, and surrounding circumstances. The mean score of 53.04 placed the firefighting personnel below the mean score of 54.60, indicating that the participants had difficulty accepting shortcomings in life, were perfectionists, and generally had a negative view on life.

The concept of **confidence**, or coping with situations better than most people and coping with daily life stressors, showed a mean score of 40.91 for the firefighters. In comparing this result with the mean score of 67.2, firefighting personnel scored significantly lower in coping with daily life stressors.

Firefighting personnel, in terms of the data collected here, use fewer resources when coping with stressors and putting problems and concerns into perspective. They had a negative outlook on succeeding.

Table 1

*Means and Standard Deviations of Firefighting Personnel Versus CRIS Database*

Concepts	Firefighting personnel*	CRIS database**	
	<i>M</i>	<i>M</i>	<i>SD</i>
Physical health	39.4	75.6	9.48
Tension control	49.2	56.1	11.82
Structuring	51.9	69.8	11.75
Social support	53.9	75.6	10.43
Acceptance	53.0	54.6	10.75
Confidence	40.9	67.2	10.93

*Note.* These concepts were adapted from the original CRIS manual developed by Matheny et al. (1987)

\**N* = 115

\*\*CRIS database = 814

### Correlations

For the purposes of this study, the correlation represented a single number from each concept describing the degree of the relationship between variables. Table 2 shows the correlations and relationships between confidence and the other five concepts. The confidence concept was the strongest indicator of the coping resources in the CRIS concepts. Confidence was one of the most frequently used concepts identified by the firefighting personnel to combat stress. Comparing the other data against the confidence concept was an indication of how other coping resources were performed. The research calculated the correlations using the Pearson product moment correlation.

Even though Pearson's *r* coefficient showed, for example, confidence and acceptance at .390980, the coefficient did not show a strong linear association. However, there was a moderate linear association with the scores. In this study, the correlations that were closer to zero showed no significant relationship among the concepts. For example, Confidence and Social Support did not have a strong correlation. On the other hand, Confidence and Acceptance had a stronger positive correlation, but this correlation did not imply a significant relationship between them.

### *t* Tests

For the purposes of this study, the *p* value was assumed to be .05. The number of participants (115) was used to calculate each value from the correlations and standard deviations. Table 2 shows the *t*-test scores in the six concepts, with *p* = .05.

Table 2

*Pearson Correlations of CRIS Scores Among Firefighting Personnel*

Concepts	Correlations	<i>t</i> -test scores
Confidence vs. acceptance	.32	3.5
Confidence vs. physical health	.39	4.4
Confidence vs. tension control	.14	1.5
Confidence vs. structuring	.17	1.8
Confidence vs. social support	.03	.38

**Data Analysis**

During the analysis process, data were obtained from a national sample of CRIS respondents. Comparative means and standard deviations were calculated for both the current study sample and the national sample. Further analysis was done using the unpaired *t* tests to compare the means of the two groups. There was statistical significance, but one might question whether it was significantly important. Table 3 shows the results of the unpaired *t* test.

Table 3 is divided into several parts. Using raw data obtained at two points in time from two sample groups, the researcher obtained means and standard deviations for the six concepts of the CRIS. The standard deviations of these concepts were compared in an unpaired two-tailed *t* test with  $p < .05$  to determine whether there was a statistical significant difference

Table 3

*Unpaired t-Test Results*

Concepts	Firefighting personnel*	CRIS database**	Firefighting personnel	CRIS database	<i>t</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
PH	39.4	9.4	75.6	20.0	19.1
TC	49.2	11.8	6.1	26.0	2.8
Struct	51.9	11.7	69.8	22.9	8.2
SS	53.9	10.4	75.6	23.2	9.8
AC	53.0	10.7	54.6	23.8	0.71
CN	40.9	10.9	67.2	27.4	10.1

\**N* = 115

\*\*CRIS database = 814

 $p < .05$ **Summary of the Results**

Firefighting personnel scored below the mean CRIS Scale score in the national database categories nationwide. The demographic results indicated that the participants were professional, White, male fire firefighters with a mean age of 38. The results indicated that the firefighting personnel's strengths were lacking in all of the categories. The data also inferred that the

firefighting personnel's use of coping resources in tension control and acceptance were close to the national mean scores in each category. The firefighting personnel in this study scored below the means of the norm group on the six concepts.

### **Discussion of the Findings**

The firefighting personnel in this study used six coping resources. As mentioned previously, their responses on the CRIS fell below the means in all of the concepts. The findings supported the literature, namely, that firefighting personnel are lacking in their use of coping resources to combat stress. In addition, exposure to various extreme weather conditions (e.g., heat, cold, humidity, wind) imposes adaptational measures that individuals may need to use (Lazarus & Folkman, 1984). Baker and Williams (2001) found negativity among firefighting personnel's attitudes in their desire to work, lack of camaraderie, and negative thoughts toward administration as the result of their exposure to stressful events.

The findings supported the literature that firefighting personnel are not physically fit enough to perform their work activities. The low mean score of 39.4 (physical health) indicated that the participants' daily life activities were affected by poor health and inactivity that may be a consequence of heart conditions, diabetes, disabilities, and other illnesses.

Lazarus and Folkman (1984) suggested that environmental stressors and ecological factors together may increase the amount of stress that an individual experiences. Previous research has identified a link between stress and the environment. For example, Altman and Wohlwill (1977) theorized that stress is dependent upon the combined impact of environmental, social, and physical stressors.

The findings supported the literature that firefighters have limitations in their tension control. The participants in this study did not feel confident in coping with stressors in their professional and daily lives. The score ( $M = 49.2$ ,  $SD = 11.8$ ) indicated that the firefighting personnel in this study had difficulty coping with tension. Stress levels interfered with their performance while they were responding to emergencies.

The findings derived from the concept of structuring supported the literature that firefighting personnel lack the coping resources to manage, organize, and set limits. The results suggested that firefighting personnel are limited in their ability to organize and time manage their schedules.

The findings supported the literature that a lack of social support from family members, peers, and coworkers is another lost coping resource for firefighting personnel. The lack of social support may be the result of stress, negativity, and the unwillingness of firefighting personnel to speak about incidents that happen at work and in daily life.

Coping styles may include attempts to minimize the stressors, accept stressful conditions, and then try to control the stressful environments around the situations (Lazarus & Folkman, 1984). The findings supported the literature that firefighting personnel, given their profession, have difficulty accepting others, accepting others with different personalities, and accepting frustrations in life. The firefighting personnel in this study had a negative outlook on succeeding professionally or life in general.

Cassidy and Dillon (1997) contended that problem-solving factors are directly related to frequency of illness, overall physical health, and psychological well-being. Baker and Williams (2001) concluded that some of the highest psychological distress scores are obtained by firefighting personnel, who have low self-appraisal, and those who have higher levels of occupational organizational stress. Their findings also suggested a lower level of distress among firefighting personnel who are able to cope with future problem situations. The firefighting personnel in this study lacked confidence in their coping resources. They were unable to put problems and concerns into perspective, cope with arising situations, and handle the outcomes.

### ***Correlations and t-Test Results***

According to Matheny et al. (1987), confidence is a major influence in an individual's ability to cope with stress and an important coping resource overall. The correlations and *t* tests indicated either no significant linear association or moderate linear association among the firefighting personnel's coping resources. Confidence, acceptance, and physical health showed moderate linear associations. The values indicated associations among the firefighting personnel's confidence, physical health, and acceptance. Thus, confidence indicated that physical health and acceptance were moderately associated. Confidence, tension control, structuring, and social support had no significant linear association in this study. The firefighting personnel's confidence did not affect the tension that they experienced professionally or privately. The findings supported the literature that firefighting personnel have limitations in tension control and that stress levels interfere with performance while responding to emergencies.

### **Implications for Social Change**

The standard organizational structure of fire departments has been in place for more than 150 years, yet it has not addressed social change. The fire service continues to rely on tactical approaches to advancement and promotion within the field (i.e., hands-on experience only, limited or no education). A new philosophy in the selection of company officers who have a combination of experience and education is necessary to address social change. The impact of 9/11 set a precedent for fire departments and emergency service personnel to follow.

The complexity and demands of work, political influence, funding issues, and scheduling increase the pressure and stress on firefighting personnel in their professional and private lives. Better training, education, career counseling, and managerial duty updates will assist fire departments in their efforts to address social change. Firefighting personnel should have access to physical activity in fire stations, confidence-building social support from other firefighting personnel, and group cohesiveness from their own crews to help to reduce stress. Further training should include rapid intervention teams; intercollaboration with hospital administration, staff, and personnel training; attendance at training sessions for national incident management systems, and updated paramedic and emergency medical technician training in the field.

More training and increased fire department personnel involvement will lead to positive social change within fire departments, including group work, groupthink, and the ability to learn prior to firefighting and medical emergencies. Although their working environment may be extremely dangerous, adequately trained firefighting personnel will be able to provide a greater standard of care to the community, develop their skills, and assist in extreme emergencies. Life-saving skills and regular training sessions will promote positive changes in firefighting techniques and demonstrate the competence of firefighting personnel to the community and residents.

The findings from this study are important because they will help firefighting personnel to recognize stress and think about the strategies that they currently utilize to cope with stress. The more effective coping resources they have and use, the more they can reduce memory disturbances, amnesia, confusion, and poor abstract thinking while responding to emergencies. Increasing their use of effective coping resources will help to decrease their feelings of guilt, frustration, depression, irritability, and emotional instability. Officers within fire departments

may become more able to recognize the symptoms of distress and burnout experienced by firefighting personnel.

Firefighting personnel experience stress in their work settings every single day, so their ability to cope with stress affects their capacity to function effectively when they respond to emergencies. Society has a stake in the ability of firefighting personnel to carry out their responsibilities effectively. Given the threat of natural disasters, the ongoing threats of terrorism, mass casualties, and major environmental incidents, society depends on the services of firefighting personnel, who often work long hours with little relief. Fire departments and the personnel working in those settings need to understand the stress involved in their profession and identify effective coping strategies to deal with it.

### **Recommendations for Action**

Although there are no simple solutions regarding the use of more effective coping resources for firefighting personnel, the researcher will attempt to offer several recommendations. A physical fitness program for firefighting personnel may stimulate interest in maintaining a healthy lifestyle. Participating fire departments may communicate with nearby health clubs to determine their willingness to offer discounted rates for firefighting personnel who want to participate in health programs. Such programs could be designed to meet the lifestyles of firefighters, including time, duration, and location in relation to the domicile.

Low-cost activities such as physical firefighter training; Firefighters' Challenge; or intradepartmental, physically challenging activities also may be considerations to stimulate physical activity and interest. External support could be solicited from health clubs, community organizations, or sports clubs as an incentive to maintain physical health. The fire department could promote healthy activities to address relevance concerning stress in activities relevant to the firefighting personnel's professional and private lives.

Identifying the factors leading to stress and solving these concerns through group interaction strategies may be beneficial to firefighting personnel. Group cohesiveness may assist all members of the group to achieve a sense of welfare, contribute to higher group attendance, and create a higher level of interaction. Sharing information within the group can stimulate insight into firefighting personnel's stress, address others who have similar feelings and have experienced similar situations, and assist in problem solving where needed.

Firefighting personnel who lack confidence or who feel that their professional efforts are not worthwhile may feel that this part of the group will help them to overcome their negative feelings. The ability of firefighting personnel to disclose their concerns may give them the strength and encouragement to address their stressors concerning lack of confidence.

Fire department personnel, administration, and public officials should consider establishing programs to benefit firefighting personnel physically and psychologically. The need for community input and interaction with fire departments is imperative to the success of these programs. The community must become aware of the dangerous working conditions that firefighting personnel experience, understand how stress is related to their professional and daily lives, and think about possible solutions to physical and psychological stressors. A firefighter fitness and wellness program designed either by administration or a medical facility may benefit firefighting personnel physically and psychologically. Discussions about healthy lifestyle, annual physicals, and voluntary immunization plans for specific communicable diseases would assist firefighting personnel in enhancing their daily activities as well as providing protection against occupational hazards. The community may participate in Fire Prevention Week activities to become familiar with firefighting personnel's daily duties and responses to sometimes dangerous emergencies.

### **Implications for Future Research**

Using a dual instrument, for example, the Beck Depression Inventory (BDI), would be beneficial to compare against the CRIS instrument. The BDI, which emphasizes cognitive signs of depression through a 21-item Likert format of responses (0 to 3), may be compared to the coping resources used by firefighting personnel and the CRIS. Several research questions were generated from the findings:

1. Would this study render the same results in other geographical regions?
2. Are social problem-solving models beneficial to the fire service and the coping resources used by firefighting personnel?
3. Would a reduction in the average working hours of firefighting personnel decrease the number of stressors that they experience?

4. If the CRIS Scale were used in its entirety (280 questions and 15 categories), would the results be different between incident-related stressors and in-house-related stressors?

A study comparing the stressors from the CRIS and the BDI concerning firefighting personnel's psychosocial stress, self-esteem, self-worth, and perception of the working environment will contribute to the literature.

### **Conclusion**

The firefighting profession is a community service. Various political, social, and geographic factors have interfered with research opportunities, usually because researchers were not aware of any extant biases. The future challenge is to place prejudices aside, reduce the amount of bias in studies, and prevent distortion during the collection of data. Psychosocial research is more than studying traumatic events, personalities, and constricted instrumentation. Studying stress can have cultural benefits and create correlations between past and present events in the lives of firefighting personnel. Understanding the culture prior to beginning new research on trauma and stress is important in making sense of one's surroundings. Firefighting personnel who may be experiencing a compromised physical health status and a lack of confidence to handle stress need to be respected and studied.

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