

Stress-management strategies of firefighters: a fortigenic approach

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ABSTRACT

Firefighters not only perform a firefighting function, but also render emergency, fire prevention and rescue services, all of which are inherently stressful. This research was undertaken to determine the relationship between certain psychological strengths of firefighters and the strategies they adopt to cope with stress. The measuring instruments were applied to the entire sample, after which a stanine scale was used to distinguish between individuals who achieved low and high scores respectively with regard to psychological strengths. An interview, based on the phenomenological paradigm, was conducted using five firefighters from each of the low-scoring and high-scoring groups. An analysis of the qualitative results indicates that firefighters with high levels of psychological strengths cope differently with stress compared with those with 'weak' psychological strengths.

INTRODUCTION

Firefighters not only perform a firefighting function (as generally accepted), but also render a series of emergency services as well as fire-prevention and rescue functions. In the USA, firefighting is regarded as the most dangerous occupation (Hildebrand 1984), and approximately 280 firefighters are injured or killed every day, while every year, 650 are compelled to resign as a result of occupational diseases, including psychological disorders (Miller 1995). Research involving 747 Australian firefighters between the ages of 21 and 60 showed that their occupation is regarded as more stressful than other occupations and that psychological work stress is the highest potential type of stress (Monnier, Cameron, Hobfoll & Gribble 2002; Moran & Colles 1995).

The working conditions of firefighters create a great deal of tension and anxiety among them. In such conditions, they are subject to a double dose of stress in the sense that are supposed to save others, and in the process put their own lives on the line (Bates 1994; Britt 1994; Paton 1994; Weiss, Marmar, Metzler & Ronfeldt 1995).

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An additional problem they have to contend with is understaffing at fire stations. This places huge pressures on the available firefighters, increases their stress levels and stretches their coping skills to the limit (Smith, Manning & Petruzzello 2001).

Antonovsky (1979) defines a stressor as a demand made on the internal or external environment of the organism that disturbs the homeostasis (balance), while restoring the balance relies on an energy consumption action that does not occur automatically and promptly. Lazarus & Folkman (1984) define stress as continuously changing cognitive and behavioural endeavours to manage specific external and/or internal demands that exceed personal resources. The way in which firefighters respond to the demands of the situation will probably depend on certain personality traits and coping mechanisms or skills (Strümpfer 1995, 2003). Some firefighters appear to be better able than others to cope with these stressful situations.

Stress can seriously damage a person's psychological and physical health. Physical illnesses associated with stress include high blood pressure, heart attacks, stomach ulcers and infertility. The psychological effect of stress is often more subtle and insidious. Stress-related illnesses and deviations have a cumulative and ripple effect on the individual, the organisation and the community at large. The actual and hidden cost of stress is huge, and some people maintain that it has a definite impact on an organisation's bottom line and the national economy as a whole (Dietrich & Hattingh 1993). It is clear from this background discussion that it is necessary to focus on the skills that better enable firefighters to handle stress in their working situation and to identify and develop psychological strengths that can benefit and assist them.

At this point, it is necessary to pose the following question: What is a firefighter who is able to handle these stressful situations actually like? A knowledge of this could add immeasurable value in the future selection and training of firefighters (Strümpfer 1998). There would be definite advantages for both firefighters and the organisation concerned (in this instance, local authorities), such as increased commitment to the organisation, job satisfaction, job involvement and job success, as well as a reduction in labour turnover and the elimination of unnecessary staff expenses (Cleal 1990; Dietrich & Hattingh 1993).

If firefighters' handling of stress is studied from the perspective of Shafer's stress-management model, the emphasis is on strengths that enable individuals to cope with stress (Shafer 1996, 2000). From a salutogenic (Antonovsky 1987) or fortigenic orientation (Strümpfer 1995, 2003), it is necessary to determine the source of health (salutogenesis) or the source of strengths (fortigenesis). According to Antonovsky (1987), stressors such as change and huge demands occur generally among people, and in spite of them, people actually survive and remain healthy. Antonovsky (1987) contends that the presence of stress may be of less significance for a person's health, but that his or her judgement of and reaction to a stressful event is in fact the decisive factor in his or her adaptation to the situation. Wissing & Van Eeden (1997, 2002a,

2006b) refer to the study of psychological strengths as psychofortology, involving the source, nature and manifestation of psychological well-being and ways to promote it. The focus in this research was on the following psychological strengths: locus of control, sense of coherence, hardiness, self-efficacy and learned resourcefulness (Antonovsky 1987; Marais 1997). These psychological strengths were selected because they represent different paradigms (physical, cognitive, conative and affective) as well as the fact that a great deal of research is currently being conducted in these areas. The presence of psychological strengths among firefighters, however, has not yet been investigated.

According to Strümpfer (1995, 2003), sense of coherence is regarded as the most important psychological strength. Ludik (1996) found that sense of coherence (as a psychological strength) plays a role in employees' handling of the process of integration in the South African National Defence Force. According to Marais (1997), there is a moderate to strong correlation between managers' psychological strengths (sense of coherence, locus of control, learned resourcefulness, self-efficacy and hardiness) and their ability to cope with organisational change. Firefighters' coping with stressful situations could be influenced by psychological strengths. As far as the authors could ascertain, the fortigenic orientation has not yet been applied to determine firefighters' handling of stress.

The aim of this research is to determine the relationship between certain psychological strengths of firefighters and the strategies they adopt to cope with stress.

Stress-management strategies

The literature describes the theoretical profile of people who can handle stress effectively and ineffectively (firefighters) as follows:

- **Physical behaviour.** Individuals who can handle stress (effective copers) have healthy eating habits and participate in constructive leisure and recreational activities and physical exercise (De Villiers 1988; Dietrich & Hattingh 1993; Elliot, Goldberg, Duncan & Kuehl 2004). People who have difficulty handling stress tend to consume alcohol, smoke and have poor eating habits. They do not put aside enough time to devote to constructive leisure and recreational activities and do virtually no physical exercise (De Villiers 1988; Dietrich & Hattingh 1993).
- **Cognitive behaviour** People who cope with stress redefine stressful situations as challenging and exciting and re-evaluate their coping skills positively (Van Rhee de Van Oudtshoorn 1988). They use cognitive avoidance as a strategy; for example, they would regard people who have burnt to death as lifeless objects (Linton 1995). They also employ positive cognitive talking to themselves (for example, "I'm trained to do this; I can handle it.") (Holaday, Warren-Miller, Smith & Yost 1995). Those who have difficulty coping redefine stressful situations as overwhelming and threatening and see themselves as powerless and out of

control, because of their negative reassessment of their coping skills (Dietrich & Hattingh 1993; Fullerton, McCarroll & Ursano 1992; Ursano, Norwood & Fullerton 2004b).

- **Affective behaviour.** People who cope effectively apply emotional self-control, affective regulation, acceptance and controlled emotional release. For example, in the case of controlled emotional release, after a particular incident, a firefighter will express his frustration about the events. In other instances, emotions such as fear of the unknown, rage, depression and feelings of uncertainty are largely suppressed (Fullerton et al. 1992; Ursano, Fullerton & Norwood 2004a; Linton 1995). Some people refer to this as emotional distancing. This entails the exclusion of thoughts and feeling by experiencing everything as unreal when rendering assistance and the negation of feelings (Holaday et al. 1995). By contrast, individuals who do not cope well experience feelings of guilt and helplessness (Fullerton et al. 1992), uncertainty, rage, depression, frustration and anxiety (De Villiers 1988; Nevid, Rathus & Greene 2005).
- **Conative behaviour.** People who cope effectively use social support to handle stress. This applies especially when they work in pairs and support one another in remaining focused on the task (Fullerton et al. 1992; Fullerton, Ursano & Norwood 2004). They concentrate on the task at hand and avoid thoughts revolving around the consequences of events (Dyregrov & Mitchell 1992). They are also extremely loyal and dedicated workers who strive to make rational purposive efforts to solve problems (Dietrich & Hattingh 1993), and in some way to make a meaningful contribution (Alexander & Wells 1991; Raphael, Sing, Bradburg & Lambert 1983–1984). Because they render emotional and physical support to others, they develop a sense of altruism which, in turn, appears to be an effective stress-management technique (McCammon, Durham, Allison & Williamson 1988). The following modes of behaviour, however, are characteristic of people who have difficulty managing stress: emotional outbursts, negative interpersonal relationships, over-involvement in work and a preoccupation with their personal problems (with a concomitant lack of sympathy for others).

Personality traits that influence firefighters' stress-management strategies

Marais (1997) defines personality traits as general dispositions or orientations that are relevant in a variety of situations. According to some researchers, there is little or no correlation between personality traits and stress-coping responses (Folkman Folkman, Lazarus, Gruen & De Langis 1986). Nevertheless, it would seem that a large number of individuals who manage to handle stress do have a preference for a certain coping strategy and that variables linked to personality traits do in fact determine stress-management behaviour (Folkman, Lazarus & Dunkel-Schetter

2000). Marais (1997) suggests that particular patterns of stress management may exist, because certain personality traits are regularly used to produce specific responses. Personality can probably influence the outcome of coping via the consequences of the broad tendencies in stress management.

Strümpfer (1995, 2003) distinguishes various constructs including locus of control, sense of coherence, hardiness, self-efficacy and learned resourcefulness (self-control) for the conceptualisation of psychological wellness. These constructs are applicable in this research, primarily because they were selected by Antonovsky (1991, 2002) as part of the generalised personality orientation and were studied in relation to successful stress management and fortigenic outcomes:

- **Locus of control.** The concept of locus of control (Rotter 1966, 1999) was based on the belief that outcomes (reinforcements) are either attributable to personality factors (internal control) or caused by factors outside the individual (external control). Individuals with an internal locus of control orientation believe that the reinforcement of their behaviour depends on their achievements, abilities and dedication. However, people with an external locus of control orientation contend that chance happenings, fate, fortune and certain significant others are responsible for reinforcing their behaviour.
- **Sense of coherence.** The key construct of the salutogenic approach is what Antonovsky (1979, 1987) defines as sense of coherence. According to Antonovsky (1987, 2002), sense of coherence is a global orientation that expresses the scope of a person's ongoing, sustained and dynamic feeling of self-assurance which:
 - Makes the stimuli derived from a person's internal and external environments in his or her life structured, predictable and explicable
 - Makes resources available to handle the demands made by the stimuli
 - Gives value to demands that are challenges in which one can invest and with which one can form links.

If a person has a high sense of coherence, he or she experiences stimuli as comprehensible, under control and meaningful. Studies show high negative correlations between sense of coherence and measures of negative affect such as anxiety and neuroticism (Kravetz, Drory & Florian 1993), as well as stress and depression (Bowman 1996).

- **Hardiness.** Kobasa (1979) regards hardiness as a global personality construct that mediates between stress and health relationships. Hardiness comprises three components, namely connectedness (as opposed to alienation), control (as opposed to helplessness) and expectations that challenge (as opposed to threaten), as the norm in life (Maddi & Khoshaba 1994).
- **Self-efficacy.** Bandura (1986, 2004) defines self-efficacy as individuals' assessments of their ability to organise and perform certain actions that are required to

maintain, organise and execute promised types of performance. Self-efficacy also refers to a person's belief in his or her ability to mobilise motivation, cognitive resources and certain actions necessary to control the demands posed by tasks (Bandura 1988, 2004). One could thus say that the more an individual feels that he or she is mastering a task, the more he or she observes others, the more he or she is exposed to the execution thereof and the more he or she experiences intimacy that facilitates performance (for example, not feeling anxious), the stronger his or her self-efficacy will be (Mataruzza, Weiss, Herd & Miller 1984).

- **Learned resourcefulness (self-control).** Learned resourcefulness refers to an acquired repertoire of self-controlled behaviour and skills (mostly cognitive) through which a person controls internal responses, such as emotions, pain and cognitions, that interfere with the execution of ongoing conduct (Fisher & Reason 1991; Rosenbaum 1990, 2000). The concept of learned resourcefulness originated from the self-control theory of Kanfer (1977) and Meichenbaum's (1985) stress inoculation training programme. The assumption is made that any endeavour to cope with stressful events includes efforts to exert self-control (Fisher & Reason 1991).

Each of these constructs focuses on another concept. Yet, the overarching end goal is the same, namely to answer the following questions: "How does a firefighter manage stress?" On the basis of the discussion of these constructs, the expectation is that the firefighters' stress-management skills behaviour will differ according to high and low levels of psychological strengths.

METHOD

Research design

The research was both quantitative and qualitative. It was quantitative in the sense that a survey design (Huysamen 1993, 1998) was used to determine whether firefighters in a local authority differ significantly in respect of psychological constructs. It was qualitative in the sense that interviews, based on the phenomenological method (Jones, Moore & Snyders 1988), were used to determine whether qualitative differences exist in respect of the stress-management strategies employed by firefighters with high and low levels of psychological strengths.

Participants

The total population of firefighters attached to the fire station of a local authority ($N = 45$) was involved in the research. Thirty-nine (86.67%) of the firefighters were male and six (13.33%) female. Sixteen (35.56%) were between the ages of 19 and 25,

while 15 (33.33%) were between the ages of 26 and 30. Sixteen (35.56%) were Afrikaans speaking, 13 (28.88%) English speaking and 16 (35.56%) spoke an African language. Nineteen (42.22%) were learner firefighters (level II), nine (20%) were leader firefighters, and the remainder were fairly evenly scattered among the other six ranks.

Measuring instruments

Firstly, the following measuring instruments were used to determine the presence or absence of the psychological strengths:

- **Locus of Control Questionnaire (LCQ)** (Scheppers 1995)
The Locus of Control Questionnaire was used to measure the locus of control. The three scales of this measuring instrument were subjected to an item analysis, and their reliability was higher than 0.8. The reliability (alpha coefficients) of the three subscales of the LCQ was as follows (Scheppers 1995): External Control: 0.80; Internal Control: 0.77; Autonomy: 0.80. All the items thus have acceptable indices of reliability (Scheppers 1995). Significant correlations with various measuring instruments confirmed the construct validity of the questionnaire. As far as criterion-related validity was concerned, the researchers found that the questionnaire correlated with a composite criterion of job success ($r = 0.62$) (Scheppers 1995).
- **Life Orientation Questionnaire (LOQ)** (Antonovsky 1987, 2002)
The LOQ questionnaire is used to measure sense of coherence. The reliability (internal consistency) of the three scales of the LOQ ranges from 0.83 to 0.93 (in respect of various population groups, languages and cultures). In the various studies conducted in relation to test-retest reliability, coefficients ranging between 0.41 and 0.97 were obtained. The construct validity of the LOQ ranges from 0.38 to 0.72 (Antonovsky 1993).
- **Personal Views Survey (PVS)** (Kobasa 1979)
The PVS is used to measure hardiness. The reliability of the PVS ranges from 0.70 to 0.85 (Kobasa, Maddi & Zola 1983). According to Kobasa (1982), there are significant correlations between stress and illness, on the one hand, and connectedness ($r = 0.85$), control ($r = 0.68$) and challenge ($r = 0.70$), on the other.
- **Self-efficacy Questionnaire (SEQ)** (Sherer & Maddux 1982)
The SEQ is used to measure self-efficacy. The reliability (internal consistency) of the SEQ varies between 0.71 and 0.86 (Kossuth, personal communication, 9 January 1997). The SEQ also has content and construct validity (Maddux & Gosselin 2003).
- **Self-control Scale (SCS)** (Rosenbaum 1980, 2000)
The SCS is used to measure learned resourcefulness. The test-retest reliability of

the SCS is 0.96 (after four weeks), while internal consistency ranges from 0.78 to 0.86 (Rosenbaum & Palmon 1984). Rosenbaum & Ben-Ari (1985) indicate that the SCS is a valid instrument for measuring learned resourcefulness.

Secondly, a quantitative data collection method, namely personal interviews based on the phenomenological method, was used to measure the stress-coping strategies employed by participants (Jones et al. 1988). The interviews were non-directive and conducted on the basis of the central question: "What strategies do you, as a firefighter, use in all facets of your humanity to handle stress?" The question was asked consistently each time, by explaining that the term 'humanity' refers to physical, cognitive, affective and conative functioning. Each of these concepts was briefly explained each time. The interview was conducted in a room equipped with easy chairs, and a tape recorder was switched on (with the participant's permission) as soon as the interview started. An effort was made to put the participant at ease as soon as he or she reported for the interview. Nondirective interviewing techniques such as noticeable body language, reflection, clarification, minimal encouragement and silences were used to help participants to articulate their experiences (Meulenberg-Buskens 1989).

The tape recording of the interview was transcribed verbatim by the researcher so that the information collected could be analysed. Information analysis (Giorgi 1985) was used to analyse and interpret the research data systematically, objectively and quantitatively (Kerlinger 1986, 2000). Firstly, the universe of the contents that had to be analysed was defined. Secondly, units of analysis, namely words and themes, were determined. Thirdly, superfluous data were eliminated and the meaning of the remaining units determined. Fourthly, concrete language used by the participants was converted to scientific language and concepts. The participants' exact words were used as substantiation. Integration and synthesis were then performed on the basis of the insights gained.

The reliability of the content analysis was promoted by the coding done by the researcher and two independent psychologists. These individuals concurred about the themes that emerged from the interviews. Two psychologists (with backgrounds in research methodology) agreed that the research plan and its application were acceptable. The researcher attempted to promote validity by spending adequate time (about 90 minutes) with each participant. Socially desirable responses were limited by using interviewing techniques (as described). Rephrasing and repetition of questions were used to obtain credible information (Krefting 1991, 2003).

Procedures

Firstly, the measuring instruments were administered to the total population, after which a stanine scale was used to identify firefighters with high and low scores on the

fortological constructs. Secondly, interviews were conducted with ten participants (five of the 11 [25%] with the highest, and 5 of the 11 [25%] with the lowest scores on the quantitative measuring instruments). These ten participants were purposefully selected, because the researcher deemed that they would best be able to verbalise their stress-management strategies.

Statistical analysis

The statistical analysis was conducted by means of the SAS program (SAS Institute 1996). Since each of the five quantitative measuring instruments had different means and standard deviations, the scores were standardised (by converting them to a stanine scale) to make the measuring instruments comparable. The mean stanine score for each participant on the five measuring instruments was then determined. These scores were arranged from high to low in an attempt to identify contrast groups (11 participants [25%] with high scores and 11 [25%] with low scores in respect of the five constructs) for interviewing purposes. As already mentioned, five participants from the 'high' group and five from the 'low' group were purposely selected with a view to phenomenological interviews (see Table 1).

Table 1: Participants from among those with the lowest and the highest scores on psychological strengths

Highest 25%			Lowest 25%		
Participant	Mean stanine score	Standard deviation	Participant	Mean stanine score	Standard deviation
8	5.63	1.09	27	3.63	3.15
3	5.72	0.88	28	4.37	2.49
5	5.76	2.26	35	4.59	1.76
44	5.80	2.84	40	4.59	1.65
34	5.87	2.27	10	4.60	2.23

The Wilcoxon test was used to determine whether there was a significant difference between the stanine scores of the two groups of participants (Steyn, Smit, Du Toit & Strasheim 1995). A Z-value of 2.51 was obtained, which indicated that there was a statistically significant difference ($p = 0.0122$) between the mean stanine scores of the contrast groups. This difference was practically significant (large effect) ($d \geq 0.8$) (Cohen 1988).

RESULTS

The physical stress-management strategies of the two groups of firefighters are indicated in Table 2.

Table 2: Physical stress-coping strategies of firefighters

Low scores on psychological strengths						High scores on psychological strengths					
Theme	Participant					Theme	Participant				
	27	28	35	40	10		8	3	5	44	34
Does physical exercise	x	x	x			Does physical exercise		x	x		
Participates in sport		x	x		x	Participates in sport	x				

As regards *physical stress-management strategies*, it is interesting to note that three of the participants in the group with the lowest scores for psychological strengths used physical exercise as a strategy for coping with stress, as opposed to two from the group with the highest scores for psychological strengths. Similarly, there were three participants from the group with the lowest scores for psychological strengths who participated in sport, as opposed to one from the group with the highest scores for psychological strengths.

The cognitive stress-coping strategies of the two groups of firefighters are depicted in Table 3.

Table 3: : Cognitive stress-coping strategies of firefighters

Low scores on psychological strengths						High scores on psychological strengths					
Theme	Participant					Theme	Participant				
	27	28	35	40	10		8	3	5	44	34
Experiences work as challenging and exciting	x		x	x		Experiences work as challenging and exciting		x	x	x	x
Does positive re-evaluation of stress-coping strategies	x					Does positive re-evaluation of stress-coping strategies		x		x	
Uses cognitive self-talk					x	Uses cognitive self-talk					x
Feels in control of matters				x	x	Feels in control of matters		x		x	
Applies distancing		x		x		Applies distancing	x				
Feels helpless and not in control of situation	x	x	x			Uses positive self-talk			x		
Experiences working conditions as overwhelming and threatening	x	x			x	Applies cognitive avoidance or confrontation	x				
Uses negative imagination	x					Applies positive thinking		x	x		

As regards *cognitive stress-management strategies*, it would seem from Table 3 that participants in the group with the lowest scores for psychological strengths to a greater or lesser degree also employed ‘positive’ stress-management strategies. This includes regarding their work as challenging and exciting (three participants), doing a positive re-evaluation of stress-management skills (one participant), applying cognitive self-talk (one participant), feeling in control of matters (two participants) and applying distancing (two participants). However, three participants reported that they felt powerless and not in control of the situation, as indicated in the following statement: “Say, for example, it is someone who has been run over, like a child. They crowd around you. You are trying to see to the child, and you don’t know when someone might put a knife in your back. With them it works as follows: let’s say that the gangsters tackle each other. You try to help one of them, and if the others don’t want you to help him, you are in trouble.”

Three participants experienced their working conditions as overwhelming and threatening. They articulated their feelings as follows: “You arrive on the scene of a serious collision. The people are trapped, and you have to deal with them. You also have to cope with yourself. How do you handle it?” One participant reported that he used negative imagination. He articulated this as follows: “I always create scenes for myself that very few people would probably think of. I do this often, for example, an aeroplane that has fallen on a shopping centre.”

By contrast, participants from the group with the highest scores for psychological strengths appeared to regard their work as challenging and exciting (four participants). This was evident from the following words: “I wasn’t scared, but it’s the adrenalin. For instance, when you drive fast and everything flashes past you, and your heart beats, and you get all excited. Look, I’ve always been someone who likes action, so I enjoy it. You know, when there’s an accident, the adrenalin pumps like mad. I enjoy working there.”

Two participants reported that they do a positive re-evaluation of their coping strategies: “I give them basic orders. If I come to a patient and I have already stabilised him, I will tell the assistant who came with me, that I want this done while I am working with the patient. At a fire, I will tell them early on to put out so many lines to the fire and put on your protective gear and go in.”

One participant also reported using cognitive self-talk as a stress-coping strategy: “At that particular moment you can’t lose your head. You can also not start panicking, because if you do, things will start going wrong; people will get hurt.” Two participants reported that they felt in control of the situation. They explained it as follows: “I do not experience stress in these situations. You know, you go there with a feeling of at least trying to extinguish the fire. I handle it well compared with my previous job. I don’t really have a problem seeing dead people.” One participant reported using distancing as a coping strategy: “We talk – say, we come to a rescue scene, a serious rescue scene – you know, on our shift we have a thing – you will find

that the guys joke around a lot.” One participant reported using positive self-talk to handle stress, while another employed cognitive avoidance or confrontation: “I’ve wanted to go for them with my fists. This is saying it straight. Honestly. I find it unacceptable and nothing is done about it. You are in a depressed state and you speak to your officers about it, and it just goes on and on.”

Two participants reported that they employed positive thinking to cope with stress. They expressed this as follows: “I know how good my work is. I’m realistic with myself. All that I ask myself is: did I give everything that I could? Yes, I did. The rest is in God’s hands. If I know that I just stood back and did nothing. Yes, then I was guilty, but I knew that I just climbed in and did everything I could.”

The affective stress-coping strategies of the two groups of firefighters are indicated in Table 4.

Table 4: Affective stress-coping strategies of firefighters

Low scores on psychological strengths						High scores on psychological strengths					
Theme	Participant					Theme	Participant				
	27	28	35	40	10		8	3	5	44	34
Experiences anxiety	x		x		x	Experiences anxiety		x	x		
Experiences rage		x	x			Experiences rage		x	x		
Experiences aggression		x				Experiences aggression	x				
Experiences frustration				x		Experiences frustration		x	x		
Experiences feelings of frustration and doubt	x					Experiences feelings of frustration and insecurity	x				
Applies emotional self-control	x		x			Applies emotional self-control	x	x	x	x	x
Accepts the situation	x			x		Accepts the situation	x	x	x	x	x
Experiences guilt feelings		x			x	Applies affective regulation	x	x	x	x	
Experiences feelings of depression and unhappiness		x				Uses controlled emotional release		x	x	x	
Experiences feelings of suspense and impatience				x							
Experiences feelings of uncertainty				x	x						
Experiences feelings of fear					x						

Regarding *affective stress-coping strategies*, it would appear from Table 4 that participants from the group with the lowest scores for psychological strengths experience anxiety, as indicated by the following words: “You feel as if you are about to have a nervous breakdown; your hands start to sweat. The sweat starts under your arms and runs down. I mean, you can feel it. These are experiences I have had, and I don’t want them. I saw blood in front of me. The bricks were gone. Gas bottles were lying there. Then there was still the smell – that cyanide has an effect too. The headaches started that time, and my nose started bleeding. Then I saw that the guy on the roof had been shot. They said to me: you are going to take him down. Then I said: ‘Sir, I’m not going to. I don’t want to go.’”

They also felt rage: “You feel unhappy, much of the time; then you just take off your kit and you sit, and you are angry; then you turn away and you go home and just try to switch off from everything.” One participant reported experiencing aggression: “You just try to live with it, because what else can you do, how can you handle it differently? Will you go to the guy and argue with him? That won’t work. It will just cause more trouble.” Another participant stated that he experienced frustration: “It is especially frustrating when you are booked ambulance. You work from eight o’clock in the morning, till eight o’clock the morning of the next day, nonstop. You just ride, it is medical calls. It’s flu, toe and head aches. You know you are going to ride for garbage, you are not going to ride for the stuff that you really want to ride for. You are going to ride for the biggest garbage going around”; while another experienced feelings of frustration and doubt: “Response is just as frustrating as ambulance. You often go out on response, for things that aren’t really that urgent. And what I really don’t like is when you go out with the response vehicle, you speed, you put your assistant’s life in danger, plus people on the road, perhaps.”

Two participants mentioned that they had guilt feelings. They expressed this as follows: “You can’t just go and tell the woman: ‘Your husband and son are dead.’ The woman is going to collapse, and then it’s your fault. And then I sit with my conscience – it was my fault the woman was in such a state.” One participant mentioned depression and feelings of unhappiness. Another spoke of expectation and impatience, which he articulated as follows: “It gives you this rush, you get this genuine rush. I think most guys are genuine junkies. It gives you that boost, you cannot wait to get out there and do it. When you get there, everything just clicks, and you do not really have to think hard about what to do next, it just happens and it is a beautiful feeling when you do something that works and it goes right.”

Two participants mentioned feelings of uncertainty: “You are scared, you are nervous, because you don’t know what is going to happen out there. You don’t know what to expect, you don’t know what is waiting around the corner for you.” One participant experienced fear: “Then I fought against my will, should I go? Then I

said to myself: just go. Forget about the guy on the roof. Just go and get the person. Then I put the guy in the body bag, and his bladder burst. You also have to pick up and scrape off little pieces of the person. I now found him gruesome.”

All things considered, the above are not really strategies, but actually negative feelings (as indicated). However, there were also participants from this group who applied ‘positive’ stress-coping strategies. Two of them reported that they applied emotional self-control: “I got hard, not rock hard, but you get hard to the situation, you are hard enough to your emotions or whatever. You learn to deal with it. I did not cry, I felt very bad, but I did not cry.” Two participants reported that they accepted events.

By contrast, all the participants in the group with the highest scores for psychological strengths seemed to apply self-control: “You have sympathy for the person, the work makes you very hard. You don’t know how to handle the sorrow, then you get rid of it completely, it’s just another dead person. You accept it. I’m as hard as stone. It doesn’t bother me. I’m actually very hard.” They accept things that happen: “This is my kind of work. I think that if you were soft, you wouldn’t be able to do the work. If you see a broken leg or someone’s brains lying on the freeway and you have to go and pick them up with a shovel, and you can’t do the work, what are you going to do? As time goes on, you become hard. For us it’s just another piece of meat and another piece of bone.”

Four participants mentioned employing affective regulation as a strategy: “You have to help those who are still alive, instead of feeling very much sorry for those who are dead, because you have to do your work. If a person is badly injured and there is still a sign of life, then I do have a feeling to help that person. I do not want to shy away from that person.” Three participants reported using controlled emotional release: “Two dead, one to be cut out. All that I look at at that stage is: who does what? I can’t become involved with the patient. As soon as I become involved with the patient, I ignore the crew. Who will support them? If one of them steps in front of a vehicle, I will have another patient on my hands. What are the public doing? My job at that stage is to ensure that no-one is injured further. Feelings of anxiety (two participants), anger (two participants), aggression (one participant), frustration (two participants) and frustration and insecurity (one participant) were also in fact prevalent in this group.

The conative stress-coping strategies of the two groups are indicated in Table 5. As far as *conative stress-coping strategies* are concerned, it is clear from Table 5, that one participant in the the group with the lowest score for psychological strengths was prone to emotional outbursts. The same person also reported that he experienced interpersonal relationships negatively. Another participant reported that he had sleeping problems, which probably adversely affected his motivation levels. By contrast, social support was of paramount importance for four participants in this group: “That is part of the job. You get used to it very quickly, and I think the best

Table 5: Conative stress-coping strategies on firefighters

Low scores on psychological strengths						High scores on psychological strengths					
Theme	Participant					Theme	Participant				
	27	28	35	40	10		8	3	5	44	34
Experiences sleeping problems	x										
Prone to emotional outbursts		x				Motivates himself and other firefighters				x	
Experiences negative interpersonal relations		x				Acts altruistically					
Uses social support	x		x	x	x	Uses social support	x	x	x		x
Employs problem solving			x		x	Employs problem solving	x			x	
Displays loyalty and dedication				x		Displays loyalty and dedication		x	x	x	x

way to relieve the problem, is talking to your friends after it.” Two participants employed problem-solving as a strategy: “When I feel bad and stressed and have a lot on my mind, the best way I find to deal with something is I take the problem, and I take it piece by piece, and I analyse it until I get to the source of the problem. The same with a call. I will analyse the call, piece by piece. I will say: ‘Look the call happened, there is nothing you can do about it, accept the call happened.’”

One participant reported that he is a loyal and dedicated worker: “I love this work. I work half my off-duty time, I work free of charge for the place. That is how much I am enjoying the work. I really need it. To run twice as far and twice as hard on a fire ground, is a pleasure”. By contrast, it would seem that four participants from the group with the highest scores for psychological strengths deemed social support to be of vital importance. Two participants employed problem-solving as a strategy. Four of them stated that they were loyal and dedicated workers. One participant reported that he behaved altruistically: “We have to save ourselves first before we save the injured person. If you do not, then you die before you save the injured person.” One participant regarded motivation of himself and other firefighters as an important strategy.

DISCUSSION

Regarding the qualitative analysis, it seems clear that in certain respects, participants with low scores for psychological strengths corresponded with the profile of ineffective stress-copers, and in other respects, with the profile of effective stress-copers. At the same time, it seems clear that in certain respects, participants with high scores for

psychological strengths corresponded with the profile of effective stress-copers, and in other respects with the profile of ineffective stress-copers. At the physical behaviour level, all five participants with low scores for psychological strengths corresponded with the profile of effective stress-copers, while three participants with high scores for psychological strengths coincided with the profile of effective stress-copers.

The following is evident with regard to the cognitive behaviour level: At first glance, it would seem that all five participants with low scores for psychological strengths coincided with the profile of the effective stress-coper. At the same time, all four of these participants appeared also to use strategies that accorded with those of ineffective stress-copers. It is interesting to note, however, that all five participants with high scores for psychological strengths at this behaviour level (only) accorded with the profile of an effective stress-coper.

When considering the affective behaviour level, the following is evident: Three of the participants with low scores for psychological strengths coincided with the profile of the effective stress-coper. At the same time, these three also seemed to employ strategies that corresponded with those of an ineffective stress-coper. The remaining two participants with low scores for psychological strengths coincided only with the profile of an ineffective stress-coper. By contrast, three of the participants with high scores for psychological strengths accorded with the profile of an ineffective stress-coper. At the same time, however, all three of these participants also used strategies that coincide with those of effective stress-copers. The remaining two participants with high scores for psychological strengths corresponded only with the profile of an effective stress-coper.

The following emerges regarding the conative behaviour level: One participant with a low score for psychological strengths coincided with the profile of an ineffective stress-coper. The other four participants with low scores for psychological strengths corresponded with the profile of an effective stress-coper, although one of them simultaneously also used a strategy that coincided with that of an ineffective stress-coper. By contrast, all five of the participants with high scores for psychological strengths only accorded with the profile of an effective stress-coper.

It would appear from the foregoing discussion that participants with high and low scores for psychological strengths, especially in respect of the cognitive and conative behaviour levels, can be distinguished from one another. At both these levels, those with high scores for psychological strengths only coincided with the profile of an effective stress-coper. As regards the physical behaviour level, three of the participants with high scores for psychological strengths only also corresponded with the profile of an effective stress-coper, but this also applied to all five participants with low scores for psychological strengths. At the affective behaviour level, the distinction between the two groups was not clear. Only two participants with low scores for

psychological strengths coincided only with the profile of the ineffective stress-coper. At the same time, only two of the participants with high scores for psychological strengths only coincided with the profile of an effective stress-coper.

It would appear that, despite the fact that they were selected on the basis of their ability to verbalise, the participants involved were possibly uncertain about the exact meaning of 'stress' and 'physical, cognitive, affective and conative stress-management strategies'. This could explain why, with regard to stress-coping strategies, a clearer distinction was not evident between participants with low and high scores on psychological strengths.

It is recommended that stress-management programmes be presented for firefighters. Such programmes should focus on the recognition of stress-related symptoms and various stress-coping strategies. This has potential for further research. Firefighters should be encouraged to make use of social support to help them cope with stress. Attention should also be paid to avoiding or reducing the negative aspects of the working conditions of firefighters.

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