Stress: Definitions, Interventions and the Role of Leaders

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Executive Summary

Introduction

In 1990, the United States' National Institute of Occupational Safety and Health (NIOSH) declared occupational stress to be one of the 10 leading causes of workplace death) and it is now common to speak of occupational stress as an epidemic. In this paper we review the concepts of stressors, stress and strain .We consider approaches to stress management and prevention that have proven to be effective. We then consider the role of organizational leaders in both producing, and ameliorating the consequences of, workplace stress. We conclude with an assessment of potential leadership interventions designed to reduce stress or enhance well-being for members of the Canadian Forces (CF).

Stressors, Stress and Strain

Stressors are generally considered to be objectively verifiable events that occur outside of the individual. Researchers have defined stressors by either focusing on the characteristics of the stressors (i.e., their frequency of occurrence, intensity, duration, and predictability). Alternatively, researchers have focused on the content of the stressor (e.g., role stressors, lack of control). Stress refers to the individual responses to stressors and typically refers to "the stress response". Finally, strain refers to the consequences of long-term exposure to stress. . *Psychological symptoms* of strain include disturbances in affect and cognition. *Physical symptoms* may manifest in such problems as gastrointestinal and cardiovascular illness. *Behavioral symptoms* of strain include increased alcohol and cigarette consumption. Finally, o*rganizational* outcomes of stress including increased absenteeism and reduced job satisfaction.

Preventative Stress Management

Preventative stress management is “an organizational philosophy and set of principles that employs specific methods for promoting individual and organizational health while preventing individual and organizational distress”. Three levels of stress management are recognized. Primary stress prevention efforts involve the reduction or removal of the actual stressors. Secondary preventative interventions focus on minimizing the negative impact of the response once a person has recognized that they are feeling stress. Tertiary intervention strategies are used after the fact to help those individuals who have not been able to effectively manage or cope with workplace stress and are now experiencing symptoms of strain

The Role of the Leader

We see three roles that leaders may play in the stress process. First, leaders who engage in abusive or poor quality leadership can be sources of work stress. Second, leaders who provide social support to the employees may be stress buffers, reducing the risk that those individuals will be victims of stress. Third, leaders may provide a more generalized effect by increasing resistance to stressors and enhancing well-being.

Implications for Leadership Development

Three pertinent avenues of training and leadership development with respect to the role of leaders in employee health are evident. First, improving leadership skills should have a direct affect on individual well-being. Second, specific training in stress and stress management would assist leaders in their social support role. Finally, transformational leadership development would also have a beneficial effect on well-being

Stress: Definitions, Interventions and the Role of Leaders

In 1990, the United States' National Institute of Occupational Safety and Health (NIOSH) declared occupational stress to be one of the 10 leading causes of workplace death (Sauter, Murphy, & Hurrell, 1990) and it is now common to speak of occupational stress as an epidemic (Quick, Quick, Nelson & Hurrell, 1997). In attempting to draw attention to this problem, researchers have frequently tried to estimate the economic costs associated with workplace stress. For example, Matteson and Ivancevich (1982) estimated that businesses in the U.S. lose at least $60 billion per year because of stress-related illness. By 1990, the estimate had risen to $150 billion per year (Karasek & Theorell, 1990). Although we recognize that these estimates involve considerable "guesswork", it is clear that workplace stress is a large and growing problem with considerable consequences for individuals and organizations. For example, claims for stress related illnesses in California increased by approximately 560% over a six year period (Quick et al., 1997) inflating costs for both organizations and society. As Cartwright and Cooper (1997) note, there are also substantial costs in human suffering associated with stress.

Social scientists have recognized for some time that the term “stress” is, at best, ambiguous (e.g., Kahn, 1987). Individuals talk about feeling stress, or about stress as something we're exposed to. Even in the scientific literature there is considerable confusion over the precise meanings of terms associated with the study of stress (Pratt & Barling, 1988). However, most researchers now agree on a general stress model that distinguishes between three closely related terms, stressors, stress, and strain. Stressors

are generally considered to be objectively verifiable events that occur outside of the individual. Stress refers to the individual responses to stressors and typically refers to "the stress response". Finally, strain refers to the consequences of long-term exposure to stress.

In the remainder of this paper we expand on these definitions in the context of occupational stress. Specifically we review the scientific literature in each of these areas of enquiry. Next, we consider approaches to stress management and prevention that have proven to be effective. We then consider the role of organizational leaders in both producing, and ameliorating the consequences of, workplace stress. We conclude with an assessment of potential leadership interventions designed to reduce stress or enhance well-being for members of the Canadian Forces (CF).

Stressors: Sources of Stress

As noted above, a stressor is an objectively verifiable event that occurs outside of the individual. The scientific literature has taken two non-exclusive approaches to the identification of workplace stressors. The dimensional approach focuses on the characteristics of the stressor, while content models of stressors focus on defining the substantive nature of the stressor.

Dimensional Definition

As Pratt and Barling (1988) point out, stressors may vary along several dimensions: frequency of occurrence, intensity, duration, and predictability (time of onset). The combination of these dimensions has led researchers to distinguish among

categories of stressors such as acute stressors, chronic stressors, daily stressors and catastrophic stressors.

In this view, **acute** stressors have a specific time onset (i.e., you know exactly when it began), are typically of short duration, are of high intensity, and have a low frequency. For example, a traffic accident is an acute stressor. Traffic accidents have a specific time of onset and they are typically over in a few seconds. Although any one individual experiences a traffic accident infrequently, when one does occur it is often a very high intensity stressor.

In contrast, a **chronic** stressor is a somewhat more vague concept. Chronic stressors have no specific onset, may be of short or long duration, repeat frequently and may be of either low or high intensity. A common example of a chronic stressor in today's workplace is job insecurity. Most people cannot point to a specific event or time that triggered the insecurity, but the nagging worry that their job is at risk is always with them. The intensity of the feeling is most likely dependent on whether their employer has been engaged in or talking about downsizing.

Daily stressors have specific onset, are of short duration, are of low intensity, and are typically infrequent. Getting caught in a traffic jam may be used as an example of a daily hassle. To illustrate the complexity of the distinctions being made here, note the following comparison. Getting caught in a traffic jam is a daily hassle for many people however, for those who have long and regular commutes to work in an urban area traffic congestion is a chronic stressor.

Finally, we need to recognize the existence of **catastrophic** stressors or disasters. Much like acute stressors, catastrophic stressors have a specific onset, occur infrequently, have a high intensity, and may be of either long or short duration. The main distinction between acute and catastrophic stressors is in the intensity of the stressor. Catastrophic stressors typically involve a direct threat to, or loss of, life and/or major property damage. Stressors of a catastrophic nature may affect a large number of people, as was the case with the tragic events of 9/11 that impacted an entire nation, if not the whole world. Again, the complexity of categorizing stressors is indicated by the observation that catastrophic stressors can become chronic stressors over time. For example, the disaster at the Three Mile Island Nuclear Plant has had long-term consequences for workers because of the ongoing uncertainty about the effects of exposure to radiation. (e.g., Davison, Weiss, O'Keefe, & Baum, 1991). A summary and comparison of Pratt and Barling's (1988) dimension definitions of stressors is provided in Table 1.

Table 1. *A summary and comparison the categories of stressors presented by Pratt and Barling (1988).*

	Dimensions			
Type Of Stressor	Frequency	Duration	Intensity	Time of Onset
Acute	Rare	Short	High	Specific
Daily	Infrequent	Short	Low	Specific
Chronic	Frequent	Short or Long	Low or High	Non-Specific
Catastrophic	Very Rare	Short or Long	Extremely High	Specific

Content Models of Stressors

Although the Pratt and Barling (1988) framework provides a general overview of stressors, other researchers have focused on defining the actual content of stressors (i.e., characteristics of the work environment that impact on well-being, (Kelloway & Barling, 1991) or identifying sources of stress that exist in the workplace (e.g., Sauter et al., 1991). Many of these models are highly similar to each other and for our purposes we review four content models that have received considerable attention in the scientific literature; the National Institute of Occupational Safety and Health (NIOSH) model of work stressors, Warr's (1987) vitamin model, the Karasek demand-control model, and Kelloway and Barling's (1997) model of non-operational workplace stressors in the CF.

The NIOSH model identifies the major categories of workplace stressors as listed below.

[a] *Workload and work pace*. The amount of work that has to be completed and the speed at which employees have to work to complete their tasks.

[b] *Role stressors (conflict, ambiguity, and inter-role conflict)***.** Role conflict exists whenever individuals face incompatible demands from two or more sources. Role ambiguity reflects the uncertainty employees experience about what is expected of them in their jobs; the opposite of role ambiguity would be role clarity. Inter-role conflict exists when employees face incompatible demands from two or more roles. The most common form of inter-role conflict is work-family conflict where the demands of work conflict with your role as a parent or a spouse.

[c] *Career Concerns*. Career related factors such as job insecurity, fear of job obsolescence, under- and over-promotion and, more generally, concerns about career development have been identified as stressful.

[d] *Work Scheduling*. Working rotating shifts or permanent night work results in a disruption of physiological circadian rhythms, as well as disrupted social activities and has been identified as a work-related stressor.

[e] *Interpersonal Relations.* Poor interpersonal relations in the workplace are consistently identified as a source of stress. Conversely, having well established sources of social support (i.e., receiving support from coworkers and supervisors) may actually reduce the effects of other workplace stressors.

[f] *Job Content and Control*. As phrased by Sauter et al. (1992, p.1153) "narrow, fragmented, invariant and short-cycle tasks that provide little stimulation, allow little use of skills or expression of creativity and have little intrinsic meaning for workers" are considered as stress provokers in the NIOSH content model of workplace stressors.

In a similar vein to the NIOSH model, Warr (1987) proposed nine substantive stressors in his vitamin model of work and mental health. The particular stressors identified by Warr are very similar to those presented in the NIOSH model. The specific content stressors considered by Warr (1987) were:

[a] opportunity for control

[b] opportunity for skill use

[c] externally generated goals

[d] variety

[e] environmental clarity

[f] availability of money

[g] physical security (freedom from physical threat or danger)

[h] opportunity for interpersonal contact and

[i] valued social position

There is substantial empirical support for the particular stressors identified by Warr. Indeed, like the NIOSH model, Warr developed the stressor content of his model by reviewing the empirical literature on workplace stressors.

The demand control model proposed by Karasek (1979; Karasek & Theorell, 1990) focused its analysis of the content of stressors only on a generic category of "job demands". However, Karasek went further in suggesting that the impact of such job demands on individual wellbeing was moderated by control (referred to by Karasek as decision latitude). In other words, the negative impact of high job demands could be ameliorated by accompanying high levels of decision latitude. In this view jobs could be divided into four categories:

[a] Low Demand, Low Control

[b] Low Demand, High Control

[c] High Demand, Low Control

[d] High Demand, High Control

In this view the high demand and low control condition is seen as the most stressful. High demand, high control jobs are seen as being invigorating and motivating

while low demand jobs (regardless of control) are seen as forms of under-employment. The simplicity and precise predictions of the Karasek model has led to a great deal of empirical research. Although some of this research has supported the propositions of the demand-control model (see for example, Barling & Kelloway, 1994), the vast majority of research suggests that the model is mis-specified. While there is little doubt that both job demands and control are important determinants of well-being, there is little support for the hypothesized interaction of demand and control. Moreover, longitudinal research has suggested that perceptions of control may be an outcome, rather than a predictor, of well-being (Kelloway & Barling, 1994a) casting the propositions of the model in further doubt.

The final example of content models that we will consider is that developed by Kelloway and Barling (1994b). In this model, Kelloway and Barling (1994b) specifically attempted to determine what stressors were experienced by members of the CF during non-operational duties. Their analysis was based on both a review of the literature and a series of focus groups with CF members. Based on this original review, Kelloway and Barling (1994b) developed and validated the Canadian Forces Occupational Stress Questionnaire (CFOSQ) as a measure of non-operational stressors.

The categories of stressors identified by Kelloway and Barling are shown in Table 2. As shown, they overlap strongly with the NIOSH and Warr models of work stress but also include stressors specific to the nature of employment in the CF (e.g., postings, public perceptions of the CF).

Table 2

Stressors associated with employment in the CF (Kelloway & Barling, 1994b).

1. **Workload** - includes both quantitative (i.e., quantity of work, time pressure) and qualitative (lack of training, degree of difficulty load)

2. **Work Schedule** – working overtime or irregular hours, lack of notice regarding changes in schedule

3. **Job Content** including the significance or importance of tasks, the amount of routine work and the opportunity to use skills.

4. **Lack of Control** including control over the work schedule, methods of work and control over job content

5. **Feedback and Rewards** including receipt of feedback on performance and the absence of formal rewards and recognition

6. **Role stressors** including role ambiguity and role conflict

7. **Job Security**

8. **Interpersonal relations** quality of relations with both coworkers and civilian employees of DND

9. **Supervision** - stressors associated with both being supervised and supervising others

10. **Physical Working Conditions** working with outdated equipment or in poorly maintained environments/buildings.

11. **Work and Family Balance** – the extent to which work demands interfered with family life, includes the disruptions associated with postings

12. **External Relations** – public perceptions of the CF and relations with the local community

13. **Organizational stressors** – perceived lack of planning, lack of fairness, lack of trust in decision makers.

Stress

Although stressors may be objective events, the individual's response to, or evaluation of, these events also has an important role to play. Researchers have typically referred to this response/evaluation as stress. In contrast to the objective and verifiable stressors we have discussed, stress is an internal event that is subjectively defined. Matteson and Ivancevich (1987) have a three part definition of stress. They believe stress is a consequence of any action, situation, or event that places demands on a person (i.e., stress is a consequence of stressors), that is both an adaptive response, and moderated by individual differences,

Stress as an adaptive response.

The stress response is our way of mobilizing responses to deal with environmental demands. Viewed in an evolutionary context, stress is the adaptive end-product of millions of years of evolution. The General Adaptation Syndrome (stress response) described by Selye (1946) is the body's way of gearing up for fight or flight (i.e., preparing to confront or run away from a predator). Quick et al. (1997) describe four major physiological changes that comprise the stress response.

1. Blood is redirected toward the brain and large organs and away from the extremities
2. The reticular activating system in the ancient brain is activated leading to a heightened sense of alertness
3. Glucose and fatty acids are released as fuel for increased activity

THE GENERAL ADAPTATION SYNDROME

Selye (1946) labeled the stress response the General Adaptation Syndrome. He suggested that the syndrome had three stages: Alarm, Resistance, and Exhaustion. The Alarm phase begins when one is confronted with a stressor (i.e., the body prepares for fight or flight). Resistance is the body's attempt to restore homeostasis (to return to normal). Exhaustion occurs if the stressor is not dealt with and strain reactions set in. The table below gives some of the physiological changes that occur as your body prepares for fight or flight. During the Resistance phase, the body resets conditions to normal. The resulting symptoms occur if the stress reaction is prolonged (i.e., as the body enters the reaction phase).

	Physiological Change	**Resulting Symptom**
Brain	Blood supply increased	Headaches, migraines,
Saliva	Reduced	Dry mouth, lump in Throat
Muscles	Blood supply increased	Muscle tension, pain
Heart	Increased rate & pressure	Hypertension, chest pain
Lungs	Increased, shallow respiration	Coughs, asthma
Stomach	Reduced blood supply,	Heartburn, ulcers increased acid production
Bowels	Reduced blood supply, increased activity	Abdominal pain diarrhoea
Bladder	Increased activity	Frequent urination (prostrate symptoms)
Skin	Reduced blood supply	Dryness, rashes
Biochemistry	Increased consumption of oxygen, glucose and fat	Rapid tiring

4. Immune systems and restorative processes (e.g., digestion) are shut down with energy redirected to heightened activity.

Stress is moderated by individual differences

Psychologists have recognized for many years that our responses to events in the environment are largely determined by our interpretation of the events. Lazarus and Folkman (1984) proposed a Transactional Model of Stress that applied such an individual interpretation view to stressors. In essence, the transactional model is based on the notion that individuals may perceive, and respond differently to, the same stressors. The transactional model labels this evaluation of external events cognitive appraisal**,** believing that individuals categorize an event and its possible consequences for well-being. According to the model, we engage in a process of primary and secondary appraisals.

Primary appraisal involves a consideration of the stimuli in the environment. At this time, an individual determines whether or not the environmental conditions are relevant to him or her and if they are potentially stressful. In other words, primary appraisals focus on the potential harm or benefit in a given situation. Secondary appraisal, which follows primary appraisal, involves an assessment of one's ability to manage the threats that exist in the environment. During secondary appraisal we examine our available options and determine the likelihood that [a] the strategy is likely to accomplish what it is supposed to, and [b] we can apply the strategy effectively.
If primary appraisal determines that the environmental conditions are relevant and potentially harmful, and secondary appraisal concludes that the individual does not have the necessary resources to manage the stressor, a state of stress will result. Thus, it is

clear that stress does not always follow exposure to a stressor, rather it results when a cognitive appraisal process indicates that the stressor is indeed an unmanageable threat to the person's well-being.

According to the transactional model of stress, engagement of coping processes follows the appraisal process. Specifically, individuals are thought to engage in problem-focused and/or emotion-focused coping as an attempt to deal with events or stimuli that have been identified as potential stressors (Bodensteiner, Gerloff, & Quick, 1989; Lazarus & Folkman, 1984). People who use problem-focused coping engage in behaviours designed to remove the stressor or actively deal with the stressor. For example, individuals terrified of writing an exam may plan a study schedule for themselves or seek out information about the material from instructors or fellow students. Emotion-focused coping involves strategies that are designed to deal with the emotions of stressful incidents. As such, the individual worried about writing the exam may choose to avoid thinking about the test by going to the movies or spending time with friends. A third strategy, appraisal focused coping, is frequently added to Lazarus and Folkman's dichotomy (Moos & Billings, 1982). This type of coping strategy involves either denying or redefining the stressor. An example of redefining the stressor would be the case where the person who was originally worried about writing an exam, cognitively reappraises it as an opportunity to consolidate their knowledge and learn more about the subject matter rather than treating it as a threat.

Stress Moderators

The suggestion that individual differences may change our perceptions of, and reactions to, stressors is generally known as a moderator hypothesis. A moderator is a variable that changes the relationship between two other variables. It is important to note that moderators can, and typically do, work in two ways:

> [a] The presence (or absence) of the moderator can **increase** the adverse consequences associated with stressors. Because moderators can aggravate the effects of stressors, factors that operate in such a manner are sometimes referred to as vulnerability or risk factors for stress.
>
> [b] On the other hand, the absence (presence) of a moderator can **protect** an individual from the adverse consequences of stress. Because of their role in breaking the chain of response, such moderators are sometimes referred to as stress buffers.

French and Kahn (1962) identify two general classes of moderators in the stress process; enduring properties of the individual (e.g., personality characteristics) and the social context (e.g., social support, individual relationships). We consider each of these classes in turn.

*The Individual—Personality***:** Although French and Kahn (1962) suggest that demographic, genetic and personality factors all represent enduring characteristics of the individual that might moderate stress reactions, by far the most research attention has been paid to the role of personality in stress. Personality has been defined as "a relatively stable set of characteristics, tendencies, and temperaments that ... determines the

commonalities and differences in the behaviour of the individual" (Maddi, 1980, p. 41). Two personality characteristics of particular relevance in a discussion of moderators of stress are the Type A behaviour pattern, and negative affectivity. Both are thought to make individuals more vulnerable to stressors.

Type A Behaviour

Friedman and Rosenman (1974) define Type A behaviour as "an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time and if required to do so, against the opposing efforts of other things or persons" (p.67). Typical Type A behavior is characterized by being hard-driving, competitive, time-urgent.

Largely as a result of inconsistent findings linking Type A behavior and heart disease, researchers now recognize two components of Type A Behavior--Achievement-Striving and Impatience-Irritability (Helmreich, Spence, & Pred, 1988). An individual who is high on Achievement Striving is typically very goal directed and action-oriented. Individuals high on Impatience-Irritability are typically very time conscious, hostile and impatient and irritable. In general, Achievement-Striving is associated with performance, but not health outcomes. That is, those high on achievement striving tend to perform at high levels, but this aspect of their personality in and of itself is not directly related to their health. Conversely, Impatience-Irritability is negatively associated with health outcomes, but not with job performance (e.g., Bluen, Barling, & Burns, 1990). Consistent with this view, researchers have consistently documented the negative health consequences of anger and hostility (e.g., Barefott, Dahlstrom & Williams, 1983;

Speilberger, 1991; Speilberger, Krasner & Solomon, 1988; Wright, 1988). Thus, those individuals who are high on the Impatience-Irritability component of Type A appear to be more vulnerable to the negative, health related outcomes of workplace stress.

Negative Affectivity

A great deal of research has focused on the role of negative affectivity in the stress process. Negative affectivity has been defined as a "mood-dispositional dimension reflecting persuasive individual differences in the experience of negative emotion" (Moyle, 1995, p. 647). A contrast that is often invoked to simply illustrate this concept is the difference between an optimist and a pessimist. Pessimists demonstrate negative affectivity across situations and live by the adage 'the glass is half empty'. Individuals high in negative affectivity or pessimism appear predisposed to see the negative side of everything. Such individuals seem to react negatively or adversely to all stressors and it is in this sense that negative affectivity may serve as a risk or vulnerability factor in the stress process. Empirical evidence consistently supports the moderating effect of negative affectivity with individuals who report higher levels of negativity evidencing stronger relationships between stressors and psychological symptoms (Brief, Burke, George, Robinson, & Webster, 1988).

Social Context: Social Support

While the preceding discussion has focused on the qualities/personality traits of the individual, there is also a considerable body of evidence suggesting the importance of social relationships as a moderator of the stress process. Unlike negative affectivity and Type A behavior, social support is generally seen as a buffer for stressors. That is,

individuals who receive social support may be more resistant to the negative effects of exposure to stressors.

Much like the stress process itself, there has been considerable confusion about the notion of social support and its definition. House (1981) attempted to clarify this confusion by offering a fourfold classification of social support: including the following categories; Emotional Support; Appraisal Support; Informational Support; Tangible Support.

First, emotional support refers to the provision of esteem, affect, trust, concern and listening by another. Being given the opportunity to talk about your problems with another person is an example of social support and people report that such a process helps them to deal with stress. Second, appraisal support refers to the provision of affirmation, feedback, and social comparison. An example of this category of support can be found in one very effective counseling technique in which the counselor attempts to normalize the individual's experience by providing affirming appraisal feedback. Third, House (1981) also points out the role of informational support as a possible stress buffer. Informational support includes providing advice, suggestions, directives, and information. For example, the stress of starting a new job is frequently mitigated when a coworker is willing to take the time to show you the ropes by providing information about the company and your job or an on the job training program that answers many of your questions. Fourth, tangible support involves providing individuals with solutions to specific problems. Examples of tangible support would include the loan of money,

helping an overworked coworker with their task load, or changing some aspect of the environment that is causing stress.

Lifestyle Factors

A variety of lifestyle factors have also been identified as potential buffers of the effects of stressors. In general these factors are thought to operate by increasing physiologic resilience – allowing individuals to recover quickly from the effects of the general adaptation syndrome. Lifestyle factors generally considered to be stress buffers include diet (Cooper, 1982; Ornish, 1990), sleep (Cartwright and Cooper, 1997) and exercise (Quick et al., 1997).

Strain

The end result of stress is strain. When people encounter a stressor, experience lasting stress, ultimately strain will result. Researchers generally recognize four categories of strain: Psychological; Physical; Behavioral; Organizational.

Psychological Strain

Psychological strain reactions typically include either a disturbance in affect (e.g., mood) or a disturbance in cognition (e.g., concentration). Feeling irritable, anxious, overwhelmed, moody, depressed, and angry are all common affective strain reactions. Indeed, individuals often describe these moods as "feeling stressed out". Interestingly, although most people recognize affective reactions to stress, cognitive reactions often go unnoticed.

Typical cognitive disturbances include difficulty in making decisions (often on trivial matters), difficulty in concentrating and staying with one task, forgetfulness (e.g.,

not being able to remember people's names even though you know them quite well), and other small mistakes. These small errors are generally not very important, but can be devastating for an individual under considerable strain or in occupations where the quality of the work or safety of the employee hinges on attention to detail.

Physical Strain

Many of the physical strain reactions have been mentioned earlier (e.g., stomach upsets, headaches, etc.). Symptoms of this sort may seem quite trivial but there is now considerable evidence suggesting that stress is implicated in more serious physical conditions. Most prominently, Coronary Heart Disease (CHD) has been consistently linked to increased stress, as has high blood pressure (hypertension), strokes, ulcers, asthma, and even some forms of cancer (Quick et al., 1997).

The mechanisms through which strain manifests itself physically are not clearly understood as of yet, although there are well documented changes in hormone and enzyme secretion that occur under stress. Moreover, stress may play a dual role as a cause of serious physical illness. First, individuals exposed to a stressor may experience stress and ultimately develop a physical strain response--illness (e.g., you are constantly under pressure to meet deadlines and make clients happy. As a result, you have developed hypertension). Secondly, increased strain may also lower the body's resistance (by impairing the immune system), thereby opening the door to physical illness.

Behavioral Strain

Behavioral strain reactions can take a variety of forms. Individuals under increased stress may develop nervous habits (e.g., nail-biting) or nervous tics. Other

forms of behavioral strain reactions may include avoidance of certain situations, or reducing individual involvements either through a lack of interest or as a means of reducing the demands on an individual's time. There is also some evidence that suggests that individuals may increase their smoking (e.g., Conway, Vickers, Ward & Rahe, 1981; Parrott, 1995) or consumption of alcohol and other drugs. (Jones & Boye, 1992) under periods of increased stress. These are particularly interesting strain reactions because, whether the individual is aware of it or not, the behavior is an attempt at self-medication. Given the known health outcomes associated with smoking and excessive alcohol consumption/drug use, these are very dangerous ways of coping with increased stress.

Eating disorders, family problems and violence (Quick et al., 1997) have all been identified as examples of behavioral strain. Each of these has been directly linked to the experience of job stress. It is worth noting that strain reactions are not limited to the individual who is experiencing high levels of stress. There is consistent empirical and anecdotal evidence that strain in one role can spill over into other life roles (e.g., parent, spouse, Barling, 1990).

Organizational Strain

Stress researchers interested in organizations commonly identify some of the most common organizational outcomes of stress as including increased absenteeism, decreased performance, increased rate of accidents and an increased likelihood of looking for alternative employment (Cartwright & Cooper, 1997; Quick et al., 1997). Attempts to quantify the effects of strain typically focus on these direct and observable costs associated with stress.

Less observable, but equally real, organizational costs include increased interpersonal conflict, impaired communication and flawed decision making as a result of stress (Quick et al.., 1997). Indeed, organizational strains may initiate a vicious circle whereby conflicts and mistakes caused by stress are themselves stressors which occasion more stress and strain.

Summary: What is Stress ?

Although we acknowledge that there has been a great deal of definitional confusion, there is now a fair degree of consensus around the meaning of the terms stressor, stress, and strain. Although it is possible to identify common stressors in the workplace, it is also clear that the perception of an event as stressful, or as a stressor, resides within the individual. Not everyone will react to the same situation in the same way. People must perceive the event to be demanding in some way (e.g., a threat or a challenge). As we've discussed, stress is an adaptive and individualistic response to the demands of the objective environment (i.e., stressors). We have also demonstrated that these demands take a variety of forms (e.g., acute, daily, chronic).

Stress also can have serious consequences. Individuals exposed to continued or high levels of stress, develop strain reactions which may be psychological, physical, behavioral or organizational. In turn, these forms of strain reactions can impact the organization and affect people's lives at. Both the human and monetary costs of occupational stress warrant our attention and lead to a focus on stress prevention and treatment.

Preventative Stress Management

The preceding discussion has clearly articulated the negative consequences that work-related stressors, stress and strain can have for individual employees and organizations as a whole. One effective approach to offsetting, mitigating or even avoiding negative stress related outcomes is Preventative Stress Management. Preventative stress management is "an organizational philosophy and set of principles that employs specific methods for promoting individual and organizational health while preventing individual and organizational distress" (Quick et al., 1997, p. 149). The following discussion will further detail the tenets of preventative stress management, highlighting the importance of organizational leadership in the realization of stress prevention and will describe some of the methods of intervention that have been successfully applied in the promotion of workplace well-being, as well as in the prevention and treatment of work-related stress and strain.

From the above definition, it is clear that efforts aimed at the prevention of stress must include both organizational and individual perspectives. Methods of intervention that involve changing aspects of the workplace including job demands, norms of interpersonal treatment, or the physical environment of the work setting are efforts that involve the organization as a whole. Other efforts, such as completion of a training program in appropriate stress coping styles, are initiatives that individuals can take on their own. In fact, a basic principle of the preventative stress management approach is that the health of an organization and the health of its employees are interdependent (Quick et al., 1997). Organizations whose employees are in good health are more likely

to be successful. Alternatively, employees who work for organizations that provide pleasant working conditions are more likely to be healthy, productive individuals. Given this interdependence, it becomes obvious that the burden of stress management cannot placed entirely upon the individual employee who is feeling stress at work, the organization itself must also assume some of the obligation.

Given their pivotal role in organization, leaders have the ability to influence the heath of both the organization as a whole and of individual employees. Although a thorough discussion of the role of leaders in the stress process is presented in a following section, it is important to presently point out that ineffective leadership can lead to organizational decline. Employees who work for an organization in trouble are more likely to be exposed to some of the workplace stressors described previously and thus be vulnerable to workplace stressors (e.g., job insecurity, role overload). Alternatively, effective leadership is a key to healthy organizational performance and accordingly a potential route to healthy employees who are less burdened by the consequences of organizational stressors.

Although it is clear that aspects of the work environment play a large role in the creation of workplace stress, many efforts to allay the impact of workplace stress have focused on individual treatment efforts that address existing stress or symptoms of strain, For instance, many organizations offer employee assistance programs (EAPs) to help individuals who have not been able to successfully cope with workplace stressors (Hepburn, Loughlin, & Barling, 1997). It is usually left up to the individual employee to seek out the services provided in the employee assistance program. Indeed efforts, to

help individuals manage sources of stress are important aspects in addressing work-related stress and strain. However, such an approach defies a core principlesof effective preventative stress management in that it fails to focus on organizational level interventions. It is important to acknowledge that organizations are dynamic entities that can be changed and molded in such as way as to modify the potential forf the occurrence of workplace stressors and provide additional support systems for to enable effective coping among employees when exposure to stressors is inevitable. For example, organizations can ensure that employees are given clear role descriptions to lessen the potential for stress related to role ambiguity.

Ideally, stress management programs will include both organizational and individual interventions that are designed to reduce exposure to stressors, aid in the coping process when stressors are unavoidable, and swiftly provide treatment options to those individuals who are experiencing the negative consequences of stress. In the following paragraphs we describe three categories of interventions (primary, secondary and tertiary) and provide illustrative examples of organizational and individual efforts to manage stress in the workplace for each type of intervention.

Primary Intervention

Primary stress prevention efforts involve the reduction or removal of the actual stressors (Hepburn et al., 1997). The logic behind such a strategy is that if the sources of stress are no longer present in the workplace there should be a simultaneous reduction in employee stress and strain. It is difficult to argue with the efficacy of removing stressors as a strategy to reduce work-related stress and strain. Not surprisingly, it is widely

agreed that primary preventative strategies are highly effective in reducing stress (e.g., Burke, 1993; Hepburn et al., 1997; Wall & Clegg, 1981). Despite the supporting evidence, it appears that primary prevention strategies are not broadly implemented in organizations. Some have suggested that organizational decision makers presume the cost and logistics of primary preventative strategies would be prohibitive and therefore prefer to focus on interventions that target the employees' ability to cope with existing stressors (Hepburn et al., 1997). However, as the individual and organizational examples of primary intervention provided below illustrate, primary preventative efforts can be of a reasonable nature and, given resulting reduction in employee stress, worth the effort involved in their implementation.

Potential Primary Interventions at the Organizational Level

There are a number of measures that organizations can take to reduce the number of stressors to which employees are routinely exposed. From a leadership perspective, leaders are crucial facets in the implementation of primary interventions to reduce stress. Leaders who are attune to the presence of particular stressors in the work environment can cooperate with their organizations and employees reduce the presence of those sources of stress and promote the communication of such stressors among organizational stakeholders – from the employees to the upper levels of leadership. As such, leaders can be valuable resources to enable reduced exposure to stressors at work.

Organizational efforts at primary stress prevention fall in a number of categories, these include, but at not limited to reducing the stressors associated with task demands, role uncertainties and interpersonal interactions. In terms of task demands, organizations

can engage in job redesign to ensure that employees are allowed the opportunity to work on tasks that are meaningful and provide sufficient levels of autonomy (Quick et al., 1997). As noted above in the discussion of the content models of stressors, tasks that provide a low level of decision latitude and lack variety are often perceived as stressful. As such, organizational efforts to enrich jobs and provide increased control (e.g., control over task completion and work schedules) should reduce a major source of work related stress and result in a healthier and more productive workforce.

Regarding role related factors, organizations should ensure that employees have clearly articulated and manageable roles that allow them to more easily avoid the stress associated with role stressors. Such interventions may be as simple as providing employees with a written role description that includes clear communication of the expectations of their supervisors and co-workers (Quick et al., 1997). Joint participation of supervisors and employees in goal setting may also help to clarify role expectations and avoid role conflict.

Interpersonal relationships are a major factor in most jobs. Employees interact with coworkers, supervisors and sometimes clients/customers on a daily basis. Leaders of organizations should work with their employees to promote an atmosphere of team work and supportive interactions (Quick et al., 1997). Recall from an earlier section of this paper that social support from peers and supervisors is important in protecting individuals from the negative consequences of stress and thus efforts to improve the degree of support employees receive at work should reduce the amount of strain ultimately reported by employees.

Potential Primary Interventions at the Individual Level

In combination with organizational efforts directed toward primary stress prevention, individuals can also engage in activities that will reduce their exposure to stressors or their vulnerability to stress. Such actions include changing their perceptions of stressors, avoiding stressors in their work environment and leading a balanced lifestyle (Quick et al., 1997).

Reducing the likelihood that a potential stressor will be appraised as a threat is approach that individuals can take to eliminate stress at its source. The literature suggests several tactics to manage perceptions around stressful incidents, including learned optimism and reducing Type A behaviour patterns (Quick et al., 1997). One aspect of pessimistic thinking over which individuals can take control is the extent to which they engage in negative cognitive distortion. Negative distortions include self-defeating thoughts in which a person predicts to worst possible outcomes for events. Such thinking patterns can result stress as situations that are negatively appraised appear threatening. Therapeutic approaches such as rational emotive therapy (RET, Ellis, 1955) and other interventions such as thought stopping (Schafer, 1987) and constructive self talk (Eliot, 1995) have been developed to help people replace negative thought patterns with positive ones.

Earlier in this work, Type A behaviour patterns were introduced as a risk factor for stress. Individuals can aim to reduce the amount of stress they experience by reducing the extent to which they exhibit characteristic Type A actions (Quick et al., 1997). Several programs have been developed to help people replace the irritability and

hard driving actions that comprise the Type A pattern with less stress provoking responses. The literature supports the efficacy of these approaches. A study of military officers found that those who attended behavioral change classes aimed at reducing Type A actions reduced the extent to which they engaged in such behavior with no accompanying reduction in work performance (Gill, 1985). Although an individual may never fully stop acting in a Type A manner, they can reduce the frequency with which they exhibit such behavior patterns.

Individuals can also engage in primary prevention strategies by avoiding numerous stressors in the workplace. Some techniques that are viable for employees at many levels of an organization include better time management practices and the avoidance of taking on an overload of tasks (Quick et al., 1997). When individuals are better able to plan, prioritize, and schedule their work activities they may be able to avoid such stressors associated with time pressure such as rushing to complete tasks, being overwhelmed, and lack of rest time. Part of effective work planning is to avoid task or role overload. Individuals can improve their ability to estimate how much work they can realistically do in a set period of time and try not to commit to excessive obligations.

Living a balanced life style, one that includes both work and leisure activity, is another effective strategy in the primary prevention of stress (Quick et al., 1997). Investing in family and leisure activities in addition to work requirements can contribute to a greater network of social support, an important buffer of stress. Research suggests that a balance of work, family and leisure activities is a key factor in promoting health in high stress environments (Quick, Nelson, & Quick, 1990).

Secondary Intervention

Secondary preventative interventions are response directed in nature. They focus on minimizing the negative impact of the stress response once a person has recognized that they are feeling stress. These techniques, such as stress management and relaxation training are aimed at helping people to identify the negative health effects of stress and teaching effective coping strategies (Hepburn et al., 1997). The logic behind this approach is that in the face of existing stressors, using the appropriate coping technique can mitigate negative the effects of stress on health. Secondary interventions are more widely used and are certainly more common that primary preventive techniques (Quick et al., 1997). Although secondary efforts can be effective and useful, from a health perspective they are less desirable than primary approaches as they target stress only after it has occurred and may place more of the burden of the intervention on the individual employee.

Potential Secondary Interventions at the Organizational Level

The role of the organization in providing secondary interventions is really one of facilitation. Secondary interventions include such programs as relaxation, stress management training and counseling, physical fitness programs, and balanced nutrition. One manner in which organizations can ease employees' access to secondary stress interventions is via the benefits package they offer employees. Benefits such as training and counseling (relaxation techniques, stress management counseling, nutritional) are appealing, viable secondary intervention strategies. Organizations can also provide opportunities for secondary interventions on site. Organizations providing fitness centres

and/or cafeterias with healthy meal options in the workplace are facilitating employee efforts to reduce the impact of stress. Companies can also sponsor stress management training programs that are directed at reducing the negative impact of stress and allow employees to complete these programs during work hours.

Potential Secondary Interventions at the Employee Level

Employees can engage in secondary by seeking appropriate training with respect relaxation and coping strategies. Having the ability to relax and invoke effective coping strategies in times of stress can protect individuals from negative health consequences. Such training programs can also help employees to identify the symptoms of stress and prompt them to seek out sources of support such as coworkers or supervisors before they experience negative health consequences. Additionally, maintaining a high level of physical fitness and a balanced diet can protect a person from negative health consequences that can follow from a stressful working environment.

Tertiary Intervention

Tertiary intervention strategies are used after the fact to help those individuals who have not been able to effectively manage or cope with workplace stress and are now experiencing symptoms of strain (Hepburn et al., 1997). Examples of tertiary intervention strategies include symptom specific psychological therapy and medical attention. Quick et al. (1997) reflect that in the "best of all organizations, primary and secondary prevention would be enough to manage the demands of work life" (p.257). However, in the event that stressors and stress are not adequately dealt with via primary

and secondary efforts, it is important to consider potential tertiary invention strategies that organizations and individuals can take to treat their symptoms of strain.

Potential Tertiary Interventions at the Organization Level

As with organizational efforts at secondary prevention, the organization's role in tertiary intervention is largely facilitative in nature. Once again, the provision of benefits packages that include such service options as employee assistance programs, individual psychological counseling and a variety of medical benefits (e.g. physical therapy, massage) will support employees in their efforts to seek tertiary level treatment. Additionally, employers should keep in mind that some events will induce stress in many individuals. Traumatic events such as job loss, violence in the workplace, natural disasters, or acts of terrorism (for instance the events of 9/11) should be addressed at the organizational level as they will negatively impact virtually all employees. Keeping in mind the reciprocal nature of organizational and employee health, organizational leaders must not only ensure that these services are available to employees, but also encourage the utilization of these programs.

Potential Tertiary Interventions at the Employee Level

Tertiary stress management strategies for individuals primarily involve seeking counseling or medical treatment for the health related symptoms of strain. Recall that strain can manifest in emotional (e.g., depression and anxiety), physiological (e.g., heart disease and gastrointestinal disorder), and behavioral symptoms (e.g.., increased alcohol and cigarette consumption). The type of treatment one seeks may be dependent on the particular spectrum of stress symptoms that the employee is experiencing. Psychological

counseling and therapy are tertiary interventions that may be particularly effective in addressing emotional and behavioral symptoms of strain. In some cases the strain related symptoms may require medical attention. Individuals who are experiencing physical strain symptoms should seek the attention of a medical professional. One should also keep in mind that severe emotional symptoms may also require medical attention by way of drug treatments.

What is important at the tertiary level is that individuals experiencing strain are aware that the symptoms are a real threat to their overall health and well-being and seek treatment. Again, the organization can take a role in such an acknowledgement by reinforcing that strain related illnesses are valid reasons to seek medical or counseling attention and facilitate employees requests for time away from work to meet with health care providers.

The above discussion identifies three categories of interventions that organizations and their employees can use to address stress related problems at work. In sections that follow we take a closer look at the role that leaders may play in the stress and stress management process.

Stress and Leadership

One of the aftermaths of tragedies such as the events of 9/11 is a renewed focus on the effect of leadership on individual well-being. Certainly, there are reports that that post 9/11 some senior managers placed their employees' needs and emotional well-being before the profits of the company (Walsh, 2001). At the same time, others not only failed to show compassion and inspiration during the crisis, but engaged in behaviors that

negatively affected employee well-being (see Dutton, Frost, Worline, Lilius, & Kanov, 2002). Despite the existence of such anecdotal evidence, there are very few empirical studies that focus on the effects of leadership on employee well-being. In the following review, we focus on three roles of leaders related to the stress process presented earlier. First, leaders can be sources of work stress. Second, leaders may be stress buffers. Third, leaders may provide a more generalized effect by increasing resistance to stressors and enhancing well-being.

Leaders as Stressors

The notion that poor quality leadership has negative effects is not new (Day & Hamblin, 1964), and the research that has been conducted on the link between leadership and mental health has invariably focused on the potentially negative effects of poor quality leadership. Poor leadership also has been associated with increased levels of employee stress (Offerman & Hellman, 1996) and retaliation (Townsend, Phillips & Elkins, 2000). Ashforth (1997) found that when abusive supervisors used non-contingent punishment, employees felt a sense of helplessness and alienation from work. Furthermore, Atwater, Dionne, Camobreco, Avolio and Lau (1998) reported that leadership effectiveness of supervisors in the military is negatively impacted when supervisors resorted to non-contingent punishment. Richman, Flaherty, Rospenda and Chistensen (1992) found heightened levels of psychological distress among medical residents who reported to abusive supervisors. More generally, employees who perceive their supervisors to be abusive experience low levels of job and life satisfaction, lower levels of affective commitment, increased work-family conflict, and psychological

distress (Tepper, 2000), as well as psychosomatic symptoms, anxiety and depression (Hoel, Rayner & Cooper, 1999). Finally, Dupre, Inness, Connelly, Barling and Hoption (2003) found a relationship between teenagers' experience of abusive supervision and their own aggression directed toward their supervisors

In addition to the potential for abusive supervision to be a stressor, we note that many of the organizational stressors identified in our initial review may be a function of leadership practices. For example, Francis, Kelloway, Barling and Keeley (2003) found that perceptions of organizational injustice predicted individual well-being. Perceptions of injustice maybe rooted in organizational leaders' decision-making. That is, leaders make decisions and enact policies that may be seen as unjust and impact negatively on individual well-being.

In a similar fashion, role stressors such as conflict, ambiguity, and overload may be a direct result of organizational leaders giving conflicting, vague or overly demanding instructions. Perhaps the biggest single determinant of whether individuals have autonomy or control in the workplace is whether their immediate supervisors allow them to have decision-making authority. Thus leaders may be a stressor by [a] providing poor quality and/or abusive leadership and [b] by creating or exacerbating negative organizational conditions.

Leaders as Stress Buffers

In a similar vein, leaders may act as stress buffers protecting their subordinates from exposure to stressors or the effects of such exposure. As noted above, Walsh (2001) reported that the care and compassion shown by leaders following the events of 9/11

were instrumental in helping employees deal with overwhelming circumstances. The positive effects of social support (House, 1981) were reviewed above and we note here that supervisors may be a particularly potent source of social support. Empirical evidence supports a congruence hypothesis whereby support is most effective when it emerges from the same domain as the stressor. Barling et al. (1987) for example, report that coworker and supervisory support, but not family support, was seen as helping survivors of an explosion at a munitions plant. Thus, supervisors may be ideally placed to provide the various forms of social support to subordinates, thereby increasing resilience to organizational stressors.

The provision of social support may be an expected role of supervisors in the CF. Kelloway and Barling (1996) conducted focus groups with CF members and found that supervisors were expected to "protect", "stand up for" and "help out" their subordinates. In this sense, CF members expected their supervisors to act as organizational shields and buffer them from harsh or seemingly irrational organizational decisions. Failure to take up this role generally lead to poor perceptions of the individual leader.

Leaders as Resources

Some attention has recently been focused on the potentially beneficial effects leadership might exert on the welfare of employees. Dutton et al. (2002) provide compelling examples and research-based insights into ways in which compassionate leaders can affect the collective health of their workers. Similarly, Turner, Barling and Zacharatos (2002) offer a conceptual argument for the positive effects that transformational leadership is expected to exert on employee well-being. Nonetheless,

the need for empirical research focusing on the potentially positive effects of leadership remains both timely and important in furthering our appreciation of how organizational leaders can promote the well-being of others within organizations.

Bass's (1998) paradigm of transformational leadership has garnered more empirical attention than all other leadership paradigms combined over the past decade (Judge & Bono, 2000), and is consistently linked to a wide range of employee (i.e., employee motivation, satisfaction, commitment, loyalty) and organizational outcomes (i.e., business unit performance, financial performance) (see Bass, 1998). More importantly from the perspective of this review, transformational leadership has been positively linked to employee safety, a facet of employee well-being. Recent research shows that transformational leadership enhances employees' safety performance in correlational (Barling, Loughlin, & Kelloway, 2002; Kelloway, Mullen & Francis, 2003) and experimental (Sivanathan & Barling, 2002; Zohar, 2002) investigations. Sivanthan, Barling, Loughlin & Kelloway (2003) have shown that leaders' transformational qualities impact well-being indirectly through the mediating roles of trust and self-efficacy.

Being able to rely on the skills, abilities, and intentions of those in supervisory positions (i.e., trust in leadership) has been argued to be one of the most important predictors of positive organizational outcomes (Kouzes & Posner, 1995; Yukl, 1998). Empirical findings support this notion: trust in leadership is associated, for example, with higher work satisfaction (Butler, Cantrell, & Flick, 1999), citizenship behaviors (Pillai, Schriesheim, & Williams, 1999) and performance (Dirks, 2000). Trust also is linked to mental health. Harvey and Kelloway (2003), for example, report that trust in

management moderated the impact of role overload on several mental health outcomes including burnout, work-family conflict and general well-being. Transformational leadership has been associated with higher levels of trust in management in several different studies (Jung & Avolio, 2000; Podsakoff, Mackenzie, Moorman, & Fetter, 1990; Pillai et al, 1999). These consistently positive findings suggest that by acting as role models who consistently do what is moral and right, and not necessarily personally beneficial, transformational leaders gain the respect and trust of their followers.

Self-efficacy reflects the belief that a particular action can be completed successfully (Bandura, 1997). Self-efficacy has attracted considerable research scrutiny, and has been shown to be positively related to job attitudes (Saks, 1995), motivation on the job (Prussia & Kinicki, 1996), and job performance (Stajkovic & Luthans, 1998). At the same time, research findings also show consistently that feelings of self-efficacy enable individuals to confront formerly fear and anxiety-provoking stimuli (see Bandura, 1997). For example, Jex and Bliese's (1999) findings that self-efficacy buffers the negative impact of work stressors on employee psychological well-being are to be expected, because individuals high in self-efficacy are more likely to confront their stressors, while those low in self-efficacy are more likely to consume their time worrying about them (Kinicki & Latack, 1990). Therefore, by relying on problem-focused coping, employees higher in self-efficacy are better equipped to act in a more adaptive manner in response to setbacks and stressors in their work environment, and thus are more likely to maintain healthy levels of psychological well-being.

Leaders themselves may enable their employees to better manage the stressors in their environment by providing their employees with a work experiences that promote the development of high self-efficacy. Self-efficacy develops through performance accomplishments, vicarious experiences, and verbal persuasion (Bandura, 1997). Therefore, by (a) inspiring their followers to greater heights; (b) manifesting positive behaviors that followers want to emulate; (c) exhorting their followers to think of challenges in ways that make it possible to confront them, and (d) providing a supportive climate within which this is all possible, transformational leaders affect their followers' self-efficacy. Preliminary evidence for this claim comes from a laboratory study in which Kirkpatrick and Locke (1996) found that the effects of charismatic/ transformational leader's vision on follower's performance were mediated by self-efficacy.

Sivanathan et al. (2003) report that perceptions of leaders' transformational leadership style were linked to increased trust in management and increased self-efficacy. In turn, trust and self-efficacy were linked to well-being. These findings extend previous literature that suggests negative leadership is a stressor by also showing that positive leadership may enhance well-being. These effects go beyond being a buffer in a time of stress. As noted above, leaders act as stress buffers when they help individuals avoid or deal with organizational stressors. However, Sivanathan et al.'s (2003) findings did not emerge in the context of particularly high levels of organizational stressors, suggesting that being exposed to transformational leadership had a generally beneficial effect on employee wellbeing regardless of the degree of exposure to stress.

Sivanathan et al.'s results are important for two reasons. First, the notion that transformational leadership exerts indirect effects on well-being is consistent with findings relating transformational leadership to other important outcomes (Howell & Avolio, 1993; Podsakoff, Mackenzie & Bommer, 1996). Second, some implications for primary prevention of employee well-being ensue from these results. Specifically, interventions that attempt to achieve high quality leadership in the workplace might plausibly be associated not only with enhanced work performance (Barling et al., 1996) and safety (Kelloway et al., 2003; Sivanathan & Barling, 2002), but also with enhanced psychological well-being.

Implications for Leadership Development

The foregoing discussion suggested that leaders may contribute to the experience of stress and strain in three major ways; as stressors, as sources of social support (i.e., stress buffers) and as resources. These findings suggest that leaders could have a direct impact on the well-being of subordinates through these avenues. In particular, the available data suggest three avenues of training and leadership development.

First, improving leadership skills should have a direct effect on individual well-being. To the extent that leaders' can establish healthy working relationships and can reduce/eliminate stressors in the workplace, subordinate well-being should be enhanced. Beaton, Murphy, Johnson, Salazar and Corneil (2003) provided striking evidence for the effectiveness of this approach. They implemented a leadership training program comprising [a] leader-match training, [b] stress management, [c] team development and [d] conflict resolution for leaders in an urban fire service. Beaton et al. (2003) were able

to compare various measures prior to the training with post-tests conducted six and eighteen months after the training. They found that on-the-job injuries declined by 10% after leadership training. Perhaps more importantly for this review, firefighters' (i.e., subordinates') reports of distress decreased immediately following the intervention and remained at these reduced levels for at least 18 months. Like most field studies, the Beaton et al. (2003) investigation does not allow for an unambiguous attribution of causality. However these results strongly suggest that specific skills training for leaders will result in enhanced outcomes for both subordinates and the organization.

Second, we suggested that supervisors may be a potent source of social support in the workplace. The ability of supervisors to function effectively in this role is predicated on their understanding of the dynamics of workplace stress and the signs of stress/strain. Therefore, consistent with Beaton et al's (2003) findings, specific training in stress and stress management would assist leaders in their social support role. While this training would obviously comprise the definitions and dynamics of stressors, stress and strain, leadership training in stress management should go further in identifying specific behavioral interventions and action plans for leaders.

Finally, Sivanathan et al.'s (2003) results suggest that transformational leadership impacts on subordinate trust and self-efficacy and, indirectly, on well-being. There are consistent empirical data suggesting that transformational leadership skills can be developed (Barling, Weber, & Kelloway, 1996; Kelloway, Barling & Helleur, 2000). Taken together these results suggest that transformational leadership development would have a beneficial effect on well-being.

Finally, we note that these three suggestions are not mutually-exclusive. Rather, an effective approach would seem to combine transformational leadership development with specific training in stress management and training in specific skills (e.g., conflict management, team development). Although we are unaware of any organization that has implemented such a comprehensive approach, the available empirical data suggest that it would be effective. Moreover, such an approach may be particularly appropriate in organizations like the CF where leadership is valued in and of itself and at least some stressors (i.e., operational stressors) are inherent in the nature of the job.

Summary

In this paper we reviewed the concepts of stressors, stress and strain and proposed a model in which stressors are objective events external to the individual. Stress is the individual reaction to stressors and strain comprises the psychological, physical, behavioral and organizational outcomes associated with continued exposure to stress. Both the stressor-stress and stress-strain linkages may be moderated by a host of individual differences.

Organizations can intervene in this process at either the organizational or individual level. Moreover, interventions at each level can be classified as primary, secondary, or tertiary. Primary interventions seek to remove the stressor. Secondary interventions seek to ameliorate the stress experience. Tertiary interventions focus on "healing the wounded" and attempting to reverse the experience of strain.

We also identified three roles for leaders in the stress process. Leaders can be seen as a source of stress, a source of social support and a resource. Each of these roles has a complementary implication for leadership development.

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