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WORKPLACE STRESS

a review of the literature

Roderic Gray

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www.rodericgray.com

Workplace stress has been identified as a serious cause of individual suffering and commercial loss. This review examines published evidence on the causes and effects of stress, and the implications for managers in organisations.

The nature of stress

Stress is "a reality like love or electricity - unmistakable in experience but hard to define" (Teasdale and McKeown, 1994).

Occupational stress "has been designated one of the top ten industrial diseases in the US" (British Psychological Society, 1988). Willcox (1994), comments that "previous research supports the view that at least 25% of the working population is psychologically stressed at any one time." If this is true it has serious implications for the health of society as a whole, a point acknowledged in the government document *The Health of The Nation* (HMSO, 1992) when it identifies mental health as one of the key areas needing to be addressed to enhance the nation's health.

The study of stress begins with a difficulty of definition. Williams (1994) describes 'stress' as "one of the most inaccurate words in the scientific literature" because it is used to describe "both the sources and the effects of the stress process." MacLean (1985) remarks that "the word is sometimes used to denote stressful events, sometimes to denote the effect of these events on work performance, and sometimes to denote an individual's reaction in terms of disordered health." This confusion permeates much of the literature. Not only is there "disagreement about the meaning of the term," there is "disagreement about how it should be measured" and there is a "lack of understanding about quite how aspects of the environment might actually make a person ill" (Marmot and Madge, 1987). These issues about the fundamental nature of stress preoccupied many researchers during the seventies and eighties as they tried to determine whether stress was a "characteristic of the environment, an experience felt by the person, or a transactional phenomenon created by the process of the person interacting with the environment" (Schuler and Jackson, 1986).

Lazarus (1971) had earlier observed that stress referred to such a broad class of problems:

"any demands which tax the system, whatever it is, a physiological system, a social system or a psychological system, and the response of that system."

This was clearly a wide field for enquiry, to the extent that many researchers in the field "concluded that the concept of stress is no longer useful as a scientific construct" (Schuler and Jackson, 1986). Ten years later the term is still very much in use and there is greater consensus about its meaning.

If there has been difficulty in determining what stress is, then how to measure it has been even more problematical. According to Kasl (1987):

It has been impossible to identify and agree upon a criterion, or more appropriately a set of criteria, for identifying the presence of a state of stress and then calibrating its intensity and duration."

Cox (1993) draws attention to the importance for general health of a state of balance between needs and demands, citing the World Health Organisation's definition of well-being:

"a dynamic state of mind characterized by reasonable harmony between a person's abilities, needs and expectations, and environmental demands and opportunities" (WHO, 1986).

Assessing this "dynamic state of mind" however, presents great methodological difficulties, leading Cox (1993) to comment that "sadly, much of what is currently published on occupational stress and health is weak methodologically," the available evidence being based to some extent on cross-sectional studies where key variables are measured and linked only in terms of self-report (Kasl, 1992). Levi (1992), however, is adamant that "the individual's subjective assessment is the only valid measure of well-being available." Similarly, Lazarus and Folkman (1984) argue that "given the centrality of internal events and processes ... we are in favour of this method despite its scientific defects." Cox and Griffiths (1995) appear to apply this belief specifically to stress research when they argue that "the measurement of the stress state should be based primarily on self-report measures which focus on the appraisal process and on the emotional experience of stress." Instruments for collecting such self-report data in a systematic and rigorous way have been developed. One such widely-used and validated instrument (Robertson, Cooper and Williams,

1990; Cooper and Williams, 1991; Rees and Cooper, 1991) is Cooper's Occupational Stress Indicator [OSI], developed in the late 1980s. The OSI asks a total of 167 questions dealing with sources of stress, general behaviour, life events, control/influence, coping behaviour and job satisfaction. Computer software is used to analyse the answers to produce a coefficient index (see Willcox, 1994).

The study of occupational stress

Hans Selye is regarded by many as the father of stress research. His book *The Stress Of Life* (1956) did much to bring the concept into the public domain and his General Adaptation Syndrome [GAS] is one of the seminal concepts in the field. Selye (1974) described stress as "a state, manifested by a specific syndrome of biological events." He argued that it was *not* "nervous tension," nor the "discharge of hormones from the adrenal glands," nor "simply the influence of some negative occurrence." He also maintained that it was "not an entirely bad event." What stress *is*, according to Selye, is the nonspecific response of the body to any demand on it for readjustment or adaptation. "Any kind of normal activity ... can produce considerable stress without causing any harmful effects" (Selye, 1974), later clarified as "the nonspecific [that is, common] result of any demands upon the body, be the effect mental or somatic" (Selye, 1982).

Selye's neutral application of the term is not adopted by French, Caplan and van Harrison (1982), the authors of a major enquiry into the mechanisms of stress in the workplace. They use 'stress' only in negative contexts, to refer to

"any of the following technical concepts: [1] objective misfit; [2] subjective misfit; [3] a variable in the objective environment which is presumed to pose a threat to the person; and [4] a variable in the subjective environment which the person perceives as threatening."

Schuler and Jackson (1986) argue that stress is a function of uncertainty, a "perceived dynamic state involving uncertainty about something important." They go on to define stress as:

"the uncertainty that occurs at the organizational, unit, group, and individual levels. Uncertainty exists to the extent that knowledge about an event or condition requiring action or resolution is experienced as inadequate."

This definition would not satisfy Edwards (1988) whose view of stress is as

"a negative discrepancy between an individual's perceived state and desired state, provided that the presence of this discrepancy is considered important by the individual."

Uncertainty is not a factor here, but the perception of discrepancy between actual and desired states can be traced through all the post-Selye definitions quoted above. This theme is continued by Taylor (1992) who maintains that stress consists of

"demands made upon us [internally or externally] which we perceive as exceeding our adaptive resources. If we try to cope and that is ineffective this gives rise to stress. If this stress is prolonged then lasting psychological and physical damage may occur."

The demands that are being considered here are those that arise from the world of work, and in a more limited context, the work of a project manager. However, acknowledgement must be made at an early stage that work does not exist in some entirely separate dimension from other aspects of life. Cox (1993) warns against the "erroneous belief that work and non-work activities are unrelated in their psychological, physiological and health effects," a misconception which Kanter (1977) calls "the myth of separate worlds." Amongst the full range of potential stressors, though, work-related sources figure prominently (Dohrenwend and Dohrenwend, 1974; Link and Dohrenwend, 1980; Dohrenwend et al, 1988, or Cox, Watts and Barnett, 1981).

Much of the work leading Dohrenwend and his colleagues, and other researchers of the time, to their conclusions about the relative importance of various stressors was based on an assumption that "discrete, time limited 'life events' requiring change or adaptation are associated with the experience of stress" (Cox, 1993). Prominent amongst the proponents of this view, which is consistent with Selye's early work, were Holmes and Rahe who produced in 1967 a "Schedule of Recent Life Events" ranked and scored in order of potential stressfulness. The majority of the specific items in the Holmes-Rahe schedule are non work-related, the top item being "Death of spouse" [rated 100], followed by "Divorce" [rated 73]. Not all are negative; "Marriage", for example, is placed seventh with a score of 50. The first specifically

work-related item comes eighth: "Fired from work" [rated 47], which, interestingly, is only marginally more stressful than "Marital reconciliation" [ninth, rated 45]. Other work-related items are: "Retirement" [tenth, rated 45], "Business readjustment" [fifteenth, rated 39], "Change to a different line of work" [eighteenth, rated 36], "Change in work responsibilities" [twenty-second, rated 29], "Trouble with boss" [thirtieth, rated 23] and "Change in work hours/conditions" [thirty-first, rated 20]. (Holmes and Rahe, 1967).

Maclean (1985) believes these "life change units" to be "useful predictors of susceptibility to subsequent illness," arguing that "the approach has held up remarkably well in a wide range of samples of people from several countries and cultures." Cox (1993), however, dismisses life event scales as indicators of the importance of work stressors on two grounds. Firstly, because "it is now widely thought that the primary stressors facing most employees in the course of their working lives are chronic rather than acute." In other words, single events are far less significant than ongoing conditions and situations. Secondly, "rankings of life events are context dependent" and are therefore meaningful only if all circumstances are known and their relative influences assessable. Lazarus and Folkman (1984) argue that

"Life events have little practical significance in the prediction of health outcomes, even though such prediction is the primary reason for using life events indexes"

and go on to maintain that their research has demonstrated, "in a regression-based comparison of life events and daily hassles, that hassles are far superior to life events in predicting psychological and somatic outcomes."

The interlinking of work and non-work factors in their effects upon an individual has already been noted and is reinforced by one finding of a survey of 109 British companies by the mental health charity MIND (MIND, 1992) in which 63% of the companies surveyed said they believed that problems at work caused equal or more stress than personal problems. This prompts another definition, of *occupational* stress. Weiman (1977) suggests:

"Occupational stress is the sum total of factors experienced in relation to work which affect the psychosocial and physiological homeostasis of the worker. The individual factor is termed a stressor and stress is the individual worker's reaction to stressors."

French, Caplan and van Harrison (1982) enhance this definition by pointing out that the term 'occupation' is "really a surrogate for a variety of characteristics of the job and of the person," reinforcing the concept that stress is a multivariate phenomenon as well as being a term which is applied in a variety of different ways.

To introduce some order to the terminology some writers have distinguished between 'stress', which they reserve mainly for inputs, and 'strain', which they apply to outcomes. Thus Cummings and Cooper (1979) defined stress as:

"any force that puts a psychological or physical factor beyond its range of stability producing a strain within the individual. Knowledge that a stress is likely to occur constitutes a threat to the individual. A threat can cause a strain because of what it signifies to the individual."

Similarly, Beehr and O'Hara (1987) suggest using 'stressor' rather than 'stress' to refer to causal factors because "few people misinterpret stressor to mean the person's reaction." They reserve the word 'strain' to mean specifically the "adverse reactions of the individuals to the ... stressor." Fletcher (1988) picks up this distinction and uses 'strain' to mean "the state of being stressed as evidenced by physiological, psychological or medical indices," whilst Karasek and Theorell (1990) define strain as "an overload condition experienced by an organism's control system when it attempts to maintain integrated functioning in the face of too many environmental challenges."

Cox's (1993) broader use of the term 'stress' might be replaced with the more precise term 'strain' in his summary:

"Stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being (Lazarus, 1966, 1976; Cox, 1990), when coping is important to them (Cox, 1978) and when they are anxious or depressed about it" (Cox and Ferguson, 1991).

Cox and Griffiths (1995) propose a "unifying concept of the stress process" which would allow these factors to be understood in their context, both temporally and as they inter-relate systemically, "beginning with ... antecedent factors and ... the cognitive perceptual process which gives rise to the emotional experience of stress" and then considering "the correlates of

that experience.” The following pages will explore the components of that process in more detail.

Foundations of stress research

According to Karasek and Theorell (1990) two “classic theories on stimulation and performance ... still form the basis of much contemporary stress theory.” These two theories are Selye’s General Adaptation Syndrome (Selye, 1952, 1956, 1974, 1976 and 1982) and the ‘Inverted-U Hypothesis’, otherwise known as the Yerkes-Dodson Law (Yerkes and Dodson, 1908, cited in Hockey and Hamilton, 1983 and in Lazarus and Folkman, 1984).

The General Adaptation Syndrome [GAS] states that, in response to a stressor, an initial ‘alarm reaction’ is followed by a ‘stage of resistance’ in which resistance to the original stressor builds up but ability to resist new stressors is lowered. Eventually a ‘stage of exhaustion’ sets in which ends in catastrophic inability to cope with *any* form of stress (Selye, 1952). Gray (1991) models the General Adaptation Syndrome diagrammatically:

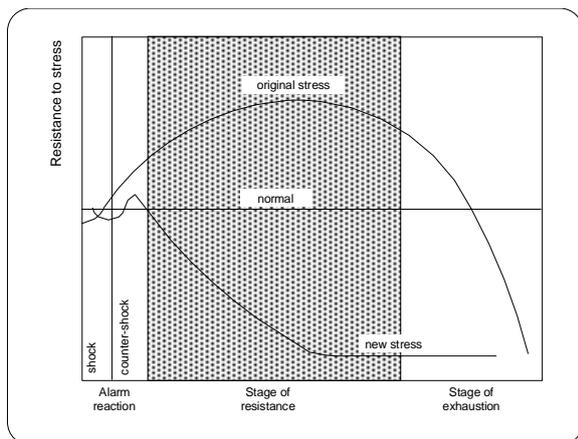


Figure 1 Selye’s General Adaptation Syndrome
Source: Gray (1991)

Selye clarifies the complete model thus:

“It is not necessary for all three stages to develop before we can speak of a GAS; only the most severe stress leads rapidly to the stage of exhaustion ... Most of the physical or mental exertions, infections, and other stressors that act upon us during a limited period produce changes corresponding only to the first and second stages. At first the stressors may upset and alarm us, but then we adapt to them” (Selye, 1982).

Selye’s model has been the inspiration for later researchers, and has contributed to the development of understanding. It has, however,

the fundamental weakness of being essentially a static model. It assumes that the stressors acting upon an organism must be endured; that the changes which eventually occur, either towards adaptation or towards collapse, occur within the subject organism. When applied to man [and presumably to many of the higher animals] there are alternative and additional possibilities for change. Williams (1994) remarks:

“The General Adaptation Syndrome assumes that each individual will react to a stressful situation in a certain way. It fails to take into account the individual’s ability to interpret a threat as a source of pressure and act to change his situation.”

This ability is referred to as *coping*, and will be discussed in more detail below.

The second of the two “classic theories” cited by Karasek and Theorell (1990) is the Inverted-U hypothesis, or Yerkes-Dodson law. This states that there is an optimum level of arousal for any task, which will be lower as the difficulty of the task increases (Hockey and Hamilton, 1983). This is consistent with Selye’s GAS in that the need to perform a task, which need may here be considered to be a stressor, causes an arousal which builds up towards a maximum and then declines. This is accompanied by an increasing ability to deal with the task, again up to a maximum level, after which performance declines. Hockey and Hamilton (1983) offer an explanation of this:

“The general form of the Inverted-U function is said to result from an increasing reduction in the processing of environmental information as arousal level increases, starting with peripheral or secondary sources, then restricting the use of even primary task information.”

This increasingly narrow focus on the task in hand, producing more effective performance, is again consistent with Selye, and the decline in performance as the focus becomes dysfunctionally narrowed until the ability to process any information eventually ceases is consistent with the decline into the exhaustion stage postulated by Selye. The observation that the more difficult the task the lower the optimal arousal level may simply reflect the fact that more difficult tasks commonly require the processing of more information and/or information of greater complexity.

Again, this model is now held to be rather too simple, but is respected as the inspiration of

later theorising and research. Hockey and Hamilton (1983) remark that "it is now apparent that stressors affect performance in ways which cannot be fitted comfortably into the simple arousal generalization." Eysenck (1983) argues for the influence of anxiety as one such performance moderator:

"Contemporary wisdom now holds that anxiety affects performance by producing changes in the selectivity and/or intensity of attention; within such an approach, anxiety can affect both the learning or acquisition of information and its subsequent retrieval."

Cox (1993) summarises three approaches to the study of stress. Firstly, an "engineering" model which sees stress as a characteristic of the work environment or "some aversive [threatening] or noxious element of that environment," that is, as a cause of strain (Cox and Griffiths, 1995). Secondly a physiological model which views stress as a set of responses to threat or aversive/noxious stimuli, or as a "generalised and non-specific physiological response syndrome and as a dependent variable" (Cox and Griffiths, 1995). This is the approach that logically arises from Selye's work. Cox (1993) argues that the engineering and physiological approaches are outdated because they do not adequately account for the available data. He observes that they "rely on simple stimulus-response paradigms" and ignore perceptual and cognitive processes.

The third approach to the study of stress identified by Cox (1993) is a psychological, cognitively-based model. Cox and Griffiths (1995) describe two main variants of this model which they say "dominate contemporary stress theory." These are transactional and interactional paradigms. The interactional paradigm "focuses on the structural features of individuals' interactions with their work environment" whilst the transactional model is "more concerned with the psychological processes underpinning those interactions" and is "primarily concerned with cognitive appraisal and coping." These two models are not, of course, mutually exclusive, but represent different priorities in the researchers' attention. Schönflug (1983) comments:

"Transactional models of stress have treated external stressors like work load, time pressure, or painful life changes as task demands ... External demands, however, cannot operate on an individual unless they have been identified by him and internalised

to become part of his set of internal demands."

These internal and external elements are summarised by Cox (1993) in a five-stage transactional model representing, in stage 1, sources of demand [part of the environment] faced by the individual, in stage 2, the individual's perceptions of those demands in relation to his/her ability to cope, in stage 3, the psychological and physiological changes associated with recognition of stress arising from stage 2, including perceived ability to cope, in stage 4, the consequences of coping, and in stage 5, the general feedback [and feed forward] that occurs in relation to all other stages of the model. .

Williams (1994) represents this as a dynamic model:

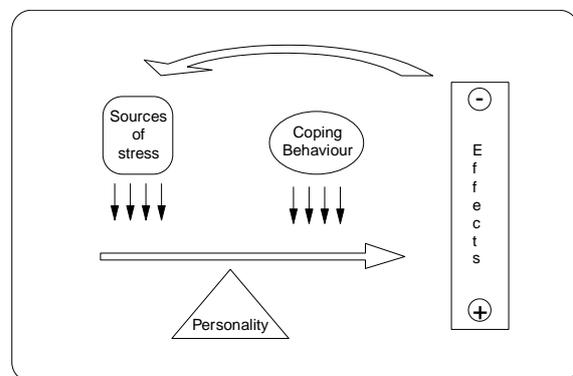


Figure 2 Stress Processes
Source: Williams (1994)

In this model an indicator rests on the fulcrum of personality. Sources of pressure and coping behaviours both exert downward pressure on the indicator on either side of the fulcrum and the positive or negative effects of this contest feed back to add weight either to the sources of stress or to the coping mechanisms. Clearly the position of the fulcrum; the individual's personality attributes, has a very significant influence on the potentiality both of the sources of stress and of the coping behaviours.

Cox (1993) emphasises the importance of the feedback loop in models of this kind:

"if individuals [a] realise that they are failing to cope with the demands of a task, and [b] experience concern about that failure because it is important, then this is a 'stress' scenario. The effects of such stress might then cause a further impairment of performance over and above that caused by lack of ability."

This has particular significance in considering threat as a source of stress because a fear of specific consequences of failure may be a strong reason to experience concern.

Prominent among interactional theories of stress are those which concentrate on the degree of match or mismatch between the individual and his or her environment. A major contribution to this research was made by French, Caplan and van Harrison (1982) who defined the key elements in the person-environment 'system' as [a] the extent to which an employee's abilities and attitudes meet the demands of the job, and [b] the extent to which the working environment meets the employee's needs, especially in respect of the encouragement the worker is given to make use of his or her knowledge and skills. French et al conclude that stress is likely to occur when there is a poor 'fit' in one or both dimensions. It should be noted that stress arises when the employee *perceives* there to be a mismatch. There may, of course, be discrepancies between objective or externally-observed reality and subjective perceptions.

It can be seen that stress is a field of study which to which a variety of research paths have contributed knowledge and understanding. These various approaches focus in turn upon different contributory factors in the experience of stress but these factors must be brought together and their inter-relationships assessed before cases of specific individuals and organisations can be properly understood. Kahn and Byosiere (1991) model a "theoretical framework for the study of stress in organizations" which traces a causal path beginning with organisational antecedents to stress, through the physical and psychosocial stressors which exist in organisational life, the perceptions and cognitions of the individual, and the physiological, psychological and behavioural responses of the individual to the "ramifying consequences" of stress in terms of health and organisational effectiveness. This "pathway" is subject to mediators, such as personal properties/characteristics and situational factors, at several points. Kahn and Byosiere's point is that the visible outcomes of stress are the product of a complex multivariate influence system which must be studied methodically if a specific situation is to be understood.

Stressors, threats and occupation

"The work environment includes a constellation of psychological factors which are likely to interact in different ways in

different jobs for different people. Epidemiological methods cannot reveal such interactions: that is a limitation of the discipline, not of the methodologies." (Fletcher, 1988).

"a variety of dissimilar situations - emotional arousal, effort, fatigue, pain, fear, concentration, humiliation, loss of blood, and even great and unexpected success - are capable of producing stress; hence, no single factor can, in itself, be pinpointed as the cause of the reaction as such." (Selye, 1982).

Because there is such a wide range of factors which contribute to the experience of stress, many researchers have sought to categorise them (eg Cooper and Marshall, 1976, 1978 [5 categories]; Quick and Quick, 1984 [4 categories]; Burke, 1988 [6 categories]; Sutherland and Cooper, 1988 [6 categories]; Kasl, 1992 [10 categories]). There is considerable overlap between these taxonomies but Sutherland and Cooper's (1988) may serve to summarise:

Factors intrinsic to the job	eg: physical demands [noise, vibration, temperature variation, humidity, ventilation, lighting, hygiene, climate].
Task factors	eg: shift/night work, workload, long hours, new technology, repetitiveness, monotony and boredom and experience of risk and hazards.
Role of the individual in the organisation	eg: role conflict, role ambiguity, responsibility [for people and/or things].
Relationships and interpersonal demands	eg: with supervisors, colleagues and/or subordinates. [Sutherland and Cooper do not mention non-work social factors such as support from family and friends. Logically these might be included as an extension of this category].
Career	eg: job insecurity, status incongruity [under/over promotion].
Organisational structure and climate	eg: participation in decision-making.

Each of these categories of stressor is examined in more detail below, although they are found to be inter-related to a considerable extent and continuity is helped if they are dealt with in a different order to Sutherland and Cooper's list.

MacLean (1985) argues that the relative importance of three factors must be considered in any study of occupational stress: stressors, the individual's vulnerability, and the context in which the stressor-vulnerability interaction is taking place. These three factors will change over time, and it is the combination of factors which leads to a stress response, or strain. Thus, an individual may at a particular time be vulnerable to suffer from stress for some reason, and the context in which the individual

is placed *at that time* may be conducive to stress/strain, but without a stressor *at that time*, no symptoms will be present. Similarly, the context may be conducive to stress/strain at a given time, but if the individual is not *at that time* vulnerable, then again no symptoms will be present. Only when all three factors are present together will a symptomatic response occur. MacLean represents this interaction as a three-circle model:

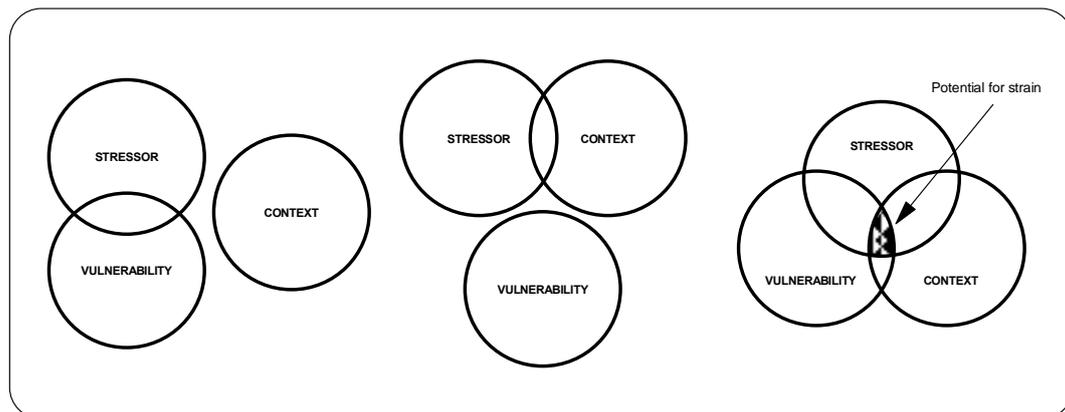


Figure 3

Interaction of Stress Factors
after MacLean (1985)

Lazarus and Folkman (1984) concur that "to produce stress-linked disease other conditions must also be present such as vulnerable tissues or coping processes that inadequately manage the stress." They draw attention to the "individual and group differences" in the kinds and degrees of reaction to stress that are observed, even though "certain environmental demands and pressures produce stress in substantial numbers of people." The Sutherland and Cooper (1988) taxonomy is deficient to the extent that vulnerability is not explicitly addressed. Vulnerability may be affected by context, or life events, in the sense that someone who is already experiencing strain either at work or in private life may be more vulnerable to the effects of a new stressor. Sauter, Murphy and Hurrell (1992) argue that "situational and personal variables moderate the effects of stressors," citing as examples of such moderators life events, family problems and financial difficulties. It may also be affected to a great extent by personality characteristics or traits. These will added to the taxonomy for the purpose of this review.

Personal characteristics

Sutherland and Cooper (1988) maintain that "the impact of a stressor is not invariant" and list

some modifiers, including personality [extroversion/neuroticism, anxiety, self-esteem], behavioural style [locus of control, Type A], needs and values, ability and experience, ethnicity, age, and physical condition. Payne (1988) groups these "individual difference" variables into genetic characteristics [physique, constitution, reactivity, sex, intelligence, introversion], acquired characteristics [social class, education, age], and dispositional characteristics [trait anxiety/neuroticism, Type A, self-esteem/self-image, locus of control, flexibility, coping style, extroversion]. Williams (1994) finds three areas of individual difference: Type A/B personality, locus of control and hardy personality. The influence of these concepts on the understanding of occupational stress has been considerable.

The Type A Behaviour Pattern

In 1974 Friedman and Rosenman published the results of a major longitudinal study of the relationships between personality variables and coronary heart disease [CHD]. They found a strong correlation between a group of observable behavioural characteristics, which they called the Type A behaviour pattern [TABP] and the development of CHD. They summarised the TABP as an "action-emotion complex"

observable 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 other persons." (Friedman and Rosenman, 1974). An ability to do several things at once ["polyphasic activity"] is also identified as very typical Type A behaviour. Powell (1987) summarises characteristic overt Type A behaviours to include:

"drivenness, extremes of competitiveness, aggression, easily aroused irritabilities, work orientation, preoccupation with deadlines, and a chronic sense of time urgency. Type A individuals appear to be guarded, alert, and intense, with rapid and jerky body movements, tense facial and body musculature, and explosive speech."

Cox (1993) summarises Type A characteristics as:

1. A strong commitment to work and much involvement in their job.
2. A well-developed sense of time urgency [always aware of time pressures and working against deadlines]
3. A strong sense of competition and a marked tendency to be aggressive"

and comments: "such behaviour is probably learnt, and is often valued by and maintained through particular organisational cultures."

Williams (1994) observes that TABP is:

"highly regarded in the western world ... Recruitment and promotion systems tend to reward Type A behaviour, and interviewers see some of these traits as positive indicators of success."

On the other hand, Williams (1994) claims that people who do not show the TABP "seem more able to cope with pressure than Type As" and do not perform any worse. He reports a study of 355 life insurance agents which found similar performance levels in Type As and others, with Type As reporting more health complaints.

Powell (1987) remarks that too little is known about the environments which promote the TABP. It is assumed that they must present a challenge, but what individuals find challenging varies. Powell also regrets that little is known about the "psychological underpinnings" of Type A individuals. He speculates that a need for control may be involved, or "enduring hostile attitudes" such as paranoia or cynicism, and

concludes that the answers are likely to be complex.

Friedman and Rosenman (1974) defined the opposite of Type A, someone who is "completely free of all the habits and exhibiting none of the traits of the Type A personality," as Type B. Powell (1987) finds this unsatisfactory:

"In contrast to the complex conceptualization, the Type A operationalization is a simple dichotomy - either the individual has it [is Type A] or does not have it [is Type B]. Varying degrees of Type A behaviour are collapsed within category. This rough categorical conceptualization emerged from early attempts to measure the TABP. It does not necessarily represent the best or most accurate way to evaluate individuals."

Powell regrets the difficulty in finding precise measures, which are available for other CHD risk factors, pointing out that "in general, the self-report measures of TABP assess competitive, hard-driving, and impatient components of Type A, but not anger and hostility." The latter attributes have, according to Powell, in any case been "conceptualized by some to be distinct."

"Anger refers to an emotional state consisting of feelings varying in intensity from irritation to rage, and hostility refers to an attitudinal set, perhaps even a personality trait, which stems from an absence of trust in the basic goodness of others and centres around the belief that others are generally mean, selfish and undependable." (Powell, 1987).

Payne (1988) shares Powell's reservations about the measurement of TABP and argues that "difficulties of developing good measures of Type A may partly account for the fact that the relationships between Type A and reports of psychological strain may vary," whilst accepting that

"the weight of the evidence is that for Type A persons the relationship between reported stress and strain is stronger, and is so for both psychological strains and some physical strains. For Type Bs the relationships are either much weaker in size, or come close to zero."

Ivancevich and Matteson (1988) also question the "assumption underlying the conceptual and empirical work surrounding TABP ... that perhaps Type A behaviour can be reduced to a

single unifying trait" which, they say, "does not appear to fit the data."

"Instead the evidence available appears to suggest that TABP is a multidimensional phenomenon, including an array of overt behaviours, cognitive styles, behaviours in response to environmental demands and physiological concomitants" (Ivancevich and Matteson, 1988).

Williams (1994) follows Powell in suggesting that there are two contrasting sub-components of Type A behaviour which should be considered separately: the "achievement-striving pattern" and the "impatient-irritability pattern." The former is positive and leads to successful performance outcomes, the latter is negative and may lead to adverse health outcomes.

The value of TABP assessment as a predictor of somatic outcomes is disputed, mainly because links between TABP and "hard CHD endpoints" (Powell, 1987) such as death or myocardial infarction [ie, actual damage to the heart] are observed in only half of all studies (Payne, 1988).

Locus of control

The concept of locus of control (Rotter, 1966) is rather simpler to describe. Williams (1994) defines it succinctly:

"Internal control is when you feel that you make things happen. External control is when things happen to you. It's the difference between managing your life and having it managed for you."

The concept of locus of control is based on social learning theory (Bandura, 1977a; Sutherland and Cooper, 1988). An individual learns from his or her environment through "modelling" and past experience. Reinforcement of certain behaviours affects expectancy and expectancy leads to behaviour. Williams (1994) argues that the understanding of locus of control and its relationship to stress

"has been refined by introducing the concept that it is the difference between the amount of control individuals think they should have and the amount of control they actually have that causes the stress reaction"

Phares (1976) found that "in contrast to externals, internals exert greater efforts to control their environment." That is to say, people who believe they can exercise control

over their situations make greater attempts to do so. They also:

"exhibit better learning, seek new information more actively when the information has personal relevance, use information better, and seem more concerned with information rather than with social demands or situations" (Phares 1976).

Phares believes that, as a consequence, people with internal locus of control perceive less stress in their environments than externals. Karasek and Theorell (1990) argue that challenge, or mental arousal, is a prerequisite for effective learning and identify control as a moderating variable determining whether effective learning or psychological strain will follow environmental demands. They go on to say:

"demands and challenges associated with lack of control are not associated with increased learning; they are thus not positive challenges. For example, uncertainty over market changes that might lead to job loss would be considered a stressor by many people. Following our criterion, however, these are not the type of challenges that one can easily learn from, because they are unpredictable and beyond one's control."

Krause (1986) found in a study of 351 "older adults" that internals reported fewer negative life events than externals. He suggests that this was because they tended to initiate actions to avoid such events. That is, they tended to exercise the control they believed themselves to have. Krause did find, however, that people with extreme leanings towards either external or internal locus of control showed more depressive symptoms than "moderates." Krause comments that being "high internal" is something of a mixed blessing in that whilst it promotes stress avoidance it can also lead to self-blame when things do go wrong.

Kasl (1987), dealing principally with health care issues, regards the simple internal/external dichotomy as originally proposed by Rotter (1966) and measures associated with it as "too broad and unworkable for understanding health-relevant behaviours" and advocates more specific scales for different types of behaviour. He suggests as examples a locus of control scale for compliance with medication, one for acquiring and maintaining health habits and one for participation in health screening, and so on.

Hardiness

Kobasa (1979) defined the attribute of "hardiness" as a "stronger commitment to self, an attitude of vigorousness towards the environment, a sense of meaningfulness, and an internal locus of control." She later expanded this description in the following terms:

"Persons high in hardiness easily commit themselves to what they are doing [rather than feeling alienated], generally believe that they can at least partially control events [rather than feeling powerless], and regard change to be a normal challenge or impetus to development [rather than a threat]. In the perception and evaluation of stressful life events, hardy persons find opportunities for the exercise of decision making, the confirmation of life's priorities, the setting of new goals, and other complex activities that they appreciate as important human capabilities. Further, they are capable of evaluating any given event in the context of an overall life plan. Their basic sense of purpose and involvement in life mitigates the potential disruptiveness of any single occurrence." (Kobasa and Puccetti, 1982).

In a study of 161 "middle and upper level executives" Kobasa (1979) found that high stress was associated with a low incidence of illness in executives showing higher levels of hardiness, and with high illness rates in executives showing lower levels of hardiness. In further studies (Kobasa, 1985) she identified three key characteristics of hardy personalities: commitment, control and challenge. She defined commitment as "the ability to believe in the truth, importance and interest of what one is and what one is doing and thereby the tendency to involve oneself fully in the many situations of life, including work, family, interpersonal relationships and social institutions." Control is "the tendency to believe and act as if one can influence the course of events" and challenge is "the belief that change, rather than stability, is the normative mode of life." As a result of extended research she concluded that

"among people facing significant stressors, those high in hardiness will be significantly less likely to fall ill, either mentally or physically than those who lack hardiness or who display alienation, powerlessness and threat in the face of change." (Kobasa, 1985).

Other personality attributes

Several personality attributes have been found to influence the ability to resist illness and have therefore been included in studies of stress as possible moderators of the deleterious effects of strain.

Payne (1988) cites various studies of optimism/pessimism, which appear to indicate a negative correlation between optimism and physical symptoms reported up to two years later. Cox (1993) refers to several studies from the early 1980s associating "hostility, repressed hostility or potential for hostility" with cardiovascular symptoms. A review by Costa and McCrae (1985), however, of several studies of CHD patients found neuroticism to be a good predictor of chest pain, but not of death from CHD or of myocardial infarction, suggesting that such symptoms need to be carefully evaluated before conclusions are drawn. Pratt (1976), in studies of primary school teachers, found significant correlations between reported stress and both neuroticism and extroversion. However, Humphrey (1977) found that neuroticism scores [using the Eysenck Personality Inventory] tended to increase when an individual was experiencing stress, so although the correlation is established, causation is not. Payne (1988) found that higher neuroticism and higher trait anxiety correlated to external locus of control. Following studies of unemployed men, he regards neuroticism as a confounding factor in relating locus of control to psychological strain, again because of the difficulty in establishing causation:

"three concepts [negative affectivity, Type A and locus of control] all relate to each other, so any conclusions drawn for any of them are ... open to the attack that a third variable might be the real cause. If a case were to be made for any of these three as the fundamental underlying variable then negative affectivity would appear to be the strongest candidate" (Payne, 1988).

Organisational structure and climate

Kanter (1983), discussing the impact of change on [American] managers, argues that they see change as a threat:

"They feel at the mercy of change or the threat of change in a world marked by turbulence, uncertainty and instability, because their comfort, let alone their success is dependent on many decisions of

many players they can barely, if at all, influence."

Cox (1993) comments that it is not clear from the literature whether change per se is stressful or hazardous to health and well-being, or whether "its possibly stressful nature is due to the uncertainty and lack of control which it often represents." Winkfield (1995) surveyed 1231 people about their attitudes to change at work. 57% agreed that they could cope with changes "if they knew what was going on." 35% agreed that they were under more stress now because of changes, although 45% agreed that changes at work meant new opportunities. Similarly, researchers for a BBC television programme (BBC2, 1995) found that bank employees regretted the loss of personal contact with customers brought about by changes in working practices, and the reductions in their personal decision-making powers which they had experienced, as well as increasing pressure due to the more competitive nature of their industry.

Schuler and Jackson (1986) attributed a range of stress symptoms to uncertainty, noting that "the event about which uncertainty exists may be associated with potentially important positive or negative outcomes." Cox (1993) believes that uncertainty "may partly underpin the effects of other hazardous job characteristics; for example uncertainty about desirable behaviours [role ambiguity] and uncertainty about the future [job insecurity]."

Uncertainty arises, at least in part, from non-involvement in the decision-making process and the information flows upon which such processes are based. Sauter, Murphy and Hurrell (1992) refer to earlier research [principally that of Margolis, Kroes and Quinn (1974) and Spector (1986)] to support the contention that "emotional distress, lowered self-esteem and job dissatisfaction result from non-participation [in decision-making] of workers."

French, Caplan and van Harrison (1982) concluded from their major investigation of job stress that:

"The findings suggest that participation may be an important organizational mechanism for allowing employees to improve their adjustment to the demands of the job by having a say in the decisions which determine those demands."

Jackson and Schuler (1985) conducted a meta-analysis of 96 papers on role ambiguity and role

conflict. They remark that much of the research in these areas hypothesises that "higher levels of participation in decision-making should lead to lowered role strain." Their meta-analysis supported this hypothesis.

Robert Karasek has been a leading figure in research on participation since the 1970s. In a major study of 1600 Swedish working men in 1968 he found that 20% of workers "who described their work as both psychologically demanding and low on a scale measuring latitude to make decisions" reported heart disease symptoms (Karasek and Theorell, 1990). In a later study of 1461 employed men (Karasek et al, 1981) he found that low decision latitude "expressed as low intellectual discretion and low personal freedom" was associated with increased risk of cardiovascular disease, as was "a hectic and psychologically demanding job." [Both factors were adjusted for other known CHD risks such as smoking and obesity]. Similarly, Ivancevich (1979) found in a study of 154 project engineers with "management-level responsibilities" that participation in decision-making correlated negatively with physical symptoms, job tension, role conflict, role ambiguity and fatigue. Other studies (eg Gardell, 1975; Remondet and Hansson, 1991; Lind and Otte, 1994 or Nelson, Cooper and Jackson, 1995) have reported broadly comparable results. A study of management morale for the Institute of Management by Coe (1993). indicates that control may compensate for some otherwise adverse factors:

"Those in self employment work longer hours on average yet they are less likely to be stressed and more likely to say they feel fully in control of their job ... One of the main causes of stress is an increase in responsibility without an accompanying increase in authority."

Participation in decision-making does not necessarily imply control, only some degree of input, although the two factors are often considered together. Actual control represents power to make decisions for oneself and its effects are observable. Murphy (1988) distinguishes between "perceived control [belief] and instrumentality [one can do something to influence the aversiveness of the event]. Controllable events 'hurt less' than uncontrollable events." Karasek and Theorell (1990) argue that high levels of skill give a worker control over which specific skills to apply ["skill discretion"] and maintain that "skill utilization and decision authority are so closely

related in empirical studies ... that they are often combined for analytic purposes in the job design research." These "mutually reinforcing aspects of work" are together called "decision latitude - often loosely labelled control" (Karasek and Theorell, 1990). Cox (1993) observes that "the issue of control is a pervasive one throughout the stress literature" and Sauter, Murphy and Hurrell (1992) claim that:

"Evidence is growing that control is the decisive factor in determining the health consequences of work demand, so that adverse effects occur when control is not commensurate with demands."

Murphy (1988) lists a "host of physiological changes" which may occur when an individual is faced with uncontrollable events or situations [or ones perceived as uncontrollable], including increased heart rate, increased hormone production and decreased immunological activity, comparing these responses to the 'fight or flight response' [see above]. McLean (1985) cites experiments by N Miller who subjected two groups of rats to electric shocks. One group, which had no control over the delivery of the shocks, suffered five times as many stomach lesions as the other group, which was able to exercise limited control. McLean concludes that a level of control over even highly aversive situations is beneficial. Murphy (1988) extends this principle by citing work with monkeys [by Stroebel (1969) and by Hanson and colleagues (1976)] which indicates that "losing control [relative to never having had control] has been associated with frustration and prolonged depression ... Evidently it is less stressful never to have had control than to have had it and lost it." Murphy goes on to relate this to organisations which "experiment with worker control or participation without a long-term commitment to the process."

The association between participation in decision making, control and physiological or psychological outcomes is not simple. The work of Karasek and colleagues throughout the 1970s and 1980s conveys the clear message that participation in decision making moderates the stressor effects of job demands and leads to reduced strain. Landy (1992), however, remarks that

"it is not clear whether this reduced strain was the result of an enhanced feeling of control [as suggested by the authors] or of reduced uncertainty that resulted from being continuously involved in the deliberations"

Cox (1993) questions the evidence for a synergistic interaction between job demands and participation in decision making to reduce strain, that is, do these two factors combine to produce an effect, as argued by Karasek? Cox suggests that an additive model, where one factor moderates the effects of the other, adequately accounts for the data. In terms of pragmatic application of the knowledge in this area it seems to be established that participation in decision making is likely to be beneficial, even if the exact mechanism which produces the benefits is still not clear. In a meta-analysis of 88 studies Spector (1986) found several positive outcomes associated with high levels of perceived control, including job satisfaction, commitment, involvement, performance and motivation, and correspondingly low levels of negative outcomes such as physical symptoms, emotional distress, role stress, absenteeism, intention to leave a job, and actual staff turnover. These findings have not been subsequently challenged. Cox (1993), however, warns that "demands implied by the choices involved in controlling situations can themselves be a source of stress."

Career factors

According to Burke (1988) "one of the most dramatic changes in organizations during the past few years has been the change of traditionally secure managerial and professional jobs into insecure ones," a topic which has preoccupied other writers on organisations in recent years (eg, Handy, 1990, 1994). Sauter, Murphy and Hurrell (1992) cite a variety of earlier research [eg by Margolis et al (1974), Kasl and Cobb (1982) and Sutherland and Cooper (1988)] to support their contention that a number of adverse psychological and physical effects are associated with job insecurity and negative career development. Cox (1993) remarks that "the lack of expected career development may be a source of stress." Burke identifies "four sources of work stressors" which affect career aspirations: "mergers and acquisitions, retrenchment and budget cutbacks, job future ambiguity and insecurity, and occupational locking-in" (Burke, 1988).

The charity MIND in its survey of 109 British companies (MIND, 1992) found that 88% of its respondents cited recession, fear of redundancy and pressure to perform as the main causes of stress. Coe (1993) in a survey of 2500 members of the Institute of Management [with a 40% response rate] found that 71% were either "very anxious" or "anxious" about the possibility

of redundancy, 76% either "very anxious" or "anxious" about lack of job security and 75% either "very anxious" or "anxious" about lack of career opportunities. Winkfield (1995) surveyed 1231 people in full or part-time work and found that 41% were "very or fairly concerned" about being redundant or unemployed in the next twelve months, whilst 24% felt "less or much less secure" in their jobs than they had one year before.

Clearly economic recession and changing employment patterns have brought with them feelings of insecurity, even where jobs have not yet been lost. Burke (1988) draws attention to "the small amount of data that exists" which "indicates that the effects of job insecurity appear to be similar to job loss itself." Kasl and colleagues have made extensive studies (Kasl and Cobb, 1971, 1982; Kasl, Gore and Cobb, 1972, 1975) of unemployed people and have found consistently that the anticipation of unemployment is associated with adverse health effects to at least as great an extent as actual unemployment. Depolo and Sarchieli (1987) made comparisons between people who had lost their jobs and those who had been retained by the same organisation. They found no difference between the "emotional well-being" of members of the two groups. These observations may have important implications for the success of enterprises because of the effects on those who are left behind. Burke comments:

"managers and professionals who are currently employed but see that it is increasingly harder to get and hold managerial and professional jobs will become increasingly insecure about their own jobs" (Burke, 1988).

The associations between change and stress have already been discussed in relation to control and participation. Two studies from the early 1980s may serve to focus these associations on the specific areas of budget cuts and retrenchment. Rosselini (1981) found that the numbers of US government employees seeking treatment for stress-related symptoms almost tripled after a round of budget cuts. In this case Rosselini was able to link these outcomes specifically to fear of staff reductions. Jick (1983) reviewed research findings concerning budget cuts and was able to show several correlations, as follows:

The experience of stress correlated positively with:

- the size of the budget cut
- the extent to which the budget cut changed goals or programmes
- the frequency of budget cuts
- the duration of the budget cut

The experience of stress correlated negatively with:

- the amount of organisational slack or possibility of finding alternative sources of funding
- management assurances about job security or departmental survival
- selective rather than uniform cuts
- the amount of forewarning of budget cuts
- the clarity of information about impending budget cuts
- the response time available between the instruction to cut a budget and actual implementation of the cut

Mirvis and colleagues (Sales and Mirvis, 1984; Marks and Mirvis, 1985) have studied the effects of mergers and acquisitions on employees. They identify a "merger syndrome" involving "defensiveness, fear-the-worst, rumours of job loss, loss of benefits, pay freezes, etc." intensified by increased centralisation and lack of communication. This leads to lowered productivity and increased staff turnover. They also cite a Wall Street Journal survey which indicated that 50% of executives try to leave their jobs in the first year after a merger. Cartwright and Cooper (1993) also noted problems of demotivation, lowered morale, employee anxiety, increased sickness and absenteeism, and high labour turnover following mergers.

A harsh economic climate, in which alternative jobs are hard to find may lead to employees continuing in jobs which are no longer satisfactory to them. This has been described as 'locking-in' or more colourfully as 'golden handcuffs.' Quinn (1975) identified three components of locking-in: [1] low probability of getting another job as good as or better than the present one, [2] little opportunity to modify a presently disliked employment situation by securing a change in job assignments, [3] low likelihood that a worker who was dissatisfied

with his job could take psychological refuge in the performance of other roles not linked to his job.

Herriot and Pemberton (1995) suggest that the "psychological contract" between managers and their employers has been unilaterally breached by companies which "have appeared to renege on their side of the old deal" leaving many managers feeling "angry and deceived." They quote one interviewee's comments as typical:

"I gave them loyalty, compliance and functional expertise, and they gave me security, regular promotions, salary increases and care in times of trouble."

The nature of the 'deal' in question is substantially the same as it was when Marshall (1977) surveyed "middle and senior staff of one major British company" and reported that:

"managers on the whole realised that they were trading their freedom for the high pay, security and wide range of job and career opportunities that the company offered."

Herriot and Pemberton's contention is that organisations are no longer offering the benefits of security and progression that they once did, but are demanding more commitment, effort, flexibility and loyalty than ever before. This results in increasing stress levels.

Role in the organisation

Cox (1993) cites a variety of research to argue that employees regard organisations as environments for [a] performing tasks, [b] solving problems and [c] development. If perceived as deficient in any one of these areas, employees are likely to suffer increased stress levels. Cox identifies two prominent sources of stress arising from an individual's role within an organisation; role ambiguity and role conflict. He defines role ambiguity as occurring when "a worker has inadequate information about his or her work role." French, Caplan and van Harrison (1982) use the definition "job too rigidly or too loosely defined." Role conflict occurs "when individuals are required to play a role which conflicts with their values, or when the various roles that they play are incompatible with one another" (Cox, 1993). Jackson and Schuler (1985) argue from the results of their meta-analysis of 96 papers on role ambiguity and role conflict that these are separate constructs, with different impacts on organisations and should be investigated separately, not together "as is usually done." This said, the two constructs appear to have

much in common, and their effects are usually described in terms of lower job satisfaction (Parkington and Schneider, 1979; Jackson and Schuler, 1985; Sauter, Murphy and Hurrell, 1992). Burke (1988) takes the view that "research on role conflict and ambiguity is extremely homogenous" and does not separate the two constructs in describing the variables which correlate with them:

Role conflict and ambiguity correlated positively with:

tension and fatigue
absenteeism
leaving the job
psychological and physiological general strain

Role conflict and ambiguity correlated negatively with:

job satisfaction
physical withdrawal
supervisory satisfaction
performance
job involvement
decision making
organisational commitment
tolerance for conflict and group cohesion
reported influence

Cooper and Marshall (1976) had accepted that correlations between ambiguity/conflict and a broadly similar list of outcomes were significant, although "rather weak" and they point out that "many measures of ill-health are based on self-report." Jackson and Schuler (1985) observe that

"The results of the meta-analysis indicate that the average correlations between many organizational context variables and role ambiguity and role conflict are substantial and are significantly increased when corrected for unreliability. In contrast, individual characteristics are generally not strongly related to role conflict and role ambiguity."

Jackson and Schuler's (1985) meta-analysis found no correlation between role ambiguity/conflict and organisational level [ie, seniority], but Miles and Perreault (1976) and Miles (1980) found that "boundary roles" exposed incumbents to both. This may be of particular significance to the project manager function.

Observing that high role ambiguity/conflict scores are positively correlated with external

locus of control, Jackson and Schuler (1985) offer a possible explanation: "prolonged exposure to ambiguous and/or conflicting role expectations may cause employees to lose any sense of being in control of outcomes."

The overall implications of the work on role ambiguity and role conflict are that uncertainty about what one should do or how one should behave is stressful, as is a discrepancy between what one believes is correct and a requirement to behave otherwise, either because of pressure from other people [eg colleagues or superiors] or because of different requirements arising from roles performed concurrently.

Relationships and interpersonal factors

Sauter, Murphy and Hurrell (1992) summarise research on workplace relationships thus: "Poor relations with colleagues, supervisors and subordinates at work have been identified as important risk factors" for stress-related problems. Cox and Griffiths (1995) identify the characteristics of situations experienced as stressful, one of which is "individuals are relatively isolated and receive little support from colleagues, supervisors, friends or family."

Ganster, Fusilier and Mayes (1986) studied 326 employees of a contracting firm and measured six stressors [role conflict, role ambiguity, overload, lack of variability, skill underutilisation and responsibility for others]. They found a strong correlation between a lack of social support, especially from a supervisor, and dissatisfaction with work. There was also a weak correlation between this and non-workplace strains. Social support did not, however, appear to moderate the effects of other stressors significantly. This is consistent with the findings of Payne and Hartley (1987) in their study of unemployed men. They found, contrary to their expectations, no evidence that "support and opportunities were important in moderating the impact of the problems faced by the unemployed."

It appears that social support operates as a 'hygiene factor' in relation to stress, in which its absence is a stressor but its presence has little effect on other factors (cf Herzberg, 1959), a view which is supported by Marshall's (1977) survey of "middle and senior staff of one major British company." Marshall noted:

"a tendency for work-related factors to be reported as pressures and interpersonal factors to be reported as satisfactions. In view of this distinction we cannot assume

that pressures and satisfactions will cancel each other out."

Lazarus and Folkman (1984) refer to a "growing body of evidence" that "other things being equal, people will have better morale and health, and function better, if they receive or believe they will receive social support when needed," but comment that "little is known about what constitutes productive or counter-productive support." If the experience of support is linked in any way to confidence in the source of support then Winkfield's (1995) survey of 1231 people in full or part-time work has a salient comment to make: 64% of Winkfield's respondents did not agree that "in general the people in charge know best."

Task factors

"The nature of the task performed has critical implications for psychological well-being. In particular, narrow, fragmented, invariant and short-cycle tasks that provide little stimulation, allow little use of skills or expressions of creativity and have little intrinsic meaning for workers have been associated with job dissatisfaction and poor mental health." (Sauter, Murphy and Hurrell, 1992).

French, Caplan and van Harrison's (1982) research on over 2000 men found that certain job or task characteristics correlated with a variety of stress symptoms. These characteristics included too much or too little complexity, too much or too little responsibility, too much or too little work[load], excess time [ie, long hours], greater service [ie, experience] than is really needed to do the job, and greater education than is really needed to do the job. These characteristics clearly emerge as discrepancies of 'fit' between the person and the job, rather than absolutes. French et al acknowledge this: "The findings ... emphasise that job stress must be understood in the light of the relationship between the job and the individual." The characteristics may also interact with each other to moderate their relative influences: "men who had excessive job complexity were more strained as a result of too much workload than were men with a good fit on complexity" (French, Caplan and van Harrison, 1982). The issue of control also reappears in this context. Karasek (1979) asserts that psychological strain results from a combination of workload [psychological job demands] and the degree of control the worker has [decision latitude], and Fletcher (1988) maintains:

"Jobs which are high in demand may also carry excess risk, but not if they are 'active' jobs which are also characterized by high levels of job discretion or decision latitude. Executive and managerial jobs may be very demanding [even overloading] but they are also associated with high levels of control or support which effectively nullifies the demandingness and reduces coronary risk."

Cox (1993) agrees that "managerial work ... is ... associated with work overload, role related problems and uncertainty." Coe's (1993) survey of 2500 members of the Institute of Management found 41% of managers working more than fifty hours per week and 13% working more than sixty hours. 75% said their workload had increased over the previous year with 35% saying their workload had increased by one third or more. 70% believed their overall health was affected by job-related anxiety. Similarly, a survey of 1408 personal contractors [senior management grades] in BT by the Society of Telecom Executives [STE] found a clear correlation between hours worked and reported stress symptoms (STE, 1994). A subsequent survey (STE, 1995) reported a positive correlation between hours worked and annual appraisal ratings, which BT's then Group Managing Director said in a television interview he found "unsurprising" (Hepher, 1995). The STE took this as an indication that the company favoured long working hours for its managers.

Taylor (1992) reported an earlier survey of twenty companies by the healthcare group BUPA which found that "too much work and pressure to perform were the major stressors experienced," with 64% of respondents complaining of too much work. Labour Research (1995) reports similar instances of increasing hours of work amongst managers and professionals [eg, lecturers] and suggests a link between excess hours and accidents, whilst Mulgan and Wilkinson (1995), collating a variety of surveys and opinion poll results, report 40% of managers working more than fifty hours per week, with one in eight working more than sixty hours. 44% of the workforce [all kinds of workers] reported coming home from work exhausted. One in four managers took work home "several times a week." Full-time British employees worked longer each week than any other European Union nationals, and the average British 'lunch hour' was now down to thirty minutes.

Working long hours has been associated in a number of studies with negative health

outcomes. Some of this evidence is mentioned under the heading *Outcomes and consequences of workplace stress*, below. It is not clear, however, that long hours as an isolated factor are damaging (Karasek and Theorell, 1990). Work overload and scheduling [shiftwork, nightwork, etc.] may be more significant. Levi (1974) reported significant blood composition changes, indicating anxiety, among a group of military officers who were required to alternate three-hour shifts on the firing range with similar shifts of staff work, without sleep or relaxation. Sauter, Murphy and Hurrell (1992) report "substantial evidence" that

"the temporal scheduling of work can have a significant impact on psychological, behavioural, social and physical well-being. Rotating shifts, and permanent night-work in particular, have been linked to a variety of such disturbances."

Sauter et al attribute these deleterious effects to disruption of circadian rhythms, rather than to simple accumulation of working hours. Landy (1992) reports that the introduction of flexitime, whilst leading to only minor changes in actual behaviour, has a positive effect on well-being. He suggests that the perceived increase in control over schedules is enough to improve health, even if the control is not actually exercised.

Overload, that is, having more work to do than one can comfortably handle, appears to have a more direct connection with strain. Margolis, Kroes and Quinn (1974), in a study of 1496 workers found that overload correlated positively with several indicators of stress reactions, including low motivation, low self-esteem and absenteeism. Levi (1967) studied twelve invoicing clerks, alternating days when payment was at fixed rates with days of piece-work payments [ie, payment for quantity of work output], controlling for other factors such as working conditions and general well-being. On piece-work days production rose 113% on average. Accuracy did not suffer, but reported feelings of strain increased significantly. A fatigue index nearly doubled and there were complaints of aches and pains and of physical and mental exhaustion. Analysis of adrenaline and noradrenaline content in urine samples showed significant increases in both, providing objective confirmation of the self-report data. In this case the overload could be argued to have been self-induced.

The concept of 'appropriate fit' of demands and person is also thought to apply to workload

issues. Fletcher remarks that "under-demand or under-utilization is one of the better predictors of work strain" and Cox (1993) agrees that "it has long been clear that both work overload and work underload can be problematic" or that "within reasonable limits, stress can arise through either overload [demand greater than abilities] or through underload [demand less than abilities], or through some combination of the two" (Cox and Griffiths, 1995).

French, Caplan and van Harrison (1982) summarise the importance of comfortable fit between all the elements of the job and the person who has to perform it:

"This interaction between the job and the person emphasizes the importance of the personnel section when hiring and transferring employees and the equal importance of allowing individualization of the job to fit the needs and values of each worker."

Factors intrinsic to the job

A variety of physical and environmental factors can have an effect on the stress experienced by a person in the workplace. The London Hazards Centre (1994) list noise, vibration, chemicals, dust, lighting, ventilation, badly designed machinery and equipment, and badly designed premises as prime examples. Burke (1988) reports the "most frequently mentioned environmental stressors" as including density and crowding, lack of privacy, high noise levels, vibrations and/or soundwaves, temperature extremes, air movement and background colour and illumination. Although, as Burke points out:

"Management and executive level organisational operations are largely conducted in an office environment which is not subjected to the same types of hazardous and noxious agents which put lower-level employees at risk. In addition, management level employees are assumed to have a great deal of personal control over their physical environment, thereby possessing the ability to significantly reduce or remove immediate environmental stressors" Burke (1988).

Nevertheless, some environmental conditions may affect even managers at some time. Noise and crowding/lack of privacy seem especially relevant to workers in open-plan office designs. Schönplflug (1983) reports an experiment in which four groups of subjects were asked to write an account of an incident at the 1972 Olympic games whilst subjected to noise levels

varying between 45-105 dB. As the noise level increased more words were written, but in shorter sentences. Schönplflug interprets this as an increase in quantity of output but a decrease in quality. Crowding and lack of privacy, at least in this context, seems less clearly stressful. Szilagy and Holland (1980) studied the reactions of 96 oil industry "professionals" who were relocated to more crowded premises. They found that role conflict and role ambiguity reduced after the move, and concluded that the higher density had aided workplace interactions. Sutton and Rafaeli (1987) studied 109 clerical workers to ascertain whether "workstation characteristics" were stressors. They found that workstation design had little effect on stress levels once other known stressors, such as overload, were taken into account.

Outcomes and consequences of workplace stress

"Stress itself is not an illness, rather it is a state. However it is a very powerful cause of illness. Long-term excessive stress is known to lead to serious health problems" (Teasdale and McKeown, 1994).

The relationship between stress/strain and a variety of adverse physical and psychological health conditions is well-established. Cox (1993) reviews a number of studies in the field of psychoimmunology which strongly suggest a connection between the experience of stress and changes in the operation of the immune system, which Cox considers as a possible mechanism by which stress may lead to ill-health. Cox accepts that "the evidence is that the experience of stress does not necessarily have pathological sequelæ" but asserts:

"Stress may affect health. At the same time, however, a state of ill health can act as a significant source of stress, and may also sensitise individuals to other sources of stress by reducing their ability to cope. Within these limits, the common assumption of a relationship between the experience of stress and poor health appears justified."

There is a body of evidence to support this assumption. Russek and Zohman (1958) compared young [25-40] CHD patients with a healthy control group and found that whilst only 20% of the control group reported prolonged stress related to work, 91% of the CHD patients did so. The patients also reported heavy workloads, with 46% working more than 60 hours per week and 20% doing two jobs. 20% reported frustration, discontent, insecurity or

inadequacies in relation to their jobs. Breslau and Buell (1960) also found a correlation between long working hours and CHD. In a study of younger [under 45] workers in light industry those working more than 48 hours per week had double the risk of death from CHD than similar workers working less than 40 hours per week.

Weiman (1977) reports a study [carried out in 1974] of 1540 officers of a "large financial institution" who were subjects of periodic health checks, including a questionnaire on occupational stress. Weiman found that:

"There is a significantly higher incidence of disease when particular stressors are operating. It is also evident that disease/risk occurs more frequently when workers are either under-stimulated or over-stimulated, as hypothesized by Selye."

Alfredsson, Karasek and Theorell (1982) studied 334 men under 65 with myocardial infarction [including deaths], with 882 matched controls. They report an increased risk of myocardial infarction from a combination of "hectic work pace" and low decision latitude and/or few "possibilities for growth."

In a review of the research on the associations between occupational stress and CHD, Landsbergis (1993) found that twelve out of fourteen studies reviewed showed a clear link. He estimated that 23% of CHD deaths in the US were potentially preventable if the stress levels in the "worst" jobs were reduced to average levels.

Correlations between occupational stress/strain and serious illness are thus shown in a wide variety of studies over generations of researchers. As with other aspects of human health, though, the association is one of probability, not of certainty. Fletcher (1988) describes the issue:

"It is difficult to estimate the size of any problem when the outcome variables have multifactorial 'causes' and one is particularly interested in one aspect of aetiology [ie work stress]. This is not an issue peculiar to the psychological investigation of disease. It should be borne in mind that the standard physiological and medical risk factors for coronary heart disease or lung cancer are not good predictors of the degree or incidence of the clinical manifestations of the disease. For example, Eysenck has pointed out that only 10% of smokers die of lung cancer and 10% of people who die of

lung cancer are non-smokers. In addition, the 10-year incidence of CHD will be made up of 40% who have no evidence of significant risk factors, and only 10% of those with such risks will have developed CHD."

Whilst heart disease is one of the more dramatic effects of stress/strain, Cooper (1994) points out that:

"it must be remembered that heart disease is only one of the physical manifestations of an unhealthy organisation, research shows that there are many more possible diseases and negative healthy outcomes [eg gastrointestinal disorders, immune system failures, neurological problems, etc.]."

An investigation by the Post Office occupational health service (IRS, 1994) found that "psychological problems" were the second most common reason for early retirement on health grounds [after orthopaedic injury]. The pressure group The London Hazards Centre (LHC, 1994) list an array of outcomes of working excessive hours, including physical and psychological fatigue, increased risk of heart disease, sleep difficulties, sexual disorders, gastric disturbances, headaches, backaches, dizziness, weight loss, apathy, depression, disorganisation, feelings of incapability, irritability, intolerance, boredom and cynicism. The "most extreme consequence" is sudden death. Cranwell-Ward (1995) reports that death from overwork [*karoshi* in Japanese] has been officially registered as a fatal illness in Japan since 1989, and goes on "in 1990 the labour ministry received 777 applications for compensation because of *karoshi*."

A more common outcome of stress/strain is an increase in accident rates at work (LHC, 1994). Carter and Corlett (1981), in a review of the literature on mental health and involvement in accidents, reported that "the mental state of the operator, whether he is fatigued or over-aroused, alert or distracted, has been the most frequently suggested reason for accident-causation during shiftwork." Cartwright et al (1993) studied accidents involving company car drivers from three subsidiaries of a major company, and related them to stress levels. They found the highest rates in the subsidiary which also returned higher levels of occupational stress, poorer physical health, poorer mental health and lower job satisfaction. They concluded that "the significantly higher levels of occupational stress within [the subsidiary with the highest accident rate]

indicate that stress is playing a major role in predicting accident rates."

Prolonged exposure to stress can result in the phenomenon of 'burnout', defined as "exhaustion, underachievement, and the inability to handle personal relationships" (LHC, 1994), or as:

"An individual's negative emotional experience leading to a chronic process ... experienced as exhaustion on a physical, emotional and cognitive level. Most definitions include withdrawal and decreasing involvement in the job, especially by persons who have been highly involved in their work." (Sonnentag et al, 1994).

Sonnentag et al associate burnout with workplace stressors and argue that "this relationship has been found to be true for various ... professional groups," although they qualify this by observing that "tasks with a high motivation potential are negatively associated with burnout."

The implications for employers of operating stressful workplaces may be economic as well as humane. Karasek and Theorell (1990) argue that

"Although their illnesses may not lead to an economically measurable health care cost, exhausted or depressed employees are not energetic, accurate, or innovative at work. The losses that result loom larger than health care as preventable costs."

Cox (1993) identifies from the literature several effects of stress which he believes may be of "direct concern to organisations." Some of these, such as "reduced availability for work involving high turnover, absenteeism and poor time keeping" he classifies as "essentially 'escape' strategies." Others involve what is described as 'presenteeism' - people continue to report for work but their performance and involvement is poor. Cox suggests that this may result in impaired work performance and productivity, with consequent increases in client complaints. Fingret (1994) also emphasises the damage caused to organisations by presenteeism, claiming that "occupational health practitioners and psychologists are well aware of significant levels of stress and psychological maladjustment which have not resulted in significant sickness absence." Fingret argues that this may be even more damaging to business efficiency than the absences which "though carrying physical illness labels, are in fact related to lack of mental well-being."

Cooper (1994) refers to the "huge costs ... of people turning up to work who are so distressed by their jobs or some aspect of the organizational climate that they contribute little, if anything, to their work."

Where employees are required to exercise creativity and initiative these effects may be even more pronounced. Talbot, Cooper and Barrow (1992) studied 202 managers [a sub-set of a wider study involving 1083 respondents, all from one organisation]. They found significant negative correlations between stress and the potential for creativity, although they were unable to ascribe a causal relationship between stress and creativity because "both may be an outcome of something else." Karasek and Theorell (1990) hypothesise that "accumulated level of unresolved strain [or anxiety level] appears to restrict a person's ability to learn solutions to new problems. ... The literature on burnout has also demonstrated that prolonged job stress is associated with decline in initiatives at work."

Task performance is also found to be impaired when stress exceeds an individual's tolerance level. Selye (1982) maintains that "under stress people often perform at higher levels, but if the stress continues exhaustion sets in and leads to a range of problems [diseases of adaptation]." Eysenck (1983) listed nine effects of anxiety on task performance, based on experimental work:

1. Anxiety leads to increased task-irrelevant cognitive activities [eg worry].
2. Anxiety leads to increased effort during task performance most of the time.
3. Anxiety reduces digit-span performance [working memory capacity].
4. Anxiety interacts with task difficulty, with adverse effects of anxiety growing as task difficulty increases.
5. Adverse effects of anxiety are more apparent on subsidiary or incidental tasks than on main or primary tasks.
6. Anxiety interacts with type of feedback [neutral versus failure] with high-anxiety subjects being more detrimentally affected than low-anxiety. subjects by failure feedback.
7. High-anxiety subjects are not more detrimentally affected than low-anxiety subjects by threat of electric shock; if anything, it is low-anxiety subjects who are more affected by shock.

8. Anxiety induced by failure impairs the retrieval process
9. There is a closer relationship between state anxiety and performance than there is between trait anxiety and performance.

The latter point suggests that situationally-induced anxiety, eg a threat, has greater potential to affect performance adversely than individual personality factors. Cox, using Eysenck's work and also research by Idzikowski and Baddely (1983) and Andersson (1976), suggests that "while low levels of anxiety and fear may have a motivating effect, higher levels can impair task performance" (Cox, 1993). This is consistent with Selye's GAS and with the inverted-U function. 'Anxiety and fear' are, of course, rather specific examples of stressors or stress symptoms. Other work has suggested that strain correlates negatively with performance. Jones et al (1988) for example found a positive correlation between levels of strain in health care staff and the number of medication errors made. Sommerville and Langford (1994) surveyed 54 site-based managers of construction projects and found evidence that workplace stressors contributed to conflict. They suggested that attention to reducing stressors would have a beneficial effect in reducing the incidence of conflict. Workplace stress may also have a deleterious effect on personal and family relationships (eg in Gutek, Repetti and Silver, 1988).

Costs arising from employers' responsibilities for the well-being of their employees may also become significant. Cox (1993) believes that the UK courts will be increasingly willing to hold employers liable for stress-related health problems. Aiken (1995) argues that an employer has a duty to provide a safe system of work, which may include taking account of stress issues where they are known to exist.¹

If the personal and organisational costs of stress/strain can be high, the burden on the wider economy is also believed to be significant.

¹ Such circumstances applied to the case of Walker versus Northumberland County Council, where Walker, who had had a nervous breakdown, returned to work. The employer continued to place heavy demands on him, and withdrew an assistant, contrary to an earlier promise. Walker suffered a second breakdown. The court held that the employer was responsible for Walker's ill health and awarded damages. This was a very specific situation and does not necessarily mean that employers will be held liable in future cases (Aiken, 1995) but does indicate that stress-related health problems are recognised in English law.

Cranwell-Ward (1995) quotes DSS statistics for 1991-92 showing almost 140 million days' benefit paid out to men and 55.4 million to women for absence from work attributed to mental and stress-related causes. Cooper (1994, and Highley and Cooper, 1994) uses CBI and HSE figures to assert that 180 million working days, costing £4 billion, are lost to UK organisations through causes related to workplace stress. Coe (1993) claims that "in the UK, job stress has been estimated to cost up to 10% of NP and to account for the loss of 80 million working days annually," a figure originating from the HSE and also quoted by Banham (1992) and by Fingret (1994). Banham (1992) asserts that "thirty days are lost to stress for every single day lost to industrial disputes." Banham also makes the point that certified absence due to stress is likely to be seriously under-estimated due to mis-certification, because "few people want a certificate referring to their mental health" and because short absences [less than seven days] are normally subject to self-certification. Kearns (1986) asserts that 60% of absence from work is caused by stress-related disorders and that in the UK 100 million working days are lost each year because "people cannot face going to work."

Sommerville and Langford (1994) quote British Heart Foundation figures which suggest that "coronary heart disease, often attributable to stress, costs of the order of £200 per employee per year in the UK."

Cooper (1994) puts these figures in context:

In a company with 10,000 employees, in any one year:

- £2.1 million productive value for men, and £340 k for women, will be lost due to heart disease
- 35 men and 7 women will die from CHD
- 59,000 working days for men and 14,200 days for women will be lost through problems associated with CHD.

[figures from British Heart Foundation]

All these figures are, of course, estimates. Murphy (1988) cautions against too ready acceptance of such estimates in the following terms:

"It is not unusual to encounter rather striking estimates of the total costs of stress that reach into billions of dollars annually. While such estimates seem impressive, one

experiences great difficulty trying to track down the precise components of the estimation formulas."

Karasek and Theorell (1990) also refer to the difficulty of developing "reliable monetary estimates of stress-related losses." They point out that :

Three levels of error-prone estimates must be made: first, the job stress-related component of total health costs, second, the preventable component of these health costs; and third, the preventable costs of poor design that are reflected in productivity losses. But one fact is beyond dispute: the costs are very large."

If it is indeed "beyond dispute" that the costs are very large, and if it is accepted that the costs are increasing, as the British Psychological Society (1988) and Cartwright and Cooper (1994) assert, then workplace stress is an issue which demands corrective action as a matter of urgency.

Coping with stress

Coping has been defined as the

"cognitions and behaviours adopted by the individual following the recognition of a stressful encounter, that are in some way designed to deal with that encounter or its consequences" (Dewe, Cox and Ferguson, 1993).

The use of the terms "recognition" and "designed to deal" imply both cognitive appraisal and decision-making at some level. Edwards (1988) presents a theoretical approach to coping, resting on a central assumption that stress produces negative impacts on well being and a motivation to reduce these impacts. Edwards argues that initially, coping effort is directed towards changing situations or people which are causing stress. If these attempts prove effective then stress is reduced and well-being improved. There is an important secondary effect in that successful coping helps to move the locus of control towards the internal, and thereby increases the confidence with which future coping attempts will be made (eg Phares, 1976; Jackson and Schuler, 1985; Williams, 1994).

Cummings and Cooper (1979) treat coping as behaviour aimed at maintaining a "steady state" of interaction between the individual and the environment within a "range of stability" in

which he/she feels comfortable. A stressor is a stimulus which disrupts some aspect of this steady state and the individual is motivated to act to restore comfort. Lazarus and Folkman (1984) emphasise the "effortful" nature of coping, distinguishing it from "automatized responses." Lazarus and Folkman also argue that for coping to be effective there must be a good "match or fit between coping efforts and other agendas" such as values, goals, commitments and beliefs." Commitments in this context are "expressions of what is important to people" and they affect the choices people make, guiding them "into or away from situations that threaten, harm or benefit them by shaping cue-sensitivity." The depth with which a commitment is held determines the amount of effort a person is willing to exert to ward off threats to that commitment. They also increase vulnerability to psychological stress in the area of the commitment, and the more public a commitment is the more threatening it is to have it challenged (Janis and Mann, 1977).

Similarly, beliefs are defined by Lazarus and Folkman (1984) as "personally formed or culturally shared cognitive configurations," which determine "what is fact, that is 'how things are' in the environment." They concern "what one thinks is true, whether or not one likes or approves of it. Whereas commitments reflect values, that is what one prefers or considers desirable."

Cohen (1987) defines coping as:

"efforts, both action-oriented and intrapsychic, to manage [that is, master, tolerate, reduce, minimize] environmental and internal demands, and conflicts among them, which tax or exceed a person's resources."

and identifies five modes of coping:

1. Information-seeking
2. Direct action
3. Inhibition of action
4. Intrapsychic processes
5. turning to others for support

These modes may be classified as representing two broad strategies on the part of the individual: [1] action to change the situation and thereby remove the stressor stimulus or reduce its impact, and [2] alteration of the individual's perception of the stimulus so that it is no longer perceived to be a stressor, or its severity is perceived as milder than before. Cox and

Griffiths (1995, also Lazarus, 1966) comment: "coping usually represents either an adjustment to the situation or an adjustment of the situation." Cohen (1987) maintains that "most people use both types of strategies simultaneously."

Moos and Billings (1982) and Edwards (1988) add an extra dimension to the above "problem-focused" and "appraisal-focused" strategies, distinguishing an alternative "emotion-focused" coping method, "where attempts are made to regulate the emotional responses to a stressful situation" (Edwards, 1988). Dewe (1987) found in a study of ministers of religion that about one-third of the coping strategies employed were task-focused and two-thirds emotion-focused.

Lazarus (1976, Lazarus and Folkman, 1984) argues that an individual's stress reaction depends on how he or she "interprets or appraises" [consciously or unconsciously] the significance of a threatening or challenging event. This cognitive appraisal involves assessment of the demands being made upon the individual, the constraints under which he/she has to cope, the support he/she receives from others, and personal characteristics and resources (Cox and Griffiths, 1995). Coping resources include such things as knowledge, behavioural and cognitive skills, attitudes and beliefs.

"The extent to which a person feels threatened is in part a function of his or her evaluation of coping resources ... in a particular situation. Level of threat, in turn, influences the extent to which available resources can be used for coping. ... The greater the threat, the primitive, desperate or regressive emotion-focused forms of coping tend to be and the more limited the range of problem-focused forms of coping" (Lazarus and Folkman, 1984).

Lazarus and Folkman (1984) identify three kinds of primary appraisal: irrelevant, benign-positive and stressful, the latter of which include harm and loss, threat ["harms/losses which have not yet taken place but are anticipated"] and challenges, which are similar to threats but focus on the potential of the situation for gain or growth, and are "more likely to occur when the person has a sense of control over the troubled person-environment relationship." Threats and challenges can occur simultaneously.

Secondary appraisal is the process of assessing "what might and can be done," and is

influenced by "outcome expectancy" ["evaluation that a given behaviour will lead to certain outcomes"] and "efficacy expectation" ["a person's conviction that he/she can successfully execute the behaviour required to produce the outcome"] (Lazarus and Folkman, 1984; Bandura, 1977b, 1982).

There may also be "defensive reappraisal," which Lazarus and Folkman (1984) define as "any effort to reinterpret the past more positively, or to deal with present harms and threats by viewing them in less damaging and/or threatening ways."

Lazarus and Folkman (1984) argue that appraisal is influenced by certain characteristics of the situation, such as its novelty:

"If a situation is completely novel and no aspect of it has previously been connected psychologically with harm, it will not result in an appraisal of threat. Similarly, if no aspect of the situation has previously been connected with mastery or gain, it will not result in appraisal of challenge."

"Most situations are not completely novel, certain facets will be familiar, or there will be a general resemblance between the situation and some other class of events."

Temporal factors also influence appraisal, such as the imminence of an event [defined by Lazarus and Folkman as the interval during which the event is anticipated], the duration of the event, which is linked to habituation [getting used to a condition, especially if a stimulus is repeated and nothing much seems to happen as a result] and temporal uncertainty [not knowing when an event will occur]. The predictability, or "signalling" of events appears to enhance coping abilities, possibly because this "allows for the possibility of anticipatory coping" or possibly because it allows for relaxation during the periods of "safety." These concepts are associated with control and feedback, and also with probability.

When there is insufficient information required for appraisal, or the meaning of the available information is unclear, then ambiguity or uncertainty affect the coping process. Lazarus and Folkman (1984) assert that ambiguity is itself a source of threat. Faced with ambiguity "person factors shape the understanding of the situation," so that, for example, people with low trait anxiety report a significantly greater expectancy of avoiding shocks than those with high trait anxiety (Lazarus and Folkman, 1984). There also appears to be a difference between

subjective and objective estimates of probability associated with uncertainty, for example, in experiments where there was an objective probability of 50% of receiving an electric shock, subjects showed 95% subjective probability by “assuming they would get one.”

Adjustment of the situation

At one level, strategies which aim to change factors in the environment are readily comprehensible and represent traditional

approaches to “problems” of all kinds. Fishbein and Ajzen (1975) defined a “theory of reasoned action” which maintains that behaviour is controlled by thoughtful analysis, decisions to do or not do something follow careful consideration of the implications and behaviour is under volitional control and is a function of a person’s intentions. Intentions are influenced by attitudes and subjective norms, which are in turn influenced by beliefs:

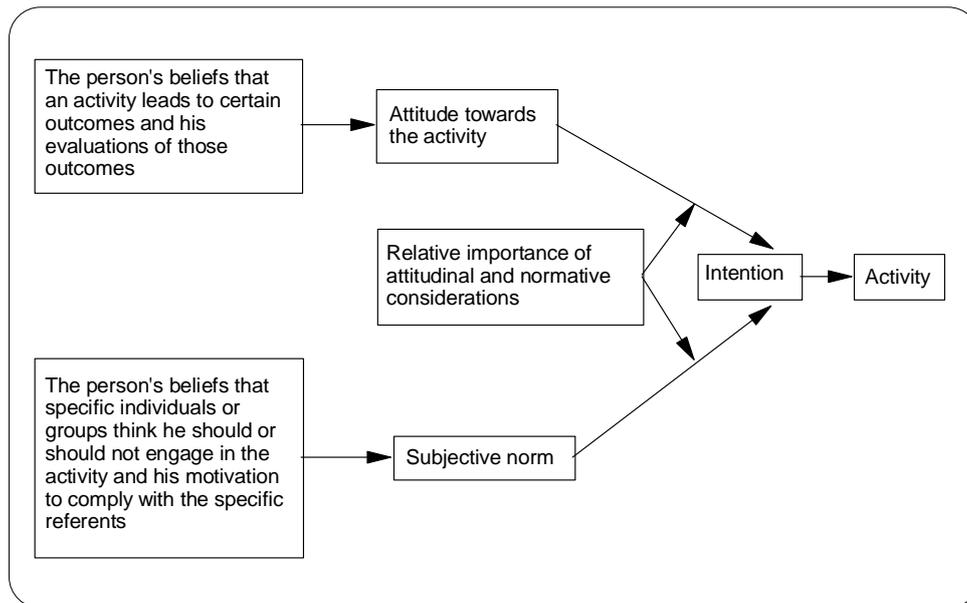


Figure 4 Model of Reasoned Action from Ivancevich and Matteson (1988), [adapted from Ajzen and Fishbein (1975)]

Models of decision-making, or problem-solving, which implicitly follow Ajzen and Fishbein’s are frequently taught to managers (eg, Collard, 1989; Hicks, 1991). However, Edwards (1988) argues that research on decision-making shows that people “systematically violate the principles of rational decision-making” and do not appear to:

“consciously generate a comprehensive set of coping alternatives, evaluate the potential consequences of each alternative, and select the strategy which minimizes stress and maximizes well-being”

This may represent a failure in effective implementation rather than any intrinsic inappropriateness of the strategy.

Adjustment to the situation

“Regardless of their particular characteristics, coping strategies which focus on the alteration of perceptions reduce stress by making perceptions more

consistent with desires or by removing perceptions from awareness altogether” (Edwards, 1988).

Changes in perceptions may be made either by seeking information (Cohen, 1987; Edwards, 1988) or by “cognitively reconstructing reality. In other words, the individual may deny a stressful situation” (Edwards, 1988). This phenomenon has been identified by Festinger as cognitive dissonance (Festinger, 1957; Festinger and Carlsmith, 1959). Cognitive dissonance theory states that when there is conflict between two related cognitions [such as attitudes], tension [dissonance] will result. This tension will be dealt with either by changing one of the cognitions or by adding another to ‘explain’ the discrepancy. Festinger described how a cult leader prophesied the destruction of a major city and gathered her followers on a hill-top to await the event. When the catastrophe failed to occur the cult members concluded that their prayers had saved the city,

thus re-balancing the dissonance between their belief in their leader and the reality that her prophesy had not come true. Festinger and Carlsmith (1959) paid students to perform an extremely tedious task [turning a large number of wooden pegs through quarter-turns for half an hour]. The students then had to tell waiting participants that the task was really interesting. Students who had been paid \$20 did as they were asked but afterwards maintained their view that the task had been excruciatingly boring. Students who had been paid only \$1, however, appeared to believe that the task had not been so bad after all. Festinger explained this difference by attributing the \$1 group's attitude to a need to justify to themselves their seemingly irrational action in lying about the task for such a trivial sum, whilst for the \$20 group the payment was sufficient justification without any need to adjust their cognitions.

Whilst Dobson et al (1982) comment that Festinger's theory is hard to prove or disprove, a number of studies have broadly confirmed its predictive ability (eg Aaronson and Carlsmith, 1963; Freedman, 1965; Cooper and Worchel, 1970; Collins and Hoyt, 1972). Cognitive dissonance theory provides an explanation of why individuals faced with a stressful situation might find their perceptions altered so that the situation seems less stressful. Edwards (1988) suggests that "an individual may reduce a discrepancy between perceptions and desires by adjusting desires, leaving perceptions intact" or by "changing the amount of importance associated with a discrepancy between perceptions and desires." In other words, an individual might cope with the failure of the real world to fulfil his hopes by reducing his aim a little.

The achievement of consonance may be attempted through the process of denial: "when there is nothing constructive that people can do, denial may alleviate distress without altering functioning" (Lazarus and Folkman, 1984). However, there may be circumstances where denial is wholly or partially dysfunctional. For example, denial that one has an illness may be dangerous if it leads to failure to take appropriate problem-focused action, although denial of the implications of having the illness may support coping.

The concept of control has recurred throughout this chapter. Murphy (1988) remarks that

"Cognitive appraisal is thought to be a function of the amount of control the person believes he/she has in the situation.

Perceived control is an essential ingredient of coping and a psychological resource that people draw upon during stressful events"

Taking or attempting to take control of the situation appears to have more beneficial effect on managing stress than 'strategies' [conscious or unconscious] that try to avoid addressing the stressor. A longitudinal study of mental health workers by Koeske, Kirk and Koeske (1993) showed that "control-oriented coping strategies clearly acted as work-stress buffers" whilst avoidance strategies "reported higher general levels of negative consequences three months later."

Moderators of the coping process

Cox and Griffiths (1995) define coping resources as "energy, knowledge, attitudes, behavioural style [or personality] and skills [including social and cognitive skills]." The balance of these resources will affect the overall ability of an individual to cope with specific stressors at specific times. Edwards (1988) argues that "personal characteristics [eg skills, abilities and personality traits] influence the impact of the implementation of a coping strategy on the determinants of stress" and that "personality traits may also influence the effects of coping, particularly where the situation is ambiguous."

Moos and Billings (1982) describe coping resources as "a complex set of personality, attitudinal and cognitive factors that provide the psychological context for coping." They go on to argue that these are "relatively stable dispositional characteristics that affect the coping process and are themselves affected by the cumulative outcome of that process." Moos and Billings believe that self-concept is highly significant in determining the effectiveness of coping. Self concept includes specific elements such as locus of control and "sense of mastery" which seems to be a very similar attribute to locus of control; "competent self," a set of favourable self-attitudes; and "self-efficacy." People with high levels of self-efficacy "may be more active and persistent in their efforts to handle threatening situations" whilst people with lower levels may be more inclined to favour avoidance strategies (Moos and Billings, 1982).

Kobasa and colleagues also believe that the "strong self-belief" of hardy personalities helps them to cope with stressors. "Coping for them consists of turning stressful events into possibilities and opportunities for their personal development and that of others around them" (Kobasa and Puccetti, 1982) and they "perceive

change as an opportunity and a challenge rather than as a threat" (Kobasa, Hilker and Maddi, 1980).

Edwards (1988) is dismissive of "characterising coping in terms of a personal trait or style" which he says leads researchers to "fail to predict actual coping behaviours, rarely measure these behaviours and ignore the multidimensional and dynamic nature of actual coping responses." For Edwards it is oversimplistic to regard coping as stable. Coping processes are multidimensional and vary over time and across situations. Any correspondence between traits or styles and subsequent coping behaviours is shown by "relevant studies" to be "often weak at best" and "not supported by much unequivocal evidence." Cohen and Edwards (1988) reviewed the literature on hardy personality and found no instances of the coping behaviours of hardy and non-hardy individuals actually being measured.

Edwards (1988) suggests that factors in the physical and social environment act to influence the effects of coping strategies. Physical factors include distance, weather and physical barriers. Social factors include support or increased pressure from co-workers. Kobasa and Puccetti (1982), however, in a study of 170 executives found no correlation between health outcomes and the amount of social support received, except support from the boss. They found that hardy personalities received more support from the boss than less hardy personalities. Kobasa and Puccetti suggest that the majority of stressful events for executives take place at work, so support from family and other sources may not help to deal with the problem and might even tend to deter executives from trying to deal with it. Ganster, Fusilier and Mayes (1986) reported that "the literature is unclear about the generality of a buffering effect of social support on stress" and that "the evidence of moderating effects is equivocal, suggesting that their existence may depend on the source of support, the recipients and the stressors ... being examined."

Stress management in organisations

Cranwell-Ward (1995) found that only 12% of UK companies had a programme to deal with stress, although 90% "considered that the mental health of their employees was vital to their competitive position." Murphy (1988) identifies three levels of stress prevention activity in organisations. Primary level activity is

aimed at the reduction of stressors, the secondary level aims to manage stress when it occurs, and the tertiary level aims to deal with the consequences of stress through employee assistance programmes [EAPs], counselling and welfare.

Karasek and Theorell (1990) are adamant that the reduction of stressors is the most satisfactory option from all points of view. They are scathing about "the work environment where stressors are routinely planned, years in advance, by some people for other people" and believe that "person-oriented intervention strategies" lead to "victim-blaming" and are costly for industry and society, and unlikely to be successful in the long term. Their approach is to "link causes in based in the environment and causes based in the individual, but with environmental causes as the starting point because:

"in our research findings it is not the demands of work itself but the organizational structure of work that plays the most consistent role in the development of stress-related disease."

Cox (1993) agrees that:

"most stress management interventions are individually focused ... and concerned with changing the worker as opposed to work or the work environment."

and Thompson and McHugh (1990) are also concerned that

"the role of the organisation in producing unhealthy systems and conditions of work is being ignored. In its place we get systems reinforcing the self-attribution of stress and anxiety as personal problems to be coped with rather than structural issues to be addressed."

The specific actions which management might take to reduce workplace stressors are implicitly documented above in descriptions of the causes and sources of stress. Griffiths, Cox and Stokes (1995) provide a succinct general summarisation in the following terms:

"Much of what needs to be done in this respect is simply 'good' management practice. Indeed, the final thought to leave with employers is that good management *is* stress management."

Summary of workplace stress

Occupational stress presents difficulties of definition and of measurement. In the literature, the single term *stress* is used to refer both to stressors [causal factors] and to strain [the adverse reaction experienced by an individual]. Strain is likely to result when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being, when coping is important to them and when they are anxious or depressed about it. Stress is strongly associated with uncertainty, that is, the perception that knowledge about an event or condition requiring action or resolution is inadequate. The measurement of stress and of resulting strain is largely based on self-report and subjective. This is recognised as a weakness but is considered to be appropriate by some prominent researchers. Strain is linked to a number of measurable health outcomes, including serious and life-threatening conditions. The exact nature of the correlations, though, remains unclear. It is believed that adverse somatic outcomes may have multifactorial causations, involving stressors, the individual's vulnerability, and the context in which the stressor-vulnerability interaction is taking place. A reduction of the effectiveness of the immune system has been suggested as the mechanism by which strain may lead to negative health outcomes.

Stress research has produced a number of paradigms. Selye's General Adaptation Syndrome and the Yerkes-Dodson inverted-U provide models of arousal and resistance which have significantly contributed to later developments. Work on life events [major incidents affecting individuals] is less highly regarded now and the primary stressors facing most employees in the course of their working lives are believed to be chronic rather than acute. Current stress paradigms are psychological and cognitively-based. Of these, transactional models focus on perception, cognitive appraisal and coping mechanisms, whilst interactional models focus on the degree of match or mismatch between the individual and his or her environment. Key elements in this interaction are the extent to which an employee's attitudes and abilities meet the demands of the job, and the extent to which the employee's needs are met by characteristics of the job and the environment. Stress is likely to occur when the individual perceives there to be a poor 'fit' in one or both of these dimensions.

The stressors which are likely to arise in the work environment include too much or too little work, work which is too difficult or too easy, uncongenial work patterns such as shift or night work, excessive working hours conflicts or dilemmas over incompatible requirements, or demands which offend against personal values, insecurity, failure of expected rewards or developments, and lack of opportunity to participate in decisions affecting the individuals or their work. Aspects of the physical environment, for example, overcrowding, lack of privacy, high noise levels, temperature extremes, air movement and lighting may also be stressors under certain circumstances. Some, but not all, of the identified sources of stress may legitimately be classified as threats. These include job insecurity, changes which affect individuals, withdrawal of expected career development and budget cuts. The issue of threat may also be relevant when considering why individuals tolerate conditions which they find stressful. This question is not directly addressed in the literature

A number of moderators are known to affect an individual's personal experience of stress. These include personality characteristics such as extroversion, neuroticism, trait anxiety, and self-esteem; behavioural style, such as locus of control, Type A behaviour pattern and 'hardiness'; needs and values; abilities and experience.

Control has been identified as the decisive factor in determining the health consequences of work demand, and the issue of control is a pervasive one throughout the stress literature. There is a considerable body of evidence that having some degree of control over events enables individuals to withstand otherwise damaging levels of stress, whilst being unable to exercise any control may result in strain and somatic outcomes from modest levels of stress.

Participation in decision making is not identical to control, but has been observed to moderate the effects of stressors in a similar way. Involvement in decisions which affect the individual at work has been shown to improve job satisfaction and to reduce conflict and tension. Negative correlations between participation in decision-making at work and physical and psychological ill health have been widely recorded.

Social support has been less positively associated with the moderation of strain. There is evidence that an employee's social relationship with his or her immediate boss may reduce or

increase the experience of stress, but the effects of other kinds of social support are less clear. It may be that social support acts as a kind of 'hygiene factor' - its absence may be a stressor but its presence may have little positive effect.

The experience of stress brings with it a motivation to reduce its negative impacts and restore stability or comfort. Actions taken by an individual to ameliorate the effects of stress are termed coping, and take the form of attempts at adjustment of the situation or adjustment to the situation, or commonly of both simultaneously. Initial appraisal of a potentially stressful situation or event involves assessment of the demands being made upon the individual, the constraints under which he/she has to cope, the support he/she receives from others, and personal characteristics and resources. Where action to change the situation is impracticable or unsuccessful the resultant strain may be reduced by changes to the way the situation is perceived, This may take the form of 'cognitively reconstructing reality,' so that the individual perceives the situation or its implications to be less damaging than they really are, or it may take the less extreme form of looking on the bright side or downwardly adjusting hopes and expectations.

Although defensible estimates of the costs of occupational stress are difficult to formulate, there is a general view in the literature that those costs are very high. Correlations between stress/strain and ill health are very widely recorded. Physical and mental ill health can be associated directly with economic costs in terms of absenteeism, and healthcare expenses. Their

indirect costs in terms of productivity through reduced motivation, enthusiasm, creativity, learning capability and task performance may be much higher. Stress has also been associated with increased accident rates and with workplace conflict.

Research shows that factors in the organisational structure of work are more significant to health than the demands of work itself, and situationally-induced anxiety [eg, threat] has a greater negative effect on performance than personality factors. Approaches to stress management which focus on the individual have been criticised as 'victim blaming' strategies which divert effort away from more productive actions. Approaches which concentrate on making jobs and working environments less stressful are believed to be far more effective. There may also be an increasing legal responsibility for employers within the general requirement to provide safe working environments.

In general, the overwhelming weight of evidence suggests that employees who are experiencing stress/strain will perform less well in a variety of ways than those who are not, and it might reasonably be supposed that projects managed by persons under conditions known to be conducive to the experience of stress/strain, as documented above, will be less successful, on average, than projects where the organisational structure and climate are less stressful.

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