

**THE DEVELOPMENT OF STRESS THEORIES AND THEIR
IMPLICATIONS FOR THERAPEUTIC INTERVENTIONS: A
REVIEW**

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DECLARATION OF AUTHENTICITY

I, the undersigned, hereby declare that the work contained in this assignment is my own original work, and that I have not previously in its entirety or in part submitted it at any university for a degree.

ABSTRACT

This paper provides a theoretical overview and critical evaluation of current conceptualizations and research in the field of stress, with particular reference to the integration of theoretical knowledge with therapeutic interventions. The discussion commences with a brief look at the detrimental effects of stress. This is followed by a clarification of the concepts of stress, stressors, strains and coping. A review of recent developments in the major stress theories, namely the stimulus-response (S-R) models, stimulus-organism-response (S-O-R) models, social stress theories, the holistic health model, control theory, psychodynamic theory, learning theory, self theory, existentialist theory, cognitive theory, the transactional model and conservation of resources theory, follows. Factors that can act as moderators of the adverse effects of stress are discussed briefly, as they hold important implications for interventions in psychological practice. These moderators include personality, social support and other moderators such as spiritual health, tolerance for ambiguity and genetic predisposition. An attempt to show how theory can inform practice by guiding specific interventions on primary, secondary and tertiary prevention levels concludes the discussion.

OPSOMMING

Hierdie artikel bied 'n teoretiese oorsig en kritiese evaluering van huidige konseptualiserings en navorsing op die terrein van stres, met spesifieke verwysing na die integrasie van teoretiese kennis met terapeutiese intervensies. Die bespreking begin met 'n algemene oorsig van die nadelige effekte van stres. 'n Verduideliking van die konsepte van stres, stressors, stresverwante spanning (strain) en streshantering (coping) volg. Hierop volg 'n oorsig van onlangse ontwikkelings in die belangrikste stressteorieë, naamlik die stimulus-respons (S-R) modelle, die stimulus-organisme-respons (S-O-R) modelle, sosiale stressteorieë, die holistiese gesondheidsmodel, sisteemteorieë, psigodinamiese teorie, leerteorie, selfteorie, eksistensialistiese teorie, kognitiewe teorie, die transaksionele model en laastens die behoud-van-bronne-teorie. Faktore wat kan dien as moderators van die nadelige effekte van stres word ook kortliks bespreek, aangesien hulle belangrike implikasies inhou vir terapeutiese intervensies. Die moderators wat in hierdie artikel bespreek word sluit in persoonlikheid, sosiale ondersteuning en ander moderators, naamlik geestelike welsyn, toleransie vir onsekerheid en genetiese predisposisie. Die artikel word afgesluit met 'n bespreking oor hoe die teorie terapeutiese intervensie kan bevorder op primêre, sekondêre en tersiêre voorkomingsvlakke.

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THE DEVELOPMENT OF STRESS THEORIES AND THEIR IMPLICATIONS FOR THERAPEUTIC INTERVENTIONS: A REVIEW

1. INTRODUCTION

Early research on psychological stress focused on extreme conditions such as combat, concentration camps, nuclear accidents, loss of loved ones, and serious injury. Another focus area was extreme responses to stress: psychosis, incapacitating anxiety, bleeding ulcers, high blood pressure, heart conditions, and many other illnesses, which over time become stressful conditions themselves (Tucker-Ladd, 2000).

According to Krebs (2000) experts estimate that up to 90% of visits to physicians are due to stress-related illnesses that manifest as headaches, hypertension, insomnia, gastrointestinal disturbances, chronic pain, fatigue, and skin disorders, to name a few. Psychological symptoms may include feelings of inner tension, anxiety, depression, anger, pessimism, resentment, increased irritability, cynicism and an inability to concentrate or perform at usual levels. The primary hormones that the body releases when an individual is stressed, namely adrenaline and cortisol, are important if a person needs to run from danger or stand and fight. However, over time these hormones take their toll on the body, especially if the individual is chronically “stressed out”. Although a single stressful event may not place great demands on the coping abilities of most persons, it is when multiple problems accumulate, persisting and straining the problem-solving capacity of the individual, that the potential for serious disorders occurs (Wills & Langner, cited in Cohen & Wills, 1985).

A recent study (National Institute of Health (NIH), cited in Krebs, 2000) demonstrated that stressed workers cost the US health care system almost 50% more than their less stressed colleagues. Despite long-standing misgivings about its usefulness, the concept of stress continues to generate great interest because of the conviction that it is a causal

factor in illness (DeLongis, Lazarus & Folkman, 1988). Mechanisms linking stress to illness include serious disruptions of neuroendocrine or immune system functioning, marked changes in health-related behaviours or various failures in self-care (Cohen & Wills, 1985).

2. CONCEPT CLARIFICATION

2.1 STRESS

The broadest definitions of stress include the entire complex sequence of events, namely an external or mental, real or imaginary event that requires some change; internal processes such as perception, interpretation of the event, learning, adaptation, or coping mechanisms; emotional reactions such as anxiety or depression; and other behavioural-bodily reactions such as nervousness, sweating, stumbling over words, high blood pressure and a variety of medical conditions (Tucker-Ladd, 2000). The contemporary concept of stress is that it is a demand that involves biochemical, physiological, behavioural and psychological changes (Ogden, 2000). In a more limited usage, *stress* sometimes refers to the upsetting situation and *strain* to the mental and physical reactions. However, the term stress commonly includes both the threatening situation and the anxious reaction (Tucker-Ladd, 2000).

A fundamental problem is that stress has been inadequately differentiated from concepts such as 'strain', 'pressure', 'demand' and 'stressors'. The term is sometimes used to describe something external in the environment (a stimulus or stressor), while at other times it is used to describe an internal feeling (a response or strain). Frequently it is used to imply some combination of both stimulus and response. On occasion it is also used as synonymous with pressure. Generally, this confusion in popular perceptions reflects the lack of clarity in the academic literature (Jones & Bright, 2001). Different definitions of stress thus abound in the literature.

Aldwin (1994) suggests the following overarching definition of stress that incorporates most of the elements that researchers have used for identifying and studying the effects of

this phenomenon: “stress refers to that quality of experience, produced through a person-environment transaction, that, through either overarousal or underarousal, results in psychological or physiological distress” (p. 22).

Another definition of stress that has been widely used by stress researchers is that of McGrath (cited in Olshevski, Katz & Knight, 1999). McGrath defined stress as a “substantial imbalance between environmental demand and the response capability of the focal organism” (p. 36). These and other similar definitions reflect the move towards a more detailed consideration of the nature of the processes involved and an emphasis on the person-environment relationship.

Most research on psychological stress is based on the cognitive-transactional definition of stress defined by Lazarus and Folkman (1984). They define stress as “a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p. 19). This definition draws attention to the processes whereby people appraise their environments as stressful and away from the assessment of the nature of environmental stressors (Jones & Bright, 2001). Lazarus and Folkman (1984) have suggested that perhaps the most useful approach to stress would be to regard it not as a variable but as “a rubric consisting of many variables and processes” (p.12). They further suggest that researchers should adopt a systematic theoretical framework encompassing relevant antecedents, processes and outcomes (Jones & Bright, 2001). One such framework is Lazarus and Folkman’s transactional theory, which will be discussed in more detail later in this article.

2.1.1 DIFFERENT TYPES OF STRESS

2.1.1.1 Distress

Distress is a broad label for a variety of stress responses, and is a central symptom of both mood and anxiety disorders. The term was introduced by Selye (cited in Rice, 1999) to account for “damaging or unpleasant stress”(p.31). Typically referring to unpleasant subjective stress responses such as anxiety and depression, it is also sometimes used to

describe behaviours and medical symptoms (“somatic distress”). Distress may be conceptualized as the internal “strain” provoked by an external “stressor” (Matthews, 2000).

2.1.1.2 Eustress

Selye (cited in Abascal, Brucato, & Brucato, 2001) used the term eustress to refer to positive stress – the optimum level of stress that is needed to keep a person motivated to perform and meet the challenges of life. Eustress heightens awareness, increases mental alertness, and often leads to superior cognitive and behavioural performance (Rice, 1999). Kobasa (cited in Abascal, Brucato, & Brucato, 2001) also stated that the physiological and psychological aspects of the arousal produced by stress could be useful, and that unless a person is routinely overloaded and aroused, stress may not necessarily be harmful.

The Yerkes-Dodson law (cited in Rice, 1999) was the first attempt to summarize the relationship between arousing stress and performance. This law states that up to a point performance will increase as arousal increases. An optimum level of stress and arousal is needed to perform at one’s best (Abascal, Brucato & Brucato, 2001). Beyond the optimum level of arousal, performance begins to deteriorate (Rice, 1999).

2.1.1.3 Harm/loss, threat and challenge

Lazarus (1999) drew a distinction among three types of psychological stress, namely harm/loss, threat, and challenge, and argued that the appraisals associated with each are different. Harm/loss deals with the damage or loss that has already taken place. Threat has to do with harm or loss that has not yet occurred, and challenge refers to the conviction that difficulties can be overcome with verve, persistence, and self-confidence. He further argued that each type of psychological stress is coped with differently, and has different psychophysiological and performance outcomes.

2.2 STRESSORS

Stressors are the circumstances or external situations that induce stress responses, and can be acute or chronic in nature. Acute stressors have a clear beginning and end. Chronic stressors may persist for extended periods without clear demarcation (Auerbach & Gramling, 1998).

2.2.1 DIFFERENT TYPES OF STRESSORS

2.2.1.1 Changes

Selye (1974) reasoned that any change in a person's life is a stressor because there is a demand on the person to deal with a new situation. Holmes and Rahe (1967) identified major life changes – positive and negative - that lead to stress. They reasoned that the more of these major life changes that have occurred in a person's life during the last year or two, the greater the chances of the person becoming physically or emotionally ill.

Siegelman (cited in Tucker-Ladd, 2000) speculated that change is upsetting as it involves a loss of the known, a giving up of a reality that has given meaning to a person's life.

2.2.1.2 Daily hassles

Lazarus and Folkman (1984) believe the minor daily hassles rather than the major life events bother people the most, causing mental and physical problems. Research has confirmed that the minor hassles identified by Lazarus are more related to physical health than Holmes and Rahe's major life events. Thus, both major and minor events create stress. Lazarus and Folkman (1984) also point out that health should rather be viewed as a result of effective or ineffective coping than as simply a result of stress in the environment.

2.2.1.3 Frustrations, threats and conflicts

Stressors may be real or imaginary, past or future obstacles or stumbling blocks, in other words frustrations. If something (or someone) has interfered with a person's "smooth

sailing" in the past, it is called a **frustration** or a regret. If the obstacle is expected in the future, it is called a **threat**. This may be an accurate or an unrealistic expectation; in either case it causes anxiety and worry. A common human dilemma is when inner wishes, needs, or urges push a person in different directions. This is called a **conflict** (Tucker-Ladd, 2000).

2.2.1.4 Other external and internal sources of stress

Shaffer (1982) listed nine external and ten internal sources of stress. The external sources are noise, polluted air, poor lighting, overcrowding, unpleasant relationships, uninteresting work or poor conditions, life changes, too much or too little responsibility, and too many rules. The internal sources include poor diet, little exercise, physical strain on the body, rushing or being unable to adjust to the pace of others, experiencing conflict or taking things too seriously, sexual frustration, finding little meaning in life, nervous symptoms, and taking no time for oneself.

2.3 STRAINS

Strain refers to the mental and physical reactions to stressors (Tucker-Ladd, 2000). Strains may include all types of physical and mental disorders ranging from minor to major illness and death; or from trivial mood swings to major psychiatric disorders. They may also include a range of behavioural indices such as poor work performance or detrimental health behaviours such as drinking or smoking (Jones & Bright, 2001).

2.4 STRESS-RELATED CONCEPTS

Commonly used phrases such as "he is anxious" or "insecure" or "she is nervous" or "jumpy," usually imply the amount of anxiety and stress being experienced, and in such way have become an accepted index of how well a person is coping. Indeed, a very high anxiety level is an aspect of most psychological breakdowns or disorders.

Tucker-Ladd (2000) identified the following other emotions and/or terms that are closely related to stress:

- *Fears* occur when a person feels scared in specific situations.
- *Phobias* are unrealistic fears; over-reactions to the actual risks involved.
- *Panic reactions* are sudden, overwhelming fear reactions, often without an obvious external cause, usually involving rapid breathing, heart palpitations, fear of dying, and a frantic attempt to get to safety.
- *Anxiety* is an unpleasant state of tension, something like fear, which occurs in certain circumstances, but is not associated with a specific stimulus, and perhaps not with an external event at all.

2.5 COPING WITH STRESS

The conceptualization of coping is based on a schema proposed by Lazarus and Folkman (1984) in which coping is viewed as a response to perceived stress and is defined as “constantly changing cognitive and behavioral efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141). More broadly defined, coping encompasses cognitive and behavioural strategies used to manage a stressful situation (problem-focused coping) or to manage the attendant negative emotions (emotion-focused coping) (Lazarus & Folkman, cited in Aldwin & Revenson, 1987). Coping researchers argue that the ways in which people cope with stress can reduce or amplify the effects of adverse life events and conditions - not only on emotional distress and short-term functioning, but also on the development of physical and mental health or disorders in the long term. Coping is thus regarded as an adaptive process, which mediates between stress and its long-term effects on mental and physical health as well as on a person’s functioning (Skinner, Edge, Altman & Sherwood, 2003).

3. REVIEW OF THE DEVELOPMENT OF STRESS THEORIES

In this section a more or less chronological and systematic review of the most important developments in stress theories relevant to psychological interventions is presented.

3.1 STIMULUS-RESPONSE (S-R) MODELS (TRADITIONAL/BIOLOGICAL THEORIES)

3.1.1 General adaptation syndrome (GAS)

Selye (1936, 1956, 1974) is popularly considered to be the father of stress theory; in fact, he gave the field its name and provided one of the first systematic descriptions of stress responses (Roskies, cited in Monat & Lazarus, 1991). Selye's (1936) definition of stress is: "a non-specific response of the body to any demand placed upon it" (p.33). He postulated that the stress response / GAS consists of three stages, namely the alarm phase, resistance phase and exhaustion. The alarm phase consists of two distinct phases: shock and counter-shock. This phase resembles the characteristic physiological response known as the fight/flight response first described by Cannon (1932). The disruptive effects of the stressor is expressed in a dramatic alteration in homeostatic processes, including regulatory processes affecting blood pressure, circulating levels of glucose, electrolyte balance, distribution of blood flow, and membrane permeability. These shock-related responses to the stressor would be counteracted in part by the counter-shock responses of the adrenal cortex, through the release of corticosteroids, and the adrenal medulla, through the release of epinephrine (McCarty & Pacak, 2000). All these physiological changes activate the body for a "fight or flight" reaction. According to Tucker-Ladd (2000) it is evident how this reaction helped the human species to survive for millions of years in the wild. Today the "fight or flight" reaction is experienced in the form of emotions such as fear, anxiety, panic, anger and sadness.

If the stressful stimulus persists over a prolonged period of time, the second stage of the GAS, namely the resistance phase, develops. During the resistance phase, the organism achieves a state of increased adaptation to the effects of the stressor, but is more

susceptible to the deleterious effects of other homeostatic challenges. This stage is thus the body's attempt to adjust to the effects of the stressor. At some unidentified point, if the stressful stimulus continues and perhaps increases in intensity, the organism enters the final stage of the GAS, namely the phase of exhaustion. Selye (1936) suggested that the onset of this third stage was triggered by the depletion of adaptation energy stores. This depletion of adaptation energy was accompanied by enhanced activity of the hypothalamic-pituitary-adrenocortical (HPA) axis and the onset of pathophysiological changes in the immune system and gastrointestinal tract, ultimately resulting in death. Gastrointestinal ulcers and increased susceptibility to infectious agents have been regarded as features of stress for many years, and represent two of the most important changes thought to accompany the phase of exhaustion (McCarty & Pacak, 2000).

Selye (1956) specifically believed that repeated or prolonged exhaustion of resources was responsible for the physiological damage that laid the groundwork for disease. Prolonged or repeated stress has been implicated in disorders such as cardiovascular disease, arthritis, hypertension, and immune-related deficiencies (Taylor, 1999). According to Tucker-Ladd (2000) psychosomatic disorders such as fatigue, hysteria, aches and pains, high blood pressure and skin rashes occur commonly, and some of the mental effects of prolonged exposure to stress may be the experience of hopelessness, exhaustion, confusion or perhaps a serious mental disorder.

Selye's (1956) attempts to popularize the concept of stress as it relates to physical and mental health were extremely successful. In contrast, his conceptualization of stress and the details of the GAS have not stood the test of time. Some of the main criticisms are:

- His emphasis on the non-specificity (that is, the generality) of the stress response has been a major source of concern for investigators, and some have argued that his writings on this subject have been contradictory. For example, although he emphasized the non-specificity of the stress response across many different types and intensities of stressors, he did allow room for individual differences in the stress response. He was forced to do this to explain the fact that many different pathophysiological changes were associated with stress. Selye addressed this problem by positing that "conditioning factors" acted to accentuate or inhibit

particular components of the stress response, leading to individual differences in expression of the deleterious effects of stress. Still, he argued that once the effects of these conditioning factors were stripped away, a constellation of non-specific responses would remain. Few if any investigators support this suggestion today (McCarty & Pacak, 2000).

- Selye's work also placed the adrenal cortex at the center of the stress process. An elevation in secretion of steroid hormones from the adrenal cortex became for some a necessary condition for stress to occur. Beginning with the work of John Mason in the 1960's, the centrality of adrenal steroids in the stress response was supplanted by an emphasis on participation of multiple neural and neuroendocrine pathways in the stress response, with no single system assuming a position of preeminence (McCarty & Pacak, 2000).
- Another major weakness of the theory is that it does not encompass the psychosocial factors that are of critical importance to understanding human stress. Neither does it address the cognitive processes that influence the point when demand becomes either challenge or threat and it does not consider the selection of coping strategies to combat stress or the effectiveness of such coping strategies (Rice, 1999).

3.1.2 Fight-or-flight response

This is a concept developed by the American physiologist W.B. Cannon (1932) that linked emotional expression to physiological changes in the periphery (McCarty, 2000). Cannon probably first introduced stress terminology to the scientific community by contributing the idea of homeostasis, namely the tendency of organisms to maintain a stable internal environment. Cannon (1932) proposed that when the organism perceives a threat, the body is rapidly aroused and motivated via the sympathetic nervous system and the endocrine system to regain homeostasis. These bodily systems mobilize the organism to attack the threat or to flee; therefore it is called the fight-or flight response. Cannon thus introduced the mechanism of emergency preparedness in the form of the fight-or-flight response. He also showed that this response involves a complex interaction

between sympathetic nervous system arousal and hormonal secretions from the adrenal glands (Rice, 1999).

Both Cannon's (1932) early fight/flight model and Selye's (1936) GAS regarded the individual as automatically responding to an external stressor. Cannon and Selye thus described stress within a straightforward stimulus-response framework. The main critique against these models is that in their suggestion of a consistent response towards stressors they included only a minor role for psychological factors, as they conceptualized individuals as passive creatures who responded automatically to their external world (Ogden, 2000).

3.1.3 Genetic-constitutional theory

This theory postulates that in addition to coping strategies, several factors related to individual genetic history, called predisposing factors, also affect stress-resistance. These factors influence resistance through preset organ weaknesses, by increasing risk for diseases, or through genetic response sensitivities (such as irritability). Genetic-constitutional research attempts to establish a link between genetic makeup (genotype) and some physical characteristic (phenotype) that lowers a person's general ability to resist stress.

Genetic factors may reduce stress-resistance in several ways, as it influences balance in the autonomic nervous system (ANS), which helps to balance body processes between the quiet restorative state and the aroused or the so-called fight-or-flight emergency reaction system. General temperament is also genetically determined in part. Temperament refers to three differences in initial response patterns. According to Fuller and Thompson (cited in Rice, 1999) these differences are:

- a. Activity levels vary on a continuum from active to passive;
- b. Emotional responses range from pleasant to unpleasant;
- c. Reactivity to stimuli varies from hypersensitive to hypo-sensitive

Genes also control the codes for the structure and function of organs and body systems. The organs and systems, which are of most importance to stress resistance, are the kidneys, the cardiovascular system (risks for coronary, high blood pressure, arteriosclerosis), the digestive system (risks for stomach and duodenal ulcers), and the nervous system (imbalance in the autonomic system) (Rice, 1999).

3.1.4 Evolutionary perspective

Evolution is the process in which traits such as the stress response are shaped by natural selection. The stress response has been shaped by natural selection to increase the ability of organisms to cope with situations that require action or defense. The stress system is a complex, sophisticated, and carefully regulated adaptation system that has been shaped by natural selection because it gives a selective advantage. According to Nesse and Young (2000) the stress response was perhaps more useful in pre-modern times, where stressors were more often physical. Today, threats are mainly social and mental, so the actions of the hypothalamic-pituitary-adrenocortical (HPA) system may be detrimental to the organism's well-being in the long run. Threats or stress response-inducing situations can have widespread effects on the cardiovascular and immune systems as well as on brain neurotransmitters responsible for mood. It is the repeated activation of these stress response systems that potentially poses a significant health threat (Jones & Bright, 2001). This supports the many efforts to reduce stress and find drugs that block the stress response. Nesse and Young (2000) further argue that most stressors in modern life do not arise from physical dangers or deficiencies, but from our tendency to commit ourselves to personal goals that are too many and too high. They thus conclude that much stress does not arise from a mismatch between our abilities and the environment's demands, but from a mismatch between what we desire and what we can have.

3.2 STIMULUS-ORGANISM-RESPONSE (S-O-R) MODELS (INTERACTIONAL THEORIES)

These theories take the interaction between the person (organism) and the environment into account in explaining stress reactions.

3.2.1 Diathesis-stress model

This model suggests that heredity and environment are complementary processes that interact to influence biological structures and functions. The theory postulates that there is interplay between predisposing factors (a person's genetic makeup) and precipitating factors (certain stressful events). A lower threshold for stress or an organic weakness makes the person vulnerable to illness. Whether that weakness ever shows up or not depends on the amount of stress, the precipitating force, that the person experiences. Parsons (cited in Rice, 1999) also suggests that evolutionary change continues to work in selecting for behaviors that enable organisms to adapt to stressful environments (Rice, 1999).

3.2.2 Life events theory

This theory originated in an attempt to depart from theories that emphasized physiological changes. The life events theory was developed to examine stress and stress-related changes as a response to life experiences (Ogden, 2000). A physician, Adolf Meyer, was one of the first to consider the importance of daily life events systematically. He noted stressful events in his patients' lives through "life charts" and made the important observation that illnesses tended to cluster at those times when major events occurred. Drawing on this finding, Holmes and Rahe (1967) constructed the Social Readjustment Rating Scale (SRRS), which is by far the most widely used, and perhaps the most criticized, stress test ever devised (Smith, 1993).

The most recent development in the life events theory is the life stress and illness model. This model is a photography-inspired lens-and-filter model to explain the development of illness in response to the experience of stressful life events. Rahe (2000) identified the following six stages of processing of life events/ life changes:

- **Perception** of the significance of the life event (personal meaning). Just as a polarizing filter will diminish the intensities of some light rays and augment others, perception of the significance of recent events may be diminished or augmented according to past experience of similar events, current social supports and biographic assets, such as intelligence, educational level and social class.
- Psychological **defenses** such as denial, displacement, repression, reaction formation, isolation, and many others are employed in an unconscious, almost reflexic manner, when challenged by significant recent life-change. These defenses are a person's first line of defense against threats from the environment. For most individuals psychological defenses are extremely helpful in the short term, but prove to be maladaptive over the long run.
- **Psychophysiological responses:** Recent life-change stress that is not deflected by a person's psychological defenses quickly stimulates a wide variety of psychophysiological responses. These responses can be divided into two categories: responses of which the person is aware, such as sweating, pain, or muscle tension, and those responses that occur outside of a person's awareness, such as elevated serum lipids and rises in blood pressure.
- **Coping** or response management techniques such as muscle relaxation, meditation, exercise, and/or various medications are represented by a colour filter in the model to indicate that successful coping can "absorb" some of the psychophysiological activation (symptoms) in much the same manner that a colour filter absorbs light rays of particular frequencies. According to this model the term coping is restricted to consciously regulated practices by a person to

reduce, and hopefully to eliminate, worrisome symptoms. Response management is an aspect of coping with challenges from the environment. Since defenses are of short-term effectiveness, it is coping that achieves lasting results.

- **Illness behaviour:** Body symptoms due to stressful life events are likely to be sustained, leading to tissue breakdown, organ system dysfunction and disease when a person's ability to cope with his or her environmental challenges are insufficient and attendant psychophysiological arousal cannot be "absorbed". As symptoms continue, the person may decide to seek medical care. It is clear from epidemiological studies that at least as many people with sustained symptoms secondary to poorly managed life stress fail to seek medical care as those who do come to medical attention. Therefore, doctors see only a portion of persons experiencing the effects of unresolved life stress, leading to protracted bodily symptoms and disease.
- **Illness:** The final step in the model represents a person with long-lasting symptoms, progressing to the point of disease, who sought medical consultation and received one or more diagnoses.

According to Rahe (2000), most persons go through the first four stages and return to pre-existing health. Only when defenses are excessive and/or coping is insufficient, stressed individuals deteriorate and develop physical illness.

3.3 SOCIAL STRESS THEORIES

3.3.1 Conflict theory

Several social stress theories focus on the integration of the individual into society and the inevitable tensions that are a part of any society. These are conflict theories. A major source of tension is that society has to engage in some sort of coercion to get members to comply with social norms. Conflict theories postulate that stress occurs, for example,

when people cannot obtain work, homes, education, technical retraining, or cannot participate in the political process. Conflict theorists such as Dooley and Catalano (cited in Rice, 1999) also look at the stability of social relationships, the distribution of economic goods and services in society and the distribution of interpersonal power and personal control. These conflict variables are related to stress in fairly obvious ways. Theoretically, stress is the inevitable outcome of less stable social relationships, poverty and lack of access to necessary social services, and a lack of power and personal control (Rice, 1999).

3.3.2 Multicultural model

Lesley Slavin and his colleagues (cited in Rice, 1999) extended the cognitive-transactional theory of Lazarus and Folkman (1984) into the social arena by proposing this model. They suggested that membership in cultural groups can affect the nature and frequency of certain stressors. Being a member of a minority group can increase the frequency of stressful events such as the likelihood of acts of discrimination. In many ways then, culture will affect primary appraisals of harm/loss and threat as well as secondary appraisals of resources that are available to deal with the stressor. In addition, this theory postulates that social customs unique to the person's culture will also influence the form and direction of coping efforts. The model is offered as a speculative extension of the cognitive-transactional theory and may prove useful in conceptualizing the perceptual filters that influence the person's interpretation of events as stressful or not (Rice, 1999).

3.3.3 Evolutionary theory

This theory views social change and tension as the inevitable results of social development, in that people must accept the fact of social change and accommodate to it instead of fighting against it (Rice, 1999).

3.3.4 Environmental-ecological theory

Numerous theories seek to explain environmental stress. Environmental stress theory integrates Hans Selye's (1936) general adaptation syndrome with Lazarus and Folkman's (1984) cognitive-transactional theory. In general, these theories explain stress in terms of conditions such as crowding, pollution, and health hazards from industrialization, and environmental accidents (Rice, 1999).

3.4 HOLISTIC HEALTH MODEL

This model is a movement with political and economic overtones. It is a humanistic philosophy with anti-scientific sentiments, and is a reaction to biological reductionism and medical specialization in Western medicine. Girdano and Everly (cited in Rice, 1999) stated that holistic implies "the concept underlying an approach to controlling stress and tension that deals with the complete lifestyle of the individual, incorporating intervention at several levels - physical, psychological, and social simultaneously" (p.20). While there is research to support the holistic model, the model does not generate research itself, and it does not have the formal properties of a scientific theory (Rice, 1999).

3.5 CONTROL THEORY: A SYSTEMS MODEL OF STRESS

Systems theory is the result of the attempt to understand self-regulating systems. The origins of systems theory are usually traced to Norbert Wiener's (cited in Rice, 1999) classic work on cybernetics. Cybernetic concepts include feedback mechanisms and goal-seeking behaviour in more or less self-contained units. General systems theory (GST) considers complex, dynamic interactions in multivariate systems, where systems may be hierarchically enmeshed with other systems (Von Bertalanffy, cited in Rice, 1999). Cybernetic theory, also called "control theory", is a subset of general systems theory (Schwartz, cited in Rice, 1999). Control theory suggests that self-regulating organisms compare their current state to some reference to maintain a match. The most widely known cybernetic system is probably homeostatic control. With reference to stress,

external stressors are disturbances that carry information to the system. When a disturbance produces extreme tension that is in contrast with the ideal state of moderate tension, the system will engage in self-regulating behaviour to restore the ideal state. Self-regulating behaviour involves coping actions to reduce or eliminate the source of stress. This is in accordance with the general theory of distress, which states that distress signals self-discrepancy and the need for coping efforts to reduce self-discrepancy and maintain adaptation to the external environment (Wells & Matthews, 1994). According to Wells and Matthews (1994) the regulatory system operates within a social context where interactions with others provide strong cues toward actual status and ideal status, which is in part reflected by societal and cultural norms.

Feedback processes are reactive. Human organisms also engage in “feed forward”, or proactive self-regulation (Ford, cited in Rice, 1999). That is, they act to make good things happen as well as to prevent bad things from happening. This is especially important in reducing existing stress or preventing potential stressors. Control theory postulates that stress is embedded in a multivariate system and has the potential for multiple effects in systems that range from the function of the body, to the function of psychological processes, to the harmony of home and job. According to Rice (1999) it remains to be seen whether systems theory will be able to generate supporting data, or whether it will function more as a metatheory, which integrates the results of smaller and more testable theories.

3.6 PSYCHODYNAMIC THEORY

The accepted standard among psychodynamic models is undoubtedly Sigmund Freud's (1936) theory. Freud described two kinds of anxiety: signal and traumatic anxiety. Signal anxiety occurs when an objective external danger is present. It corresponds most closely to the stressor-strain (danger-anxiety) relationship. Traumatic anxiety was the dominant form of anxiety in Freud's theory and refers to instinctual, or internally generated, anxiety (Rice, 1999). For example, Freud thought that we experienced "birth trauma" as we were painfully and abruptly squeezed from our warm, safe, dark, quiet place in

mother's womb into a cold, demanding, changing, confusing, and dangerous world. Freud postulated that birth was our first stressful experience and that it influenced later experiences (Tucker-Ladd, 2000).

Contemporary psychodynamic theories place much less emphasis on instinct and the unconscious, and more on the ego, which is the structure of the personality that copes with stress. Anna Freud (cited in Smith, 1993), one of the first of the contemporary psychodynamic theorists, emphasized the ego's defense mechanisms. Horney (cited in Smith, 1993) focused on the general coping and defensive strategies of moving away from, toward, and against people. One area of concern to all psychodynamic theories, which is directly related to stress, is defense and the defense mechanisms (Smith, 1993). However, a discussion of defense mechanisms (with which all psychologists are familiar) falls outside the scope of this article.

3.7 LEARNING THEORY

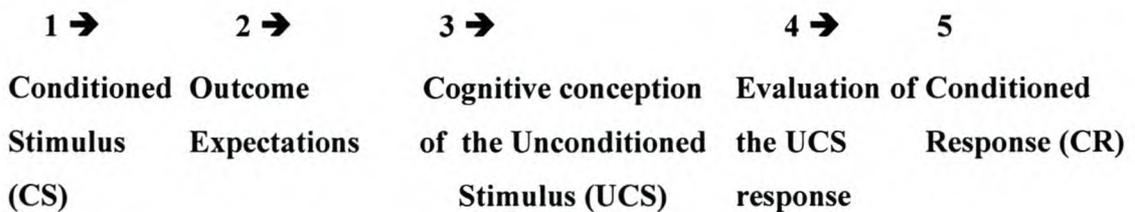
Experiencing stress and anxiety may involve all three kinds of learning - classical, operant, and observational (Tucker-Ladd, 2000) or a combination of the three (Rice, 1999).

- **Classical conditioning**

In classical conditioning, loud noise is one of a general class of stimuli called unconditioned stimuli (UCS). These are biologically powerful unlearned signals related to survival needs of the organism. When an unconditioned stimulus occurs, it evokes an unlearned reflex, or unconditioned response (UCR). For conditioning to occur, a neutral stimulus (such as a rat) must be associated or paired off with the powerful unconditioned stimulus (the loud noise). The novel or neutral stimulus (the rat) then becomes a conditioned stimulus when it brings about the response previously only produced by the UCS, so that it is now a learned reflex or conditioned response (CR) (Rice, 1999).

New research findings indicate that classical conditioning in humans is far more complex than just pairing a neutral stimulus (S) with a situation (UCS) that automatically arouses a reaction, like pain, fear, saliva or attraction. The old conception of classical conditioning was that an association was learned when a CS and an UCS were paired together several times. This is still the essence of classical conditioning, but thirty years ago it was assumed that the mind had nothing to do with this conditioning process. Today, findings suggest that the CS arouses expectancies about the UCS (in that a person develop a mental representation of the UCS) and then, as the person has an experience with the UCS, he / she evaluates and develops different reactions to the UCS which, of course, influences the final conditioned response (CR). Clearly, a lot of mental events influence the CS-UCS connection (Tucker-Ladd, 2000).

According to Davey (cited in Tucker-Ladd, 2000), the new theories suggest a conditioning-cognitive sequence like this:



According to this model steps two and four are places where cognitive factors can affect the conditioned response (CR). Science is just beginning to learn more about how cognitions interact with conditioning (Tucker-Ladd, 2000).

Research also confirms that simply thinking about all the anxiety-provoking things that could happen in a scary situation, for instance giving a speech, can increase the individual's fear response. Similarly, fears can be learned from models or family traits without the person having had any painful experience him/herself; these vicarious experiences presumably change a person's "outcome expectancies" (Tucker-Ladd, 2000).

- **Operant conditioning**

Operant theory proposes that behaviour changes because it produces either good or bad outcomes. When behaviour produces pleasant outcomes, or rewards, the behaviour increases and when behaviour produces unpleasant outcomes, or punishment, the behaviour decreases. Explanations of stress from an operant perspective place most emphasis on the acquisition of avoidance behaviour and the discriminative control of symptomatic behaviour. Avoidance behaviour is an operant response that serves to reduce learned fear or anxiety (Rice, 1999).

In general, any stressful situation that produces high or unmanageable levels of anxiety is likely to motivate some form of escape or avoidance (Rice, 1999). This escape/avoidance behaviour is involved in fear development, and is referred to as negative reinforcement, as the behaviour (escape) reinforces and maintains the fear and the fear response (escape). This theory does not explain the origin of an irrational fear, only the growth and maintenance of it (Tucker-Ladd, 2000).

- **Observational learning**

As mentioned before, fears can be learned from models or family traits without the person having had any painful experience him/herself; these vicarious experiences presumably change a person's "outcome expectancies" (Tucker-Ladd, 2000). It is clear, therefore, that cognitive factors can play a huge part in the acquisition of fears. Bandura and Rosenthal (1966) have done extensive research on the acquisition of behaviours and fear responses by vicarious modeling. They found that if a parent has an obvious fear, for instance fear of flying or of storms, his/her children are likely to assume there are great risks involved and be afraid of these things also (Tucker-Ladd, 2000).

- **Self-control**

Recently, theories of stress have emphasized forms of self-control as important in understanding stress. This is illustrated in theories of self-efficacy (Bandura, 1997); a belief in the ability to control one's behaviour (Ogden, 2000); hardiness (Maddi &

Kobasa, 1991) and mastery (Karasek & Theoroll, cited in Ogden, 2000). According to these recent developments, stress is conceptualized as a product of the individual's capacity for self-control. These theories postulate that successful coping and self-management eradicate stress and that failed self-regulation results in a stress response and stress-related illness (Ogden, 2000).

3.8 SELF THEORY

Carl Rogers (1961), Abraham Maslow (1970) and other humanists have attributed a central role to the self-concept. People want to feel good about themselves, which usually involves being accepted by others. As people we strive to express our true selves - to actualize our best selves. According to self theory, stress in part comes from conflicts (1) between our actual self and our ideal self, (2) between conscious and unconscious perceptions or needs, and (3) between our view of reality and incoming evidence about reality. Epstein (cited in Tucker-Ladd, 2000) added two more stress-producing conflicts: (4) between differing beliefs or values we hold and (5) between our belief of what is and what should be. Thus, values and doing or being right affect stress levels (Tucker-Ladd, 2000).

For decades, the Adlerians have contended that over-demanding parents produce anxious, insecure children, perhaps because the children never succeed in becoming what they "should be" in the eyes of the parent. Previous research showed that the closer a child's self-concept was to his/her mother's ideal, the less anxious he/she was (Stewart, cited in Tucker-Ladd, 2000). Very recently, addiction counselors have contended that addictions of all kinds are a way of diverting our attention away from a deeper concern, usually self-doubts and low self-esteem. If a person sees him/herself as defective, insecure, nervous or fragile, it seems likely that he/she is going to experience more stress and respond less effectively than a secure person (Tucker-Ladd, 2000).

3.9 EXISTENTIALIST THEORY

Existentialist anxiety comes from the threat of non-being and from the dread of having to change to become something different. Fears are attacks from the outside, whereas

anxiety reflects an internal threat to a person's very essence. According to this theory anything that questions a person's values, that alienates a person from others or from nature, or anything that challenges a person's ideas about the meaning of life causes anxiety. Thus, anxiety is not learned; all humans are born with it. Serious anxiety reduces a person's ability to guide his/her life and might create a feeling that life is meaningless (Tucker-Ladd, 2000). A person with high levels of existential anxiety will presumably be more prone to stress.

3.10 COGNITIVE THEORY

The cognitive theory is clearly very different from the notion of stress based on an inborn impulse, an innate need, an automatic reaction, or conditioning. This theory is also different from Freud's unconscious processes, although some of the cognitive processes may be semiconscious. Cognitive theory returns the mind to a central role in psychology; it contends that conscious cognitions largely determine what a person does and feels (Tucker-Ladd, 2000).

According to Jones and Bright (2001) the common feature of the cognitive models of stress is that stressors are represented in memory, and that the processing of new information is biased by either the presence of the stressor, or the memory of it. Thus, stressors influence attention, which in turn influences what is processed. Stress affects both attentional and memorial cognitive processes.

Within current psychology theory, cognitive explanations of stress are fairly new, at most 20 to 25 years old. These theories are therefore not yet well integrated and organized. Some of the basic ideas of cognitive theory and its role in the development of fears and anxiety are summarized by Tucker-Ladd (2000) in the following points:

More-intense-than-necessary fears, worries, self-doubts and anxiety may be caused

- by merely *observing someone* else - a model - who has excessive fear or nervousness, and learning to respond the same way,

- by learning to distort incoming perceptions so that the situation is made to look worse than it is by these *faulty perceptions*,
- by applying certain unreasonable personal beliefs or expectations to the perceived situation so that disappointments, anger, and/or a sense of inadequacy are immediately created by these *irrational thoughts*,
- by acting on a variety of *faulty conclusions*, so that an excessively stressful situation may have long-range consequences.

There are many different kinds of thoughts that cause stress and fears. Cognitive processes have become the main focus of psychological treatment in the last 15 years (Tucker-Ladd, 2000).

3.11 TRANSACTIONAL MODEL

Thus far, the transactional model of psychological stress (Lazarus & Folkman, 1984) has been the most influential theory, generating the most research. This theory suggests that stress only occurs when people judge their coping skills to be inadequate to meet the current demand (Rice, 1999).

The transactional theory of stress has roots in several scientific origins, including the cognitive sciences, personality theory, attitude research, social research, health research, and behavioural medicine (Rice, 1999). Lazarus and Folkman (1984) assume that stress and health have reciprocal influences, in other words stress can have a powerful impact on health and health can influence a person's resistance or coping ability. The central point of the transactional model is that stress is "neither an environmental stimulus, a characteristic of the person, nor a response, but a relationship between demands and the power to deal with them without unreasonable or destructive costs" (Coyne & Holroyd, 1982, p. 108 cited in Rice, 1999).

This influential theory of stress and coping is transactional in that the person and the environment are viewed as being in a dynamic, mutually reciprocal, bi-directional relationship. Stress is conceptualized as a relationship between the person and the

environment that is appraised by the person as taxing or exceeding his or her resources and as endangering well-being (Lazarus & Folkman, 1984). The theory identifies two processes, cognitive appraisal and coping, as critical mediators of stressful person-environment relationships and their immediate and long-term outcomes. Cognitive appraisal is a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being and, if so, in what way. Lazarus and Folkman (1984) suggested three appraisals that provide meaning and influence the coping process. In primary appraisal, the person evaluates whether he or she has anything at stake in this encounter. A range of personality characteristics including values, commitments, goals, and beliefs about oneself and the world, helps to define the stakes that the person identifies as having relevance to well-being in specific stressful transactions. In secondary appraisal the person evaluates what, if anything, can be done to overcome or prevent harm or to improve the prospects for benefit. Various coping options are evaluated, such as changing the situation, accepting it, seeking more information, or holding back from acting impulsively. Reappraisal is based on feedback from transactions that occur after the first two appraisals. This may lead to a change in primary appraisal, which may in turn influence the perception of the skills available to deal with the situation (Rice, 1999).

Cognitive appraisal and coping are transactional variables, in that they do not refer to the environment or to the person alone, but to the integration of both in a given transaction. An appraisal of threat is a function of a specific set of environmental conditions that are appraised by a particular person with particular psychological characteristics. Similarly, coping consists of the particular thoughts and behaviours a person is using to manage the demands of a particular person-environment transaction that have relevance to his or her well-being (Folkman, Lazarus, Gruen & DeLongis, 1986).

Lazarus and Folkman (1984) suggested the term “hassles” for minor stressors. Hassles are “the irritating, frustrating, distressing demands that in some degree characterize everyday transactions with the environment” (Kanner, Coyne, Schaefer & Lazarus, cited in Rice, 1999). Hassles are less intense than catastrophic types of stress, but they are

persistent and nagging. In comparing hassles with life changes such as divorce or the death of a spouse, Lazarus and his colleagues showed that hassles and illness are more strongly related to one another than major life changes and illness. This finding has been confirmed cross-culturally as well (Nakano, cited in Rice, 1999).

3.12 CONSERVATION OF RESOURCES (COR) THEORY

COR theory (Hobfoll, 1989) examines and describes the nature of psychological stress and its likely consequences; it is an extension of the cognitive-transactional model to the wider social context. Traditionally, stress theories have concentrated on people's individual appraisals of stressful situations as the determining factor of how much distress they will experience. COR theory states that stress is neither first nor foremost a product of individual's appraisal of events, but that it has central environmental, social, and cultural bases in terms of the demands on people to acquire and protect the circumstances that ensure their well-being. People therefore constantly try to distance themselves from threats and to achieve a state of well-being. The theory posits that stress emanates from difficulty achieving the common goals toward which members of a culture strive. Stress is thus largely culturally determined, because most of the major demands placed on people have a shared social context. The basic tenet of the COR theory is that people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources.

The COR model identifies resources whose loss is likely to result in stress. Four categories of resources are identified, namely:

- Object resources (such as shelter and transportation)
- Personal resources (skills and personal traits such as social competence, self-esteem and a sense of mastery)
- Condition resources (for instance, marriage)
- Energy resources (such as time, knowledge and money)

Thus, according to COR theory (Hobfoll, 1989) psychological stress is a reaction to the environment in which there is

- the threat of a loss of resources,
- the actual loss of resources, or
- a lack of resource gain following the investment of resources.

Although Hobfoll (1989) criticized weaknesses of the transactional model, he used similar cognitive concepts. He tried to suggest one quantifiable marker – loss – that may make stress theories more testable. However, there does not seem to be a significant difference in the precision, or quantifiability, of loss as opposed to Lazarus's concept of harm (Rice, 1999). Hobfoll also tried to substitute the concept of resources for that of appraisal to derive a more “objective” understanding of stress. Aldwin (1994) however, argues that the comprehension of internal and external resources is by definition an appraisal process as Lazarus has indeed defined secondary appraisal as the assessment of resources.

4. MODERATORS OF THE EFFECTS OF STRESS

A large body of literature demonstrates that stressful life events play a precipitating role in the onset of physical and psychological disturbance (Ganellen & Blaney, 1984). An important area of investigation thus concerns the identification of factors that act as buffers against the adverse effects of stress. The existence of such factors have been posited by early theorists such as Selye (1956), who suggested that individuals respond in a distinctive manner to stressors, and Antonovsky (1974), who discussed individuals' possession of “resistance resources”. Moderators change the nature of the stressor-strain relationship by altering either the strength or direction of the relationship. A moderator that decreases the strength of the stressor-strain relation is referred to as a buffer, while a moderator that increases the strength of the stressor-strain relation is referred to as a vulnerability or reactivity factor. For example, some personality factors are thought to increase vulnerability to stress (Jones & Bright, 2001). Among the kinds of variables that have been empirically identified as potentially important moderators of the effects of

stress, two have received considerable attention: social support and personality characteristics (Johnson & Sarason, cited in Ganellen & Blaney, 1984; Rabkin & Struening, cited in Ganellen & Blaney, 1984). These two important moderators of the effects of stress, as well as a few other moderators of stress resistance, will be discussed subsequently. Although more moderators exist, only a few will be focused on, due to the length restrictions of this article.

4.1 PERSONALITY

Extensive research has been done on personality variables that act as moderators of the effects of stressful life events. This paper does not allow for a thorough review of all the personality variables; therefore only some of the variables encountered in recent literature will be mentioned.

4.1.1 Learned helplessness and attributional style

Learned helplessness refers to the motivational, cognitive, and emotional deficits that may follow from an organism's exposure to uncontrollable stressors. The diathesis-stress model of depression onset claims that people who have a pessimistic attributional or explanatory style, in which negative events are explained as having internal, stable, and global causes, will be especially vulnerable to depression when faced with uncontrollable life stressors (Seligman & Isaacowitz, 2000). Hull, Van Treuren and Propsom (cited in Rice, 1999) provided strong evidence that attributional style plays a mediating role in the hardy personality. Specifically, hardy persons tend to give internal, stable, and global attributions for positive events, and external, unstable, and specific attributions for negative events.

More recent research by Kamen-Siegel, Rodin, Seligman and Dwyer (cited in Jones & Bright, 2001) has also linked pessimistic attributional style to immune functioning and Peterson, Seligman, Yurko, Martin and Friedman (cited in Jones & Bright, 2001) have

found that catastrophizing (that is, attributing bad events to global causes) has been shown to predict accidental or violent deaths.

4.1.2 Optimism

Optimists are people who hold generalized positive expectations for the future. They expect good things to happen to them, not bad things. Pessimists are just the reverse (Scheier & Carver, 1992). Research suggests that individual differences in optimism and pessimism may play an important role in the manner in which people react to stressful circumstances. Optimists are likely to believe that the adversity can be handled successfully, whereas pessimists are likely to anticipate disaster. To the extent that continued engagement in goal-directed efforts is adaptive, optimists should experience a coping advantage over pessimists.

Results of various studies have shown that optimistic persons experience less distress during times of adversity than pessimists, as optimists tended to show signs of more adaptive immune functioning and also exhibited less extreme cardiovascular reactivity during the course of their daily lives (Scheier & Carver, 2000). There is also mounting evidence that optimists use more engaged coping strategies (such as problem-solving), whereas pessimists use more disengaged coping strategies (such as denial of the problem) when dealing with stressful encounters. Comparative analyses further indicated that optimists and pessimists differed significantly in secondary (but not primary) appraisal, coping and adjustment (Chang, 1998). Various researchers (Jenkins, cited in Brehm, 1998; Seligman, cited in Brehm, 1998) have also found that optimism enhances perception of personal control, deepens a person's involvement in life, and helps a person to see change as a challenge.

4.1.3 Hardiness

Kobasa (1979) first proposed the notion of psychological hardiness. According to Kobasa, psychologically hardy individuals are less likely than non-hardy individuals to

fall ill as a consequence of stressful life events. There are three components of the hardy personality, namely:

1. High in commitment: a “tendency to involve oneself in (rather than experience alienation from) whatever one is doing or encounters” (Kobasa, Maddi, & Kahn, 1982, p. 169),
2. High in challenge: a “belief that change rather than stability is normal in life and that the anticipation of changes are interesting incentives to growth rather than threats to security” (Kobasa et al., 1982, pp. 169-170),
3. High in perceived control: a “tendency to feel and act as if one is influential (rather than helpless) in the face of the varied contingencies of life (Kobasa et al., 1982, p. 169).

Non-hardy persons, in contrast, are hypothesized to display alienation (thus, a lack of commitment), an external locus of control, and a tendency to view change as undesirable (Allred & Smith, 1989).

Hardiness was originally conceived by Kobasa (1979) to improve health by acting as a buffer against stressful life events by increasing the use of successful coping strategies. The stress-buffering effect of hardiness is hypothesized to result from an adaptive cognitive appraisal process. It is presumed that hardy persons respond to potential stressors with positive cognitions or appraisals concerning both the level of threat present and their ability to cope effectively - that is, primary and secondary appraisal respectively (Lazarus & Folkman, 1984).

In contrast to this buffering role, Kobasa, Maddi and Kahn (1982) also offered a model in which factors of hardiness have direct effects of reducing psychological strain associated with illness. This main effect model propagates that hardiness in the form of the committed personality decreases strain directly. The hardiness model assumes that the adaptive cognitions of hardy persons result in a lower level of organismic strain in response to potential stressors (Gentry & Kobasa, cited in Allred & Smith, 1989). Thus, hardiness may moderate the effects of stress by way of cognitive processes (Allred & Smith, 1989). Findings suggest that both these models play a role in making some people

more resistant to the effects of stressful life events (Hull, Van Treuren & Virnelli, 1987). As predicted by the model of Kobasa, Maddi and Kahn (1982), the results have generally demonstrated that hardy persons report less illness than do nonhardy subjects under conditions of high life stress (Kobasa, Maddi & Pucetti, cited in Allred & Smith, 1989; Kobasa, Maddi & Zola, cited in Allred & Smith, 1989; Kobasa & Pucetti, cited in Allred & Smith, 1989).

4.1.4 Coping dispositions

Extensive research has been conducted on classifying people in terms of the strategies that they typically use to deal with stress (Lazarus & Folkman, 1984). There is evidence that though people adjust their coping strategies to the demands of situations, they also develop predispositions to cope with stress in particular ways (Lazarus & Folkman, 1984; Folkman & Lazarus, 1985) and that these coping dispositions, like most other personality traits, remain fairly stable from the post-adolescent years throughout adulthood (Costa & McCrae, cited in Auerbach & Gramling, 1998; Millon, cited in Rice, 1999). This has important implications for stress management interventions, and McCrae and Costa (1986) recommended that intervention studies be conducted to establish if coping behaviour can in fact be changed, and if the changes produce benefits to health and psychological well-being. They also recommended that measures of personality be employed in order to provide data on whether some individuals are more prone than others to learn, use and benefit from more effective coping efforts.

4.2 SOCIAL SUPPORT

Various research studies (Cassel, cited in Brehm, 1998; Cohen, cited in Brehm, 1998; Elliott & Gramling, cited in Brehm, 1998) have concluded that positive social support is an important stress buffer. Cohen and Wills (1985) posited that the possible stress-buffering mechanisms of social support may work in the following way: Support may play a role at two different points in the causal chain linking stress to illness. Support may intervene between the stressful event (or expectation of that event) and a stress

reaction by attenuating or preventing a stress appraisal response. That is, the perception that others can and will provide necessary resources may redefine the potential for harm posed by a situation and/or bolster one's perceived ability to cope with imposed demands, and hence prevent a particular situation from being appraised as highly stressful. Adequate social support may also intervene between the experience of stress and the onset of the pathological outcome by reducing or eliminating the stress reaction or by directly influencing physiological processes. Social support may alleviate the impact of stress appraisal by providing a solution to the problem, by reducing the perceived importance of the problem, by tranquilizing the neuro-endocrine system so that people are less reactive to perceived stress, or by facilitating healthful behaviours. Similarly, embeddedness in a social network may enhance well-being by facilitating the development of feelings of predictability and stability, by maintaining positive affective states, or by providing status support through social recognition of self-worth (Cohen & Wills, 1985).

DeLongis, Folkman and Lazarus (1988) found that people with low self-esteem and low emotional support have a higher probability of a positive association between stress and both physical symptoms and poor mood than people who are high in these psychosocial assets. A review by Uchino, Cacioppo and Kiecolt-Glaser (1996) indicated that there is relatively strong evidence linking social support to aspects of the cardiovascular, endocrine, and immune systems. This is consistent with research suggesting that the formation and disruption of social relationships have important immunological and endocrinological sequelae in nonhuman primates and humans (Gunnar, cited in Uchino, Cacioppo & Kiecolt-Glaser, 1996; Coe, cited in Uchino, Cacioppo & Kiecolt-Glaser, 1996; Herbert & Cohen, cited in Uchino, Cacioppo & Kiecolt-Glaser, 1996).

With regard to the psychological benefits of social support, many researchers believe that "a trusting heart" (Williams, cited in Brehm, 1998) and "opening one's heart" to others (Ornish, cited in Brehm, 1998) are essential for stress resistance. Involvement with others is the opposite of hostility, which closes the channels of communication and forces a person into isolation (Brehm, 1998).

4.3 OTHER MODERATORS OF THE EFFECTS OF STRESS

4.3.1 Spiritual health

Spiritual health emphasizes a person's larger connection to others and to his/her own spiritual growth. Spiritual health gives life meaning and value in the deepest sense; it is a potent stress buffer (Bellingham, Cohen, Jones & Spaniol, cited in Brehm, 1998; Kabat-Zinn, cited in Brehm, 1998; Zika & Chamberlain, cited in Brehm, 1998). The past few years have seen a resurgence of interest in the buffering effect of religion in coping with stress and maintaining health (Packer, 2000). Although scientific data is sparse on exact links between stress, health, and religious beliefs, there is a strong sense that a holistic view of the person must incorporate religious beliefs and practices as an important ingredient in the person's appraisal processes and coping strategies (Rice, 1999).

4.3.2 Tolerance for ambiguity

Some researchers have emphasized the importance of this variable for healthy adaptation to stress (Witmer, Rich, Barcikowski & Magine, cited in Brehm, 1998). Every stressor implies some form of change, which implies a new way of doing things. Newness usually means uncertainty. Modern times demand flexibility that allows people to live with an exploding rate of change and uncertainty (Brehm, 1998). Rice (1999) also identified the ability to tolerate ambiguity as a personality trait, which plays a part in whether uncertainty will result in a stress reaction, or not.

4.3.3 Genetic predisposition

Evidence suggests an intriguing interplay between genes and the experience of stressful events (Blackwood, 2000). It is well known that genetic factors play an important role in much human behaviour, personality dimensions, and in the development of specific patterns of illness, including anxiety and depression. According to Blackwood, the nature and number of stressful life events that a person experiences are the result of a two-way

interaction between a person's genetic makeup and the environment. Blackwood points out that several studies have confirmed that genes strongly influence not only how a person responds to stress, but also how much stress that person is likely to be exposed to. One explanation is that personality traits are hereditary: for example, individuals who score highly on "neuroticism" are more likely to report adverse life events, "impulsivity" may be related to poor management of money and getting into debt easily, whereas people with high scores on "novelty seeking" are more likely to become involved in combat (Blackwood, 2000).

5. CONCLUSIONS AND RECOMMENDATIONS: APPLYING THEORY IN PRACTICE

The different theoretical approaches to stress lead to different contributions to applied interventions in psychology. The stimulus-response (S-R) approach reduces the focus of interest to an input (or stressor) and an output (strain) and examines the structure of the relationship between stimulus and response (with or without taking individual differences into account). Thus, in organizational psychology, whether relocating employees to a new area causes poor health outcomes for a large number of employees may be an important question to answer regardless of how people appraise the stressor of relocation.

The interactional approaches (in accordance with the stimulus-organism-response (S-O-R) model) will look at intervening variables such as social support and whether those with more support cope better (Jones & Bright, 2001).

In contrast, Lazarus and Folkman's transactional approach sees stress as a shifting process, which changes over time and is dependent on how individuals appraise the stressors and the coping strategies they use (Lazarus & Folkman, 1984). In the same example given above, the transactional approach would necessitate a different type of strategy that might involve repeated measures to establish patterns of stress and coping over time. These results might lead to more detailed understanding of individual psychological functioning, which might be of less immediate practical use to the

organization's relocating policy, but may be more useful to a counselor or psychotherapist seeking to provide individual help and support (Jones & Bright, 2001).

According to Murphy (cited in Jones & Bright, 2001) interventions can be viewed in terms of three categories of stress reduction. These categories are:

- Primary prevention

This involves reducing the stressor at the source; this would include environmental interventions to remove stressors, for example job redesign in the work place. Moderator variables interact with stressors; it is thus possible to alter the intensity of the stress response by either manipulating the level of the moderator (such as social support) or stressor (such as workload). In the work context, for example, if a stress buffer such as social support is shown to moderate the effect of high workload, then developing more opportunities for social support could reduce the negative impact of the workload without cutting the volume of work done. Another way to prevent strain from occurring is to identify known vulnerability or reactivity factors so that they can be eliminated or reduced. This could be done by redesigning a job for certain personality types that are shown to be more reactive to stressors such as deadlines. Redesigning the job to reduce the number of deadlines for such individuals would reduce their strain (Jones & Bright, 2001).

- Secondary prevention

This involves reducing the severity of symptoms before they lead to more serious problems. Stress management training (SMT) courses would fall under this category. In accordance with the Yerkes-Dodson law, which states that an optimum level of stress and arousal is needed for performance (Rice, 1999), the aim of stress management is not to eliminate stress entirely but to control it so that an optimum level of arousal is present that is needed for optimal performance. Stress management differs from conventional psychotherapeutic approaches by emphasizing person-environment interactions: the goal of treatment is to improve the person's ability to manage his or her environment. Stress management programmes are typically holistic (incorporating the physical, mental and

spiritual health of a person), combine psycho-educational and psychotherapeutic methods and emphasize the collaborative therapist-client-relationship. It is thus best conceptualized as a general treatment approach to a broad category of adaptational and health problems. The theoretical basis for this treatment approach lies both in conceptions of health and illness provided by stress theorists, and in the self-management therapies developed by the cognitive behavioural practitioners (Roskies, cited in Monat & Lazarus, 1991).

The key components of stress management programmes (Brehm, 1998; Greenberg, 2002; Jude, 1998; Olshevski, Katz & Knight, 1999; Rice, 1999; Romas & Sharma, 2000; Schafer, 1998; Schlebusch, 2000; Smith, 1993) include:

- Relaxation techniques: Decreasing physical stress reactivity and increasing self-awareness by using the following techniques:
 1. Body scanning exercises
 1. Progressive muscle relaxation
 2. Abdominal / diaphragmatic breathing exercises
 3. Meditation and visualization
 4. Autogenic (imagery-based relaxation) training
- Problem solving training
- Time management
- Communication skills training; including active listening and training in assertiveness and conflict management
- Lifestyle interventions: Nutrition and exercise
- Increasing and utilizing healthy pleasure and a sense of humour
- Cognitive restructuring (fostering a healthy self-esteem in order to improve stress resistance and develop a hardy personality)
- Stress inoculation training, which is the preventive, immunizing branch of stress management. It teaches people first how to anticipate stressful transactions, then how to defuse the potential for stress by rehearsing statements and behaviours that can be carried out in real-world situations.

Lazarus (cited in Monat & Lazarus, 1991) warns against “trivializing” people’s distress by offering “ready-made” and over-simplistic cures in the form of stress management techniques of unproven validity or which fail to acknowledge individual differences or life agendas. As noted by Lazarus:

It would also be well for professionals, of all people, not to fall into the trap of popularization that now plagues media treatment of stress, coping and adaptation, and programmes of stress management. When professionals take their simplistic formulas for intervention too seriously and oversell their product, they encourage the public to think in terms of mechanical solutions that fail to address the most important sources of distress, and they help create a culture in which distress is trivialized, or at least, encourage public acceptance of an already existing pattern of trivialization. The goal of realizing effective intervention requires more sophisticated thought than presently exists and a deeper respect for the person who receives professional help. (p.14)

- Tertiary prevention

Tertiary prevention implies treatment, involving such interventions as psychotherapy aimed at alleviating a problem once it has already developed. It is on this level that clinical psychologists have traditionally intervened the most. Milner and Palmer (1998) have designed an integrative model of stress counseling and management, which is a direct application of stress theory to stress counseling or psychotherapy practice. This integrative model can help the client by intervening at any of the five stages of their model of stress and coping. The five stages are:

1. The recognition of a potential external pressure or demand.
2. Considering and deciding whether the demand exceeds the person’s ability to cope with it, and whether the situation is of personal significance. This is in accordance with the appraisal process described by Lazarus and Folkman (1984).
3. The triggering of the stress response, which involves a variety of psychophysiological changes.

4. Reappraisal of the situation and the effect of coping responses upon the stress scenario.
5. The effect of the person's actions upon the stressors, appraising whether they had been effective in alleviating distress or not.

Wells and Matthews' (1994) view of distress as a sign of maladaptive self-regulation has implications for psychotherapy and counseling. In mild sub-clinical distress conditions, it may be sufficient for the patient/client to learn specific coping skills that permit him/her to manage the specific situations that provoke distress. Distress is alleviated both through the person's increased confidence and positive self-appraisal and through the likelihood that the person's greater skill will lead to more positive outcomes in the problematic situation. In more severe cases, stress management techniques such as skill training fail to address the underlying cognitive distortions, which drive both distress and behavioural problems. In such cases, Matthews (2000) argue that cognitive-behaviour therapy will be more effective as it seeks to uncover and modify faulty cognitions through a variety of techniques. Empirical studies show that clinical improvement in behaviour and affect is accompanied by a decline in cognitive bias; that is, the enhanced and selective filtering and processing of negative stimuli that cause distress (Matthews, 2000).

Seligman and Isaacowitz (2000) have shown that there is some evidence that successful cognitive-behavioural psychotherapy can cause a shift in attributional (or explanatory) style. This has important implications for prevention programmes for stressed people at high risk for depression. Seligman and Isaacowitz (2000) have shown that programmes based on teaching pessimistic children and college students who experience stress to dispute their automatic pessimistic thoughts and to become more realistically optimistic, have produced lower rates of significant depressive symptoms in these participants.

Over recent years the variable of control has emerged as a powerful explanatory variable in stress research (Bandura, 1997; Maier & Watkins, 1998; Steptoe & Appels, 1989). It is relevant to a wide variety of settings and has also emerged as a key variable in the study of work stress. Substantial literature indicates that greater autonomy and participation at

work (that is, more control) are associated with higher levels of self-reported job satisfaction, commitment to work, better performance, and reduced levels of emotional distress, staff turnover, and absenteeism. Studies of work stress indicate that when high need for control is blocked by low extrinsic rewards (such as poor pay or promotion prospects), the individual may be placed at increased risk for coronary heart disease (Stephoe, 2000).

Most serious illnesses bring with them strong feelings of loss of control, and other facets of helplessness, including hopelessness, distress and passivity, often accompany this. Many stress management procedures for improving the emotional state of patients have the effect of enhancing perceived control (Stephoe, 2000). It is thus important to give enough and relevant information to clients in clinical settings as it both reduces uncertainty and increases the perception of personal control, which in turn reduce the stress response (Rice, 1999).

Finally, valuable contributions from stress theorists, researchers and practitioners would include the formulation of theories relevant to specific stressful situations and specific stressors, and the development of specific treatment programmes for specific stress-related symptoms and conditions. The development of such theories and programmes would help to guide practitioners to conduct applied research and to design effective interventions for patients/clients who suffer from the detrimental effects of stress.

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