

Stress: Sources, Appraisal, Coping, and Effects

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Abstract

This paper provides a comprehensive look at the nature of stress and its effects on humans. It covers four main concepts that must be considered when studying stress. These are causal agents, appraisal, coping processes, and resultant effects. The author reviewed empirical studies and other types of literature to produce a summary report on the four concepts. An additional section on aging and stress is included due to its relevancy to the author's personal interests.

Stress: Sources, Appraisal, Coping, and Effects

Stress originates from a demand impinging on a biological, social, or psychological system (Lazarus, 1993). It is a cause of human distress and dysfunction and consists of an unpleasant state of arousal. An individual experiences stress when he perceives demands on him as taxing or exceeding his ability to satisfy or alter them (Brehm, Kassin, & Fein, 2005).

After World War II, interest in stress grew rapidly as approaches were needed to deal with veterans suffering from the stress of combat (Lazarus, 1993). The most popular model at the time described human stress in engineering terms, e.g. input load, demand on system, output deformation. It became apparent to researchers that the model did not produce dependable effects when applied to humans. For example, under stressful conditions, some individuals became impaired, some improved, and some demonstrated no discernible effects. Some reacted greatly to a given condition and some barely at all, demonstrating the individualized nature of the stress response.

Four concepts must be kept in mind when discussing stress: 1) an external or internal causal agent; 2) an appraisal that discerns a threat from a benign condition; 3) coping processes used by mind and body to deal with the demands; and 4) the stress reaction or resultant effects on mind and body (Lazarus, 1993). This paper examines these concepts from a social psychology perspective and is composed of a section on each concept. Additionally, a section has been included on aging and stress. The author anticipates that future work will involve middle-aged and older adults and included this section as a foundation for future study in this area.

Sources of Stress

Types of stressors

There are many stressors in life ranging from daily occurrences to once-in-a-lifetime events. Some stressors are acute and some are chronic, with each type identified by its own distinctive features, symptoms, duration, and treatment approaches. One taxonomy used to categorize stressors is built upon the dimensions of duration and course, i.e. discrete vs. continuous (Elliot & Eisdorfer, 1982, as cited in Segerstrom & Miller, 2004). These categories include:

- Acute time-limited stressors – laboratory challenges, such as public speaking
- Brief naturalistic stressors – situations in which the individual confronts a real-life short term challenge, such as an academic exam
- Stressful event sequences – focal events that give rise to related challenges that will subside at a future point in time, such as a divorce or a major natural disaster
- Chronic stressors – pervasive demands with no foreseeable end that force an individual to alter his social roles or identity, such as work overload or providing care for a spouse with dementia
- Distant stressors – traumatic experiences from the past with long-lasting cognitive and emotional impacts, such as childhood sexual abuse or combat trauma

Discrete stressors are observable and reportable life events whereas continuous stressors are generally the ongoing problem or circumstances that permeate daily life. Research suggests that everyday events affect well-being more than the less frequent major events (Repetti & Wood, 1997, as cited in Serido, Almeida, & Wethington, 2004). These everyday, or quotidian, stressors

can be further classified into chronic stressors or daily hassles (Serido, Almeida, & Wethington, 2004).

Chronic stressors may arise from an individual's environment or from the conditions an individual must interact with in fulfilling responsibilities of a social role (Serido, Almeida, & Wethington, 2004). An employed mother, for example, may experience the incongruent demands of being a parent and a worker. Chronic stressors may also be ecological in origin, such as a noisy, crowded, or crime-infested neighborhood. The nature of a chronic stressor is that it is open-ended and ongoing, such that the individual does not know when it will end and has a lack of control over its onset and remission. On the other hand, daily hassles are relatively minor events that arise from day-to-day living and include events such as commuting in traffic, car problems, or an argument with a spouse.

Another source of stress is pressure or the perception of expectations and demands that one behave in a certain manner. This may take the form of pressure to perform tasks or responsibilities efficiently and successfully, or the pressure to act and think in conformity to others' expectations. In one research study, participants were asked to maintain stress diaries in order to compare the prevalence of major life events, hassles, and pressure (Weiten, 1998). As one would surmise, major life events occur infrequently and were rarely reported in the diaries, while hassles and pressure appeared at the same prevalence. Pressure was found to be related to negative change in the participants and predictive of anxiety, discomfort, and depression.

Type A behavior pattern

An individual's traits and characteristics may be sources of stress in themselves. Researchers have classified individuals who are hard driving, competitive, impatient, time-conscious, and quick to anger as having Type A behavior pattern (Brehm, Kassin, & Fein, 2005).

These persons detest waiting in line, interrupt others, are highly competitive, do things at a fast tempo, multitask, and seem to operate under a sense of time urgency. In contrast, individuals who are relaxed and easygoing are considered to have Type B behavior pattern.

Type A has been linked to increased occurrence of coronary heart disease (CHD), but the link only appears when the behavior is accurately diagnosed using a face-to-face interview as opposed to a self-report questionnaire. The Type A behavior pattern was originally defined in a broad manner and has been refined to narrow down the most damaging component, which is hostility (Brehm, Kassin, & Fein, 2005). Characteristics of hostile behavior are cynicism, resentment, anger, suspicion and mistrust, which keep an individual in a negative and stressful emotional state.

In addition to the bodily stress reaction of being in a "fight or flight" mode, the detrimental effects of hostility may result from several physical processes. Hostile individuals may engage in such behaviors as using tobacco, caffeine, or alcohol, which themselves confer risk. Numerous studies support the association between hostility and unhealthy behavior (Niaura, Todaro, Stroud, Spiro III, Ward, & Weiss, 2002). Another explanation is that hostility may be associated with physiological attributes that predispose the individual to arteriosclerosis, vasospasms, or cardiac arrhythmia.

Appraisal

Explanatory style

Appraisal is the cognitive mediator of stress reactions (Lazarus, 1993). It's a process through which individuals evaluate the significance of what is happening for their personal well-being. The way we appraise events is influenced by our explanatory style, perceptions of control, and optimism.

Explanatory style is the habitual way in which individuals explain negative events in their lives (Seligman, 1998). The dimensions of permanence, pervasiveness, and personalization characterize this style. Permanence refers to the dimension of time, i.e., a temporary event versus a persistent state. Pervasiveness involves the scope of the bad event, i.e. a specific aspect of the individual or the situation versus a global domain of activities. Personalization points to the cause, i.e. an internal cause attributed to the individual versus an external one involving other people or circumstances. These dimensions define an individual's explanatory style and indicate whether he is an optimist or pessimist. For example, an individual with a pessimist explanatory style might say the following after receipt of a bad grade in class, "My future is ruined (permanence). Studying and writing papers for classes is useless (universal pervasiveness). I'm really stupid (personalization)."

Researchers found that individuals who account for negative events with an explanatory style of permanence, universal pervasiveness, and internal causes show helplessness deficits, including passivity, depression, poor problem solving, poor immune function, and higher morbidity (Kamen et al., 1987; Maier & Seligman, 1976; Peterson, 1988; Seligman, 1975; as cited in Peterson, Seligman, & Vaillant, 1988). Ninety-nine men from the Harvard graduating classes of 1942 through 1944 were followed for a period of thirty-five years. Their explanatory style was assessed using questionnaire data completed in 1946 and their health status was physically monitored at eight separate ages. The results demonstrated that men with a pessimistic explanatory style at age 25 were less healthy later in life than those with an optimistic explanatory style. In addition to affecting health, studies have shown that explanatory style affects outcomes as related to performance in academics, athletics, and work domains (Kamen & Seligman, 1985; Nolen-Hoeksema, Girgus, & Seligman, 1986; Peterson & Barrett, 1987;

Peterson & Seligman, 1984b; Seligman & Schulman, 1986; as cited in Peterson, Seligman, & Vaillant, 1988).

Perception of control

Self-efficacy consists of the beliefs that individuals have about their capability to exert influence over events that affect their lives through their own behavior (Bandura, 1994). These beliefs operate through cognitive, motivational, affective, and selection processes. Persons with a strong sense of self-efficacy enhance their personal accomplishments and well-being. Their sense of competence and confidence in their abilities to acquire desired skills reduces stress and lowers vulnerability to depression.

The sense of controllability is key to buffering the effects that stressors exert on physical dysfunction (Bandura, 1994). Exposure to stressors while holding a sense of helplessness activates biological reactions that impair immune system functions and increase susceptibility to infection and illness. An individual's sense of well-being is increased when he perceives that he can influence aspects of his life or the course of his illness. A number of studies have demonstrated that individuals with cancer, AIDS, and heart disease are emotionally better adjusted when they have a sense of self-efficacy over the course of their disease (Helgeson, 1992; Reed et al., 1993; Rodin, 1986; Thompson et al., 1993; as cited in Brehm, Kassin, & Fein, 2005).

Optimism

Explanatory style and perception of control affect the way individuals look at the future. Individuals with a nondepressive explanatory style, i.e. an optimist style, do better in school, succeed more at work, and win more elections than pessimists (Seligman, 1998). In terms of the three dimensions of explanatory style, optimists perceive bad events as temporary, as having a

specific cause, and blame other people or circumstances. As an example, an individual with an optimistic explanatory style might say the following after the receipt of a bad grade in class, "My grades have dropped temporarily (permanence dimension). This professor is unfair (specific). He doesn't know how to give appropriate assignments (external)."

A research study tracked older men and women for a period of nine years (Giltay, Geleijnse, Ziman, Hoekstra, & Shouten, 2004). Participants, who had a high level of optimism as self-reported on a questionnaire, had a 55% lower risk of death from all causes. The trait of optimism was linked to mortality independent of cardiovascular and socioeconomic risk factors. The researchers concluded that dispositional optimism provides a protective survival effect in elderly persons.

Coping

Types of coping

The coping process involves altering circumstances or how they are interpreted in order to reduce the perceived level of stress (Lazarus, 1993). Effective coping must be flexible and change over time and across conditions; hence, coping is contextual in nature. There are numerous specific ways of coping, but similar strategies may be grouped into two general types: problem-focused coping and emotion-focused coping. Another type of coping is called proactive coping, which consists of performing efforts ahead of time to mediate the negative effects of stressful events.

Problem-focused coping

Problem-focused coping involves cognitive and behavioral efforts to change the relationship that an individual has with the environment (Lazarus, 1993). For example, assume that the neighbor's tree overhangs into your yard and causes you distress for whatever reason. If

you persuade the neighbor to cut the tree or alter the situation, you relieve your stress using a problem-focused solution.

Sometimes it's beneficial to confront stressors and deal with the source of the distress. This is especially true when dealing with task-oriented deadlines. It is better to confront and control the details and method of accomplishing the task, rather than avoid it (Brehm, Kassin, & Fein, 2005). One study looked at procrastination among college students (Tice & Baumeister, 1997, as cited in Brehm, Kassin, & Fein, 2005). Based on a questionnaire administered at the beginning of the semester, students were classified as to the potential extent of their procrastination. Procrastinators were relatively stress-free early in the semester. But they perceived greater stress and more symptoms of illness later in the semester as the due date for term papers neared and passed. Avoidance provided a short-term benefit that turned into a long-term cost.

Control not only involves active efforts to oversee the course of something, but it may also take other forms, such as knowledge or blaming others (Brehm, Kassin, & Fein, 2005). The caveat in dealing with problem-focused solutions is that exerting control involves the physiological strain of vigilance, alertness, and active engagement (Light & Obrist, 1980, as cited in Brehm, Kassin, & Fein, 2005). It can also lead to an over-controlling, stress inducing behavior pattern. Many events are out of our control and efforts to change them are futile and stress provoking. The wisdom is in knowing when to let go.

Emotion-focused coping

Emotion-focused coping utilizes cognitive and behavioral efforts to change the way we attend to or interpret an event so that we may reduce its distress (Lazarus, 1993). Threatening situations may be reappraised in non-threatening terms, thereby altering the cognitive basis of the

stress reaction. For example, an individual can reinterpret a hurtful comment as the unintended action caused by an overworked co-worker and dissipate the basis for anger.

A specific way to employ coping is by distraction, i.e. using mental images or activities to think of things other than the problem situation. This is especially helpful in situations in which the individual does not have actual control over the events. In this case, problem-focused coping is not effective and emotion-focused coping does act to relieve stress. Cioffi and Holloway (1993, as cited in Brehm, Kassin, & Fein, 2005) demonstrated this effect in their study of pain tolerance. Participants placed a hand in ice-cold water and were instructed to either avoid thinking about the pain or to form mental images of their homes. Those individuals who had used focused self-distraction to cope with the pain recovered faster.

Individuals who cope well with negative events and adapt effectively in the face of loss, hardship, or adversity are psychologically resilient (Tugade & Fredrickson, 2004). They are characterized by their ability to "bounce back" from stressors and to exhibit flexibility to changing demands. An important element of resilience is positive emotionality, which is associated with strengths such as optimism, zest, energy, curiosity, and open-mindedness (Block & Kremer, 1996; Klohen, 1996; as cited in Tugade & Fredrickson, 2004).

Positive emotions help to buffer against stress by enabling individuals to find positive meaning in negative circumstances and may contribute to efficient emotion regulation (Tugade & Fredrickson, 2004). Positive emotions appear to accelerate cardiovascular recovery from negative emotional arousal, thus strengthening the physiological rebound from stress. Fredrickson's (2001) broaden-and-build theory states that certain positive emotions, such as joy, interest, contentment, pride, and love, broaden an individual's thought-action repertoire and build their personal resources. During times of stress, the positive emotions widen the array of

thoughts and actions that the individual may utilize and augment the ability to call upon social, physical, intellectual, and psychological resources.

Opening up by expressing inner feelings to others and ourselves is another form of emotion-focused coping. Pennebaker (1997, as cited in Brehm, Kassin, & Fein, 2005) suggests that psychotherapy, self-help groups, and religious practices enhance healing by offering individuals a chance to confide in someone and talk freely about their problems. Pennebaker studied the effect of expression of feelings on college students who were asked to speak or write for twenty minutes about past negative events. The process of speaking or writing physiologically aroused the participants; they became tearful as they recounted traumatic events. Soon after, the students felt better than ever, their blood pressure dropped, and they made less visits to the health center over the next six months. Other studies have also replicated the therapeutic effects of talking about a problem on mental and physical health.

Proactive coping

Sometimes individuals are able to make efforts beforehand to ameliorate the effects of stressors or to divert them entirely. This ongoing process is called proactive coping and consists of a number of steps that the individual enacts (Aspinwall & Taylor, 1997). An example of proactive coping is when an individual recognizes that the marketability of his/her job skills is decreasing due to technological advances and begins to pursue a study program to acquire new skills. Even simpler activities may be employed as part of the coping process, such as when a single individual realizes he/she will be emotionally distraught on a significant holiday and makes plans to engage with others on that day. Another example is when a mother arranges baby-sitting care for an afternoon in order to pursue her interests and take a break from the children.

The proactive coping steps are part of a framework made up of: 1) resource accumulation; 2) recognition of potential stressors; 3) initial appraisal; 4) preliminary coping efforts and 5) elicitation and use of feedback (Aspinwall & Taylor, 1997). Proactive coping differs from other forms of coping in that it involves resource accumulation that doesn't target a particular stressor, but rather prepares the individual in general. It also utilizes the ability to identify potential stressors before they materialize. It can't be used to avert all stressful events; chronic illness and the death of a loved one may be inevitable, however, proactive steps and preparatory activities can contribute to a better adjustment.

The proactive coping model proposed by Aspinwall & Taylor (1997) represents interrelated tasks of self-regulation. The first stage begins with accumulating resources and skills such as time, money, specialized skills, and a network of family and friends. Time is an important resource because having some free time for reflection allows an individual to think through cues or warning signs, avert fatigue, and garner energy to initiate proactive strategies. The next stage involves the detection of potential stressors through the interpretation of environmental warning signs and/or the internal process of reflection. A social network plays a role in this detection because it brings to light information about such things as impending layoffs, financial shortfalls, and other changes in the institutions or relationships of importance to the individual. The liability associated with this stage is the risk of hypervigilance leading to imagined problems or threats that do not materialize.

When a potential stressor is recognized, the stage of appraisal comes into play to define the problem and regulate the arousal. The individual must make sense of the incipient cues and utilize a schema based on the variables of salience, strength, accessibility, representativeness, past experience, and expertise to interpret and appraise the emerging signals, while also

regulating negative emotional arousal. The initial appraisal gives rise to the preliminary coping stage in which the individual takes initial steps, which typically are small at first. An example is a problem with a misbehaving child. A mother may try some disciplinary tactics on her own and employ larger resources such as counseling or family therapy only if the initial attempts fail. Individuals with high perception of control see more opportunities for action than those who have an unfavorable appraisal of controllability. One study found that although 60% of adults correctly identified impending negative events, they did not initiate action to prevent them (Sansone & Berg, 1993, as cited in Aspinwall & Taylor, 1997). The most common reasons given were the perception of low personal control and an underestimation of the magnitude of the event.

The last stage of proactive coping is the revision of the initial appraisal by taking into consideration other factors and information that have evolved over time. An important proposal about the proactive coping model is that active coping uncovers more information than avoidant coping, and that this information should be used in subsequent efforts to manage the stressor. The potential stressor may not have surfaced or it may have changed form. The coping efforts must consist of the use of feedback in the ongoing management of the stressor and the conservation of resources.

Resultant Effects of Stress

In the 1930's Cannon was one of the first physiologists to explore stress and identified the innate stress response as the "fight or flight" response (Schwartz & Olson, 2003). This response is a normal reaction to a perceived threat and includes changes in the sympathetic / parasympathetic tone ratios which in turn alter circulation, respiration, muscle tension, digestion, and other bodily functions (Sherman, 2004).

Around the same time, Selye noticed that rats who received daily saline injections developed physical problems (Durand & Barlow, 2000). He ascribed the cause of these problems to stress, thereby coining a new term for the non-specific reactions that he observed. Selye (1936/1988) theorized that sustained stress results in a general adaptation syndrome consisting of three stages: 1) general alarm to an immediate danger; 2) resistance and mobilization of coping mechanisms; and 3) exhaustion or death.

During the initial alarm stage, the sympathetic nervous system stimulates the adrenal glands, which begin to pump epinephrine and norepinephrine into the bloodstream (Marieb, 2002). These hormones increase heart rate, blood pressure, and blood glucose levels and dilate the passageways of the lungs. As a result the blood circulates faster and contains more oxygen and glucose, enabling the body to better deal with a short-term stressor. Alertness, metabolism, perspiration, and blood clotting increase while digestion and kidney activity decrease. If the stress continues, the adrenals begin to pump glucocorticoids, which operate to protect the body during the resistance stage. During this period blood volume, blood pressure, and blood sugar increase and the immune system is suppressed. If the stress does not resolve, the adrenal cortex may simply "burnout", resulting in fatality.

Long-term stress takes its toll on the cardiovascular system and appears to have an important role in the development of coronary heart disease (CHD) along with other factors such as hypertension, cigarette smoking, diet, family history, and lack of exercise (Brehm, Kassin, & Fein, 2005). A research study demonstrated that stress reduction reduced deaths among men who were hospitalized after acute myocardial infarctions (Frasure-Smith, 1992, as cited in Durand & Barlow, 2000). Over a period of five years, some men received stress-reduction treatments whenever they reported a high level of stress. Of the men who experienced stress

after their hospital discharge, three times as many died in the control group than those who received the stress-reduction treatments.

As a short-term reaction, stress is a normal, adaptive response, but over time it can be injurious to one's health and well-being. Chronic stress takes its toll on the body and can compromise physical and mental health through its effects on the major systems in the body, e.g. digestive, immune, nervous, cardiovascular. It may produce persistent feelings of anxiety, helplessness, and impending doom and has been linked to depression possibly because of the negative effects of excessive cortisol (Mayo Foundation for Medical Education and Research, 2004).

Segerstrom and Miller (2004) completed a meta-analysis of over 300 empirical studies on the topic of psychological stress and the immune system, covering a period of 30 years and 18,941 individuals. Their results support the hypothesis that immune system changes are related to stressful events and that the characteristics of the events are relevant in determining the types of changes that occur. Acute time-limited stressors were generally followed by an adaptive redistribution of cells, which would efficiently fight infection without diverting energy from the fight-or-flight response behavior. As stressors became chronic, the adaptive nature of the immune system changes decreased. Chronic stressors were associated with global immunosuppression; the increased stressor duration produced a shift from adaptive changes to detrimental changes, initially at the cellular level and then to more broad immune function.

The most chronic types of stressors were those involving identity or social roles, such as becoming a caregiver for a family member with dementia, unemployment, or living with a disability. These types of stressors are more persistent, less controllable, and hold less hope for

control in the future. These qualities could affect the severity of the stressor in both psychological and physiological terms.

Aging and Stress

As individuals age their physical resiliency decreases and their ability to adapt to physical and psychological stressors becomes impaired (Sapolsky, 1992). Older organs and endocrine systems lose their effectiveness in response to stressors. This may manifest as a diminished response to a stressful crisis or as an overactivation of the stress response components. In either case, the results can be harmful and the individual is in a state of vulnerability. For example, older individuals produce epinephrine and norepinephrine during exercise at the same rate that younger individuals do. However, the older heart and vascular tissue is less sensitive to these hormones and maximal cardiovascular output is reduced due to cellular inefficiency. On the other hand, older individuals secrete hormones for a longer duration after the removal of the stressor and an overactive response may be observed. An excess quantity of hormones, especially the glucocorticoids, causes conditions such as hypertension, osteoporosis, diabetes, muscle wasting, and suppression of immunity (Krieger, 1982; Munck, Guyre, & Holbrook, 1984, as cited in Sapolsky, 1992). The meta-analysis by Segerstrom and Miller (2004) also found that age is a variable that moderates vulnerability to stress related decreases in immune function.

As reported by Folkman, Lazarus, Pimley, & Novacek (1987), numerous studies of age differences in stress indicate that older adults experience more loss events such as those associated with declining health, work roles, loss of friends, etc. than younger adults. They also report that ordinary day-to-day hassles are strongly related to distress in older adults, as well as being related to well-being and health in younger adults. Younger adults tend to experience hassles related to finances, work, personal life, home maintenance and family and friends. Older

adults no longer have the hassles from raising young children and are generally no longer in the workplace, however, they deal more with health, environmental and social issues. The method of coping with hassles is critically important as this has a large impact on survival and well-being in older adults (Lieberman & Tobin, 1983, as cited in Folkman, Lazarus, Pimley, & Novacek, 1987).

Some theorists support the developmental interpretation of coping, which states that there are inherent age-related changes in the way people cope (Folkman, Lazarus, Pimley, & Novacek, 1987). The basis for this idea is built upon a stage-related view of adult development. Within the developmental interpretation are contradictory variations. One variation holds that the coping behavior of individuals regresses as they get older while another variation holds that they become more mature and wise in coping behavior. Research on the former was based on observations of adult with psychopathology (Pfeiffer, 1977; Gutmann, 1974; as cited in Folkman, Lazarus, Pimley, & Novacek, 1987), whereas the latter is based on research with a normal sample of males (Vaillant, 1977, as cited in Folkman, Lazarus, Pimley, & Novacek, 1987).

Other theorists support the contextual interpretation, which suggests that the things people must cope with change as people age, and this accounts for age differences in coping behavior. Some research has found that older people have more stressful encounters related to health, but that they do use both problem-focused and emotion-focused coping behavior (Folkman, Lazarus, 1980, as cited in Folkman, Lazarus, Pimley, & Novacek, 1987). The extent to which they do so depends on the personal significance of the event and whether there are options for changing environmental factors.

Folkman, Lazarus, Pimley, & Novacek (1987) studied the differences between younger and older adults in regards to the kinds of coping they employed. They found striking and consistent age differences in coping. Younger adults employed relatively more active, interpersonal problem-focused coping. This included planful problem solving, confrontation, and active seeking of social support. Older adults used relatively more passive, intrapersonal emotion-focused coping. This included positive reappraisal, distancing, and acceptance of responsibility. The researchers believe that their findings are consistent with a developmental interpretation of coping behavior, but they did not find support for the idea that coping regresses and gets more primitive in the older adult.

The older adults in this study used more emotion-focused coping, which the researchers believe is generally appropriate to their stage of life. Younger individuals emphasize problem-focused modes and situation in their lives are more malleable than that of older adults. Both patterns of coping behavior seem very adaptive to life circumstances.

Conclusion

Stressors vary in duration and intensity ranging from minor hassles to life changing events that have long-term impact. Explanatory style, perception of control, and optimism affect the way individuals interpret events. Different types of coping utilize different skills that each help to alleviate the negative effects of the stressors. The detrimental effects of stressors can be highly individualistic and depend on the appraisal and coping methods of the individual involved.

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