

POSITIVE AND NEGATIVE EFFECTS OF STRESS: A PARADOX

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Abstract: Stress is a global phenomenon affecting all spheres of life. Selye (1956) used the term “stress” to represent the effects of anything that seriously threatens homeostasis. It has a profound effect on practical life; it can be both, positive (eustress) and negative (distress). It can be used as the best defensive system of our body. Short-term stress response is functional. “Positive stress or eustress (also called good stress) is when one perceives a stressful situation as an opportunity that will lead to a good outcome.” Occasional stress can help to keep one focused and improve recall, which can be a plus point when cramming and learning or preparing for an important presentation at work or pushing one to as per one’s fullest potential. For instance, some stress can help to fortify the immune system and improve working of heart. Negative stress termed as “distress” has been linked with several negative effects on physiological, cognitive, psycho social, and emotional processes of a human body. The linkages to health and distress have been identified, such as increase in smoking, substance use, accidents, sleep problems, and eating disorders. Stress is a key for survival, but too much stress can be detrimental. Chronic stress can cause high blood pressure, fatigue, depression, anxiety, and heart disease. It may lead to hindrance in learning, memorizing, and thinking. Hence, stress and dealing with stress is a paradox. It is possible that there is a curvilinear relationship between stress and performance in various domains with too little or too much stress having deleterious effects, and moderate amount of stress be motivating for an individual to overcome problems, and move towards excellence. So, stress is useful and necessary for a person’s growth when in an optimum quantity.

IndexTerms- Stress, strain, eustress, distress.

I. INTRODUCTION:

“I cannot and should not be cured of my stress, but merely taught to enjoy it.”
-Hans Selye.

Over 60 years ago, Selye recognized the paradox that the physiological systems activated by stress can not only protect and restore but also damage the body. Stress is a global phenomenon affecting people of every sphere of life in all countries. Stress is usually associated with feelings of control which affects life and work. Furthermore, stress is a common experience, but individuals perceptions of stress are not homogeneous (Aldwin, 1994). Stress is known as the emotional and physical strain caused by a person’s response to pressure from the outside world.

Stress, a word derived from the Latin word ‘stringere’ which means to ‘draw tight’, was used in the seventeenth century to describe ‘hardships and affliction’. During the late eighteenth century, stress denoted “force, pressure, strain or strong effort.” The term stress was first employed in a biological context by the endocrinologist Hans Selye in the 1930’s. He later broadened and popularized the concept to include inappropriate physiological response to any demand.

Selye (1956) used the term “stress” to represent the effects of anything that seriously threatens homeostasis. Stress is a man’s adaptive reactions to an outward situation which would lead to physical, mental, and behavioral changes. Stress has a profound effect on practical life; it can be both, positive (eustress) and negative (distress).

According to *Lazarus (1984)*, “Stress is a relationship between the person and the environment that is appraised by the person as taxing or exceeding his/her resources and endangering well-being.”

According to *Cohen, Kessler, & Gordon (1995)*, “Stress is a process in which environmental demands tax or exceeds the adaptive capacity of an organism, resulting in psychological and biological changes that may place a person at risk for disease”.

Stress is the inability to cope with a perceived (real or imagined) threat to one's mental, physical, emotional, and spiritual well-being which results in a series of physiological responses and adaptations (*Dossey, 2004*). It is the situation by which the individuals suffer from physical as well as psychological hypertension resulted from factors that can't be handled and exceeds human ability to cope with (*Hussien & Hussien, 2006*). Stress knows no demographic boundaries. It effects everyone and is often called the “equal opportunity destroyer” as it is a state of mental or emotional strain or suspense and also a number of normal reactions of the body (mental, emotional, and physiological) designed for self-preservation (*Princeton University, 2001*). According to *Wheeler (2007)*, stress is a physics word which refers to the amount of force used on an object, and it relates in real life as to how certain issues that carry force applied to human life. For instance, such as financial difficulties, health challenge issues, conflicts with friends, all carry force or pressure on person's body-mind and spirit. Some of the pressure or force originates from the environment but most often comes from within a person's head in the form of worry, anxiousness, regret, discouragement, and low confidence.

The American Institute of Stress cites that 75-80 percent of all diseases and illnesses are stress-related. Stress has long been a major research concept in health science since it is linked to various health outcomes and illnesses, including cancer, diabetes, cardiovascular disease, asthma, and rheumatoid arthritis (*Cohen, Janicki-Deverts, & Miller, 2007; Johnson, Perry, & Rozensky, 2002*). The ways in which the concept of stress has been assessed in research can be broadly classified into three perspectives: (a) environmental (focusing on stressors or life events); (b) psychological (assessing subjective stress appraisal and affective reactions); and (c) biological (assessing the activation of the physiological systems involved in the stress response) (*Cohen & Kessler, 1997*). Stress is explained by *Pargman (2006)* as “An uncertain reaction to external and internal factors” that indicates a negative or positive reaction to environmental stimuli. In this regard, it is how the totality of your body relates to changes and unfamiliar situations that present it in the course of time.

The situations that cause stress are called stressors. The causes may be related to people (conflict with parents, children, lovers or others), situations (job, and traffic jam, etc.) or environmental events [noise (high/low), temperature high/low)]. Stressors vary in severity and duration. Stressors are a pervasive element of human condition to which the organism responds with a state of tension. For example, death of a loved one may be a cause of severe stress whereas, getting stuck in traffic jam may cause mild or short-term stress. Individuals may respond differently to the same event. One stressful event which is stressful for one person may not be stressful for another. Furthermore, stressor is the situation or one's state of conflict that will cause stress. So, stress is an unpleasant state that is produced in response to a stressor.

We may feel stress when we are very busy or have important deadlines to meet. Stress in moderate doses is very significant in our life. It can be used as the best defensive system of our body against external and internal dangers. Stress pushes one to change, to fight, to grow, and to adapt to new situations. Short-term stress response is functional, and can enhance reactivity and performance. So, stress is useful and necessary for a person's growth when in an optimum quantity. But when the optimum level exceeds, it creates trouble for the person.

Students and young adults today are growing up in a world that is very different from not only that of their parents, but also that of their elder siblings. Young adults undergo rapid physiological changes coupled with psychological changes. Such changes often have dramatic effects, and furthermore they tend to experience social, emotional, and behavioral problems which may interfere with their wellbeing in a high-pressured society (*Blakemore, Berenbaum, & Liben, 2009; Divall, & Radovick, 2008; Susman & Dorn, 2009; Giedd, 2008; Keating, 2004*). Stress and strain have become part and parcel of life. It continues to take a toll on youth as well as adults. Circumstances that trigger stress are known as stressors. According to *Centre (2010)*, stress is not only negative things that happen, positive things also cause stress. The human body craves homeostasis or physiological calm; yet, it also needs physiological arousal

to ensure the optimal level of functioning of the whole body system. In our life, we only know stress to be bad but that's not the only case. There are three types of stress: positive stress which is known as 'eustress', stress neither positive or negative is known as 'neustress', and negative stress, which is also known as 'distress'. One other type of stress which is usually found in children is known as 'toxic stress'

Stress is the body's natural defense against real or imagined danger. It flushes the body with hormones to prepare systems to evade or confront danger. This is known as the "fight-or-flight or freeze" response. Not all stress is bad; in fact, the body craves physiological arousal to ensure the optimal functioning of several organs, including the heart and musculo skeletal system (Seaward, 2012). The positive effects of stress are however, often overlooked. Stress is a burst of energy that basically advises one what to do. In small doses, stress has many advantages. Positive stress called "eustress" (also called good stress) is when one perceives a stressful situation as an opportunity that will lead to a good outcome or a person finds it motivating or inspiring as well. Stress can lead you to accomplish goals and allows being successful. Usually, situations that are considered as eustress are enjoyable, and for this reason, are not classified into a category of a threat. Although an optimal level of stress can enhance learning ability (Kaplan, 2000), too much stress can cause physical and mental health problems (Carver & Scheier, 1993), reduce self-esteem (Bressler & Bressler, 2007), and may effect academic achievement of students (Rafidah, Azizah, & Noraini, 2007). Occasional stress can help to keep one focused and improve recall, which can be a positive point when cramming and learning or preparing for an important presentation at work or pushing one towards his fullest potential. Another way stress can be beneficial for students is that it helps one to learn the best way to overcome and manage stressful situations. Stress can help one to accomplish tasks more efficiently. It can even boost memory. In addition, there are various health benefits with a little bit of stress for students. Repeated exposure to stressful events makes the body develop both physically and psychologically bringing sense of control in students. For instance, some stress can help to fortify the immune system, can improve how your heart works, and protect your body from infection.

According to Seaward (2012), "neustress" is neither positive nor negative. It refers to events that have no actual impact on a person. Seaward defines neustress as "any kind of information or sensory stimulus that is perceived as unimportant or inconsequential". Neustress experienced by a person have no as such consequential effects as it is considered neither good nor bad.

Negative stress termed as "distress" has been linked to many of the negative effects on physiological, cognitive, psycho-social, and emotional processes of a human body. The negative consequences of stress that could provide linkages to health have been identified, such as increase in smoking, substance use, sleep problems, and eating disorders. Forty-three percent of all adults suffer adverse health effects from stress (American Psychiatric Association (APA), 2018). Stress is a key for survival, but too much stress can be detrimental. Emotional stress that stays around for weeks or months can weaken the immune system, and cause high blood pressure, fatigue, depression, anxiety, and even heart disease. A little stress every now and then is not something to be concerned about. Further, there are two types of distress – acute stress and chronic stress. Acute stress does not last very long, but seems unbearable during that moment. Stress that lingers for a prolonged period of time is a chronic stress; however, it can cause or exacerbate many serious health problems. Stress that exceeds the optimal level may interfere with the healthy functioning of mind and body. It may interfere in some of the daily activities, such as learning, memorizing, and thinking. With the pressure of stress, it is possible that one tends to forget more and even minute things. Long-term ongoing stress can increase the risk for hypertension, heart attack or stroke.

Toxic stress usually takes place in children when a child experiences strong, frequent, and/or prolonged adversity—such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship—without adequate adult or caregiver support. This kind of prolonged activation of the stress response systems can disrupt and hinder the development of brain architecture and other organ systems, and also increase the risk for stress-related diseases or problems, and cognitive impairment, well into the adult years. Such prolonged activation increases the potential for enduring changes in physiological and neurological systems of the body. When such enduring changes compromise children's adaptation, this long-term series of events is referred to as Toxic Stress. Toxic stress can have long life repercussions, affecting a child's physical growth — slowing them down from putting on height and weight — and transforming their brain architecture. Children who are separated from their parents in early childhood and raised without a constant, loving caregiver suffer a profound impact on cognitive ability, social function, mental health, and, brain development. Adverse experiences in childhood increase the chance of health related problems like heart disease, diabetes, and substance abuse.

The poor health outcomes are varied and include alcoholism, chronic obstructive pulmonary disease, depression, cancer, obesity, increase in suicide attempts, heart disease, and myriad other disease processes (Benjet, Borges, Medina-Mora, & Mendez, 2013). Evidence (Johnstone, Carter, Luty, Mulder, Frampton, & Joyce, 2013) supports the use of parent-child interaction therapy, child-parent psychotherapy, cognitive behavioral therapy, and trauma-focused psychotherapy for children showing signs of toxic stress.

THEORETICAL FORMULATIONS:

There are a number of models of stress which have been proposed that explain stress and the stress response.

1. AROUSAL MODEL:

One of the earliest models that have been proposed is the arousal model by Yerkes & Dodson (1908). It leads itself to explain the relationship between eustress, distress, and health. According to this model, arousal is beneficial to the individual's performance up to an optimal level, but extremes of arousal produce stress, and decrease performance. So, performance increases up to an optimum level of arousal. If arousal becomes too high, then performance declines. It has been found that different tasks require different levels of arousal for optimal performance. Difficult or unfamiliar tasks may require lower levels of arousal (to facilitate concentration), whereas, familiar tasks demanding stamina or persistence may be performed better with higher levels of arousal (to induce and increase motivation). Stress is positive, healthy, and challenging when the body tolerates it and uses it to overcome lethargy or enhance performance. Stress and performance are correlated to each other in the area of an optimal performance. Eustress is action-enhancing stress that gives the competitive edge, optimal learning, comfort, and enthusiasm to project optimally. Distress results in overreaction, confusion, poor concentration, performance anxiety, and into subpar performance at work. Thus, somewhere between eustress and distress is a level of stress that can promote an optimal performance.

2. FIGHT-OR-FLIGHT MODEL:

After this, the 'fight-or flight model' was proposed by Walter Cannon (1935) to describe the dynamics involved in the body's physiological arousal to survive a threat. Cannon (1935) initially found this body's response to stress in animals, but it was later found in human beings too. The fight or flight response explains as to how one responds to threat when one faces a threatful situation. One needs to decide quickly whether one should fight with the situation or run away from threat. So, it can be said that fight-or-flight prepares the body for action. The change that occurs during stress allows the body to exert a large amount of energy over a short period of time so that the individual may either fight effectively or run away.

3. GENERAL ADAPTATION SYNDROME MODEL:

The General adaptation model was proposed by Hans Selye in 1936. Stress is the non-specific response of the body to any demand placed upon it to adapt, whether that demand produces pleasure or pain (Selye, 1936). Hans Selye (1936) noted that several physiological adaptations occurred as a result of repeated exposures to stress and adaptations that had pathological repercussions. Environmental events trigger stress reactions by the way they are interpreted and the meanings they are assigned. Therefore, it is not so much what happens to you as it is (Selye, 1976). General Adaptation Syndrome (Selye, 1936; 1976) model of collective changes in a body tries to accommodate chronic stress by adapting and identifying three stages: alarm reaction, resistance stage, and exhaustion stage. This outlines the parameters of stress and maintaining a state of homeostasis. The concept of homeostasis, 'stability through constancy' as the main mechanism by which the body copes with stress, has given way to all stasis, 'stability through change' brought about by central neural regulation of the set points that adjust physiological parameters to meet the stressful challenge.

4. COGNITIVE APPRAISAL MODEL:

The cognitive appraisal model was proposed by Lazarus (1975). Richard Lazarus (1975) defined stress as a relationship between the person and the environment that is appraised as personally significant, and as taxing or exceeding resources for coping. This definition is the foundation of stress and coping theory (Lazarus & Folkman, 1984). The appraisal of stress resulted from the interaction or transaction between the individual and the environment (Lazarus & Folkman, 1984). This transactional model is currently dominant, that there are individual differences in appraisals of stress that nonetheless reflect environmental contingencies. In this model, stress can also be seen as a combination of environmental

demands and individual resources, and cognitive processes are central. Thus, appraisals of stress arise when environmental demands exceed the individual's resources, particularly in situations that are personally significant (Lazarus & Folkman, 1984). There are four general types of stress appraisals: a situation may be benign, or it may involve threats of future stressors, harm or loss, and challenges (Lazarus & Folkman, 1984). Appraisals are important because they are thought to determine how an individual chooses to cope with the stressors, although individuals typically use multiple appraisals (Aldwin, Sutton, Chiara, & Spiro, 1996; Boeninger, Shiraishi, Aldwin, & Spiro, 2009). Coping with stress is a process that unfolds over time; thus, individuals may alter their initial appraisals of how stressful the situation is based upon an assessment of available coping resources called secondary appraisal. Appraisals are not necessarily a product of conscious, rational processes, but may occur at an unconscious, largely automatic level (Lazarus, 1991; Smith & Kirby, 2004). Primary appraisal is influenced by personal and environmental factors, and promotes the selection of coping processes. Furthermore, primary appraisal includes the perception of how stressful the problem is, and realizing that one has more or less adequate resources to deal with the problem. On the other hand, secondary appraisal refers to the evaluation of the resources available to cope with the problem, and may also alter the primary appraisal. Further, it can be said that coping is flexible, and one can examine the effectiveness of coping on the problem. For example, people experience stress during a film depending on what they have experienced in their lives. Lazarus (1984) focused on cognitive appraisal as a mediator of the stress response.

5. CONSERVATION OF RESOURCES (COR) THEORY:

In the theoretical model of the stress process developed by Stevan Hobfoll (1989), known as the Conservation of Resources (COR) theory, resources are defined as things that one values, specifically objects, states, and conditions. This perspective bears marked similarity with the Person–Environment fit model by Kurt Lewin (1951); specifically, both approaches examine the interaction of the person and the environment, and the degree of correspondence between demands in the environment and the individual's resources to deal with those demands. The fundamental tenet of COR theory is that “individuals strive to obtain, retain, protect, and foster those things that they value” (Hobfoll, 2001). A “resource” is anything that is important to the person, contributes positively to an individual wellbeing and enables one to adjust. In the overview of COR theory, it indicates that 74 different types of resources have been identified through research. Some of these are what he referred to as “personal” resources whereas others are features of the environment (external resources). Personal resources include attributes such as personal values (e.g., the importance of achievement), personality traits (e.g., internal locus of control, hardiness, dispositional optimism, generalized self-esteem) and other characteristics, including positive affect (Nelson & Simmons, 2003). Environmental resources will vary depending on the kind of environment the person functions in. Social and organizational support for colleagues (accommodating their needs) also represent major environmental resources, which can reduce stress and burnout (Halbesleben, 2006), as well as enhance positive well-being (Luszczynska & Cieslak, 2005).

In Eastern philosophies, stress is known to be an *absence of an inner peace* whereas in Western culture, stress is considered to be a *loss of an emotional control*.

In Eastern medicine, stress can be roughly categorized into 2 types – physical and emotional – although there is quite a bit of overlap between them because Traditional Oriental Medicine views the body, mind, and spirit as being inter-related to each other. Physical stress can be caused by many factors, including overwork, not enough rest, environmental toxins, and simply pushing the body too much. On the other hand, the second main type of stress – emotional stress – affects mostly the liver meridian system, which in Eastern medicine includes not only the liver organ, but other related functions including blood circulation throughout the body, as well as the connective tissue and tendons. Unfortunately, stress will always be a part of our lives, although efforts should be made to reduce it whenever possible. However, helping to regulate and strengthen the liver and kidney systems can be useful in allowing us to better cope with our stress, and stay healthier.

Positive stress brings happiness and therefore, is not seen as threatening. Studies indicate that stress-related hormones in optimal doses actually improve physical performance and mental processing skills, concentration, thought process, and increasing alertness (Juliana Nery de Souza-Talarico, Marie-France Marin, Shireen Sindi & Sonia J. Lupien, 2011).

A certain level of stress can be helpful and at times, stress acts as a motivator to accomplish goals. Stress can also lead to motivation, causing to complete a difficult task or event that one must deal with. The positive response to stress enhances performance and potential in an individual. Under stress, people in

business hold more successful negotiations, students do better in academics, athletes become more efficient, and surgeons improve their proficiency, and become a valuable resource in difficult moments.

Firdaus Dhabhar & Bruce McEven (1997) found that some stress is helpful to fortify the immune system. For instance, stress can improve how heart works and protect the body from an infection. Individuals who experienced moderate levels of stress before surgery were able to recover faster than individuals who had low or high levels. Low level stressors can stimulate the production of brain chemicals called neurotrophins in our body, and strengthen the connections between neurons in the brain which results into stronger brainpower. This is the primary mechanism by which exercise (a physical stressor) can help to improve memory and other cognitive functions (McGonigal, 2016). Johns Hopkins (2006) found that most children of women, who reported mild to moderate stress levels during pregnancy, actually showed greater motor and developmental skills by age 2 than those of unstressed mothers. The one exception: the children of women who viewed their pregnancy as more negative than positive had slightly lower attention capacity.

Vandana, Sarawathy, Pillai, Ramaiyer, & Kuman (2011) found that stress and other emotional responses affect the body's ability to remain healthy and to fight disease. Stress and emotion appears to have an important consequence for the beginning or progression of cancer, HIV, cardiovascular disease, and, other illnesses through nervous, endocrine, and immune systems. According to Stanford psychologist McGonigal (2016), stress has a disastrous effect on individuals who believe stress is bad for them. She basically calls this stress 'a paradox'. A study (McGonigal, 2016) of car-crash survivors found that those who recovered most quickly are found to had the highest levels of stress hormones after the accident. They were also less likely to develop post traumatic stress disorder (PTSD). Doses of stress hormones may turn out to be an effective therapy for individual's going through PTSD.

Therefore the best way to deal and handle stress in our daily life is to embrace it happily and calmly and also deploy it to support the effort to reach the set goals. To do so, one must change their mind-set about stress and its beliefs. A mind-set is a major "core belief" that is a part of an individual's fundamental understanding of how the world works. As in the placebo effect – in which a tonic produces whatever results the patient expects from actual medication, in a same manner a mind-set can spark physiological or neurological responses in an individual to overcome obstacles.

Life is a long journey having some purposes, goals, values, and aim. All of the places, things, events, and people we encounter along the way help us learn to reach the ultimate goal. Stress is a gift we give to ourselves to make us remind that we have temporarily lost the way, and the discomfort felt provides us with the motivation and zeal to get back on a track. When the symptoms and signs of the excessive stress are experienced, our body reacts to an alerting alarm to manage and create a balance between internal and external environment. Thus, stress is not about what world does to us; stress is about the perception of the world and the things around us.

Hence, stress and dealing with stress, is a paradox. While some view stress as having deleterious effects, others view it as having beneficial outcomes. It is possible that there is a curvilinear relationship between stress and performance in various domains (be it academics, non-academics or health) with too little or too much stress having deleterious effects, while moderate amount of stress may be motivating for an individual to overcome the problems and move towards excellence. Thus, one needs to ponder over the prevalent theories of stress and re-structure them according to the changes in socio-cultural conditions which can have far reaching implications at the individual, societal, national, as well as international level.

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