Research Article ISSN 2641-4317

International Journal of Psychiatry Research

Four Phases of Life and Four Stages of Stress: A New Stress Theory and Health Concept

Nader Butto*

Former Cardiologist, Rabin Medical Center, Petah-Tikva, Israel.

*Correspondence:
Nader Butto, Former Cardiologist, Rabin Medical Center, Petah-Tikva, Israel.

Received: 17 August 2019; **Accepted:** 09 September 2019

Citation: Nader Butto. Four Phases of Life and Four Stages of Stress: A New Stress Theory and Health Concept. Int J Psychiatr Res. 2019; 2(6): 1-7.

ABSTRACT

This article presents a new theory of stress reaction and adaptation with reference to the four phases of life (excitation, expansion, contraction, and relaxation), four phases of acute stress (threat, organization, fight and flight, and recovery or shock), four phases of chronic stress (alarm, resistance, adaptation, and exhaustion), and four grades of fear (anxiety, fear, panic, and horror). Each phase of acute stress is associated with a corresponding grade of fear. The grades of fear are determined by the balance between the strength of the stimulus and the subjective capacity to cope with it. The subjective capacity depends on different factors but mostly on the experience and energy availability that determine a person's psychological resilience. Then, the phases of chronic stress correlate with the four phases of life. When a traumatic conflict is unresolved, the fear remains blocked in the energetic system, corresponding to one of the phases of life. This blockage may explain why we have different diseases in the same organ. Further, the concept of vitality is introduced to explain the resilience that allows the individual to cope with stress efficiently to maintain homeostasis. This new model opens a gate to establish a new therapeutic strategy aimed at increasing an individual's vital energy and resolving energy blockages by elaborating psychological trauma, completing the learning process to achieve intellectual growth, and achieving spiritual growth toward health and well-being.

Keywords

Four levels of fear, Four phases of life, Four stages of acute stress, General adaptive syndrome, Stress.

Introduction

The impact of stress on human health is widely recognized. Stressors have a major influence on our mood, sense of well-being, behavior, and health. Stress is a process in which environmental demands strain an organism's adaptive capacity, resulting in both psychological demands and biological changes that could place the organism at risk for developing illness [1]. When we are confronted with a problem, we assess its seriousness and determine whether or not we have the resources to cope. If we believe the problem is serious and do not have the resources to cope with it, we will perceive ourselves as being under stress [2].

Existing models of stress

Selye (1956) introduced the concept of stress as a response model [3]. According to Selye, stress is a physiological response pattern, or a "nonspecific response of the body to any demand," focused on achieving or maintaining homeostasis, which is the stability of physiological systems that maintain life (e.g., body temperature, heart rate, glucose levels). This idea is elaborated in his general adaptation syndrome (GAS) model [4]. General adaptation theory is based on the observation that all living organisms respond to stress as a basic reaction pattern, and this is always the same, irrespective of the agent used to produce the stress. The model explains three main concepts:

1. Stress is a defensive mechanism.
2. If stress is prolonged or severe, it could result in diseases of adaptation or even death.
3. Life is a three-stage adaptation to steadily renewed external stressors: [5,6]
    a. initial alarm / reaction to the stressor,
    b. resistance / adaptation to coping, and
    c. eventual exhaustion.

The three stages of adaptation are described in further detail below.

Alarm/reaction phase

The rate of all bodily functions of the autonomous nervous system increases dramatically, known as the "fight-or-flight" response, to give physical strength and mobilize internal forces. In normal circumstances, the alarm reaction phase does not last very long. In some instances, its duration may only be a few seconds, though it may last longer.

Resistance/adaptation phase

After the initial shock of a stressful event and having a fight-or-flight response, the body begins to repair itself. If the resistance/adaptation phase continues for a prolonged period of time without periods of relaxation, sufferers become prone to fatigue, poor concentration, irritability, frustration, and lethargy, which can lead to the exhaustion stage.

Exhaustion phase

If the stressor environment is chronic, struggling with the stress for long periods can drain an organism's physical, emotional, and mental resources to the point where the body no longer has the strength to fight the stress. The organism will begin to show signs of adaptation failure. Systems begin to break down, and the person becomes more susceptible to a range of biopsychosocial symptoms. Signs of exhaustion include fatigue, burnout, depression, anxiety, and decreased stress tolerance. This may even lead to death.

Later, Selye introduced the idea that a stress response can result in positive or negative outcomes based on cognitive interpretations of the physical symptoms or physiological experience [7]. When a person tolerates stress and uses it to overcome lethargy or enhance performance, the stress is positive, healthy, and challenging; this is called eustress [8]. On the other hand, stress is negative when it exceeds our ability to cope, fatigues body systems, and causes behavioral or physical problems. This is called distress.

In the 1967, the theory of stress as a stimulus was introduced [9,10]. In this theory, stress is a significant life event or change that demands a response, adjustment, or adaptation. The stress as stimulus theory assumes the following:

- Change is inherently stressful.
- Life events demand the same levels of adjustment across the population.
- There is a common threshold of adjustment beyond which illness will result.

However, the stress as stimulus model ignores important variables such as prior learning, environment, support networks, personality, and life experience. Subsequently, in 1978, the concept of personal interpretation was introduced, suggesting that a change or life event could be interpreted as a positive or negative experience based on cognitive and emotional factors [11]. Lazarus (1966, 1988), in attempting to explain stress as a dynamic process, developed the transactional theory of stress and coping (TTSC), which presents stress as a product of a transaction between a person (including multiple systems: cognitive, physiological, affective, psychological, and neurological) and his or her complex environment [2,12].

Study aims

This article presents a new stress theory based on a universal law that manifests everywhere, from single cells to the universe as a whole: the law of four phases of life. It also makes a unique contribution to the literature by offering a new description of the alarm phase and addressing the four phases of chronic stress. The connection between the four grades of fear and four phases of life is discussed, leading to a new proposal that this connection can explain different diseases in the same organ.

Causes of Stress

The stress response consists of the physiologic, behavioral, and psychological changes that occur in the face of a challenge to an individual's health or state of well-being.

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely an absence of infirmity [13]. The state of well-being is a state of mind in which a person feels able to achieve aspiration in life with a sense of love, happiness, and freedom. Then, "health promotion is the process of enabling people to increase control over, and to improve, their health. […] To reach a state of well-being, an individual or group must be able to identify and to realize their aspirations, satisfy their needs, and to change or cope with the environment [14]."

These aspirations are related to twelve categories of life, behind each of which lies a potential for learning and growth. The categories are as follows:

1. Territory
2. Material expectations and desires
3. Sexuality
4. Fertility and reproductive capacity
5. Social position
6. Social affection bonds and interactions
7. Familiar relations:
    a. Parents brothers and sisters
    b. Couple life
    c. Parental activity and children
8. Personal fulfillment as intellectual growth and professional achievements
9. Projects planes and personal path
10. Spiritual growth and spiritual influence
11. Religion and tradition
12. Faith in God and illumination

Any of the mentioned areas can be expressed in one or more modes: physical, emotional, mental, and spiritual. The physical level gives a sense of safety and security, such as physical health and strength, or territorial and material possession, social position, attachment to figures and objects such as to offspring (parental activity), and potential sexual partners.

The emotional level gives a sense of pleasure as a response

to obtaining money, sex, food, or success. In the intellectual perspective, a person looks for intellectual growth or professional success. In the spiritual level gives a sense of spiritual evolution and personal fulfillment to achieve illumination.

The obstacles one faces in life are stimuli to change and grow. Despite the tension and stress that challenges cause, if the events are accepted and lead to change, it will cause intellectual growth associated with a sense of fulfillment, growth, and happiness. This stress is positive known as eustress. On the other hand, when aspirations are not identified, needs are not satisfied, or the person is unable to cope with the obstacle, negative stress will be experienced, i.e., distress.

The level of stress that can be provoked from each event depends on the importance of the stressor for the person and its intensity, and the difficulties or easiness to cope with it. Therefore, the grade of stress depends on seven factors:

- Level of importance of the desired thing
- Grade of impediments to achieve them
- Sharpness of the appearance of stress
- Life experience
- Vitality level responsible for the resilience to face difficulties
- Duration of the stress
- Presence of other causes of stress

Therefore, stressors may differ not only in type (qualitative aspect) but also quantitatively (in intensity), and that different behavioral and physiologic signatures may be associated with these differences or a change in the stressor's quality and/or quantity.

Personality variables and attributes are closely connected to childhood. A child growing up with loving parents, confident and physically and emotionally strong, will be a self-confident adult free of fears and over-concern. In contrast, a child growing up with parents fearful for him will develop fear that will accumulate throughout his life.

The intensity of the stimulus is perceived subjectively and depends on the strength of the stressor and the capacity to cope with the problem.

Distress manifests when the defense system (vitality) fails to maintain a state of homeostasis. This could be for one of two reasons:

- The stressor is bigger that the defense system capacity to cope to maintain the homeostasis; or
- The energy of the defense system (vitality) is low; therefore, even if the stressor is not intense, it will be perceived as significant.

The capacity to cope with the problem and the response to stress depend on three resources, psychological, biological, and energetic. These are explained below.

The psychological perspective emphasizes assessment of the emotional and mental situations and their ability to cope with demands presented to them by certain situations and experiences that are objectively related to substantial adaptive capacity.

The biological stress perspective emphasizes the function of certain physiological systems in the body such as the endocrine or immune systems that are regulated by both psychologically and physically demanding conditions. Cortisol for example, has historically been used as a biomarker of stress, but chronic stress causes cortisol depletion, which can be manifested as fibromyalgia.

The energetic perspective emphasizes assessment of the state of vitality that is an expression of the vital energy available to cope with the stressor to maintain the homeostasis. Most of the caregivers are not aware about the concept of energy when we deal with stress and health. However, energy is a basic concept in the definition of health and homeostasis. We define homeostasis as a dynamic equilibrium in which the system functioning efficiently with minimum energy expenditure.

The following are among the factors that influence the vitality of the system and thus the susceptibility to stress:

- genetic vulnerability and physical constitution,
- age and life style (sleep, alimentation, physical and sexual activity),
- coping style,
- type of personality,
- social support.

For example, acute stress responses in young, healthy individuals who are full of vitality may be adaptive and typically do not impose a health burden. However, if the threat is unremitting, particularly in older or very young or unhealthy individuals with low vitality, the long-term effects of stressors can damage health.

Responses to negative stimuli manifest in different forms:

- Frustrations for the denial or absence of individual aspirations
- Fears of losing physical, emotional, mental, or spiritual integrity
- Pains due to physical, emotional, or moral damage.

Theses sensations can lead to avoidance or aggressive responses that increase even more the basic level of stress. Distress produces overreaction, confusion, poor concentration, performance anxiety, and physical pain.

The Four Stages of Life and Four Stages of Stress [15,16]

Birth, growth, reproduction, and death are the four stages of the life cycle of all animals. This phenomenon can be experienced in the human body in the breath, the heartbeat, sexual intercourse, pregnancy, and many more functions that give people a sense of life and pleasure. These pulsations are also the expressions of life force, which is observable in its electrical and mechanical functions.

The activity of the heart cell as a typical example of the relation between electromagnetic activity and mechanical function, known as excitation contraction coupling. The electric activity of every

cell can be registered and described in a diagram, known as action potential; (Figure 1).

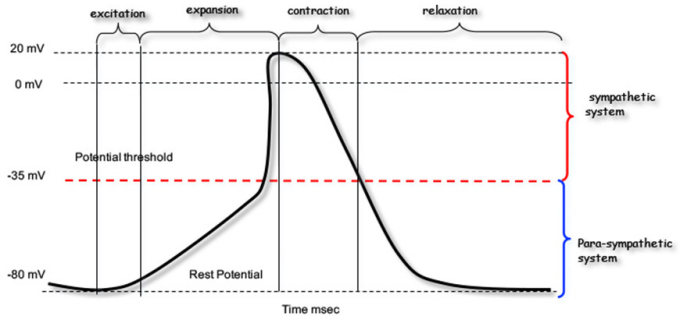

Figure 1: The action potential curve and four phases of life. The potential threshold is determined by the relation between the sympathetic and parasympathetic systems.

The action potential passes in four phases: excitation - expansion - contraction – relaxation. These are present in all living cells but are more pronounced in neurones and in the heart. If we consider the myocardial cell as a functional unit, we can see that at the cellular level the cells pass four phases.

In each one of these phases, there is precise movement of different electrolytes that determines the electrical and mechanical activity of the cell. These four phases are applied to stress reaction; therefore, there is correlation between the four phases of life and four phases of acute stress and four phases of chronic stress. In acute stress, there phases are threat or menace, organization, contraction, and relaxation, which are directly related to the four phases of life. This is depicted in Figure 2.

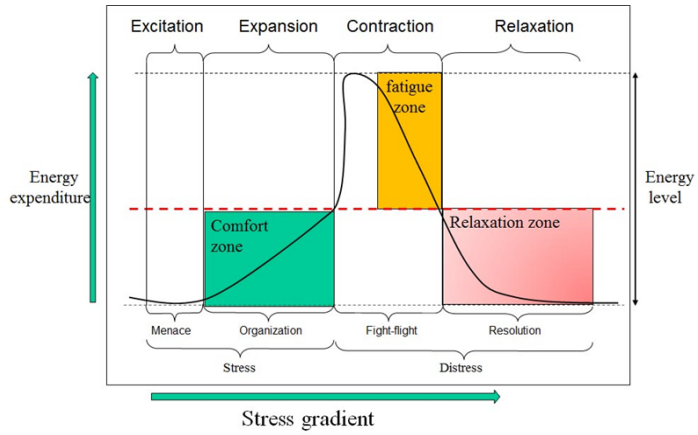

Figure 2: The four phases of stress and four phases of life. The first two phases of stress cause eustress. Then, when fatigue starts to appear or shock in the fourth phase, distress will appear.

Threat

Emotional tension rises, and the sympathetic system is activated. The reaction takes place at three levels, biological, physical, and psychological. In this stage, the autonomous nervous system is activated central nervous system through the nerves connection to different organs. The heartbeat and blood pressure rise. There is also an increased flow of blood to essential organs such as the muscles and the brain, which stimulates the adrenal gland to secrete adrenaline, noradrenalin, and cortisol.

Organization

At this stage and after activating the autonomous nervous system, a general process of recruiting energies begins in order to convey the energy to the essential organs and systems to cope with the threat. Blood vessels expand in essential organs such as the heart, brain, muscles, and lungs. The breathing rate increases and the bronchia expand, bringing more oxygen to the brain and muscles.

Flight or Fight

Physiological changes that occur during the fight-or-flight response are activated in order to give the body increased strength and speed in anticipation of fighting or running. At this stage, the sympathetic system causes a rapid rise in the availability of energy to the body's essential organs. Some of the specific physiological changes and their functions include the following [17,18].

Catecholamines, which are released in response to sympathetic-adrenal-medullary activation, work in concert with the autonomic nervous system to exert regulatory effects on the cardiovascular, pulmonary, hepatic, skeletal muscle, and immune systems.

The adrenalin converts fatty acids and glycogen to sugar, and therefore, the level of blood sugar rises. The level of fats in the blood, including cholesterol and triglycerides, inflates in order to produce more energy; the Cortisol increases glomerular filtration rate, and renal plasma flow from the kidneys thus increasing phosphate excretion. Also increasing are sodium and water retention and potassium excretion in high amounts acting as aldosterone (in high amounts, cortisol is converted to cortisone, which acts on mineralocorticoid receptor mimicking the effect of aldosterone). It also increases sodium and water absorption and potassium excretion in the intestines in order to maintain high blood pressure [19].

The parathyroid removes more calcium from the bones and transfers it to the brain and muscles; there is considerable destruction of protein in the lymph glands and the thymus and a drop in the functioning of the immune system.

The blood clotting function of the body speeds up in order to prevent excessive blood loss in the event of an injury sustained during the response. Contraction of the blood vessels in the digestive organs reduces the secretion of enzymes in the digestive system, sex organs, and skin. Fear sometimes can cause loss of control of the sphincter, and urine and feces escape, facilitating the animal's escape and reducing its vulnerability.

The fourth stage depends on the intensity of the stimulus and the capacity of the animal to react to the event. Could cause two different reactions: resolution and recovery or shock. In both cases entail diverse degrees of relaxation, ranging from enjoyable relaxation through deep relaxation of exhaustion to the point of the absolute relaxation of shock and paralysis.

Solution (recovery)

At this stage, after the emotional expression and threat have vanished, the stress is reduced the body returns to enjoyable relaxation, embarking on a process of correcting the damage and refilling the reserves of energy that emptied. The immune system starts functioning to repair eventual damages caused by over-contraction of the tissues or to direct harm by the threatening factor.

Shock

When the intensity of the external threat is beyond the reactive ability, sensorial and motor paralysis appear. From the physiological perspective, the blood vessels in the essential organs can expand before the blood vessels in the stomach cavity and the skin manage to contract. This reaction is known as a shock reaction when the blood vessels throughout the body expand, consequently there is a significant drop in blood pressure that can numb the senses and cause a loss of consciousness or paralysis. This reaction is intended to ease the suffering likely to be caused prior to death.

Stress and the Four Levels of Fear

Fear is a natural reaction to stress intended to stimulate action, and it serves an essential role in protecting people from threatening situations. The proportionality between the intensity of the stressor and the ability to react manifests as four degrees of fear. This becomes a negative factor that can cause absolute paralysis. Each stress phase is associated with one of the four levels of stress:

Anxiety: The degree of fear is small and causes a state of tension, over-vigilance, increased awareness, and disturbed sleep.

1. **Fear:** The degree of the reaction is proportional to the stressor and causes a state of alert.
2. **Panic:** The degree of internal or external stimulus exceeds the absorption capacity of the defense system, leading to post-traumatic stress disorder (PTSD).
3. **Horror:** The intensity of the internal or external stressor exceeds the ability of the defense system to react, creates intense feelings of fear and helplessness, and manifests as a shock with general motor and sensory paralysis, leading to PTSD.

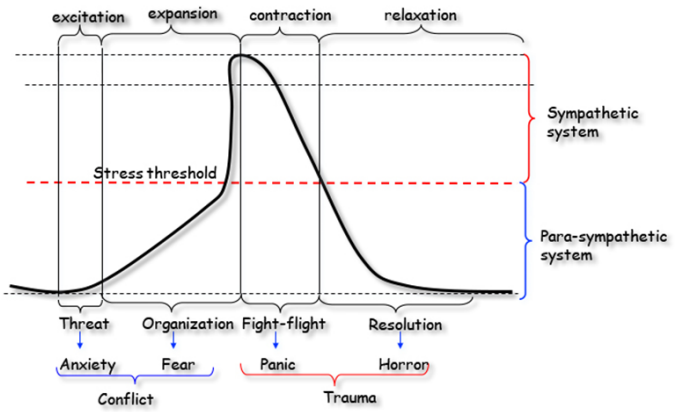

Figure 3: Correspondence between the four grades of fear, four phases of stress, and four life phases.

In this new classification, we distinguish between conflict and trauma. Events associated with anxiety and fear are considered conflict, while intense events associated with panic and horror are traumas. Figure 3 shows how the phases of stress relate to the four grades of fear and four life stages.

This classification could be the important connecting ring between stress and physical and mental illnesses. Each level of fear is related to one of the four phases of stress; if the conflict or trauma is not resolved, the related organ will be blocked in the corresponding phase.

For example, blockage of the thyroid in the excitation phase appears as hyperthyroidism, blockage in the expansion phase appears as goiter, and blockage in the contraction phase appears as nodule, while blockage in the relaxation phase appears as hypothyroidism or cancer.

This model can be applied to all systems and organs. For example, if an adolescent has a sense of not being protected by her parents, the thymus, which is responsible for the immune system, may be affected. If the repeated stress provokes anxiety, the thymus will be blocked in the phase of excitation, and a respiratory allergy will appear. If the stress is associated with fear, it will be blocked in the expansion phase, and thymoma will appear.

If panic is associated with the stress, the thymus will be blocked in the contraction phase, and extreme thymus atrophy will develop. If the stressor is associated with shock or repeated stress leading to energy depletion, the vital energy of the immune system will be very low and AIDS will appear.

The Four Phases of Chronic Stress

In the biological sense, stress is the interaction between damage and repair, the energy available considered to be the defense system that continuously acts to maintain a homeostasis balance, just as in physics tension or pressure represents the interplay between a force and the resistance offered to it.

Normally, when a person completes the four phases of acute stress, he or she will arrive at recovery and the energy is restored. However, if the stress persists chronically, it activates the adaptation program to maintain system functioning. This includes stressful events that persist over an extended duration (e.g., caring for a spouse with dementia) or brief focal events that continue to be experienced as overwhelming long after they have ended (e.g., experiencing a sexual assault) [20].

In the long run, this process at the long run will consume the energetic reserves and the system will be exhausted.

The adaptation reaction can be described in four stages, instead of the three stages described by Selye: 1. alarm, 2. resistance, 3. adaptation, and 4. exhaustion. Figure 4 depicts these four stages and how they relate to the four phases of life.

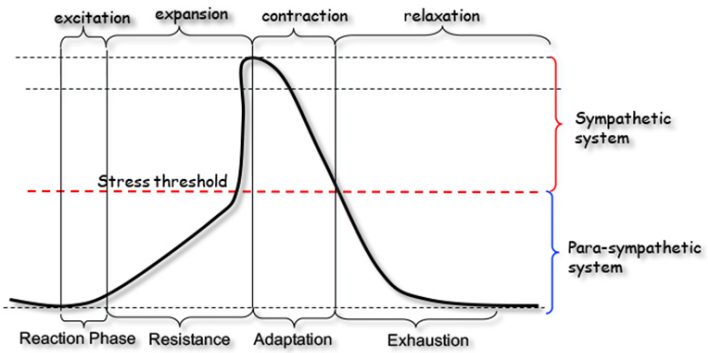

Figure 4: The four phases of chronic stress and their relation with the four phases of life.

In the alarm stage, there are four phases of acute stress. In normal circumstances, the alarm reaction phase does not last very long. Indeed, in some instances, it may only be a few seconds, though it can last longer. In this case, it passes to the phase of resistance, where the system recruit energy to resist against the aggressor, and its function change to adapt to the chronic stress. In this stage, the parasympathetic nervous system attempts to return many physiological functions to normal levels while the body focuses its resources against the stressor and remains on alert. This resistance may be required for a few moments, days, months, or even years.

If the stress continues for a prolonged period of time without periods of relaxation, an adaptation mechanism takes place that adopts diverse intentional protective reactions. Psychological disturbances such as a distorted perception or physio-psychological reactions may be manifested. On the biological plane, physical adaptation reaches extreme values regarding exploiting the resources and its maximal activity and starts to apply mechanisms to save energy, which appear as fatigue, concentration lapses, irritability, and lethargy. However, the adaptation energy is a finite quantity; its magnitude appears to depend largely on the vital energy that determines the resilience of the organism.

If the combined biological, psychological, and social responses employed do not deal with the threat effectively or if the threat is chronic, whereby it eventually wears down the capacity of the organism to resist the threat or deal with it properly, the body's resources become exhausted and the organism loses its ability to object. The body is then susceptible to disease and death.

Regardless of the length of time, once the threatening stressor has been dealt with effectively, and the learning process is completed and the energy resources restored, the organism is able to return to the recovery phase.

Conclusion

Stress has been neglected in everyday clinical activity. However, it is of a paramount importance understand the stress phenomenon and its relation with the physical body in order to apply WHO's definition of health as complete physical, mental, and social well-being, more than merely the absence of disease. However, the theory relies on the biochemical model to explain the effect of stress on the body, mainly through the secretion of hormones as mediators that connects the psyche with the body. This is a general effect not specific to explain the different effects on different organs in different persons and the different diseases in the same organ.

Based on the four phases of life that are present in all living and non-living systems, we use the same theory to describe stress phases. The life depends on continues pulsation which passes in four phases that manifest as a pleasure in psyche and health in the body and well-being in the soul. These phases excitation, expansion, contraction and relaxation are signs that the living system is open and the energy of life is flowing.

The acute stress passes four phases, each associated with one grade of fear. The level of fear experienced during the stress is the final result of the interaction between the stimulus intensity and the system capacity to cope with it. Each fear's level is related to one of the four phases of life.

The alarm phase described by Selye consists of four phases: threat, organization, fight and flight, and recovery/shock. These are related to the four grades of fear: anxiety, fear, panic, and horror. In addition, they correlate directly with the four phases of life: excitation, expansion, contraction, and relaxation.

The correlation between the four phases of life and four phases of acute and chronic stress emphasizes the connection between the psyche and the physical body. This is the first step to understand why different types of diseases appear in the same organ. The factor that determines in what of the four phases of life will be blocked depends on the grade of fear that was present in the moment of the stress, or the grade of fear that was experienced repeatedly which has leaded to depletion of the energetic resources and exhaustion of the forces.

Another new definition and distinction between conflict and trauma relates to the stress phase. In the first two phases of stress, the intensity of the stimulus is relatively modest and the defense system can cope with it to maintain homeostasis, while the in third and fourth phases, the intensity of the stressor is high enough that the event is perceived as a trauma. This distinction could have important implications for diagnosis and therapy. From the perspective of diagnosis, this theory sheds light on the relation between the phase of the stress and the kind of disease in the same organ. However, further studies should be done to explore this relation.

Although Selye's three stages of stress can be applied to describe general adaptation syndrome, they are inadequate for describing acute stress and the relation between stress and specific diseases in specific organs.

An important aspect was added to the discussion of stress is the defense system and the energy availability to cope with the stressor. The model and theory presented provide a glimpse of the meaningful relationship that exists between resilience and psychological and

physical health while unfolding the consequences of resilience for various health outcomes.

The purpose of the therapeutic intervention is to reduce stress and increase vitality by doing the following:

- elaborating psychological conflict and traumas to complete the learning process;
- adopting a style of life that increases vitality such as adequate sleep, physical activity, sexual activity, and stress reduction and by using antioxidant food supplements;
- freeing the physical body from energy blockages (using the energy wash-out technique).

Therefore, the psychological intervention aims to solve conflicts and traumas, not only by identifying the psychological conflict and elaborating it, but mainly to complete the learning process in order to avoid a recurrence of the same conflict. This way, the energy flow will be restored, the regular four phases of life will reappear, and well-being will be obtained. Thus, we activate one's full potentials of talents and abilities, to be connected with his/her true self which transcends one's own mind and body, allowing intellectual growth and spiritual evolution and to achieve personal fulfillment.

This kind of intervention could be of paramount importance for the prevention of mental and physical illnesses. Future research that measures vital energy and stress levels will be a major step toward identifying an individual's susceptibility to stress and disease development.

Acknowledgments

The author would like to thank Enago (www.enago.com) for the English language review.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Cohen S, Kessler RC, Gordon LU. Strategies for measuring stress in studies of psychiatric and physical disorders. Measuring stress: A guide for health and social scientists. Oxford: Oxford University Press. 1995.
2. Lazarus RS. Psychological Stress and the Coping Process. New York, NY: McGraw-Hill. 1966.
3. Selye H. The Stress of Life. New York, NY: McGraw-Hill. 1956.
4. Selye H. Stress and the General Adaptation Syndrome. British Med. J. 1950; 1: 1383-1392.
5. Selye H. Stress and Aging. J. Am. Geriatr. Soc. 1970; 18: 669-680.
6. Selye H. Stress without Distress. Ed. J.B. Lippincott Co. New York. 1974.
7. Selye H. The concept of stress: Past, present and future. In C.L. Cooper (Ed.). Stress research: Issues for the eighties. New York: John Wiley. 1983; 1-20.
8. Selye H. Stress and the General Adaptation Syndrome. Br Med J. 1950; 1: 1384-1392.
9. Masuda M, Holmes TH. Magnitude Estimations of Social Readjustments. J. Psychosom. Res.Journal of Psychosomatic Research. 1967; 11: 219-225.
10. Holmes T, Rahe R. The Social Readjustment Rating Scale. J. Psychosom. Res.Journal of Psychosomatic Research. 1967; 12: 213-233.
11. Rahe RH, Arthur RJ. Life Change and Illness Studies: Past History and Future Directions. Journal of Human Stress. 1978; 4: 3-15.
12. Folkman S, Lazarus RS. Coping as a Mediator of Emotion. J. Pers. Soc. PsycholJournal of Personal and Social Psycholog. 1988; 54: 466-475.
13. World Health Organization. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. New York, June 19–22, 1946; signed on 22 July 1946 by the representatives of 61 states and entered into force on 7 April 1948. (Official Records of the World Health Organization, no. 2. p. 100).
14. (WHO, Ottawa Charter for Health Promotion, 1986).
15. Butto N. Unified Integrative Medicine: A New Holistic Model for Personal Growth and spiritual evolution. AuthorHouse. 2014.
16. Butto N. Seven Universal Principles and the Seventh Sense: A New paradigm for future's medicine. AuthorHouse. 2014.
17. Stress Management for Health Course. "The Fight Flight Response". Retrieved 19 April 2013.
18. Olpin M. The Science of Stress. Weber State University.
19. McKay LI, Cidlowski JA. Physiologic and pharmacologic effects of corticosteroids. Holland-Frei Cancer Medicine. (6th ed.). Hamilton, Ontario: Decker. 2003.
20. Baum A, Cohen L, Hall M. Control and Intrusive Memories as Possible Determinants of Chronic Stress. Psychosom. Med. 1993; 55: 274-286.