

ANOTHER VIEW OF STRESS

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A brief consideration of some stress definitions and models, revealed a considerable confusion in the way the term "stress" is currently used.

It is argued that what is usually called "stress" at present should be called "stress process", implying several stages of it. The model, proposed by the autor, limits the extent of word stress to the environmental stimulation and the processes up to perceptual level. Not every kind of supraoptimal stimulation should be considered as stressful, but only the stimulation associated with unpleasantness. The model emphasizes the role of matching process between the results of mental elaboration of the situation and the assessment of subject's own capacities to cope with the situation. The model also gives provision for a dynamic interaction of the subject with the stress source, and long term effects of persistent psychophysiological reactions to stress.

Some of the currently used concepts of stress, which are aimed at explanation of various aspects of enviromental effects on humans, have been initially taken from physical sciences, where "stress" is referred to as external force acting upon an object or a system, which reacts with "strain" to resist the force. Transferred to the grounds of human sciences, the concept has changed to a great extent, mainly due to rather vague definitions of stress given by different authors. A number of definitions at present embrace the external force(s) and the bodily reactions under the term of stress, making thus the consideration of the whole process rather vague and imprecise.

Selye (1956), for example, argued that "stress" has different meanings for different people, although they respond to it in a stereotyped way. This was probably one of the reasons that he called the external stimuli "stressors", and the person-s reaction as "stress". He talked of physiological and psychological stress, when referring to reactions to the external stimuli. For Selye "stress is a nonspecific (physiological) response of the body to any demand made upon it". He

argued that the physiological stress response did not depend on the nature of the stressors, and saw it as a nonspecific defense reaction. Repeated exposure to the same stressor results in the change of stress reaction through three different stages, which he called the "general adaptation syndrome". Prolonged exposure and/or exposure to severe stress may result in disease state, so called "disease of adaptation".

Another often referred to model of stress is the one of Lazarus (1966). He called stress a complex psychobiological process which consists of three major elements: stressor, threat and emotional reaction. Stress, according to him, is initiated by a potentially harmful or a dangerous situation, which is perceived as a threat, which ends in an emotional reaction. The emotional reactions may fluctuate over time as the function of the variation in external stressors and the perception of the threat. Anxiety and anger, according to Lazarus, are the primary emotional reactions, which may vary in intensity. Persistence of these states, according to Spiclberger (1987), may result in coronary heart disease and/or elevated blood pressure, or even cancer.

Lazarus (1987, according to Vizek-Vidović, 1990) elaborated different stages of his model of stress, to a certain extent. He, nevertheless, still insists on psychological side of stress perceived as threat or danger, while on physiological side, stress is defined as "effects of harmful agent on the body". Personality traits are treated as input variables, while the two levels of the assessment are classified as mediating processes, with immediate effects on affective and physiological side.

Although Lazarus insists on "perceived threat or danger" as the crucial part of stress process, one could argue that many real life situations where stress would hardly classify that as threat or danger. This especially refers to working situation factors, including workload, which may be stressful but certainly not perceived as a threat. Furthermore, Lazarus seems to insist on affective (emotional) reaction (apart from physiological) rather than on more complex psychological reactions which might be the basis for some behavioural outcomes. Finally, calling the whole process, from the environmental stimulation to the reactions, as "stress", does not clear any terminological confusion in this area.

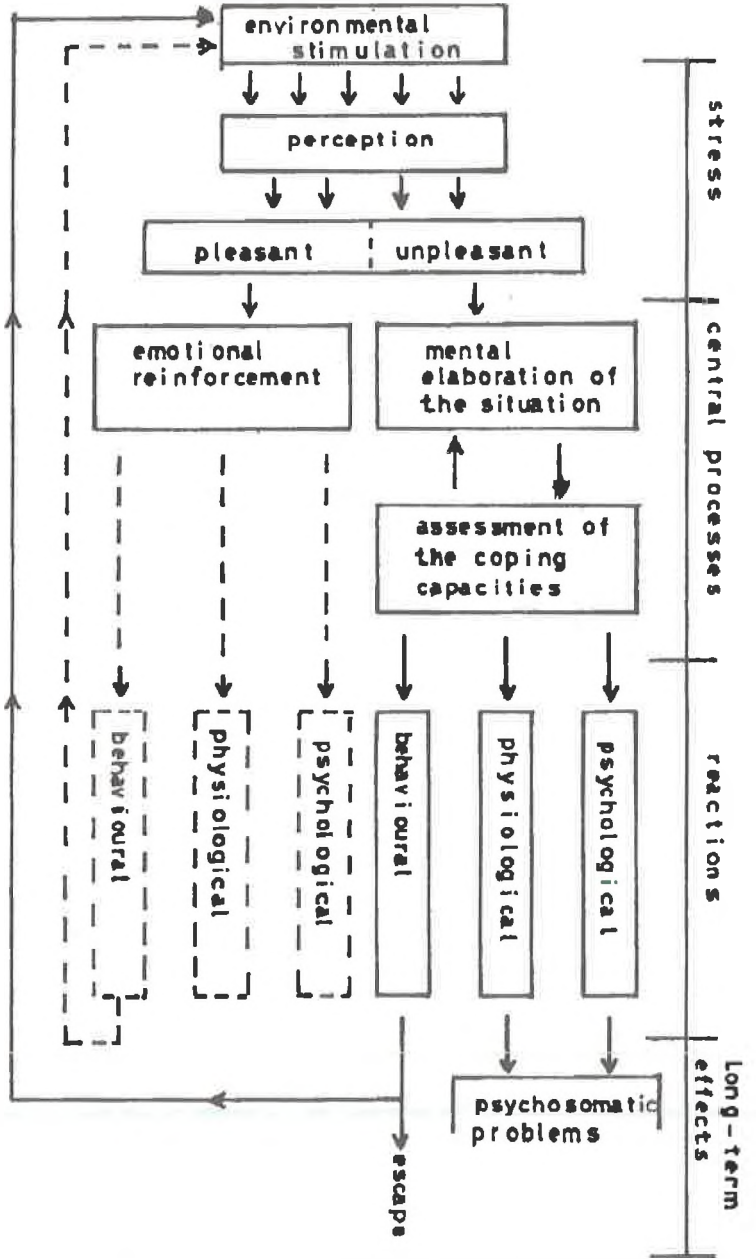
Hancock and Warm (1986) in their approach to the same problem considered three stages of the process as important. The input stage included the description of the physical characteristics of the environment. The second stage was adaptive or compensatory, which embraced the bodily reactions, common to all individuals, which regulate the effects of external changes on homeostasis. Finally, the third stage referred to the output reflections of the stress, which were dependent on the state and goals of the individual. Although rather general in its approach, this model goes back to the original "stress-strain" concept, which seems reasonable from the point of attribution of proper names to the stages of stress. This should,

no doubt, help in solving some semantic confusion about stress. The model treats stress as the characteristics of physical environment, and the reactions to stress as the changes located in the body.

After this brief consideration of the three currently used approaches to the problem of stress, it is clear that the differences appear in the definition of stress as a general concept, and the emphases on the subject's role in the whole process. Generally, the role given to the subject is rather passive or one-sided, with the reactions brought down to some simplified stereotyped psychophysiological pattern. The differences in definitions of stress are not distinctive either.

It is apparent that, with the aim of reducing the semantic confusion and making communication within the area easier, different elements of the present stress concepts ought to be defined more precisely. First of all, one has to accept "stress" as a process beginning with some kind of real or imagined environmental stimulation and ending with some psychophysiological and/or behavioural reaction(s). The whole process could be called "stress process" for short, although due to its heterogeneousness its descriptive name should be much longer. The stress process usually starts with some kind of environmental stimulation, which could be identified with the external "force" affecting the body in some way. If this were accepted, it would not seem justifiable to call any environmental stimulation which exceeds the optimum, as stressful. It would seem logical that only stimulation which elicits unpleasantness as the initial emotional reaction may be classified as stress. The pleasant-unpleasant emotional reaction usually appears during or immediately after perception, but before any further mental processing. The concept of stress should, therefore, be limited to the stimulation(s) associated with unpleasantness, regardless of its magnitude or other aspects. Noise exceeding certain intensity, for example, is generally considered as stressful, while good music of the same intensity is not. Furthermore, rock-music would be stressful to the majority of elderly people, while it is pleasant, to most of the youth. This means that various processes in the body will not be the same in an objectively same or very similar environmental situation, because of the difference in the initial emotion associated with the stimulation. None of the models considered here, make any provision for this.

There is a need, for a somewhat different model of stress which would treat the subject in a more dynamic way in the whole process. The model should also give a possibility of an explanation of psychophysiological and behavioural reactions within the situations where stress (defined as above) is not present at the given time. Such a model is shown in Figure 1.



The model places the stress at the input of the stress process suggesting that the stress appears as the result of the interaction between the environmental stressors and the body, up to the perception level. After the initial basic emotional "classification" of the stimulation, the model suggests the possibility of two rather different processes, depending on the stimulus classification. If, for example, the stimulus were classified as pleasant, it might elicit further pleasant emotional reactions, and some physiological reactions different from those elicited by stress. Behavioural reactions could include the seeking for an additional stimulation of the same kind.

If, however, the stimulation were initially classified as stress, it would elicit the process of mental elaboration (assessment) of the environmental situation, including primarily the stressor(s). The result of this elaboration would be matched with the subject's own possibilities and/or capabilities of coping with the stressful situation. The parameters for the estimation of his own coping capacities are based on the subject's self-concept, which, amongst other things, includes past experiences in similar situations, specific knowledge of the situation, the knowledge of the origin and the nature of the stress, awareness of personal success-failure rate in coping with stressful situations, self-confidence, etc. The outcome of the matching will depend on the available coping strategies, which are much depended on the individual abilities and personality traits. After the matching, psychophysiological and behavioural reactions would take place. If the comparison of the situational assessment and the subject's coping capacities goes against the subject, the expected physiological and behavioural reactions could be higher in magnitude, and the latter ones more inappropriate to the situation. It seems reasonable to assume that psychophysiological reactions could be the same or very similar at a general level of bodily reactions (changes in cardiac output parameters, for example) regardless of the nature of stress. Different stressors, however, may have different effects, on some local physiological reactions (inhibition or activation of adrenal glands by the effects of noise or working pace, respectively).

There are some real situations, however, with no actual presence of stress, but with the body functioning at a rather high psychophysiological level. These reactions are kept at an increased level on the basis of the imagination of the real stressful situation taking place. The imagination is usually based on the knowledge of the potential dangers of the situation, although the probability of the danger becoming real might be very low. It is not very difficult for people working in an ammunition factory, for example, to imagine "what would happen if ..." Matching the imagined situation with their capabilities and chances of coping with it, they may see no chance at all. It is normal to expect that their psychophysiological reactions (anxiety, activation, etc.) are at a higher level than in the comparatively

same working population in less dangerous real work processes. Results obtained by Škof (1990) in a nuclear power plant showed that the activation level of the operators was the same during night and day shifts, although it is common knowledge that this variable in ordinary working places is of a much lower level in night shift workers. A higher activation level during the night shift was accompanied by less working mistakes, less unplanned stoppages and less power oscillations, than during the day shifts. The author tried to explain the somewhat lower working efficiency during the day by the fact that all the accompanying services were functioning during the day, when the feeling of a greater safety and/or divided responsibility might have occurred. During the night, however, most of the specialist services were not available, and the responsibility was fully on the operators. Being aware of the consequences of major mistakes, and their helplessness if they happened, the operators' vigilance level was much higher than expected.

In conclusion it could be said, that the proposed model of "stress process" differs from others in several points. First of all, it limits the term stress to the external force and its immediate effects upon the body (up to perception level). Secondly, the differentiation of what stressful stimulation is the model keeps at the primary (basic) emotional reaction of pleasurable-unpleasant. Thirdly, the model allows different processing of the stimulus effects (information input), depending on the initial classification. The two different processes may include different psychophysiological and behavioural reaction (outputs). Finally, the model puts the subject in to a more dynamic interaction with his stressful environment. With that, the model includes possible long-term effects of working and/or living under stress. In other words persistent psychological states induced by stress (anxiety, fear, for example), accompanied by a higher physiological activity level, may result in psychosomatic problems and/or diseases. Whether this happens or not, depends very much, not only on the nature of the stressor, but on the subject's perception of stress and his overall pattern of reactions to stress, usually referred to as stress coping strategies.

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Ilija Manenica: DRUKČIJE GLEDANJE NA STRES**S a ž e t a k**

Nakon uvodnog razmatranja nekih modela i definicija stresa, autor ukazuje na prisutnu heterogenost upotrebe termina "stres".

Sugerira, da ono što se danas naziva "stresom", trebalo bi zvati stresnim procesom, koji ima nekoliko faza. Model, koji se predlaže, svodi značenje riječi stres na okolinsku stimulaciju i procese do perceptualne razine, naglašavajući da se bilo koja supraoptimalna stimulacija ne može poistovjetiti sa stresom, nego samo ona koja se asocira s osjećajem neugode.

Model naglašava ulogu procesa usporedbe rezultata mentalne elaboracije efekta okolinske stimulacije s procjenom vlastitih mogućnosti nošenja sa stresnom situacijom od strane subjekta. Modelom se također predviđa mogućnost direktne interakcije subjekta i izvora stesa, kao i smjer nastavljanja stresnog procesa, ako su psihofiziološke reakcije na stres trajnije prisutne.