

The Biophysical Modeling of the Psychological Balance

BY

Janos Vincze^{1*}, Gabriella Vincze-Tiszay²

^{1,2}Health Human International Environment Foundation, Budapest, Hungary



Article History

Received: 22/03/2023

Accepted: 28/03/2023

Published: 31/03/2023

Corresponding author:

Janos Vincze

Abstract

In our paper we write about the some directions in stress research and the stress syndromes in clinical medicine. During the harmonic life gradually all human psycho-organic components shall get exhausted. Forming a biophysical model is not the task of the biologist or physicist alone, a good model can successfully constructed only by common, collective-work. To have respect for the cultural tradition, to keep customs and rites facilitates the process of the mourning being a diverting scheme. A state similar to the mourning reaction occurs on the course of stress condition due to losing parts of the body. After an accident or as the consequence of a disease surgeons often have to amputate. This is typically the task of the biophysicist and a problem which falls within the competence of this discipline. Model is always an approximation, the user of the model has to take into consideration that he can approach only the absolute truth just through the endless series of relative truths.

Key words: stress, psychical organization, biophysical modeling

INTRODUCTION

What is stress? Stress is the non-specific response of the living organism to a stressor. Such stressors include effort, focused attention, pain, illness, failure, joy, success. Stress can be either pleasant or unpleasant, whereas distress always denotes something troubling and unpleasant. Although the natures of the stressors may differ, similar biophysical/physiological/biochemical changes are produced. Selye always emphasized in his writings and lectures, that stress is a necessary component of human life, which does not cease to exist even in our sleep. A stress-free state is equivalent to being dead. [1] Severe and chronic stress, on the other hand, may lead to the development of chronic disease, and may severely damage the function of the immune system and the central nervous system. This depends on susceptibility, age, and certain hormones. Selye did not only present his findings in scientific journals but also wrote popular books about the process of scientific research, about stress, and related subjects. [2] These books have been translated into many languages.

The Psychological Balance

Stress is a complicated concept just as its special literature looks like. For the sake to keep the everyday physical balance, the healthy man creates mentally that stress-level interval which, despite its

fluctuations, represents the proper ratio of the equilibrated state. Motivation is one of its facilitating factors composed of intrinsic as well as extrinsic constituents. Both set an adaptation process in the individual, first by imagination, later put into the practice whatsoever step by step.

Although the unsuccess, failure, lack of self-confidence, delay of recognition, uncertain existence, insecure status are negative judgment forms they may also stimulate to search for new variations. In this case, drawing a lesson from the failure one must take another course, prepare another strategy accordingly and apply it gradually. The solution of the question depends upon how long a person can tolerate the mass of negative influences, when does a lethargic state ensue resulting in stagnation. [3]

In the natural sciences even with physical phenomena, it is a known fact the summation of small effects the time interval of which we cannot suspect, it is person-dependent. The long-lasting unsuccess may generate failure on other fields whether similar or different and the protracted negative status may call in action itself a process of query.

Stress is similar so far to other stimuli as to elicit a lot of somatic responses. We should primarily understand the somatic functions in order to get nearer to the essence of the stress. Alarm reactions originate from the conception of Cannon: once the person is confronted with any kind of difficulty, or emotional experience to overcome problems, there happen automatically a long row of somatic changes and although the struggle is mental in the beginning, changes are notwithstanding similar to some kind of „flight“. The usage flight is symbolically general, nothing else but a mental preparedness carrying out the voluntary action to come which is a purposeful activity. The perceptible part of the stress is the internal restlessness preparing with its pulsation the accomplishment of the conceived action. The organic and psychotic behavioural changes don't run parallelly and on the same frequency whereas they appear simultaneously despite the shift.

The physiological activation processes are parts of the psychical emotional mechanisms, these processes are intensity indicators, markers of the behaviour and aren't any criteria in directional relation. The born and learnt behaviour as forms are composed in an imperfectly connected system in complicated interaction with each other.

The born and the learned behavioural reactions evolve during the long-term effect of the stimulus and do not by the chaotic short, low-intensity appearances. There is no correlation between two somatic variables. But correlations are modified in functions of more than two variables; such influencing factors are the cultural surrounding, the intelligence level, tradition, national customs, manner of life (conduct), family structure, etc.

The observation, perception, experience of the stress and the adaptation, sufferance to it, forming of defensive mechanisms jointly appear but not in the same time. [4] In consequence of stress-producing stimuli, many physiological processes go into action, probably through different paths in close connection; the response is, therefore, an interaction between the organism and his environment. The different somatic processes have got different role in performing the behaviour, the interaction is of different dimension and of temporal order. The different attitudes of stimuli induce different somatic patterns of response being so the cause of the psychosomatic illnesses. Individuals inclined to produce psychosomatic symptoms possess of different and characteristic attitudes. Also, the different emotional states result in deviating physiological response patterns or even when stimuli are unaltered these bring about different subjective states, experiences. The pattern derives from the attitude, expectation of the person. From the complex responses of behaviour, from the complex states of stimuli, one cannot separate the essential factors either to determine the interactions between the somatic response reactions nor estimate them in advance. Also, the emotional component takes part in the response reactions through the somatic effect of which it influences the behaviour.

The greatest loss is the mourning known by everybody. The mourning reaction has a regular course giving rise to psychical injury and one needs a certain definite time for its conscious treatment. Because of the shock we don't believe, don't accept the

reality. Shock retards, delays every psychical function moreover sometimes temporary constriction of mind sets in.

Doubts, scruples, charges, and self-accusations take their origin but mourning passes off in the form as it is prescribed by the tradition how one must adapt such occasion. To have respect for the cultural tradition, to keep customs and rites facilitates the process of the mourning being a diverting scheme. Death arises in the mind, the person left alone struggled against despair, vacuity and hopelessness feels the final secession. [5]

The natural mourning lasts for 6–12 months. Henceforth living have to speak without sorrow of the deceased. The survivor has to create new connections setting in the positive identification. During the treatment of mourning it is first the sorrow to be dominant and lessens by the time, the bequeathed things, inheritance are attended to care, testimony fulfilled and people try to do their best according to the deceased's wish which would have been liked to see. In this last tribute, the apology is included, too. The man having lost his last connection with the world grieves duple and his environment must pay great attention not to lose also him.

A state similar to the mourning reaction occurs on the course of stress condition due to losing parts of the body. After an accident or as the consequence of a disease surgeons often have to amputate. The final cessation of a lost function is a grave „object loss“ after which one have to learn once more to live under other circumstances, to realize oneself by restricted living space and means of earning of a livelihood chance to learn with the special insufficiency feeling as he were of sound mind in an impaired body. Every medico-surgical intervention belongs to the stress factors.

Losing the native-, homeland elicit a grave stress condition the feeling of homelessness after a period of residence in a new, chosen country. In the new, recipient country the settler counts as a stranger and everything – beyond the elementary self-sufficiency – has to be learnt again on another basis, to live practically impersonal „without countenance“.

The Genocide

The nationalization of the private property, giving „in the hand of the people“ the forfeiture of the property, losing the landed property set off an irreversible process which was equal with genocide and makes its effect feel for the time being. The loss of the personal goods and immovable property as the results of a lifetime work is again a new stress which cannot heal like the trauma of losing the homeland. The deprivation of protection means harmful stress for a lifetime. To be threatened by losing the living space, and to be in jeopardy appears as a fatal disease, as the experience of a catastrophe like a state after survival of a trauma. The loss of life space shows increased negative activity which lasts for a long time. The longer the threat and losing period of the life-existence space was the greater is the chance for an irreversible state to happen. Psychogenic damages proceed, previous pathologies recrudescence or worsen, turn into chronic. [6] The uncertainty of existence, the threats menacing brings about mental

crisis, personality impairment which in itself makes impossible the balanced participation in the society.

The subsistence is of vital importance. The loss of a post-work (unemployment and worklessness) if somebody becomes unemployed through no fault of his own but by irrationality of mismanagement his working place have been reduced and passed over to foreigners then it means a mockery of the constitutional human right, the life element of man.

The involuntary change of employment: re-education and retrained for other work is up to the stress of a personality change because the skill and experience gathered throughout a lifetime, the profession-conformed personality will be inhuman, cruel degrade to zero.

The appearance of life danger-threats provoke experience like disease, natural catastrophe or as the survival of war or an accident. The destructing elementary calamities signify increased threats because possessing the same chance one cannot figure out who shall survive and who falls victim to. The man who had thought of his invulnerability suddenly realizes the critical situation that he is in the center of the catastrophe. People behave embarrassed in every life danger, in fact, they don't grasp by-gones and drift along with the tide. War brings about stress reaction similar to the symptoms of the life-danger stress. Both contain psychopathological elements and a long psychotherapy accomplished by a specialist is needed, considerate-protective environment for the accommodation in the normal life, for the resocialization. [7]

In the state of isolation, there arise affective disturbances specious solutions to give themselves purpose and task. The sexual life, the instinct of self-preservation belongs to the line of instinct frustration. To give it up, to cease it, induces stress process. Nourishment also belongs to the instincts. Keeping the dietary prescription or the over-eating as supplemental actions are not primary stressors but the consequences of secondary problems of other nature.

In childhood, the stress is diffuse and multicausal, the appearing disturbances are negativism, elective mutism, resistance-spite and fit of fury, opposition, aggression, eating disturbance, emptying troubles. [8] In the case of children, these are not-organic manifestations but prove the loosened connection with their surroundings, their therapy shouldn't aim the conscious treatment of life danger or threats.

On middle and long course, the effect of stress elicit about psychosomatic diseases (hypertension, cardiac and colon problems, etc.) in the general state of health it means disappointment, withdrawal from the activity, depression. There are changes also in the social behaviour: conflicts become critical, aggressive actions against others thicken, the tolerance threshold of the individual diminishes. [9]

Set out from these facts we can declare: the more invalid is a population the worse is the quality of the social life.

The biophysical modeling

One can establish that the physical system is an isomorphic superstructure of material, energetical and informational cycles of events originating from the in- and outside of the organism and realized in the peculiar alphabet of the logical network of the nervous system. This superstructure evolves place through the self-organization of abstract codes created in the course of the juncture of the reflexion-rised imaginal and of the symbolic one. [10] We can plainly say that the spiritual life in cybernetic respect is nothing else but an entropy device subjected to the preservation task of the human-specific psychophysiological homeostasis.

The psychical system in organizational viewpoint is of developing character because it forms and develops within the frame of interaction between the man and his environment. It is, therefore, a self-organizing, developing system. [11]

The organization of the psychical system is subordinated to the domination areas of the universal laws of the evolution and it is directed also by such particular principles which accentuate more concrete its organizational mechanisms and variants. Out of these let's mention some: the Le-Chatelier principle, the weakest chain loop, the efficiency of the energy consumption, the ranking, avalanche-effect, the compensation, the principle of action. In reference to the Le-Chatelier principle: if on a system in rest is operative such an external input which changes one of the conditions resulting the equilibrium state then the system evades in the direction reducing the outcome of the effect.

The principle of the weakest chain link declares that during a change-over from a given organization to the new one the modification determined by the effect of the directing factors take place mainly in the vulnerable points or chain-loops of the system. [12]

For the energy consumption, an excellent example is the formation of dynamic stereotypes. Ranking happens when simultaneously more factors affect the living system. The avalanche effect is well illustrated by the „it's hit or miss" law of the nervous system in the case of the stimulus-answer reaction. The compensation principle is realized in the living organism in every case of the negative feedback regulation. [13] Action comes into being when it is threatened by an external factor or mediates such adequate, essential information towards the system that has to be replied.

According to the system theory, from the of viewpoint, of the steering circumstances in the systems, the process of the guiding communication takes its course in compliance with the divergency-convergency principle. [14]

Creativity can be considered as the highest level of the expression of the operational polyvalency of the human psyche. The distance between reality and model the effort and the possibility is such an indicator which determines the real self implementation level of the personality. Since these indicators determine the entity of the psychical organization by their help one can estimate the general development level of the personality which expresses the conformity of the behaviour towards the nature and sense of the external effects. This can be estimated by completing the phase

profile of the psychical system on the basis of the main psychical indicators which can be expressed in the form of the following relation:

$$S = \frac{\sum_{j=1}^m Y_j(t_k)}{\sum_{i=1}^n X_i(t_k)} ; \quad k = 1, 2, \dots, p$$

where $\sum_{j=1}^m Y_j(t_k)$ expresses the sum of the mean (value) of the

adaptive answer answers, $\sum_{i=1}^n X_i(t_k)$ still the sum of their

external effects and employments, t_k ($k=1, 2, \dots, p$) the consecutive moments of the examined period. If the value of S is near the zero then the personality is characterized by considerable absence of psychical organization, i.e. psychical inorganization; if the value of S is near the 1 it can be expected the individual should properly respond, show psychically balanced state and his psychical amplitudes should be minimal.

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