

# Stress Resistance of Personality in the Conditions of Development of Professional Activity

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## Abstract

The article discusses the problem of stress resistance of a person in the context of the development of professional activities, for example, students during the examination session. Under the concept of resistance to stress, the biological and psychological characteristics of a living organism considered, allowing it to remain stable under the influence of various factors of the external and internal environment. This concept considered as an integral property of a person necessary for the adaptation of an individual to the influence of environmental factors and professional activity manifested in mental and psychological indicators. The results of the study showed that stress resistance, as a necessary condition for the successful social and psychological adaptation of a person to mastering professional activities in the aspect of synergetic. Accordingly, it is actually predicting professional health and professional longevity of the personality of men and women in connection with an increase in the retirement age as a global social problem.

**Keywords:** personality, stress resistance, communicative, accentuation of character, professional activity, synergetic, heart rate variability, coping with stress

## 1. Introduction

The factors affecting stress resistance include congenital characteristics of the body; personality traits; experience; human orientation, and others (Kitaev-Smyk, 2009). Researchers do not have a single opinion on the content of this concept; however, most consider stress tolerance as overcoming stress by a specific person (Usatov, 2016; Bodrov & Obozov, 2000). The study of individual resources of stress resistance of a person is among the relevant and promising areas in the psychology of professional, especially extreme, activity. Often, various types of human activities occurring under stressful conditions require an increased expenditure of the body's resources and make demands on its stress resistance and adaptability (Katunin, 2012; Ponomarenko, 2006). It should be noted that stress resistance depends not so much on personality characteristics as on genetic and congenital attributes of the human body, including molecular and cellular levels (Chen, 2019; Kirsch, 2014).

During the development of the profession, the characteristics of a person it revealed so clearly that they sometimes resemble psychopathy. The most famous was the term K. Leonharda "accentuated personality" (Leonard, 2001; Tarabrina et al., 2020). However, it is more appropriate to use the term "character accentuation". In the descriptions of K. Leonhard, we are talking specifically about character types, where special attention paid to the communicative nature of the person. In countries with German, the term "accented personality" used as a clinical diagnosis. With growing up or in a state of psycho-emotional stability, the features of accentuations usually smoothed out. Many studies have found that the period of a session for high school students characterized by the stress of functional systems (Rean & Baranov, 1997; Tserkovsky, 2011).

In modern conditions of new approaches, a person considered as an open, self-organizing psychological system.

C. Sherrington called such a system synergistic, or integrative (Sherrington, 1969). According to individual researchers, a person can become a subject of psychology only if he appears in it as an open, self-organizing psychological system (Klochkov, 2005). Processes such as communication, orientation in space and time; decision-making; recoding information; a mental reflection of a situation; objective, creative and abstract thinking; psycho-emotional stability; working capacity; twilight consciousness with hypoxia of the brain; overcoming the lack of time; the formation of decision logic and others are based on fundamental knowledge of physiology, physics, psychology, medicine (Pappas & Pappas, 2015). Since it is difficult to separate the genesis of one stress from another, the synergetic approach to fluctuations allows us to see the tendencies of system instability and base on this to identify the marginal group.

In our work, the study of "stress resistance of the personality" is associated with the analysis of the functional state of the physiological systems of the body. During the examination session, there is a hyperbalization of character traits (accentuation), especially communication. The coping with stress as an individual adaptive feature in the aspect of the synergetic approach also observed. It should be noted that this problem has not been studied enough.

## 2. Methods

The circulatory system is a sensitive indicator of the adaptive reactions of the whole organism to any stressful effect (Parin et al., 1967). We used the methodology of heart rate variability (HRV) using the non-invasive electrocardiographic system Varicard (manufactured by RAMENA, Ryazan) and the complex statistical ISCIM6.0). This allows to obtain information about the state of regulatory systems, which is contained in the functions of the "spread" of cardio intervals, and to consider changes in heart rate in connection with the adaptive reaction of the whole organism, as a manifestation of the various stages of the adaptation syndrome by G. Selye's theory (Agadzhanian et al., 2010; Fleishman et al., 2014). The concept of adaptive considered by us as individual reactions of an organism to the influence of any factors, and adaptive reactions as evolutionary mechanisms of adaptation caused by natural and climatic conditions, ethnic, linguistic and other features. In psychology, the concept of adaptability of the personality takes place since the adaptation of a person to social values depends on the individual characteristics of the psyche.

There are several such indicators of HRV, such as stress index (SI), indicating the tension of regulatory systems; the activity of parasympathetic (RMSSD) and sympathetic (SDNN) links in the autonomic regulation of the circulatory system; the power of spectra of frequency ranges (HF, LF, VLF, ULF and their percentage ratios); an integral indicator of the functional state of the circulatory system (IARS), correlating with various psychological indicators. Our studies have established that the above HRV indicators are biological markers that affect human behaviour and its adaptive response (Bashkireva, 2018).

Objective: to study the stress resistance of a person in the conditions of the development of professional activities by students during the examination session in the aspect of a synergistic approach.

Under conditions of tension associated with the session period, character accentuation indicators were studied in 103 students ( $\sigma = 51$ ;  $\rho = 52$ ) in various areas of training using the characterological test of K. Leonhard-N. Shmisheka, HRV by indicators: RMSSD, SDNN, HF, LF, VLF, ULF (in percentages), SI, stress coping technique Yu.L. Yeryomkin (2008) (Baykova, 2006).

## 3. Results and Discussion

The study during the examination session showed that 65.5% of students have accentuated characteristics, among young men – 46.4% (25% - hyperthymic type, 10.7% - exalted, 10.7% - excitable, emotional, cyclothymic) girls - 72% (29.5% - exaltation type, 20.7% - hyperthymic, 21.8% - other types of accentuations). It was be founded that in young men, there is a tendency to emotionality and exaltation, characterized by the strength of open or closed emotional experiences. Girls exhibit characteristics of hyperthymology. In the behaviour of the examination session, they become more independent, energetic, proactive, and prone to excessive self-esteem and irritability. Girls are significantly more accentuated ( $t = 2.38$ ;  $P < 0.05$ ) than boys.

Since passing exams causes general stress of the functional state, the indicators of heart rate variability were to study in boys and girls during the examination session, and the relationship with the types of accentuation was revealed. In young men of an emotional type of character accentuation, a connection was established with the activity of the parasympathetic regulation link (RMSSD) ( $r = 0.41$ ;  $P < 0.05$ ), and anxiety, with the average period of the respiratory

cycle (HFt) ( $r = -0.39$ ;  $P < 0.05$ ); cyclothymic - with an average neuro reflex response of higher vegetative centers (ULFt) ( $r = 0.37$ ;  $P < 0.05$ ). We can state that in young men intense situations or conditions, the adaptive reaction depends on the individual characteristics of the body, due to anoxia, which reduces the speed of thought processes. It should be noted that in the group in studied of young men there were no cases of adaptation failure under the conditions of the studied load, which indicates that the evolutionary mechanisms of adaptation did not experience stress that is dangerous to health.

During the examination session, the pedantic type of girls observed: a decrease in the sympathetic effect on the management of the rhythm of cardiovascular activity (SDNN,  $r = -0.37$ ;  $P < 0.05$ ). In students of the anxious ( $r = 0.36$ ;  $P < 0.05$ ), exalted ( $r = 0.47$ ;  $P < 0.05$ ) and emotional ( $r = 0.38$ ;  $P < 0.05$ ) types of accentuation, stress increases regulatory systems (SI). The activity of the vasomotor center (LF,  $r = -0.36 \div -0.41$ ;  $P < 0.05$ ) and the sympathetic link of regulation by heart rhythm (VLF,  $r = -0.39$ ;  $P < 0.05$ ). The data obtained indicate that in girls pedantic, exalted types of accentuations are predisposed to a violation of the regulation of heart rhythm regulation under stresses exceeding their adaptive resources. Depletion of the nervous system during the examination session observed in dysthymic girls and the failure of adaptive systems in rigid, hyperthymic and exalted types of accentuation. The data obtained allow us to state that girls are subject to accentuation during the examination session, with the dominance of hyper-communication.

In the examined group, 18.6% of students with a high, 30.2% - a low level of stress resistance, within the group norm - 51.2%. Correlation analysis revealed in students a coherent nature of the relationship between accentuation and the type of coping with stress. It established that among the examined boys and girls, the pedantic type is most resistant to the examination session, and the unstable type is the most resistant to the examination session.

In connection with the obtained data, we are inclined to believe that young men at a personal level have a higher level of stress resistance in mastering professional activities than girls. This indicates gender differences in the process of adaptation to various stress factors.

#### 4. Summary

Thus, the study of the relationship of accentuations of the personality character with heart rate variability showed that in conditions requiring tension of functional systems, as an example of an examination session, all types of accentuations are prone to violations of social adaptation of a different nature. Studies have established that young men are less prone to accentuations intense situations or conditions, and the adaptive reaction depends on the individual characteristics of the body. In the examined group of young men, cases of adaptive disruption related to loading conditions not identified. However, we are alarmed that all the challenged young men showed overstrain of functional systems, regardless of accentuations (Mukhametzyanova, 2018). We are inclined to believe that the duration of such effects on the body of young male students requires a more in-depth study in monitoring. Girls are subject to accentuation during the examination session and the adaptation of their body to social conditions provided by evolutionary mechanisms.

#### 5. Conclusions

As a result of the survey, It can be concluded that girls of pedantic, exalted types of accentuations are predisposed to a violation of the regulation of heart rhythm regulation in conditions that exceed their adaptive resources. Depletion of the nervous system during the examination session noted in the girls of the victim type during the examination session, and the failure of the adaptive systems in the rigid, hyperthymic and exalted types of accentuation.

Moreover, correlation analysis unveiled a coherent nature of the relationship between accentuation and coping with stress. The pedantic type is somewhat resistant to stress factors of diverse nature, and unstable is distant, which has the greatest dissipativity. Generally speaking, these relationships among students during the session are fluctuations of a discrete nature. The results of our research on the example of the examination session revealed that stress resistance, as a necessary condition for the success of the socio-psychological adaptation of the individual to the development of the professional activity, is relevant and required for predicting professional health and professional longevity of the personality of men and women. In the aspect of synergetic in modern trends in increasing the retirement age as a global problem of society, it is necessary to consider the peculiarities of adaptation in men and women.

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