

PNP 2021
Personality in Norm and in Pathology 2021**MENTAL HEALTH IN TERMS OF FUNCTIONAL
EQUIVALENCE THEORY**

Oleg Avilov (a)*

*Corresponding author

(a) South Urals State Medical University, Vorovskogo str., 64, Chelyabinsk, Russia, avilveschun@gmail.com

Abstract

In the context of chronic emotional stress caused, in particular, by the COVID-19 epidemic, the problem of maintaining the mental health of the population is urgent. So, the purpose of the study is to offer a different view of mental health. It is shown that mental health can be assessed from a subjective point of view, from the point of view of society, which assesses the degree of compliance with social norms by an individual, as well as from the point of view of the theory of functional equivalence. According to this theory mental health means that an individual has the capacity and ability to establish equivalence eliminating continuously arising imbalances(needs) at an optimal pace, within socially acceptable limits in the form of oral and written speech, emotions and behavioral responses. The desire for self-actualization and the formation of meaning in life is also a sign of mental health. It is shown that the development of emotional stress is an indicator that the equivalence is establishing at a rate different from the optimal one. The features of the preference of needs in the A. H. Maslow pyramid among students of the Medical University are found, and the possibilities of their correction are determined. It is suggested that the establishment of equivalence can save an organism from death even at the expense of the formation of what can be considered a pathological condition by an external observer.

2357-1330 © 2021 Published by European Publisher.

Keywords: Functional equivalence theory, mental health, potential, stress

1. Introduction

In modern conditions, due to the acceleration of the pace of life, as well as due to the negative impact on the human psyche of the COVID-19 epidemic, the problem of preserving, strengthening and correcting mental health is particularly acute. The COVID-19 epidemic has led to an increase in the level of emotional stress in various segments of the population, both because of the risk of infection and illness, and because of the limitations of habitual manifestations of life. The epidemic is expected to have significant consequences for human health, including mental health. At the same time, there is no consensus on what mental health is, on what signs it can be assessed, what is considered normal and what is pathological. The relationship between mental health and the ability to meet needs has been controversially evaluated by various authors. The role of emotional stress in maintaining, or, conversely, in the violation of mental health is not fully understood. In this regard, in our opinion, the theory of functional equivalence, to some extent, can generalize ideas about mental health, and solve related problems.

2. Problem Statement

In modern conditions, a person's mental health and its signs can be considered from different points of view. Estimates made at the individual, group, or population level may not match. These assessments depend on the level of education and cultural characteristics of the observer, on the characteristics of the group to which the individual belongs, on the traditions of society. So, from the point of view of a person far from military service, going on the attack under enemy bullets is madness. But, from the point of view of the commander of a military unit, a soldier who unquestioningly obeys the order to go into battle is certainly mentally healthy. The importance of a different culture in assessing mental health can be seen in the example of the attitude of Europeans to the recently existing tradition among the military class of Japan of ritual gutting to preserve honor. In Europe, this behavior would most likely be assessed as a sign of mental illness. In Japan, this option of leaving life is considered quite compatible with the presence of a suicide of mental health.

There are other examples of different understandings of what can be considered a manifestation of mental health. We believe that the contradictions associated with the different understanding of what a mentally healthy person is, can be eliminated with the help of the theory of functional equivalence developed by us. Mental health, in our opinion, is closely related to the ability to shape and meet needs. As we wrote earlier: "The need is the development of an imbalance of varying degrees of severity, caused by an excess of information, physical and chemical factors formed in the process of vital activity, which cannot be removed by the body independently without the risk of structural disorders. And satisfaction of needs is the search for "channels" of establishing equivalence, that is, an increased or reduced amount of information, physical and chemical incentives to eliminate this excess. The end result of satisfying needs is the establishment of equivalence by converting the excess of information, physical and chemical components of life activity into functional and structural changes in the body. such, for example, as the elimination or synthesis of certain substances, the renewal of cellular composition, changes in the mass and volume of organs and tissues, changes in motor and behavioral activity. The process of establishing

equivalence can go stepwise. At the same time, the sum of physical, chemical and informational changes in the body after satisfaction of needs is equivalent to those before satisfaction, only the ratio of physical, chemical and informational components of the life process changes. The formation and elimination of imbalances occurs continuously throughout life” (Avilov, 2019, p. 72). We also wrote that from the point of view of our theory:” The imbalance exists already at the level of the zygote, and is determined by the initial level of disequilibrium, the higher the level of disequilibrium, the higher, all other things being equal, the level of imbalances that need to be eliminated in the process of life. It is the initial level of disequilibrium that, in our opinion, is the potential of the organism. In the course of our life, there is a continuous movement from disequilibrium to equilibrium, the final manifestation of which is the death of the organism or, in other words, the realization of the individual's potential is observed. Thus, within the framework of the theory of functional equivalence developed by us, under the potential of a living system, we understand the innate capabilities of the organism and its individual systems determined by the initial disequilibrium, to eliminate the manifestations of imbalance that arise in the process of life. Potential cannot fail to be realized in the process of individual development. It's just a matter of how fast it happens, how quickly the body "self-actualizes" thanks to the potential. Both with insufficient and excessive input of stimuli, there is an increased level of potential waste, which can lead to both diseases and death of the body. Since, the movement from disequilibrium to equilibrium occurs at an accelerated pace” (Avilov, 2019, p.73).

Imbalances can also occur due to the formation of high-level needs in a person, or, as they were defined by Maslow (1963) meta-needs. In addition, the imbalance, in our opinion, is the meaning of life. How can we distinguish needs from the meaning of life? In our opinion, the difference is determined by the hierarchy of imbalances, the degree of their severity. The higher the level of understanding of what a person considers the meaning of life, the more pronounced is the imbalance, the more effort is required to eliminate it, to find" channels " for establishing equivalence. But the easier it is, according to the dominant principle (Sudakov, 1993), less significant imbalances are eliminated. At the same time, the order of construction of the specified hierarchy can be different, and is determined by both the situation and individual characteristics of a person. So, if the meaning of life is to protect the Motherland at any cost, then the imbalance caused, for example, by torture will be eliminated not by giving out the information that the enemies need, but by silence, which even pain cannot break. In this case, the imbalance associated with the meaning of life will prevail over the imbalance associated with the need to avoid pain. On the other hand, if the protection of the Motherland is not the meaning of life, the desire to escape from pain will become the leading need, in essence becoming the meaning of life.

It should be noted that the behavior of a person can be understood if we know whether he has pronounced imbalances, or not. This behavior will be determined by such a reaction as emotional stress. From the point of view of the theory of functional systems, emotional stress is formed in all conflict situations in which the subject cannot satisfy his needs. But according to the theory of functional equivalence, the view of the causes of stress may be somewhat different. The meaning of a stress reaction, in our opinion, is a response to a situation where the rate of development of an imbalance due to the impact or sudden absence of exposure to information, physical or chemical factors exceeds the rate of establishing equivalence. In this case, an emergency attempt is made to form an equivalent response

through different "channels". As a result, there is a change in the functioning of almost all body systems. But due to the fact that the body's response is an emergency, stress in this phase of its development is accompanied by significant disintegration in the functioning of functional systems, as well as negative emotions (Sudakov, 1993). If the imbalance exists for a long time, then in order to find "channels" for establishing equivalence, chronic emotional stress develops in the body. In our opinion, its manifestations against the background of negative emotions can be described as states of frustration, anxiety, cognitive dissonance. We believe that it is the long-term lack of elimination of imbalances by establishing equivalence that leads to such consequences as burnout syndrome, chronic fatigue syndrome, neuroses, psychosomatic diseases, and, as a result, to a reduction in life expectancy. But needs can be met, and the meaning of life is found. If equivalence is established in full, positive emotions are formed in a person and there is a transition from disorganization to consistency in the work of functional systems (Sudakov, 1993).

In connection with the above, we believe that functional equivalence theory can help solve the problem of understanding the essence of mental health. To confirm our point of view, this study was conducted.

3. Research Questions

First, existing definitions of mental health do not allow us to understand what exactly is the basis for its presence, for its strengthening, or for its loss.

Second, there is no consensus on how mental health, needs, and satisfaction relate to each other.

Third, the criteria for mental health presented in the available literature are contradictory, and do not give an idea of a person as a whole.

Fourth, emotional stress is most often seen as a reaction that indicates both mental health problems and a lack of them. One can only partially agree with such statements.

Fifth, to restore mental health, it is most often suggested to "fight" with emotional stress. Other possibilities, except for the use of medications, are practically not considered.

4. Purpose of the Study

Based on the theory of functional equivalence, give a generalizing definition of mental health. To show that based on the definition of the hierarchy of needs, it is possible to determine both the risk of losing mental health and the chances of its preservation and recovery. Demonstrate that emotional stress can be considered as an indicator of the degree of satisfaction of needs. Experimentally confirm the high probability of bringing a person's mental health to a higher level.

5. Research Methods

According to the theory of functional equivalence, we believe that satisfaction of needs is the elimination of imbalances by converting the excess of information, physical and chemical components of vital activity into functional and structural changes in the body. To determine the characteristics of mental health, first of all, in our opinion, it is necessary to pay attention to the potential of a person, the structure

of his imbalances and ways to eliminate them. In our opinion, when studying the "channels" of establishing equivalence, special attention should be paid to the individual's thoughts, their manifestation in oral and written speech, emotions, and a comprehensive assessment of behavior. In order to understand whether an individual's chosen model of behavior helped establish equivalence or not, from the point of view of the theory we propose, an assessment of the level of emotional stress is required. It is worth mentioning that in modern conditions the problem of emotional stress is of great importance (Berg-Beckhoff et al., 2018; Lacuta, 2019), especially for medical students (Bacchi & Licino, 2017; Bruffaerts et al., 2018; Ershens et al., 2019; Fawasy & Hamed, 2017).

In this regard, our study examined the structure of needs and the subjective assessment of the severity of students' emotional stress. So, we found out the attitude of students to each of the five needs presented in the pyramid of Maslow (1963). Students were asked to rank the five needs (physiological needs, the need for security, the need to occupy a certain place in society, the need for love and respect from others, the need for self-actualization) of the pyramid according to their subjective significance. In addition, at the same time students were asked to assess the degree of severity of their emotional stress. To do this, they were offered a scale with a calibration from "0" to "10", where the value "0" corresponded to the absence of voltage, and "10" - its maximum severity. The study involved 100 students of the South Urals State Medical University (73 girls and 26 boys aged 20-22 years). The study was conducted twice. The first survey of students was conducted at the end of March 2020, before the expected introduction of restrictive measures caused by COVID-19. We considered the restriction of students' activity in connection with the quarantine as a stressful situation. That is confirmed in some studies (Chandrate, 2020; Husky et al., 2020; Serafini et al., 2020; Spoothy et al., 2020). To study the impact of this situation, we conducted a second survey at the end of May 2020, after almost two months of self-isolation of students and their transition to distance learning. The second study involved 93 students out of 100 surveyed earlier (71 girls and 22 boys). Further, with the help of the psychotherapy technique developed by us, for some students, the structure of imbalances was changed and new "channels" for establishing equivalence were found.

6. Findings

It turned out that in the first study, among the needs presented in the Maslow pyramid, 41% of students put the satisfaction of physiological needs in the first place in importance, 14% - the need for security, 10% - the need to occupy a certain place in society, 10% - the need for love and respect from others, 25% - the need for self-actualization. Two months after the introduction of restrictive measures related to COVID-19, the picture of the hierarchy of needs in the Maslow pyramid has changed somewhat. In the first place, 48.8% of students (46 people) also had physiological needs. 8.6% of students (8 people) - the need for security, 10.7% of students (10 people) - the need to occupy a certain place in society, 7.5% - the need for love and respect from others, 24.4% - the need for self-actualization. Thus, needs defined by the Maslow pyramid, remained approximately at the same level after two months of restrictions. It should be noted that traditionally it is believed that needs are arranged in a hierarchical order in a series from physiological needs to self-actualization. The transition to a higher-level need is ensured by the full satisfaction of a lower-level need (Taormina, 2013). Our data showed that in contrast

to the traditional hierarchy of needs, the students we surveyed had two groups of the most pronounced needs. These were, on the one hand, physiological needs, and on the other hand, the needs for self-actualization. We associate this feature of building a hierarchy of needs with the future profession of the medical students we examined. Of particular interest is the group of students who put the need for self-actualization in the first place. Maslow, speaking about self-actualized people, wrote: "They... devote themselves to the search for... the values of Being - the search for the main, eternal, underlying values that cannot be subordinated to any other, more important ones. ... These values ... arise in the role of needs and behave accordingly ... These are meta-needs" (Maslow, 1963, pp. 98-101). From the point of view of functional equivalence theory, these students showed that due to a significant amount of potential, they are able to form high-level imbalances. At the same time, in our opinion, it is possible to understand that they are able to eliminate imbalances by establishing equivalence based on an assessment of the level of emotional stress. With the same amount of potential in different individuals, a high level of emotional stress indicates an attempt to find "channels" for establishing equivalence. Training a person to find such "channels", on the one hand, like any impact, creates an additional imbalance, and on the other hand, as a result, helps to slow down the movement from disequilibrium to equilibrium and reduce the level of emotional stress. The ideal variant of mental health, in our opinion, is observed when the potential of a person allows to create high-level imbalances, "channels" of establishing equivalence are formed, and emotional stress occurs only when a new situation occurs.

At the same time, when assessing mental health, it is necessary to take into account existing norms of behavior. The socially applicable limits for establishing equivalence are different in each society. These limits, on the one hand, constrain the ability of a person to give an equivalent response to the imbalances that arise in the body with the help of previously formed "channels".

On the other hand, social norms, although they create an additional imbalance for the individual, in another cultural space, can serve as a kind of "functional breakdown". Some individuals are able to understand that the imbalances formed by punishment, condemnation for behaviors that violate social norms in a particular society can be eliminated only with the help of new behavioral "channels" of establishing equivalence. For these individuals, the imbalances caused by the censure of the society in which they want to integrate will be more significant than the rejection of habitual behavior. Other individuals may believe that the imbalances caused by the need to develop new behavioral norms are less significant than the imbalances that occur when you abandon the usual, often familiar from childhood, behavioral reactions. In this regard, one of the criteria for mental health, in our opinion, is the ability to retrain, forming new "channels" for establishing equivalence in situations that threaten the preservation of life, health or freedom. We were also interested in the relationship between the preferred needs and the level of emotional stress of students. To do this, we evaluated the severity of emotional stress in two groups of students. The first group is students who put the need for self-actualization first. The second group – students, for whom the most important was the satisfaction of physical needs. Among students of the first group at the first survey, before the introduction of restrictive measures, expressed emotional stress (5-10 points on the scale of subjective assessment) was in 44% (11 people). In the second survey, 63.1% of students (14 people) already felt a pronounced emotional tension. Among students of the second group, before the start of restrictions, 43.1% of students (18 people) felt signs of severe emotional

stress caused by COVID-19. After two months of being in a stressful situation caused by the restriction of habitual life activity, 71.7% (32 people) of students in this group experienced pronounced emotional stress.

Thus, before the limitations of life activity, when the ability to meet the needs were practically not violated, pronounced emotional stress occurred with approximately the same frequency in students of both groups (44% vs. 43.1%). At the same time, being in a stressful situation caused by COVID-19 affected the students of the first and second groups differently. So, in the first group, the number of people with severe emotional stress increased very slightly (from 11 to 14 people). At the same time, under the same conditions, the number of students in the second group with severe emotional stress increased almost twice (from 18 to 32 people). We assume that the stressful situation had a minor impact on the satisfaction of the need for self-actualization in students of the first group. Along with this, the limitations of life caused by COVID-19 led to a serious violation of the ability to meet the physiological needs of students in the second group. And, probably, the expressed emotional stress in most of the students of this group served as a way to urgently find new "channels" for establishing equivalence. Apparently, students of the second group were more vulnerable to new living conditions due to the fact that due to cultural characteristics, or due to defects in education, they could not find a replacement for the usual areas of spending their potential.

At the same time, the question arises about the possibility of rapid formation of the need for self-actualization in order to find the most resistant to external influences, "channels" of establishing equivalence. To answer this question, 16 students were selected from 32 students of the second group who reacted most acutely to the decrease in the ability to meet physiological needs. For these individuals, psychotherapy sessions were conducted individually during the week according to our method. Each session lasted one hour. The purpose of the sessions was to create a new imbalance that occupies the first place in the individual hierarchy of needs – the need for self-actualization. In parallel, work was carried out to eliminate the new imbalance by finding a new "channel" for establishing equivalence. The criterion that a new "channel" was found was an increase in the number of positive emotions experienced by students during the day, as well as a decrease in the level of emotional stress. It turned out that after a week of psychotherapy, 12 students out of 16 had increased joyful expectations of life, and on the scale of subjective assessment of emotional stress, none of them indicated values greater than 3 points (weakly expressed emotional stress). The lack of success in working with 4 students who were also offered psychotherapy, we explain by the fact that during the week we were not able to find an appropriate "channel" for establishing equivalence for them. We also compared those students who were offered psychotherapy with those who were not offered it. It turned out that if 75% of students who were given a course of psychotherapy, the subjectively assessed level of emotional stress decreased after a week. That is, among those students who did not receive a course of psychotherapy, a decrease in the level of emotional stress (less than 5 points on the scale) was observed in only two out of 16 people after a week.

We believe that the data we have obtained confirm the earlier assumption that in the case of a high-level imbalance, less pronounced imbalances are eliminated more easily. Perhaps this is the meaning of the "paradoxical intention" discovered by Frankl (1960).

The formation of high-level imbalances, including in a short period of time, can be seen in various types of human activity. So, for a person saving, for example, drowning, the main imbalance will be the desire to save. All other imbalances, problems of the rescuer go by the wayside. The establishment of equivalence in this case is the fact of salvation, which is manifested in positive emotions, joy in the rescuer. In the case of human participation in combat operations, the commander's order is, in our opinion, a form of high-level imbalance. The execution of an order by a serviceman is to form the equivalence for him. In this case, death in battle can also be represented as the final phase of establishing equivalence. According to the examples given, the formation of imbalances and the establishment of equivalence can be very costly for the body. The formation of "channels" for establishing equivalence will take place quickly and without serious consequences for the body in the case of preliminary training and training.

In ordinary life, we believe, it is very important to strive for the formation of a high-level imbalance – the need for self-actualization. If "channels" for establishing equivalence for such an imbalance are found, then all lower-level imbalances, in our opinion, will be eliminated easily, and will not lead to chronic emotional stress and its consequences. The possibility of forming a need for self-actualization, as well as an imbalance of the highest expression – the meaning of life, can also be, in our opinion, a sign of mental health.

7. Conclusion

Thus, in our opinion, mental health is the presence of an individual's capabilities, determined by individual potential, and the ability to establish equivalence at an optimal pace, within socially acceptable limits. At the same time, equivalence is established at the level of thoughts, emotions, oral and written speech, at the level of behavioral reactions in general. Mental health is related to the process of meeting needs, or, in other words, with the elimination of constantly emerging imbalances. Imbalances are present at different levels of individual functioning. They can also include the meta-needs of Maslow and the search for the meaning of life. Emotional stress shows that the individual is in the process of searching for "channels" of establishing equivalence. At the same time, it should be borne in mind that the boundary between norm and pathology is rather conditional and dictated by the requirements of society. From the point of view of our theory, the establishment of equivalence goes through different "channels" available to the individual. A patient with a diagnosis of a mental disorder behaves, from the point of view of society, not adequately. But this behavior, in our opinion, is the only possible "channel" for establishing equivalence. In the absence of such a "channel", the individual will inevitably die. In this we fully agree with alternative theory of pathology (Petrov & Petrov, 1993), according to which any pathology is considered only as a form of adaptation to environmental conditions. At the same time, a mentally ill person can create additional, often very pronounced, imbalances for others. These imbalances can be eliminated only by isolating the patient, and (or) by using treatment, which for the patient himself is a "channel" for establishing equivalence.

Therefore, the theory of functional equivalence, we believe, can help to generalize existing ideas about mental health. This theory can probably help to interpret human behavior in a different way, and outline new approaches to its diagnosis and correction.

References

- Avilov, O. V. (2019). Formation of life meaning and health at the foundation of functional equivalence theory. *The European Journal of Natural history*, 3, 72-74. <https://world-science.ru/en/article/view?id=33985>
- Bacchi, S., & Licino, J. (2017). Resilience and Psychological Distress in Psychology and Medical Students. *Acad. Psychiatry*, 41, 185-188. <https://doi.org/10.1007/s-40596-016-0488-0>
- Berg-Beckhoff, G., Nielsen, G., & Larsen, E. L. (2018). Use of information communication technology and stress, burnout, and mental health in older, middle – aged, and younger workers – results from systematic review. *International Journal of Occupational Environment Health*. <https://doi.org/10.1080/10773525.2018.1436015>
- Bruffaerts, R., Mortier, P., Kiekens, G., Auerbach, R. P., Cuijpers, Green, J. G., Nock, M. K., & Kessler, R. C. (2018). Mental health problems in college fresh men: Prevalence and academic functioning. *Journal of Affective Disorders*, 225, 97-103. <https://doi.org/10.1016/j.jad.2017.07.044>
- Chandrate, S. (2020). Medical students and COVID – 19: Challenges and Supportive Strategies. *Journal of Medical Education and Curricular Development*, 7, 1-2. <https://doi.org/10.1177/2382120520935059>
- Ershens, R., Keifenheim, K. E., Herrman – Werner, A., Loda, T., Shwille- Kiuntke, J., & Bugaj, T. J. (2019). Professional burnout among medical students: Systematic literature review and meta – analysis. *Medical Teacher*, 41(2), 172-183. <https://doi.org/10.1080/o14259x.2018.1457213>
- Fawasy, M., & Hamed, A. (2017). Prevalence of psychological stress, depression and anxiety among medical students in Egypt. *Psychiatry research*, 255, 186-194. <https://doi.org/10.1016/j.psychres.2017.05.027>
- Frankl, V. V. (1960). Paradoxical intention. A logotherapeutic technique. *American Journal of Psychotherapy*, 14, 520-535. <https://www.researchgate.net/journal/American-Journal-of-Psychotherapy-0002-9564>
- Husky, M. M., Kovess-Masfety, V., & Swedsen, J. D. (2020). Stress and anxiety among university students in France during COVID -19 mandatory confinement. *Comp. Psychiatry*, 102, 152-191. <https://doi.org/10.1016/j.comppsy.2020.152191>
- Lacuta, P. (2019). Personality Trait Interactions in Risk for and Protection against Social Anxiety Symptoms. *The Journal of Psychology*, 153(6), 599–614. <https://doi.org/10.1080/00223980.2019.1581723>
- Maslow, A. H. (1963). Further notes on the psychology of Being. *The Journal of Humanistic Psychology*, 3, 12-135. <https://doi.org/10.1177/002216786300300112>
- Petrov, S. S., & Petrov, S. V. (1993). The ecological problem in the light of I.V. Davidovski is biologic conception of general pathology. *Archive pathology*, 55(1), 3-6. <https://pubmed.ncbi.nlm.nih.gov/7980037/>
- Serafini, G., Parmigiani, B., Amerio, A., Aguglia, A., Sher, L., & Amore, M. (2020). The psychological impact of COVID-19 on mental health in the general population. *QJM: An International Journal of Medicine*, 529-535. <https://doi.org/10.1093/gjmed/hcaa201>
- Spoorthy, M. S., Pratapa, S. K., & Mahant, S. (2020). Mental Health problems faced by healthcare workers due to the COVID -19 – a review. *Asia Journal of Psychiatry*, 51, 102-119. <https://doi.org/10.1016/j.ajp.2020.102119>
- Sudakov, K. V. (1993). Brain neuronal mechanisms of motivation and reinforcement: system organization of behavior. *Integrative Physiology and Behavioral Sciences*, 28(4), 396-407. <https://doi.org/10.1007/BF02690937>
- Taormina, R. J. (2013). Maslow and the motivation hierarchy: measuring satisfaction of the needs. *The American Journal of psychology*, 126(2), 155-177. <https://doi.org/10.5406/amerjpsyc.126.2.0155>