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Emotions as a state and as a trait in people with depressive disorders*

Emocje jako stan i cecha u osób z zaburzeniami depresyjnymi

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Summary

Aim: Depression is a disorder involving a number of changes in human psychosocial functioning. The aim of this study is to evaluate the intensity of positive and negative emotions understood both as a state and a permanent personality trait in people with depressive disorders and to determine whether the intensity of positive and negative emotions differentiates healthy people from people suffering from depressive disorders.

Material/Methods: The study was conducted on 107 individuals – 67 people from the experimental group suffering from depressive disorders and 40 people from the control group with a negative interview in terms of mental and somatic disorders. The following tools were used: Hamilton Depression Rating Scale (evaluation of severity of depressive symptoms), STAI Questionnaire (evaluation of anxiety severity as a state and trait) and PANAS Questionnaire (intensity of negative and positive emotions as a state and trait).

Results: A significantly higher intensity of positive emotions understood both as a state and a trait was observed in the people not suffering from depression, while the opposite results were obtained with regard to negative emotions, i.e. the individuals suffering from depression recorded lower scores than the healthy persons. It was also shown that the people with depression had higher scores in terms of the level of anxiety as a state and trait. The intensity of positive emotions as a state was significantly higher among the people with the first depressive episode in comparison to the people with recurrent depressive disorders. The severity of depression correlated positively with the intensity of negative emotions as a state both at the time of inclusion in the study and after obtaining a response to the applied pharmacological treatment.

Conclusions: Experienced positive and negative emotions, understood both as a state and as a trait, differentiate not only individuals with depression from healthy people, but also patients with the first depressive episode and those with recurrent depressive disorders.

Keywords: emotional state • emotional trait • anxiety • depressive disorder

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INTRODUCTION

Major depression is a mood disorder consisting of a set of symptoms, which include a predominance of the affective type (e.g. apathy, anhedonia, irritability, hopelessness) and coexisting cognitive, volitional, and physical symptoms. According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), the diagnosis of a Major Depression Episode requires five or more symptoms to be present for more than two weeks. At least one of the symptoms is either depressed mood or loss of interest or pleasure. Depressive disorders are a psychosocial disease involving a number of changes in human functioning – in the physiological, social and emotional dimension. Depression is a disorder of complex and multifaceted aetiology, so a full understanding of its conditions requires a number of studies taking into account the different dimensions in which it manifests itself, e.g. in terms of affective changes.

Taking into consideration the different properties of affective experiences, they can be divided into emotions understood as a state or as a relatively constant personality trait. According to this division, emotions may be experienced as a temporary and situationally variable state or they may be a relatively constant trait of an individual determined by personality factors and expressed as a tendency characteristic of an individual to experience specific emotions. A similar characteristic of emotional states can be found in Watson (2000), who states that every person is characterized by a dominating specific mood, i.e. a relatively constant affective tendency, at the base of which there are fundamental emotions understood as non-specific affective states. Thus, every person is characterized by a specific emotional response, i.e. a relatively constant affective trait that determines their behavior in different situations.

The affective space can also be defined by referring emotional states to two dimensions related to their valence, i.e. positive and negative affect [18] or activation level, i.e. tension and energy. At the same time, it is assumed that a high level of positive emotions will coexist with a low intensity of negative emotions and vice versa – a high level of negative affect will be associated with a low intensity of positive affective states [18]. Studies indicate that the interdependence of affective reactions depends on their time and situ-

ational constancy. If the experienced emotional reactions are characterized by changeability and transience in time, and thus we interpret them as affective states, then the positive and negative affect are dependent on each other. On the other hand, when subjectively experienced emotions are assessed as affective traits, i.e. relatively constant dimensions related to personality traits, then positive and negative affects remain independent from each other.

Recent research has shown the mutual relationships between the cognitive sphere and the emotional one in recurrent depressive disorders, including deficits in the scope of social cognition, which is an ability to receive, identify and interpret stimuli that are socially significant [5].

The aim of this study is to evaluate the intensity of positive and negative emotions understood as both a state and a permanent personality trait in people with depressive disorders (I) and to determine whether the intensity of positive and negative emotions, understood as both a state and a trait, will differentiate healthy people from people suffering from depressive disorders (II).

MATERIAL

A total of 107 individuals (mean age $M = 38.61$, $SD = 13.07$; 83 women and 24 men) was qualified for the experiment: 67 people from the experimental group, including 27 people with the first episode of the disease (mean age $M = 40.71$, $SD = 12.96$; DE group); 38 people with the second and subsequent episode of the disease (mean age $M = 45.71$, $SD = 11.07$; RDD group); and 40 people from the control group with a negative history of mental disorders and somatic diseases (CG group).

The inclusion criteria in the study for the experimental group were based on the diagnostic criteria for a depressive episode and recurrent depressive disorders in accordance with the ICD-10 guidelines (F32.0-F32.2; F33.0-F33.8) [ICD-10]. The study was conducted during hospitalization of the patients, before the introduction of pharmacotherapy (DE group) or before its modification (RDD group). Participation in the study was voluntary and had no influence on the applied pharmacological and psychotherapeutic treatment.

The criteria for exclusion from the study included the following: history of other mental disorders; coexistence of somatic diseases that may affect the course of a depressive episode; traumas of the central nervous system; abuse of or addiction to psychoactive substances; and lack of consent to participation in the study. Qualification for participation in the study had a random nature and was carried out in each case by the same person – a psychiatrist.

All the qualified individuals expressed their consent in writing to participate in the study in accordance with the protocol approved by the Bioethics Committee of the Medical University of Lodz (approval No. RNN/534/10/KB of 07 September 2010).

METHOD

Assessment of severity of recurrent depressive disorders

The Hamilton Depression Rating Scale (HDRS, HAM-D), worked out by M. Hamilton [6], and version 3.0 of the CIDI questionnaire [9] were used to evaluate the severity of symptoms of depressive disorders. Tests using the HDRS scale were performed twice, i.e. during the first and second stage of the study. The first stage was carried out before the commencement of pharmacological treatment (SSRI) or before modification of the existing treatment. The second stage of the study was carried out at the moment of clinical improvement – the average duration of hospitalization was about 6–8 weeks for 62 people from the experimental group (5 results are missing). The CIDI questionnaire was used once to qualify patients for participation in the study. The control group did not undergo the tests indicated above, as they were subjected to a detailed psychiatric interview. All the groups had a negative interview in terms of mental and somatic disorders. The HDRS and CIDI tests were carried out in each case by a psychiatrist.

Evaluation of emotional functioning

The Polish adaptation of the STAI Questionnaire (State-Trait Anxiety Inventory) by C. D. Spielberger, R. L. Gorsuch, R. E. Lushene was used to assess the level of anxiety as a situation-specific state and anxiety as a permanent personality trait.

The Polish adaptation of the PANAS Questionnaire (Positive and Negative Affect Schedule) by D. Watson and L. A. Clark was used to assess the intensity of negative and positive emotions as a state and a permanent personality trait [17].

The tests were performed once by a clinical psychologist in the control group and in the experimental group during the first stage of the study.

STATISTICAL ANALYSIS OF RESULTS

Selected methods of descriptive statistics and methods of statistical reasoning were used in the statistical analysis of the material. The following were used to describe qualitative characteristics in the experimental and control groups: the arithmetic mean to describe the average value of a quantitative characteristic (M) and the standard deviation as the average deviation of the characteristic value from its arithmetic mean (SD). Appropriate structure indicators, i.e. prevalence of a given trait expressed in percentage terms, were applied to describe qualitative characteristics in the experimental group.

The nature of the distribution of the variables was evaluated using the Shapiro–Wilk test, where the hypothesis of normality of distribution was rejected. The Mann–Whitney U test was used for comparison of the studied groups. Spearman's rank correlation coefficient was used to evaluate the correlations between the analyzed variables.

The materiality level for all the statistical methods applied was set at $p < 0.05$. All statistical calculations were conducted using computer software STATISTICA PL, version 12.0.

Table 1. List of positive and negative emotions analysed in the study (based on the SUPIN scale – Polish adaptation of the Positive and Negative Affect Schedule) [1, 17]

POSITIVE EMOTIONS	NEGATIVE EMOTIONS
Attentive	Hostile
Active	Irritable
Alert	Ashamed
Excited	Guilty
Enthusiastic	Distressed
Determined	Upset
Inspired	Scared
Proud	Afraid
Interested	Jittery
Strong	Nervous

Table 2. Descriptive statistics for the analysed variables as divided into experimental and control groups

Variable	EG N = 67		CG N = 40		Z	P
	M	SD	M	SD		
HDRS I	20.089	6.022	-	-	-	-
HDRS II	3.551	2.319	-	-	-	-
STAI state	49.233	11.250	33.700	8.754	5.326	0.000*
STAI trait	55.069	8.972	38.600	6.207	6.161	0.000*
SUPIN S20 positive	20.620	8.813	31.359	7.002	-5.085	0.000*
SUPIN S20 negative	24.280	9.556	12.641	3.863	6.338	0.000*
SUPIN C20 positive	24.837	8.671	34.898	5.534	-5.216	0.000*
SUPIN C20 negative	27.776	8.931	15.692	4.092	6.426	0.000

HDRS I – Hamilton Depression Rating Scale on the day of inclusion in the study; HDRS II – Hamilton Depression Rating Scale after response to pharmacological treatment; STAI state – STAI Questionnaire (assessment of the level of anxiety as a state); STAI trait – STAI Questionnaire (assessment of the level of anxiety as a permanent personality trait); SUPIN S20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as an experienced state); SUPIN S20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as an experienced state); SUPIN C20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as a permanent personality trait); SUPIN C20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as a permanent personality trait); M – mean; SD – standard deviation; EG – experimental group; CG – control group; N – number; Z – Z test result; P – test probability; * – p statistically significant.

RESULTS

Table 2 presents the results of the tests carried out for the whole study group (N = 107) as well as a comparison of the results obtained for the experimental group (N = 67) and the control group (N = 40).

Statistical significance was found in each of the tests carried out. Statistical significance was obtained for the following variables: anxiety as a state, anxiety as a trait, positive emotions as a state, negative emotions as a state, positive emotions as a trait, and negative emotions as a trait. Significantly higher results on the scale of positive emotions understood both as a state and as a trait were recorded by the persons not suffering from depression, while the opposite results were obtained with regard to negative emotions in the same two dimensions – the individuals suffering from depression had lower scores than the healthy persons. The people suffering from depression also recorded higher scores in terms of the level of anxiety as a state and trait.

Table 3 presents the results of the test conducted on the patients with the first depressive episode (DE, N = 27) and with recurrent depressive disorders (RDD, N = 38).

In the case of statistical analysis comparing the first and subsequent depressive episodes, statistically significant results were obtained only for the intensity of positive emotions as a state with significantly higher scores among the people with the first depressive episode in comparison to the people with recurrent depressive disorders. In other cases, there was no statistically significant correlation, but it can be noticed that the people with recurrent depressive disorders achieved higher scores in terms of negative emotions as a state compared to the people with the first depressive episode. It can also be noticed that the people with the first depressive episode, compared to the people with subsequent episodes of the disease, were characterized by a greater severity of anxiety both as a state and as a trait. The intensity of positive and negative emotions as a permanent trait does not significantly differentiate the people affected by the first and subsequent episodes of the disease.

Table 4 presents results of a correlation analysis for the entire experimental group (EG, N = 67) and for the patients with the first depressive episode (DE, N = 27) and with recurrent depressive disorders (RDD, N = 38).

The severity of depression correlates positively with the intensity of negative emotions as a state both

Table 3. Descriptive statistics for the analysed variables as divided into depressive episode and recurrent depressive disorders

Variable	DE N = 27		RDD N = 38		Z	P
	M	SD	M	SD		
HDRS I	20.4	6.85	19.9	5.40	-0.406	0.685
HDRS II	3.9	2.86	3.3	1.89	-0.417	0.677
STAI state	46.3	11.72	50.5	10.68	1.668	0.095
STAI trait	53.7	8.72	55.4	9.19	0.6	0.528
SUPIN S20 positive	24.6	9.13	17.9	7.51	-2.455	0.014*
SUPIN S20 negative	23.3	8.83	25.2	10.26	0.586	0.558
SUPIN C20 positive	25.1	7.92	25.1	9.22	0.114	0.909
SUPIN C20 negative	28.8	8.72	27.2	9.29	-0.696	0.486

HDRS I – Hamilton Depression Rating Scale on the day of inclusion in the study; HDRS II – Hamilton Depression Rating Scale after response to pharmacological treatment; STAI state – STAI Questionnaire (assessment of the level of anxiety as a state); STAI trait – STAI Questionnaire (assessment of the level of anxiety as a permanent personality trait); SUPIN S20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as an experienced state); SUPIN S20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as an experienced state); SUPIN C20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as a permanent personality trait); SUPIN C20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as a permanent personality trait); M – mean; SD – standard deviation; DE – first depressive episode group; RDD – recurrent depressive disorders group; N – number; Z – Z test result; P – test probability; * – p statistically significant.

at the time of inclusion in the study and after obtaining a response to the applied pharmacological treatment. Moreover, in the group of people with recurrent depressive disorders, the intensity of negative emotions as a state correlates positively with the severity of depressive symptoms after obtaining a response to the pharmacological treatment applied.

DISCUSSION

The objectives set in the paper were largely achieved. The study found that the people suffering from depressive disorders were characterized by a greater intensity of negative emotions as a state and as a trait, greater intensity of anxiety as a state and as a trait, and lower intensity of positive emotions in comparison to the people not suffering from depression. These results are consistent with data from other clinical trials, which show that anxiety levels correlate positively with the severity of depressive mood symptoms in the group of individuals suffering from depression. No such correlation was observed in the non-clinical group [2]. In the available literature we also found research conducted with the use of the same method (adaptation of the PANAS questionnaire), indicating that the intensity of negative emotions both as a state and as a trait, as well as personality traits such as intolerance, uncertainty and emotional inhibition, correlated positively with the intensity of anxiety and depression symptoms [8, 15].

The results obtained by us allow for a conclusion to be drawn that people with depression experience more negative emotions and anxiety, not only during the disease, but the tendency to experience negative affective states and anxiety is also a relatively constant trait of their personality. It can, therefore, be concluded that the tendency to experience negative emotions is a personality-conditioned factor, which may predispose to the development of depressive disorders. On the basis of the foregoing findings, this tendency can be seen as a personality trait characteristic of people experiencing depressive disorders, similarly to neuroticism, low level of engagement, low self-esteem, lack of control over the situation, treating stressors as a threat, low social skills, pessimistic attribution style, high perfectionism, and lack of constructive strategies for coping with stress [14]. The tendency to experience negative emotions, characteristic of people with depressive disorders, is most probably related to imbalances between emotional (limbic) and motivational/regulatory (prefrontal) brain structures [11]. These dysfunctions are characterized by constancy and are observed not only during the disease but also during periods of remission, which confirms the conclusions reached in the present study concerning the existence of constant trends in emotional response, which predispose to the development of depression [3].

The conclusions of the study are also consistent with the neurodevelopmental theory of depression, which explains the aetiology of this disorder by referring to

Table 4. Correlations of Spearman's ranks for features of the clinical course of depression and emotional functioning

Variable	EG N = 67		DE N = 27		RDD N = 38	
	R	P	R	P	R	S
HDRS – I & STAI state	0.105	0.512	0.135	0.593	0.020	0.927
HDRS – I & STAI trait	0.031	0.849	0.337	0.171	-0.221	0.309
HDRS – I & SUPIN S20 positive	-0.191	0.189	-0.361	0.108	-0.078	0.693
HDRS – I & SUPIN S20 negative	0.312	0.029*	0.353	0.116	0.298	0.124
HDRS – I & SUPIN C20 positive	0.140	0.342	0.002	0.994	0.231	0.247
HDRS – I & SUPIN C20 negative	0.081	0.586	0.168	0.468	-0.039	0.843
HDRS – II & STAI state	0.101	0.536	0.177	0.483	0.006	0.979
HDRS – II & STAI trait	-0.113	0.488	-0.169	0.501	-0.058	0.796
HDRS – II & SUPIN S20 positive	0.027	0.865	-0.056	0.821	0.201	0.357
HDRS – II & SUPIN S20 negative	0.311	0.045*	0.159	0.516	0.478	0.021*
HDRS – II & SUPIN C20 positive	0.028	0.860	-0.015	0.952	0.083	0.712
HDRS – II & SUPIN C20 negative	0.226	0.155	0.089	0.717	0.392	0.071

HDRS I – Hamilton Depression Rating Scale on the day of inclusion in the study; HDRS II – Hamilton Depression Rating Scale after response to pharmacological treatment; STAI state – STAI Questionnaire (assessment of the level of anxiety as a state); STAI trait – STAI Questionnaire (assessment of the level of anxiety as a permanent personality trait); SUPIN S20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as an experienced state); SUPIN S20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as an experienced state); SUPIN C20 positive – PANAS Questionnaire (assessment of the intensity of positive emotions as a permanent personality trait); SUPIN C20 negative – PANAS Questionnaire (assessment of the intensity of negative emotions as a permanent personality trait); M – mean; SD – standard deviation; EG – experimental group; DE – first depressive episode group; RDD – recurrent depressive disorders group; N – number; R – Spearman's rank correlation; P – test probability; * – p statistically significant.

the importance of biological (genetic factors, infections, adverse environmental factors), emotional (difficult experiences, traumas), as well as cultural (style of upbringing) factors from the prenatal period, early childhood and adolescence. Personality traits resulting from the interaction of biological, emotional and cultural factors, in contact with stressors and critical events, may lead to the development of depressive disorders [13]. Both genetic and environmental factors are important in the process of shaping the personality structure of a human being. These factors, by affecting the structural and functional development of the brain, may be either a beneficial or an unfavorable factor for the development of the ability to cope with critical life situations, and thus also for the development of depression [10]. Incorrectly shaped personality traits, including increased anxiety, through HPA axis dysregulation, may be a cause of the pro-inflamma-

tory activity of the immune system [7]. As a result, excessive production of neurotoxic compounds (tryptophan catabolites, TRYCATs) can occur, which may gradually lead to the development of neurodegenerative processes underlying depression [12].

On the basis of our research we can also conclude that in the group of people with depressive disorders the intensity of negative emotions as a state correlates positively with the intensity of depressive symptoms. This relationship was observed both at the time of inclusion in the study and at the end of the therapy as a result of a positive response to the introduced treatment. This may indicate that, regardless of the stage of the disease, the more severe the depressive symptoms, the more intense the negative affective states experienced at a given time. It can, therefore, be concluded that the intensity of negative emotions as a

state is closely related to the current intensity of depressive symptoms, but among people with depressive disorders the level of negative emotions is always higher than among healthy subjects, as indicated by the previously quoted data obtained from the study in question. The available literature provides data on other clinical trials in which similar data were obtained, indicating that people with depressive tendencies experience greater intensity of negative emotions in comparison to people without depressive tendencies. No differences in the intensity of positive emotions were observed. It was indicated that fear, sadness, guilt, shyness, fatigue dominate among the experienced negative emotions; a reduced level of joy and self-confidence was also observed. Negative affect understood as a state and a trait reveals a stronger connection with properties of a biological background. No such links were noticed in the case of positive emotions. Moreover, it was shown that people with depressive tendencies have a much higher level of anxiety as a trait in comparison to people without depressive tendencies [4]. Our research also points to the fact that a depressive episode is dominated not only by sadness but also by a number of other negative emotional states, such as guilt, fear, anxiety or shame. Other studies conducted with the use of the SUPIN scale (Polish adaptation of the PANAS scale) also confirmed the assumption that a low level of positive emotions is characteristic of depression, while a high level of negative emotions is characteristic of both depression and anxiety understood as disorders in the clinical dimension [2]. There are, however, studies contrary to these conclusions, which indicate that this dependence is characteristic only for clinical groups of depression and anxiety disorders [1].

Another conclusion drawn from our study is that a higher intensity of positive emotions exists as a current state among people with the first depressive episode in comparison to people suffering from recurrent depressive disorders. This mechanism can be explained by referring to the concept of a stressor, which is a chronic disease, both somatic and mental. Every chronic disease is a stressor, because it poses a threat to life and functioning, reduces the quality of life, is associated with the deterioration of the economic situation, with stigmatization and social ostracism linked with the disease. When exposure to a certain stress stimulus is prolonged and the mechanisms of coping with it cease to be effective, the learned helplessness and difficulty in constructive problem solving develop. A crisis situation triggers primary and secondary cognitive situations. A secondary cognitive assessment of the situation – recurring depression – may, therefore, hinder the use of constructive strategies for coping with stress and limit access to positive emotions.

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CONCLUSIONS

Depression may be one of the ways the mind adapts to excessively high requirements of the environment, and thus separating emotions from cognition seems to be impossible in everyday human experience. Difficulties in identifying, naming and analyzing experienced emotional states are observed in patients with depressive disorders. Faster and more frequent recognition of negative emotions (sadness) on the face by people with the diagnosed depressive disorders may be associated with primary disorders of regulation of their own emotions – high level of anxiety as a state and trait, deficits of cognitive processes. This can lead to distortions in social cognition, which is determined by the integration of a range of information sent and received using both verbal and non-verbal channels. Maladaptive methods of regulating emotions may be an important prognostic factor of depression symptoms; they may influence its duration, intensity of symptoms and increase the probability of subsequent episodes of the disease. The obtained results may become the basis for further research on factors related to the development of depression and the basis for building new paths in prevention and therapeutic work with depressed people.

Experienced positive and negative emotions, understood both as a state and as a trait, differentiate not only individuals with depression from healthy people, but also patients with the first depressive episode and those with recurrent depressive disorders.

LIMITATIONS

The size of the studied groups may be a limitation of the conducted study. If the study had been conducted on a larger group of individuals, it would have probably been possible to indicate statistically significant differences in other dimensions, e.g. in terms of negative emotions or the level of anxiety as a state and trait among people with the first depressive episode and recurrent depressive disorders. It can also be assumed that if more people were to be included in the group, there would be a dependence in the range of intensity of positive emotions at the time of inclusion in the study and after obtaining a positive response to the treatment applied. Moreover, other variables such as socio-demographic data were not measured in the conducted study. We are aware of the influence of the indicated factors on the regulation of emotions. The indicated hypotheses may be subject to further research in the future.

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