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Cognitive and Personality Traits of Social Media Users With Eating Disorders

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Abstract: This work aims to study the personality and cognitive characteristics of social media users with eating disorders. The work involved 209 people (84 women with anorexia nervosa, 82 women with bulimia nervosa, a control group of 43 healthy women). The Eating Behavior Rating Scale (EBRS), Cognitive-behavioral Patterns in Eating Disorders Questionnaire, 16-factor Personality Questionnaire, and the Dysfunctional Relations Scale (DRS) were used to assess cognitive and personal characteristics of people with eating disorders. It was found in the work that emotional instability, anxiety, and suspicion are characteristic personality traits for persons with eating disorders. It has been found that individuals with anorexia nervosa and bulimia nervosa have different cognitive characteristics. The cognitive characteristics of individuals with eating disorders are correlated with their personality traits.

Keywords: anorexia, bulimia, cognitive and personality traits.

Introduction

The problem of disorders in eating behavior is becoming increasingly important today. In recent years, there has been a significant increase in the number of patients with eating disorders, both in Russia and abroad, which is a severe problem (Kessler et al., 2013). Eating disorders are mental disorders that manifest themselves as impaired eating (Schag et al., 2013; Mehler and Rylander, 2015; Iqbal and Rehman, 2020). Current research examines the factors that influence the occurrence of eating disorders. The emergence of eating disorders such as anorexia nervosa and bulimia nervosa is associated with genetic predisposition, social influences, the role of psychophysiological factors, as well as personality traits (Bulik, Sullivan and Kendler, 2003; Urwin and Nunn, 2004; Javaras et al., 2008; Rask-Andersen et al., 2010; Muller et al., 2012; Trace et al., 2013; Yilmaz, Hardaway and Bulik, 2015; Grzelak et al., 2017; Motalova and Vorobyeva, 2018; Zam, Saijari and Sijari, 2018; Himmerich et al., 2019; Vorobyeva et al., 2021).

In the era of the COVID-19 pandemic, on the one hand, there were certain restrictions for conducting face-to-face psychological research, and on the other hand, with the increasing stressfulness of the surrounding situation, the need for consultation with a clinical psychologist based on psychological diagnostics in persons with eating disorders has increased significantly as the number of people with eating disorders has increased.

Eating disorders include anorexia nervosa, bulimia nervosa, binge eating disorder, and other specific eating disorders. Their clinical manifestations are described in two main classifiers of mental and behavioral disorders: the International Classification of Diseases (ICD-10 and ICD-11) and the American Psychiatric Association's Diagnostic and Taxonomy of Mental Disorders Handbook (DSM-IV and DSM-V). Anorexia nervosa is a neurotic register syndrome that manifests itself in abstaining from food to lose for weight due to the belief in the presence of apparent or overestimated obesity. Bulimia nervosa manifests itself as an intermittent inability to refrain from eating large amounts of food. Bulimia nervosa characterized desire to prevent the effect of food on body weight, by inducing vomiting, taking laxatives and diuretic drugs, and fasting. Bulimia nervosa is associated with guilt and fear of obesity (Kaye et al., 2011; Voon, 2015; Harasim-Piszczatowska and Krajewska-Kulak, 2017; Burton and Abbott, 2019).

This paper presents the results of an online study of the cognitive and personality traits of individuals

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with eating disorders. The purpose of this work is to study the cognitive and personal characteristics of users of social networks with eating disorders. The subject of research: persons with eating disorders from the thematic group in the social network "VKontakte" with a confirmed diagnosis. Research hypotheses: 1. The personal characteristics of persons with eating disorders may have statistically significant differences from the control group in terms of the emotional attributes of the personality: anxiety, emotional instability, suspicion, and tension; 2. Individuals with anorexia nervosa and bulimia nervosa may have different cognitive factor; 3. The cognitive aspect of individuals with eating disorders may be inter-related with their personality traits.

Materials and Methods

The study was conducted in a specialized social media group. The number of participants left 209 people. Of these, 84 women with anorexia nervosa (mean age 22 ± 0.3 years) and 82 women with bulimia nervosa at age 23 ± 0.5 years. Control group - 43 healthy girls aged 22 ± 0.4 , used Google Forms.

The Eating Behavior Rating Scale (EBRS) (Wilson et al., 1989) was used to assess the severity of eating disorders. We used the Russian version of EBRS (validation by Ilchik et al., 2011). Cognitive-behavioral Patterns in Eating Disorders Questionnaire (Sagalakova and Kiseleva, 2014) was used to revealing cognitive and behavioral features at persons with eating behavior disturbances. 16-factor Personality Questionnaire (Cattell, 1949) was used to assess the personal characteristics. The Dysfunctional Relations Scale (DRS) (Weissman and Beck, 1978) was used to measure the intensity of dysfunctional attitudes. We used the Russian version of DRS (validation by Zakharova, 2013). Statistical data processing was carried out using Statistica 10. The Shapiro-Wilk test was used to assess the normality of the distribution, the Mann-Whitney nonparametric test was used to evaluate the reliability of differences between the compared groups, and the Spearman correlation coefficient was used to determine the presence of relationships.

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Results

Individuals with eating disorders showed a pronounced expression of such behavioral stereotypes as: inefficiency (8.4 ± 0.9), perfectionism (6.9 ± 1.7), distrust in interpersonal relationships (7.7 ± 1.8), in-teroceptive incompetence (8 ± 1.2). Indicators on the scale "Episodes of overeating and cleansing behavior" ($U=1769.5$; $p<0.05$) in the group of people with bulimia nervosa are statistically significantly higher than in the group of people with anorexia nervosa.

According to the methodology "16-factor personality questionnaire R.B. Cattell", significant differences were found between the group of people with anorexia nervosa and the group of people with bulimia nervosa on the scales: "Emotional instability - Emotional stability" ($U=2753$; $p=0.05$), "Restraint - Expressiveness" ($U=2662$; $p=0.05$). Significantly significant differences were found between individuals with eating disorders and individuals from the control group in terms of individual psychological personality traits such as: self-esteem ($U=531$; $p<0.05$), emotional stability ($U=466$; $p<0.05$), gullibility ($U=658$; $p<0.05$), calmness ($U=664.5$; $p<0.05$), relaxation ($U=400$; $p<0.05$).

The assessment of the severity of cognitive features in eating disorders was carried out. The results obtained for individuals with anorexia nervosa are shown in Figure 1.

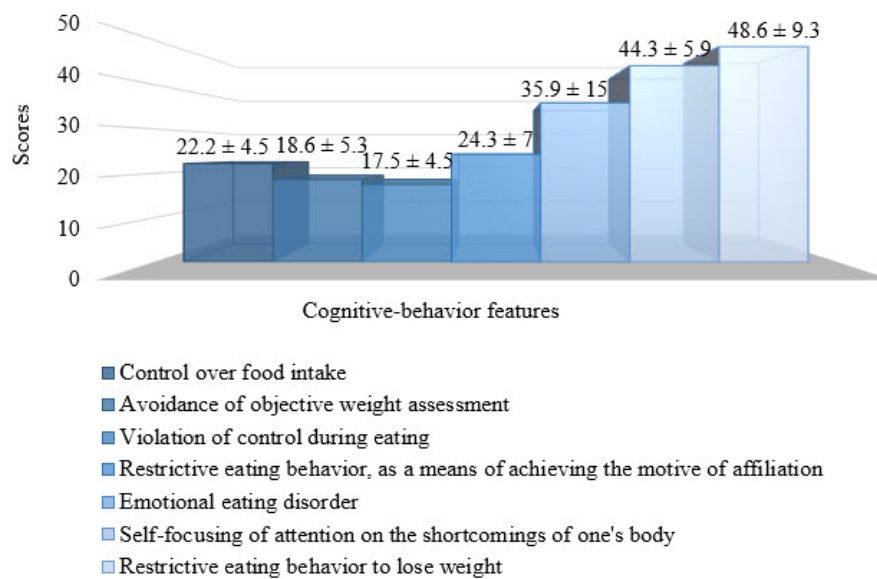


Figure 1. Mean values of the severity of cognitive features in individuals with anorexia nervosa.

Based on the results depicted in Figure 1, we can say that individuals with anorexia nervosa demonstrate a high severity of such cognitive features as: control over food intake, self-focusing on their body imperfections, and restrictive eating behavior to lose weight. For the parameter “Control over food intake”, the average value in individuals with anorexia nervosa was 22.2 ± 4.5 , which is a high indicator. According to the parameter “Self-focusing of attention on the shortcomings of one’s body”, the average value was 44.3 ± 5.9 , which is a high indicator and indicates the presence of close attention to the imaginary “shortcomings” of their own body. In addition, there is a desire to hide “flaws” with the help of certain clothes. For the parameter “Restrictive eating behavior to lose weight,” the average value was 48.6 ± 9.3 , which is a high indicator and indicates the presence of respondents’ dissatisfaction with their weight and the application of the strategy of restricting food intake. In addition, people with anorexia nervosa resort to vigorous physical exercise, laxatives, and diuretics. The revealed cognitive features of persons with anorexia nervosa are of moderate severity with a tendency to high: “Avoidance of objective weight assessment”, “Violation of control during eating”, “Restrictive eating behavior, as a means of achieving the motive of affiliation”.

According to the parameter “Avoidance of objective weight assessment”, the average value was 18.6 ± 5.3 , which is an average indicator and speaks of a not vivid expression of the desire not to attract the attention of others to one’s figure and body. This pattern consists in avoiding cases of evaluating the figure by choosing loose clothing, eating restrictions, and can manifest itself in avoiding social contacts due to dissatisfaction with one’s appearance. According to the parameter “Violation of control during food intake,” the average value was 17.5 ± 4.5 , an average indicator indicating rare cases of loss of control during eating and accompanied by cleansing behavior. Such results are less pronounced in individuals with anorexia nervosa and are more common in individuals with bulimia nervosa. According to the parameter “Restrictive eating behavior, as a means of achieving the motive of affiliation” the average value was 24.3 ± 7 , which is an average indicator and suggests that weight loss is perceived as a factor necessary for realizing the need for communication, friendship, and love with other people. For the parameter “Emotional eating disorder” the average value was 35.9 ± 15 . There is a tendency to high severity. These results suggest that not all individuals with anorexia nervosa exhibit this pattern. The indicators suggest that food intake serves to change the emotional state. The above cognitive-behavioral patterns have moderate and high severity among individuals with anorexia nervosa.

An assessment of the severity of cognitive features in persons with bulimia nervosa was obtained. The results are displayed in Figure 2.

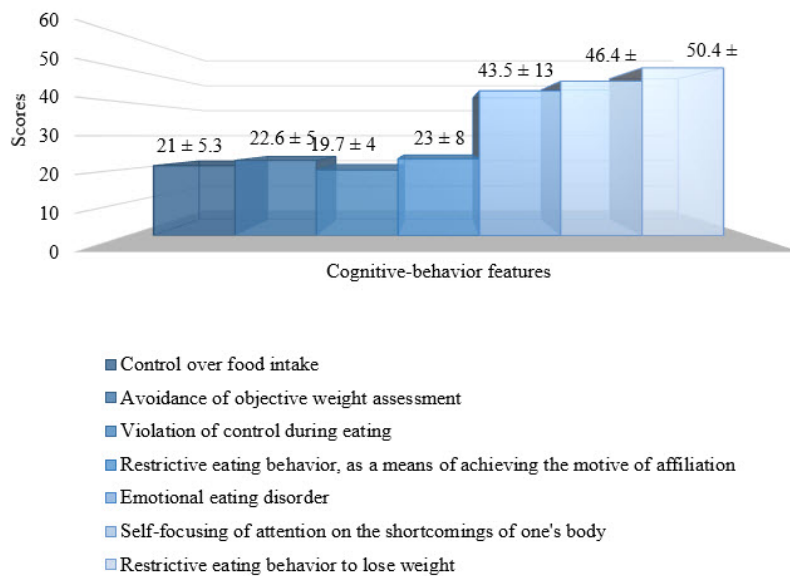


Figure 2. Mean values of the severity of cognitive features in persons with bulimia nervosa.

Based on the results presented in Figure 2, we can say that people with bulimia nervosa demonstrate a high severity of such cognitive features as: control over food intake, avoidance of objective weight assessment, impaired control during eating, emotional eating disorder, self-focusing on the deficiencies of their body, restrictive eating behavior to lose weight. According to the parameter “Control over food intake”, the average value in persons with bulimia nervosa was 21 ± 5.3 , which is a high indicator and indicates the severity of the pattern, which manifests itself in increased self-control in the field of eating behavior, as well as in the establishment of rules and requirements for oneself, to your figure and body, the way you eat. According to the parameter “Avoidance of objective weight assessment”, the average value was 22.6 ± 5 , which is a high indicator and indicates the presence of a desire not to draw the attention of others to their figure and body. This pattern can be expressed in avoiding cases of figure evaluation, by choosing loose clothing and eating restrictions, and avoiding social contacts due to dissatisfaction with their appearance. According to the parameter “Violation of control during food intake,” the average value was 21 ± 5.3 , a high indicator indicating frequent loss of control during eating and accompanied by cleansing behavior. According to the parameter “Emotional eating disorder”, the average value was 43.5 ± 13 , which is a high indicator and suggests that food intake is a way to change one’s emotional state. According to the parameter “Self-focusing of attention on the shortcomings of one’s body,” the average value was 46.4 ± 6.7 , which is a high indicator and testifies to the expressed attention of respondents to their body and its “shortcomings”. For the parameter “Restrictive eating behavior to lose weight,” the average value was 50.4 ± 10.5 , which is a high indicator. For the parameter “Restrictive eating behavior as a means of achieving the motive of affiliation” the average value was 23 ± 8 , which is the average. To achieve acceptance by other people, respondents apply food restrictions by choosing low-calorie foods. For the parameter “Restrictive eating behavior for the purpose of losing weight,” the average value was 50.4 ± 10.5 , which is a high indicator. For the parameter “Restrictive eating behavior as a means of achieving the motive of affiliation” the average value was 23 ± 8 , which is the average. Respondents apply food restrictions by choosing low-calorie foods to achieve acceptance by other people. For the parameter “Restrictive eating behavior lose weight,” the average value was 50.4 ± 10.5 , which is a high indicator. For the parameter “Restrictive eating behavior as a means of achieving the motive of affiliation” the average value was 23 ± 8 , which is the average. Respondents apply food restrictions by choosing low-calorie foods to achieve acceptance by other people.

The data of a comparative analysis of the personal characteristics of individuals with eating disorders and individuals from the control group are given in Table 1.

Table 1

Comparative analysis of personality traits of individuals with eating disorders and individuals from the control group (Mann-Whitney U test)

Personality traits	Sum of ranks in the eating disorder group	The sum of the ranks in the control group	U	Z	p-level
Low self-esteem - High self-esteem	1477	2264	531	-3.39	0.00
Emotional instability	1412	2328.5	466.5	-3.95	0.00
Emotional stability	2137	1604	658	2.29	0.01
Gullibility - Suspicion	2130.5	1610.5	664.5	2.24	0.01
Relaxation - Tension	2395	1346	400	4.52	0.00

Analysis of the data presented in Table 1 allows us to speak of the presence of significantly significant differences between individuals with eating disorders and individuals from the control group in terms of individual psychological personality traits such as: self-esteem ($U=531$; $p<0.05$), emotional stability ($U=466$; $p<0.05$), gullibility ($U=658$; $p<0.05$), calmness ($U=664.5$; $p<0.05$), relaxation ($U= 400$; $p<0.05$).

Based on our results, we can say that people without eating disorders have significantly higher confidence, self-satisfaction, and emotional stability. Individuals with eating disorders are characterized by excitability, irritability, tension, and frustration. Thus, the most pronounced personality traits that distinguish people with eating disorders from healthy people are: anxiety, low self-esteem, emotional instability, caution and vigilance towards people, self-doubt, anxiety, irritability, frustration, and tendency to experience feelings of guilt.

Spearman's correlation analysis made it possible to determine the existence of a relationship between the clinical manifestations of eating disorders and cognitive characteristics in individuals with eating disorders. Correlation analysis revealed a moderate relationship between the indicators "Excessive concern about weight" and "Control over food intake" ($r=0.34$, at $p\leq 0.05$), "Episodes of overeating and cleansing behavior" and "Self-focusing on the shortcomings of one's body" ($r = 0.35$, at $p\leq 0.05$), "Excessive anxiety about weight" and "Impaired control during eating" ($r=0.36$, at $p\leq 0.05$), "Binge eating episodes and cleansing behavior" and "Violation of control during food intake" ($r=0.49$, at $p\leq 0.05$), "Excessive anxiety about weight" and "Restrictive eating behavior as a means of achieving an affiliation motive" ($r=0.35$, "Episodes of overeating and cleansing behavior" and "Avoidance of objective weight estimation" ($r=0.55$, at $p\leq 0.05$), "Dissatisfaction with the body" and "Violation of control during food intake" ($r=0.44$, at $p\leq 0.05$), "Episodes of overeating and cleansing behavior" and "Emotional eating disorder" ($r=0.65$, at $p\leq 0.05$), "Dissatisfaction with the body" and "Self-focusing on the shortcomings of one's body" ($r=0.47$, at $p\leq 0.05$).

Discussions

The study revealed significant differences in the severity of clinical signs of eating disorders between the group of individuals with anorexia nervosa and the group of individuals with bulimia nervosa in terms of the frequency of episodes of overeating and purging behavior. These results indicate that individuals with bulimia nervosa have a higher incidence of binge eating and cleansing behaviors. This result reflects the features of the clinical picture of the disorder, which includes alternating episodes of overeating and maladaptive compensatory behavior that occurs in response to a "breakdown" in eating. Our results do not contradict the previously obtained data described in works involving the study of bulimia nervosa (Benton and Karazsia, 2015; Moore et al., 2017; Herpertz et al., 2019).

During our study, it was found that for people with bulimia nervosa, compared with people with anorexia nervosa, a higher severity of the desire not to attract the attention of other people to their figure, a violation of control during meals in combination with episodes of overeating, a tendency to change your emotional state with the help of meals and increased attention to the imperfections of your body. The results obtained can be explained by the fact that the understanding of the loss of control over their eating behavior and the prognosis of the consequences (weight gain) in persons with bulimia nervosa are accompanied by the fear of negative assessment of their appearance by other people, as well as the fear of social interactions. In this case, emotional overeating attempts to cope with frightening social

assessment and “relaxation” from negative experiences. Thus, people with this disorder are characterized by an avoidant type of behavior, the desire to avoid condemnation due to existing social fear, and a high susceptibility to emotional overeating since this is a simple and safe way to get rid of tension and cope with stress.

Our work found that people with eating disorders are characterized by high seriousness of dysfunctional attitudes. Comparison with the control group showed a significant predominance of indicators in the group with different forms of eating disorders in comparison with healthy subjects. Thus, it can be concluded that individuals suffering from eating disorders are characterized by a high degree of cognitive biases, regardless of the form of the disease. Our results confirm the data available in the literature on inadequate perception of oneself and the surrounding reality in individuals with eating disorders (Sansone and Sansone, 2011; Hasan and Hasan, 2011; Dufresne et al., 2019).

In the study of personality traits, we found that individuals with bulimia nervosa had a statistically significantly higher severity of emotional instability and expressiveness than those with anorexia nervosa. The results can be explained by the fact that in bulimia nervosa, difficulties in the self-control of emotions and impulsive drives can contribute to the emergence of new bulimic episodes, while individuals with anorexia nervosa are characterized by pronounced sustained control over the amount of food consumed. Our results on a sample are consistent with the data that adolescent girls with bulimia nervosa are indicated by the presence of impulsivity and affective instability (Šobot and Markovic, 2010).

Comparative analysis of personal characteristics of individuals with eating disorders and individuals from the control group showed differences in emotional aspect. The personality traits of individuals with eating disorders include emotional instability (C-), suspicion (L +), anxiety (O +), tension (Q4 +), low self-esteem (MD-). The combination of personality factors O +, Q4 +, L + indicates a neurotic anxiety syndrome, focus on resolving internal conflicts. In the control group, personality traits included emotional stability (C +), gullibility (L-), calmness (O-), and adequate self-esteem (MD). Based on the results obtained, it can be concluded that the control group is characterized by a more “harmonious personality organization” than for persons with eating disorders.

Correlation analysis provided data on the correlations between the clinical manifestations of eating disorders and the cognitive characteristics of individuals with eating disorders. The data obtained indicate that the clinical signs of these disorders are reflected in specific cognitive and behavioral patterns. In individuals with anorexia nervosa, a positive correlation was found between excessive anxiety about weight and some cognitive features: control over food intake; restrictive eating behavior to lose weight. In addition, in individuals with this disorder, positive correlations were found between dissatisfaction with their bodies and such patterns as: avoidance of objective weight estimation, self-focusing of attention on the shortcomings of your body and disturbances in control during food intake. The study of correlations among people with bulimia nervosa revealed a positive relationship between excessive anxiety about weight and such cognitive features as: impaired control during meals; restrictive eating behavior. Similar results were found in individuals with anorexia nervosa, which ensures that the clinical picture of these eating disorders is similar. In addition, in individuals with bulimia nervosa, correlations were found between binge eating, purging, and weight avoidance, and emotional eating disorders. The obtained result suggests that episodes of overeating occur in response to emotional pain, reflecting the eating behavior’s reliance on the emotional state. Above results are consistent with data from other studies on the manifestations of eating disorders and their distinguishing features (Burton and Abbott, 2017).

In addition, positive correlations were found between interoceptive incompetence and insufficient control during meals in individuals with bulimia nervosa. Such results can be explained by the fact that during episodes of overeating, there is no feeling of satiety, the absorption of food continues until the onset of pain in the abdomen and shortness of breath. During episodes of binge eating, it is difficult for a person to identify a feeling of fullness. Our results are consistent with the previously obtained data of other authors (Laviano, Lazzaro and Koverech, 2018; Burton and Abbott, 2019).

Our correlation analysis of personality traits and dysfunctional attitudes in individuals with eating disorders showed that individuals with anorexia nervosa showed a positive correlation between timidity and such dysfunctional attitudes as: dichotomous thinking, overgeneralization, dependence of the state on other people. In addition, in persons with this disorder, positive correlations were found between anxiety and dichotomous thinking, overgeneralization. In the group of people with bulimia nervosa, a positive relationship was found between stress and catastrophizing, the condition’s dependent of the situation on other people. In summary, we can say that people with eating disorders tend to interpret their feelings in terms of defeat, failure, or loss of something important to their happiness or peace of mind. Our results do not contradict the previously obtained data from other authors (Hoseini, Dusti and Bagheri, 2016).

In our work, it was found that the cognitive characteristics characteristic of persons with conduct

disorders correlate with suspicion and anxiety. Similar results were also obtained in other works concerning the personality traits of people with eating disorders (Sanchez-Guarnido, Pino-Osuna and Herruzo-Cabrera, 2015; Izydorczyk and Sitnik-Warchulska, 2018).

In the group of people with bulimia nervosa, we found a positive relationship between emotional instability and interoceptive incompetence. It can be assumed that a person is under the influence of feelings, changeable, and easily upset due to pronounced emotional instability, which can contribute to episodes of overeating to get rid of emotional discomfort. During a bulimic episode, eating large amounts of food in a short period of time is accompanied by a loss of satiety.

Individuals with eating disorders have a high degree of cognitive biases, regardless of the form of the disease. Correlation research has shown that clinical signs of eating disorders are reflected in cognitive characteristics. It was found that individuals with eating disorders tend to interpret their feelings in terms of defeat, insufficiency, loss of something important for their happiness or peace of mind, with a tendency to overgeneralize the meaning of the loss.

Characteristic features of individuals with eating disorders are social maladjustment, avoidance of social experience, and rejection of interpersonal interactions (from casual, everyday interactions to friendship and intimate relationships). Thus, during our study, it was determined that such personal characteristics characterize individuals with eating disorders as anxiety, emotional instability, suspicion, and difficulties in social adaptation.

Conclusions

1. Personal characteristics of people with eating disorders who are users of social networks (members of the specialized group "In contact") have statistically significant differences from the control group. The characteristic personality traits for persons with eating disorders are emotional instability, anxiety, and suspicion, and for the control group, emotional stability, calmness, and gullibility.

2. Individuals with anorexia nervosa and bulimia nervosa have different cognitive characteristics. Individuals with bulimia nervosa, compared with individuals with anorexia nervosa, are characterized by a higher severity of avoidance of objective weight assessment, impaired control during meals, emotional eating disorders, and self-focusing of attention on the shortcomings of their body.

3. The cognitive characteristics of individuals with eating disorders are interrelated with their personality traits. In individuals with anorexia nervosa, a positive correlation was found between suspicion and impaired control during eating and a negative relationship between non-conformism and emotional eating disorder. In persons with bulimia nervosa, a positive correlation was found between suspicion and such cognitive features as: self-focusing of attention on the shortcomings of one's body; restrictive eating behavior to lose weight.

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Conflict of interests

The authors declare no conflict of interest.

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