ALEXITHYMIA, EMPATHY AND SYSTEMATIZATION IN ANOREXIA NERVOSA

ANA ALBESTEANU[1*], LAURA GEORGIANA POPESCU[1], FLORINA RAD[2]

[1]Resident Doctor in Physical medicine and Rehabilitation, "Bagdasar-Arseni" Emergency Clinical Hospital, Bucharest

[2]Lecturer, Child and Adolescent Psychiatry Department, "Prof. Dr. Al. Obregia" Psychiatry Hospital, "Carol Davila" University of Medicine and Pharmacy, Bucharest

Corresponding author email: ana.albesteanu@gmail.com

INTRODUCTION

Eating disorders are highly prevalent and often have serious complications that can become permanent. Among them, anorexia nervosa is associated with high mortality, due both to malnutrition and suicide. That is why eating disorders represent an important public health issue in pediatric psychiatry. Personality traits associated with anorexia nervosa are an important factor in both deciphering the complex phenomena that stand at the root of this pathology, and in choosing the most efficient course of treatment.

Alexithymia is a concept first used is 1972 by Peter Emanuel Sifneos in relation to eating disorders [1]. Considering the complex aetiology of eating disorders, including cultural, biological and psychological factors, deciphering the links between alexithymia and eating disorders is of utmost importance. At this moment, most studies that have considered this issue have proved there is a definite link between the two [2].

Patients diagnosed with anorexia nervosa exhibit character traits similar to those found in obsessive-compulsive personality disorder: perfectionism, high emotional control, obsessive preoccupations [2].

Studies have also found that these character traits remain stable after the patients return to a healthy weight, which indicates that obsessive character traits play an important role in the pathogenesis of anorexia nervosa [3].

The therapeutic success in all psychiatric pathology in negatively influenced in the presence of an added personality disorder. In the case of anorexia nervosa, a reduction of the obsessive-compulsive personality traits or of the perfectionism could improve the patient's self-esteem and their degree of social insertion, which in turn could improve the prognosis of the eating disorder [1]. Another aspect greatly influenced by the presence of these character traits is the degree in which the patient responds to the treatment, especially the psychotherapy, which is a key element in anorexia nervosa [4].

This paper aims to represent how three of the many character traits studied in adolescents diagnosed with anorexia nervosa (alexithymia, obsessive preoccupations, empathy) are clinically manifested and in what degree. We also aim to show the difference between self-evaluated empathy and the one evaluated by the caregiver (usually a parent). In order to better understand the emotional challenges faced by adolescents diagnosed with anorexia nervosa, we also identified their main attachment style (either secure, anxious or avoidant) and grouped them into the five cognitive types (B, E, S, extreme-E or extreme-S) described by Baron-Cohen et al in 2003 and 2004 [5].

METHODS

This paper is based on an observational study that took place between 1 of `January

2018 and 1 of July 2018 in "Prof. Dr. Alexandru Obregia Psychiatry Hospital" on 14 patients diagnostic with anorexia nervosa.

All the patients included in the study met the diagnosis criteria for anorexia nervosa from DSM IV or ICD-10.

In order to better understand de character traits associated with eating disorders we used five questionnaires:

1. Online Alexithymia Questionnaire (OAQ-G2) – This questionnaire was created in 2005 as an attempt to improve older versions (Bermond-Vorst or TAS-20) and most importantly to improve their accessibility. OAQ-G2 has two new sub-categories, "vicarious interpretation of feelings" and "sexual difficulties and disinterest". Taking into consideration the age of the participants in this study, many of them refused to answer the questions pertaining to the last category.
2. Vulnerable Attachment Style Questionnaire (VASQ) - VASQ is made up of 22 items. It uses a total score of insecure attachment style and another two subscales. The two subscales indicate whether the insure attachment style reflects insecurity/ mistrust and the degree of proximity/ distance in relating.
3. The Empathy Quotient (EQ) and Systemizing Quotient (SQ) were designed to be given to the parents. They were designed y Baron-Cohen et al. in 2003 and 2004, respectively. (5) The questionnaires are made up out of a series of affirmations about real-life situations, experiences, and interests where empathy and/or systematizing abilities are needed.
4. The last questionnaire has the same items as the Empathy Quotient (EQ), but it is designed to be completed by the adolescent patient. Its purpose is to compare its results with the Empathy Quotient (EQ) questionnaire.

RESULTS

Concerning alexithymia, the results of the Online Alexithymia Scale (OAQ-G2) questionnaire are illustrated in figure 1.

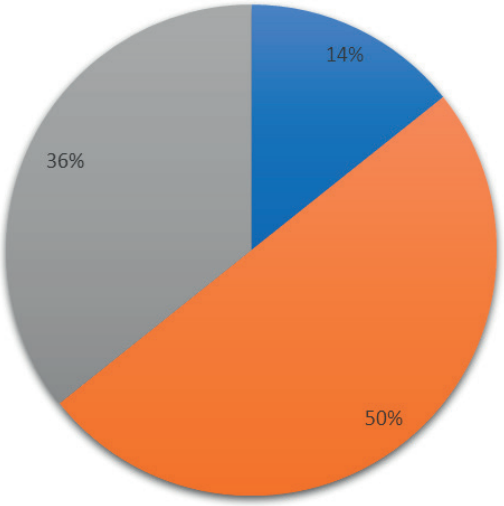

Figure 1: The distribution of OAQ-G2 total scores

We can observe that only for 14% of the patients included in the study strong alexithymia manifestations could be ruled out. Half of the patients make up the category of possible alexithymia. A significant number of patients (36%) exhibit strong alexithymia manifestations and they were included in the latter group - Alexithymia.

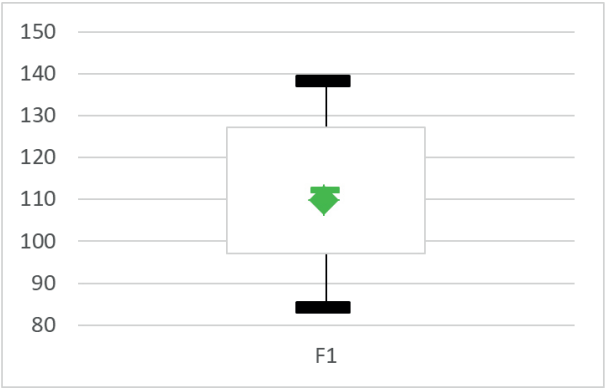

Figure 3: Total score relating to the average, median value, standard deviation, and extreme values

The average score has a value of 112 out of 185, with a cut-off score of <94 for non-alexithymia, >113 for alexithymia. The standard deviation is 13.77.

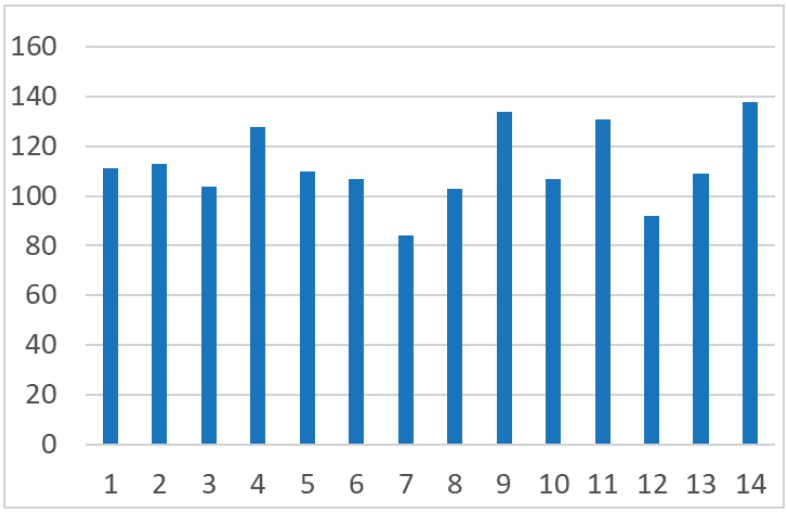

Figure 2: Total score of OAQ-G2 questionnaire

The graph in figure 3 suggests once again the predominance of high scores obtained by the patients diagnosed with anorexia nervosa. Close values for average and median values suggest that the distribution is relatively uniform, and the results can be extrapolated for a larger number of patients.

The OAQ-G2 was also analyzed concerning the individual scores in each of the seven sub-categories of the questionnaire:

1. F1 - Difficulty Identifying Feelings
2. F2 - Difficulty Describing Feelings
3. F2b - Vicarious interpretation of feelings
4. F3 - Externally-Oriented Thinking
5. F4 - Restricted Imaginative Processes
6. F5 - Problematic Interpersonal Relationships
7. F5b - Sexual difficulties and disinterest

Figure 4 comparatively illustrates the individual results for all of the 7 categories of the OAQ-G2 questionnaire. Average scores and standard deviation are reproduced in Table 1.

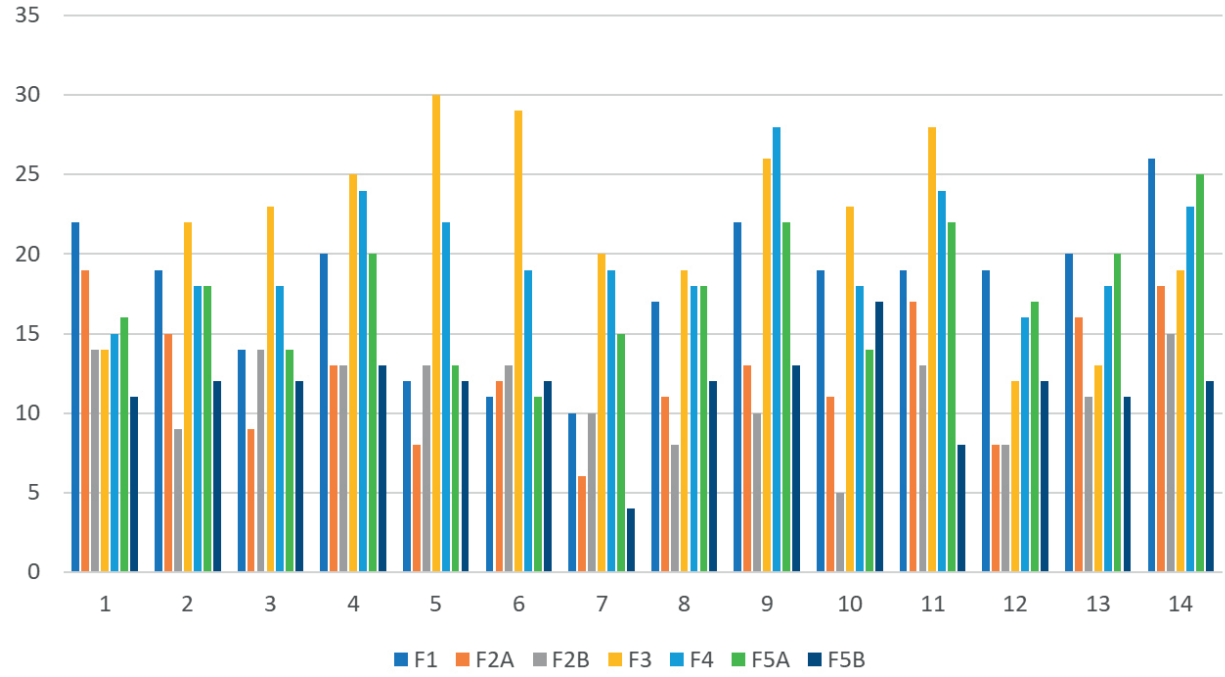

Figure 4: Score distribution for all of the 7 categories of the OAQ-G2 questionnaire

Table I: Average scores and standard deviation for OAQ-G2 categories

	Average	Standard deviation
F1	17.86	4,42
F2a	12,57	3,89
F2b	11,14	2,8
F3	21.64	5.61
F4	20	3.51
F5a	17.50	3.83
F5b	11.5	2.75

By analyzing the data in Table I we can observe that the F4, F5a and F5b sub-categories, "Restricted Imaginative Processes", "Problematic Interpersonal Relationships" and "Sexual difficulties and disinterest" have to lowest standard deviation. This fact suggests that the participant's responses were the most homogeneous in this sub-category. In the case of the F5b sub-category, "Sexual difficulties and disinterest", the explanation can be found in the young age of the participants, most of them refusing to answer questions pertaining to this subject.

The identification of the F5a sub-category, "Problematic Interpersonal Relationships" as having a low score in most of the questionnaires holds up the hypothesis according to which social and psychological factors play an important role in the development of eating disorders.

By analyzing the data in Figure 5 it can be observed that the F2 sub-category ("Difficulty Describing Feelings") has the score distribution that is most strongly oriented towards the maximum value. Therefore, most of the patients had high or very high scores at this sub-category. The same thing can be said about the F1 sub-category ("Difficulty Identifying Feelings") and F3 ("Externally-Oriented Thinking"). The scores obtained at these 3 sub-categories contributed the most at classifying some of the patients diagnosed with anorexia nervosa as manifesting alexithymia.

An inversed orientation can be observed in the F4 sub-category ("Restricted

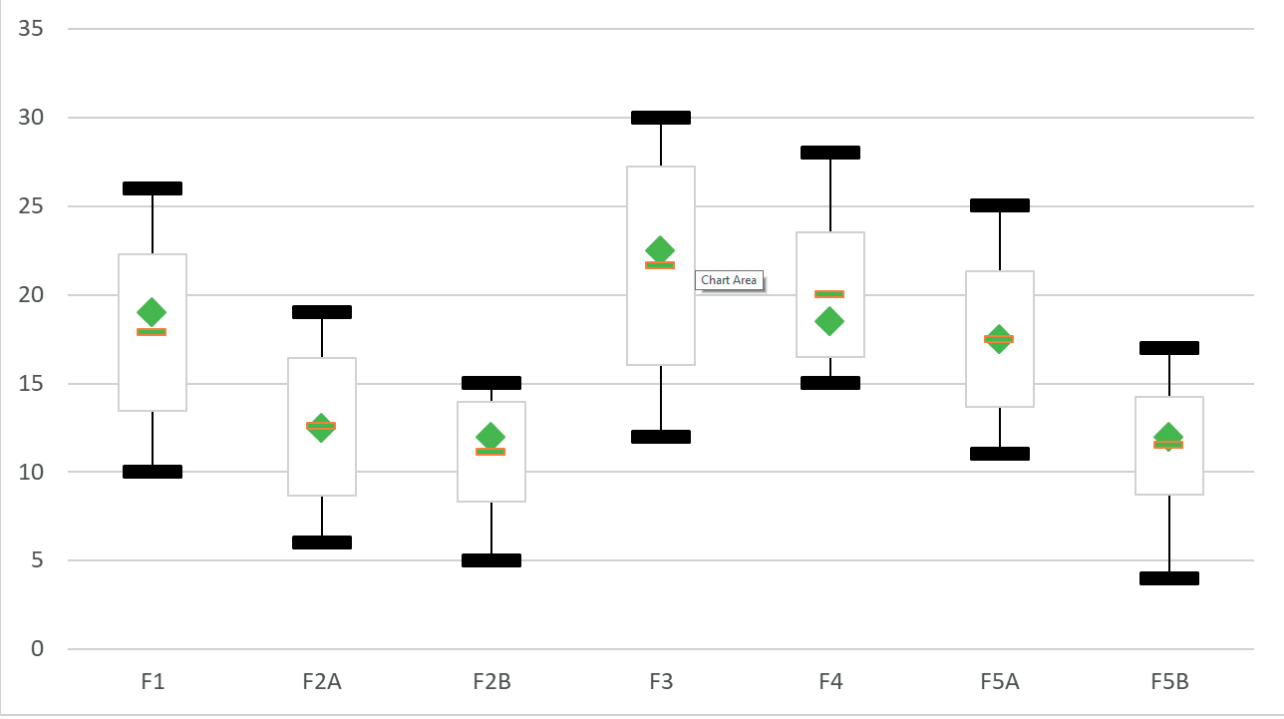

Figure 5: The average, median and standard deviation score for each sub-category of the OAQ-G2 questionnaire

Table II: Pearson Correlation between the different sub-categories of the OAQ-G2

	F1	F2a	F2b	F3	F4	F5a	F5b
F1							
F2a	0.77						
F2b	-0.16	0.21					
F3	-0.31	-0.24	0.19				
F4	0.22	-0.01	0.11	0.65			
F5a	0.71	0.49	-0.05	-0.03	0.62		
F5b	0.43	0.15	-0.33	0.14	0.01	-0.1	
Total	0.7	0.62	0.21	0.4	0.72	0.72	0.35

Imaginative Processes"). This observation shows that most of the patients did not identify themselves as having significant problems concerning this aspect.

By analyzing the data in Table II, it can be observed that F1 sub-categories ("Difficulty Identifying Feelings") and F2a ("Difficulty Describing Feelings") are positively correlated (r=0.77, p=0.005). The confidence interval (p), calculated using T-test shows a very low probability that the positive correlation can be attributed to chance. Thus, patients that scored in one category have a high chance of having a high score in the other. The same thing can be observed for other pairs as well:

- F1 ("Difficulty Identifying Feelings") and F5a ("Problematic Interpersonal Relationships ") with r=0.71 and p=0.014.
- F4 ("Restricted Imaginative Processes") and F3 ("Externally-Oriented Thinking") with r=0.65 and p=0.03.
- F4 ("Restricted Imaginative Processes") and F5a ("Problematic Interpersonal Relationships") with r=0.62 and p=0.04

Above the diagonal line, the r values are symmetrical to those below the main diagonal. According to an article published in Malawi Med J, pertaining to statistical correlations in the medical field [6], a $p<0.5$ is to be interpreted as having no statistical significance.

Considering the purpose and design of the items in categories F1 and F2, the positive correlation is to be expected. The correlation between F1 and F5a could be interpreted as an important clue as to why interpersonal relationships are tense or confusing for people diagnosed with anorexia nervosa.

According to the results derived from the Vulnerable Attachment Style Questionnaire (VASQ), most of the patients included in the study (71%) were identified as having an insure attachment style. Four of the patients diagnosed with anorexia nervosa did not meet the needed criteria to be included in this category, having a score lower than 57 (the cut-off value for this test), but not significantly so (55, 56 and 45 points).

By further analysing the VASQ questionnaire, the ten patients identified as having an insure attachment style were classified into two types: anxious or avoidant. The results show that 60% of the participants exhibit an anxious attachment style, and 40% of them and avoidant attachment style.

These results suggest that most of the patients diagnosed with anorexia nervosa manage difficultly to maintain close, healthy interpersonal relationships, which in turn backs up the results of the alexithymia test (OAQ-G2).

Classing the patients diagnosed with anorexia nervosa into the Baron-Cohen typological classification can give us more clues as to understanding the complex phenomena that surround eating disorders.

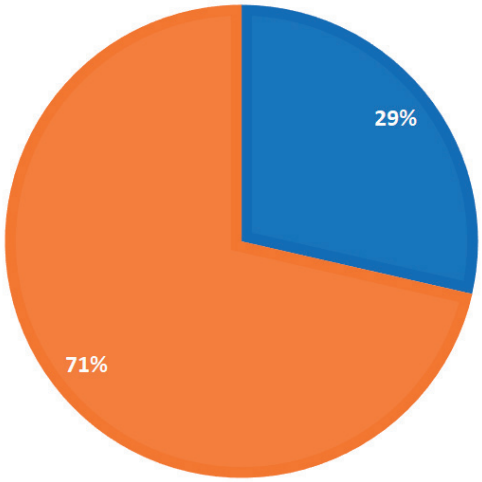

Figure 6: Total scores for the VASQ questionnaire

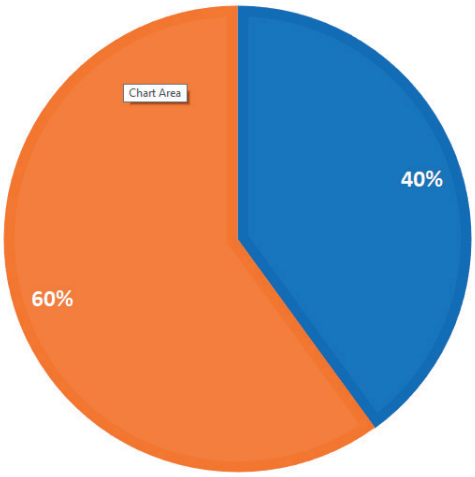

Figure 7: Anxious and avoidant insecure attachment styles

By analyzing the data in Figure 8 it can be observed that most patients can be found in the S-type group (Systematizing). Only 3 of the adolescents included in the study belong in the B group (Balanced) and no patient was included in the E group (Empathizing). These results are conclusive with the academic literature concerning this subject, proving that patients diagnosed with anorexia nervosa exhibit character traits exceptionally similar to those found in the obsessive-compulsive personality disorder: perfectionism, rigidity, high capacity to control one's impulses and emotions [2]. Patients exhibit minimum changes concerning obsessive character traits once they return to a normal weight, which indicates that these character traits play an important role in the pathogenesis of anorexia nervosa [3]. The connection was brought to light several decades ago, and there also

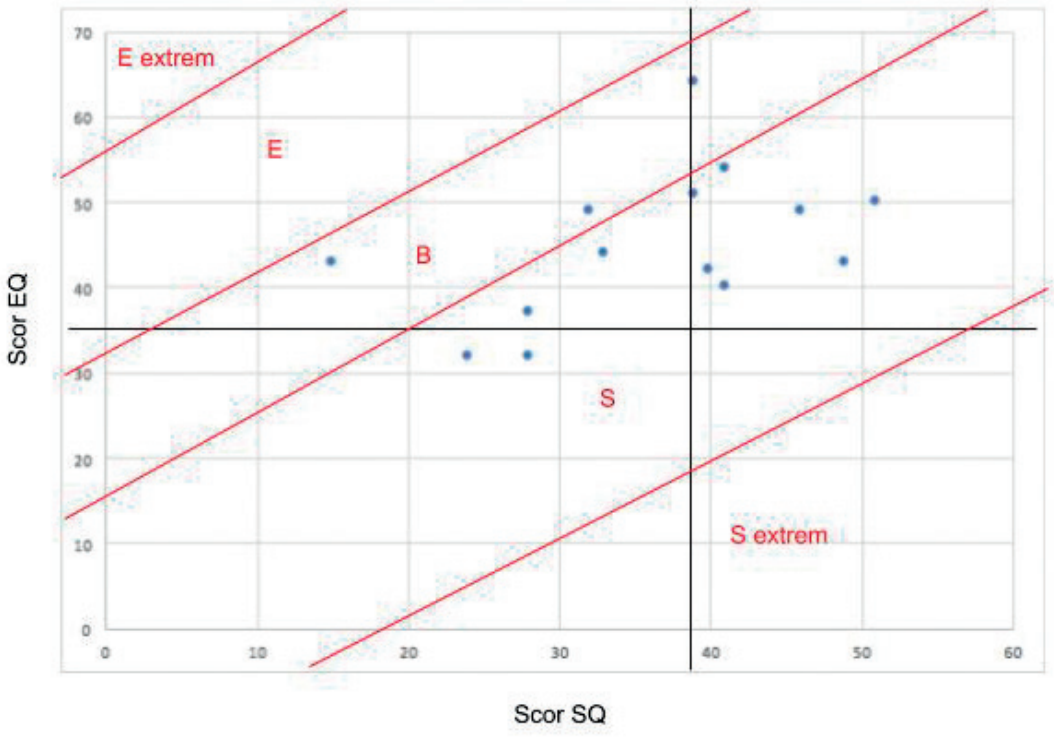

Figure 8: The Baron-Cohen typological classification

Table III: Comparative results of the empathy questionnaire

Parent's score	32	24	28	41	39	41	39	28	15	46	51	49	33	34
Patient's score	31	24	36	25	30	45	45	31	16	54	53	41	55	36

neurochemical arguments that reinforce this theory [7].

Patients diagnosed with anorexia nervosa also exhibit significant disorders concerning emotion processing and their interpretation. This theory is supported by the fact that no patient in the present study was included in the E group.

Table III comparatively illustrates the scores obtained at the empathy score by the parents and the adolescent patients. The average score for the parent questionnaire was 37.71, and the average score for the adolescent questionnaire was 37.28. The two averages have similar values, suggesting that both parents and children are aware of the difficulties they have in initiating and maintaining close relationships, interpreting and processing emotions. The slightly higher value of the adolescent questionnaire could suggest the fact that the patients tend the underestimate these deficits.

The Pearson Correlation score is 0.68, suggesting a strong link between the two scores. Considering the small size of the body of patients analyzed, we eliminated the two pairs with very different total score (41-25 and 39-30), thus obtaining an even stronger Pearson correlation score of 0.88. Robin Morissa et al. found that in patients diagnosed with anorexia nervosa, self-evaluated levels of empathy were similar to those in the general population [8]. This is not the case in the present study, where both patients and adolescents were acutely aware of their deficits in this area, scoring lower than what the questionnaire's authors considered to be the cut-off value.

Between the total alexithymia score and the empathy scores, the value of the Pearson correlation score is -0.35, which according to MM Makaka in 2012 can be interpreted as a low negative correlation [6]. Considering the low number of participants to this study, there is not enough proof to affirm the existence of a negative correlation between the two scores.

Regarding the alexithymia-systematization pair, the Pearson score has a value of 0.09, indicating, according to the same study, a negligible correlation.

CONCLUSIONS

By analyzing and interpreting the data obtained through the five questionnaires filled out by 14 patients diagnosed with anorexia nervosa admitted in the Pediatric Psychiatry Ward at the Clinical Psychiatry Hospital "Prof. Dr. Alexandru Obregia" we drew the following conclusions:

1. There is a strong correlation between anorexia nervosa and alexithymia. More

Table IV - Correlation between total alexithymia, empathy and systematization scores

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Alexithymia	111	113	104	128	110	107	84	103	134	107	131	92	109	138
Empathy	31	24	36	25	30	45	45	31	16	54	53	41	55	36
Systematization	49	32	37	40	64	54	51	32	43	49	50	43	44	42

than half of the patients that filled out the OAQ-G2 questionnaire were grouped into the "possible alexithymia± group and 2 of them manifest very strong traits associated with alexithymia. The average scores are situated at the highest limit of the "possible alexithymia± interval.

2. Concerning the different sub-categories of the same questionnaire, a larger study that would also analyze component F5b ("Sexual difficulties and disinterest") could bring more information on the clinical manifestations of alexithymia in patients diagnosed with anorexia nervosa. During this study, most patients refused to answer the questions pertaining to this category.

3. The most uniform answers were reported in sub-categories F4 ("Restricted Imaginative Processes") and F5 ("Problematic Interpersonal Relationships") suggesting that these two aspects are only to a small extent influenced by character traits manifested alongside eating disorders.

4. Most of the participants scored high in sub-categories F2a ("Difficulty Describing Feelings"), F1 ("Difficulty Identifying Feelings") and F3 ("Externally-Oriented Thinking"), suggesting that these could be considered good aims in psychotherapy for patients diagnosed with anorexia nervosa.

5. The lowest scores were found in sub-categories F4 ("Restricted Imaginative Processes"), suggesting that this aspect remains relatively unchanged in these patients.

6. Positive correlations were found between F1 ("Difficulty Identifying Feelings") and F2a ("Difficulty Describing Feelings") and also between F1 - F5a ("Problematic Interpersonal Relationships"). Identifying these correlations could offer important clues as to why interpersonal relationships are often troubled or difficult for patients diagnosed with anorexia nervosa.

7. Another positive correlation was observed between F4 ("Restricted Imaginative Processes") and F3 ("Externally-Oriented Thinking").

8. Most of the participants were identified as having an insure attachment style. This is probably a consequence of not being able to properly process emotion. This result can be corroborated with the data extrapolated from the OAQ-G2 questionnaire, which indicates interpersonal relationships as one of the key elements that are acutely perturbed in eating disorders.

9. More than half of the patients that participated in the present study (60%) were identified as having an avoidant attachment style. Nevertheless, considering the low number of patients included in the study, no final conclusions can be derived from these findings.

10. By asking the patients to fill out the questionnaires designed by Baron-Chen et al., we found that no patient can be grouped into the E or extreme-E (Empathizing) category. Only two of them belong in the B group (Balanced), and all the rest belong in the S group (Systematizing). From here we can draw two conclusions. Firstly, it further reinforces that patients diagnosed with anorexia nervosa have significant deficits pertaining to empathy and the processing of emotion. Secondly, the data is corroborated with the scientific literature on this subject, which indicates a strong link between eating disorders and systematization, obsessive symptoms.

11. By comparatively analyzing the results derived from the questionnaires filled out by adolescents and the ones filled out by parents, similar scores indicate that parents and adolescents alike are aware of the empathy deficits and emotional disturbances. These results suggest that emotional disturbances are a good target in psychotherapy for patients diagnosed with eating disorders.

12. We tried to correlate the alexithymia, empathy and systematizing questionnaire, but we could not find any correlation

whatsoever, either positive or negative. Therefore, it is safe to assume that the three character traits manifest independently in patients diagnosed with anorexia nervosa.

BIBLIOGRAPHY

1. Anna M. Crane, Marion E. Roberts,Janet Treasure. Are Obsessive-Compulsive Personality Traits Associated with a Poor Outcome in Anorexia Nervosa? A Systematic Review of Randomized Controlled Trials and Naturalistic Outcome Studies. Int J Eat Disord 2007; 40:581–588.
2. I. Hsu LKG, Kaye W, Weltzin T.Are the eating disorders related to obsessive compulsive disorder? Int J Eat Disord 1993, 14:305–318.
3. Davis C, Kaptein S, Kaplan AS, Olmsted MP, Woodside DB. Obsessionality in anorexia nervosa: the moderating influence of exercise. Psychosom Med 1998, 60:192–197.
4. Herpertz S, Hagenah U, Vocks S, von Wietersheim J, Cuntz U, Zeeck A. The diagnosis and treatment of eating disorders. German Society of Psychosomatic Medicine and Psychotherapy, and the German College for Psychosomatic Medicine. Dtsch Arztebl Int 2011; 108: 678–85, 2011.
5. Baron-Cohen, Bonnie Auyeung, Carrie Allison, Sally Wheelwright. Brief Report: Development of the Adolescent Empathy and Systemizing Quotients. J Autism Dev Disord (2012) 42:2225–2235.
6. Mukaka, MM. A guide to appropriate use of Correlation coefficient in medical research. Malawi Med J. 2012 Sep; 24(3): 69–71.
7. Jarry JL, Vaccarino FJ. Eating disorder and obsessive-compulsive disorder: neurochemical and phenomenological commonalities. J Psychiatry Neurosci 1996, 21:36–48.
8. Robin Morrisa, Jessica Bramhama , Emma Smitha & Kate Tchanturiab. Empathy and social functioning in anorexia nervosa before and after recovery. Cognitive Neuropsychiatry, 19:1, 47-57.