

## PRE-OPERATIVE PSYCHOLOGICAL ASSESSMENT IN OBESE PATIENTS, CANDIDATES FOR BARIATRIC SURGERY

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### ABSTRACT

No evidence of specific personality traits characterizing the obese population has ever emerged. Furthermore, studies addressing personological differences between obese individuals with and without Binge Eating Disorder (BED) are not always consistent. In this study 70 obese patients, 22 males and 48 females, (Age range 18 - 67 years; M = 40.70; SD = 12.24) candidates for bariatric surgery, were evaluated with the following instruments: Eating Disorder Inventory, Binge Scale Questionnaire, Big Five Questionnaire and Rorschach Inkblot Test. Findings showed that the two groups were statistically different concerning food disorders, with worse results in obese patients with BED, but no personality differences emerged on the self-reported questionnaires. Conversely, Rorschach's responses and the analysis with the projective method, highlighted qualitative differences in mental functioning. These findings encourage the use of a projective test in the pre-surgical assessment for evaluating deeper eating-related problems as a possible individual marker of the post-operative outcome.

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## 1. Introduction

The issue of the role of personality in obese patients has gained some interest over the years; however, no evidence of specific personality traits has ever emerged. Nevertheless, there is evidence that anxiety, depression, and concern for one's health are frequently found in association with obesity, although they have been poorly investigated. Magee & Heaven (1) used the Big Five Questionnaire to investigate personality traits on more than 5,000 healthy subjects correlated with weight gain in a two-year longitudinal study.

One of the most relevant finding that emerged, was the predictive value of the low awareness of weight gain.

Pozzoli et al. (2) investigated the structural characteristics of personality in a group of 93 obese people, through the Minnesota Multiphasic Personality Inventory-2- (MMPI-2) questionnaire, finding some significant gender differences, but not a specific profile. Some authors

such as Rydén et al. (3) explored personality differences in a sample including overweight and normal-weight subjects, searching for possible distinctive patterns.

The results showed that obese subjects obtained higher average scores than controls on the Karolinska Personality Scale administered by clinicians, especially with regards to "somatic anxiety", "psychic anxiety" and "impulsiveness". The authors concluded that a specific personality profile of obese individuals could not be found, although heterogeneous traits were observed. Sansone et al. (4) found a greater incidence of borderline symptoms in obese women in a psychiatric setting who did not present for obesity treatment; the Authors suggested that the association between obesity and borderline personality symptomatology might derive from deficits in self-regulation. Finally, only one study conducted by Clerici et al. (5) used the Rorschach Inkblot Test in a sample of 106 obese patients, highlighting the presence of alexithymic traits and emotional blunting.

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However, to our knowledge, no study has ever compared self-reported measures with projective methods, nor has a clear difference in personality traits ever been found in obese patients with or without binge eating. Based on this background, the purpose of this research was to investigate possible differences in personality traits in obese patients with and without a Binge Eating Disorder, with the specific goal to compare findings from self-rating instruments and Rorschach's projective test for assessing personality traits.

## 2. Methods

### Procedure

The study was carried out in collaboration with the General Surgery Unit of "Policlinico G. Martino", University of Messina, during the period between December 2018 and May 2019. Patients, who were also candidates for bariatric surgery, underwent pre-hospitalization and specialist consultations (anesthesiology, pneumology, and gastroenterology) and were subsequently sent to the Unit of Psychiatry for a pre-operative psychodiagnostic assessment and clinical evaluation. Each examination included two sessions lasting between 30 and 60 minutes in total.

### Sample

The sample included 88 patients, between the ages of 18 and 67 years, selected for bariatric surgery, who underwent a psychodiagnostic evaluation at the Psychiatric Outpatient Clinic of the University Hospital "G. Martino" of Messina. The subjects agreed to participate to the study by signing a specific informed consent for research purposes, with a guarantee of anonymity according to the recommendations on the ethical principles of research listed in the Declaration of Helsinki.

### Instruments

- Eating Disorder Inventory - EDI (6): a 64 item self-report scale measured on a 3-point Likert scale (from 0 = NEVER to 3 = ALWAYS), identifying 8 subscales that explore the attitudes and behaviors related to weight, eating habits, and body image. The 8 dimensions evaluate: Drive for thinness, Bulimia, Body dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal distrust, Interoceptive awareness, or the difficulty of recognizing and identifying the emotions and sensations related to hunger and satiety, and Maturity fears. Higher scores indicate clinically relevant symptoms of eating disorders.
- Binge Scale Questionnaire - BSQ (7): measures the severity of cognitive, emotional, and behavioral components of bulimia. The scale includes 9 items, with scores ranging from 0 = ABSENCE to 3 = MAXIMUM GRAVITY. The total is between 0 and 23, scores above 9 indicate the presence of binge eating symptoms.
- Big Five Questionnaire (8): a personality questionnaire in which items are measured on a 5-point Likert scale (from "absolutely true for me" to "absolutely false for me") that identifies 5 fundamental dimensions: E = Extraversion or Energy; A = Agreeableness or Friendliness; C = Conscientiousness; S = Emotional Stability; M = Openness to experience or Openness of mind. The BFQ is completed by a Lie (L) scale, a measure of the subject's tendency to give a falsely "positive" or "negative" image of themselves.

- Rorschach Inkblot Test: used for the evaluation of personality features from a psychodynamic perspective, according to the Passi Tognazzo school of interpretation (9). Within this methodology, the analysis of the protocols considered both the structural, quantitative issues and the interpretative, psychodynamically oriented dimension. This method offers the possibility of integrating the traditional scoring with an interpretative approach to the projective dynamics of the personality, including defense mechanisms, cognitive and intellectual features connected to perception, affective-emotional areas, and personality structure. The Rorschach Inkblot Test legend is reported in Figure 1.

W	Whole Response
D	Common Detail Response
DW	Whole Confabulatory Response
Dd	Unusual Detail Response
S	Space Response
WS	Whole-Space Response
SW	Space-Whole Response
SD	Space-Detail Response
F	Form Response
F+	Superior Form Response
F-	Minus Form Response
M	Human Movement Response
FM	Animal Movement Response
m	Inanimate Movement Response
FC	Form-Color Response
CF	Color Form Response
C	Pure Color Response
H	Human
Hd	Human Detail
A	Whole Animal
Ad	Animal Detail
Obj	Object
An	Anatomy
Xy	X-Ray
Na	Nature
Bt	Botany
Ge	Geography
Mit	Mithological
Relig	Religious
Arch	Architecture

**Figure 1. Rorschach Inkblot Test Legend.**

### Statistical Analyses

After the scoring procedures, the data were analyzed using SPSS (Statistical Software for Social Sciences, IBM Chicago v. 17.0). For subscales with different numbers of items, scores were normalized through the transformation into arcsen. Comparison between groups was performed using Student's t-test for independent samples.

### 3. Results

From the total sample, 18 patients were excluded because they provided insufficient (<10) responses to the Rorschach Inkblot Test. The final sample included 70 patients (males = 22; females = 48), mean age 40.70 years (SD = 12.24). With regards to the socio-demographic variables, most of the subjects had a medium-low educational qualification (Lower middle school leaving certificate = 43.4%; Diploma = 43.4%; Elementary school leaving certificate = 7.5%); few subjects had achieved a university Degree title (5.7%). Regarding marital status, 50.9% were married, 43.4% were single, and 5.7% were divorced. According to body weight (range 86-179 kg; M = 120.04; SD = 18.20) and to BMI, 23 subjects presented Class II Obesity (BMI of 35.0 to <4 0.0), and 47 Class III Obesity (BMI of  $\geq 40.0$ ). Based on the cut-off scores of the BSQ (>9), the sample was divided into two subgroups: obese subjects with binge eating (N = 32; 46%), and without binge eating (N = 38; 54%).

#### Differences in eating behavior

Table 1 shows the differences in EDI scores between obese patients with and without binge eating. Between-groups differences were found in several specific dimensions of eating behavior such as: Drive for thinness, Bulimia, Body dissatisfaction, Poor interoceptive awareness, and EDI total score, with binge eating patients showing higher scores than obese subjects without binge eating.

#### Differences in personality traits

BFQ scores (mean  $\pm$  SD) resulted as follows: Extraversion = 50.54  $\pm$  9.09, Agreeableness = 51.1  $\pm$  10.03, Conscientiousness = 48.92  $\pm$  9.40, Emotional Stability = 54.06  $\pm$  9.07, Mental Openness = 46.26  $\pm$  11.27. However, even by analyzing the full sample, none of the patients scored above the normative range, except for low scores on Openness, probably a sign of rigidity or defense. Finally, no differences between subgroups were found in personality profiles.

	Binge (N=32)		Without binge (N=38)		Student t-test	
	Mean	SD	Mean	SD	T	p
Drive for thinness	0.93	0.25	0.67	0.27	3.20	.003
Bulimia	0.65	0.23	0.22	0.22	6.10	<.0001
Body dissatisfaction	1.13	0.13	0.92	0.20	4.33	<.0001
Ineffectiveness	0.46	0.27	0.29	0.30	1.90	.067
Perfectionism	0.70	0.28	0.55	0.31	1.68	.102
Interpersonal distrust	0.55	0.33	0.53	0.24	.27	.790
Interoceptive awareness	0.52	0.23	0.29	0.26	3.12	.004
Maturity fears	0.71	0.26	0.68	0.21	.40	.688
EDI total score	0.68	0.11	0.53	0.13	3.92	<.0001

**Table 1. Comparison of obese patients with and without binge eating at EDI**

#### Differences on the Rorschach Inkblot Test

The analysis of the responses to the Rorschach Inkblot Test was done first by comparing the two groups, with and without binge eating, for each response category (Location; Determinants and Content) and then on general parameters.

The overall comparison of the subjects on the N. of total, banal and original responses showed two main results: obese patients with binge eating provided lower mean values in total responses (Rtot) [Binge (N=32): M Rtot = 12.20  $\pm$  1.74; Without binge eating (N=38): M Rtot = 14.63  $\pm$  4.86; t = -2.67 df = 50.77 p < 0.01], and banal responses [Binge (N=32): ban M = 1.53  $\pm$  1.12; Without Binge (N=38): ban M = 2.82  $\pm$  1.24; t = -3.62 df (28.38) p < 0.01].

#### Locations

When comparing the two groups on locations, patients with binge eating provided fewer common detail (D) and Space (S) responses than patients without binge eating. This is consistent with the low productivity of responses in binge subjects that previously emerged. The trend observed in both groups highlights a higher number of Common Detail Responses than Whole Responses (D > W). This result could suggest a tendency towards practical spirit and concrete intelligence, concreteness in facing reality, and emotional inhibition shared by obese both with and without binge episodes. Instead, the total number of S responses, a possible index of oppositeness, is less than 1 for each protocol/patient, therefore not assuming clinical relevance (Table 2).

Location	Binge (N=32)		Without binge (N=38)		t-test for Equality of Means Equal variance not assumed	
	Mean	SD	Mean	SD	t	p-value (2-tailed)
W	4.80	2.14	5.11	2.45	-.551	.584
D	5.93	2.93	8.29	5.14	-2.386	.020
DW	0.60	1.18	0.45	0.64	.645	.522
Dd	0.33	0.81	0.24	0.49	.579	.565
S	0.07	0.25	0.24	0.43	-2.030	.047
WS	0.00	0.00	0.00	0.00	-1.492	.141
SW	0.07	0.25	0.18	0.39	1.105	.275
SD	0.13	0.35	0.05	0.22	.757	.453

**Table 2. Rorschach Locations of obese patients with and without binge eating**

Determinants	Binge (N=32)		Without binge (N=38)		t-test for Equality of Means Equal variance not assumed	
	M	SD	M	SD	t	p-value (2-tailed)
F	7.73	2.40	10.24	4.30	-3.051	.003
F +	5.00	1.64	6.82	2.94	-3.237	.002
F -	2.73	1.53	3.42	2.92	-1.253	.215
M	1.27	1.03	1.29	0.98	-.093	.926
FM	0.73	0.88	0.79	1.06	-.239	.812
m	0.07	0.25	0.08	0.35	-.165	.869
FC	0.47	0.64	0.32	0.73	.909	.367
CF	0.93	0.59	0.79	1.23	.635	.528
C	0.27	0.59	0.18	0.45	.636	.528
FT	0.53	0.64	0.74	0.79	-1.179	.243
TF	0.07	0.25	0.18	0.39	-1.492	.141
T	0.00	0.00	0.05	0.22	-1.434	.160

**Table 3. Rorschach determinants of patients with and without binge eating**

### Determinants

The main result, in the comparison of the two samples on determinants, is that patients with binge eating showed a lower number of F and F+ responses compared to obese patients without binge eating. Form responses (F) are those in which the concept of form was determined either by the shape or by the outline of the inkblot. The ability to give shape to ambiguous stimuli – *pareidolia* - provides information on the interpretative, imaginative, and intellectual capacities, which in these subjects seem to be reduced.

Indeed, both groups also provided a low number of M responses (Human Movement). “M” are creative projective responses *par excellence*; they refer to the person's attitudes and feelings towards inner world, revealing the concept of self, the vital impulse, conflicts and tensions, fantasies, and instinct (10). Furthermore, the presence of few color responses is also qualitatively relevant, with particular focus on the prevalence of CF responses compared to FC responses: this usually expresses affective lability, as well as the presence of poorly controlled, or not well adapted, emotions (Table 3).

Contents	Binge (N=32)		Without Binge (N=38)		t-test for Equality of Means Equal variance not assumed	
	M	SD	M	SD	t	p-value (2-tailed)
H	1.20	1.08	1.61	1.17	-1.489	.141
Hd	0.73	1.33	0.68	1.16	.161	.873
A	4.80	2.36	6.32	3.29	-2.220	.030
Ad	0.60	0.63	1.03	1.00	-2.154	.035
Obj	1.67	1.23	1.45	1.46	.675	.502
An	0.27	0.45	0.89	1.31	-2.755	.008
Xy	0.13	0.51	0.00	0.00	1.439	.161
Na	0.47	0.74	0.00	0.00	.251	.802
Bt	0.60	1.12	0.42	0.75	-.021	.983
Ge	0.00	0.00	0.61	0.91	-1.781	.083
Mit	0.07	0.25	0.08	0.27	-.192	.849
Relig	0.00	0.00	0.08	0.27	-1.434	.160
Cartoon	0.33	0.48	0.05	0.22	1.730	.089
Mask	0.00	0.00	.013	0.47	-2.368	.023
Dress	0.00	0.00	0.13	0.34	-1.434	.160
Fire	0.07	0.25	0.05	0.22	1.439	.161
Water	0.07	0.25	0.00	0.00	.757	.453
Smoke	0.07	0.25	0.03	0.16	.237	.813
Food	0.07	0.25	0.05	0.22	-.666	.508
Monster	0.33	0.72	0.13	0.52	.634	.529
Arch	0.07	0.25	0.24	0.49	1.439	.161
Scene	0.20	0.41	0.00	0.00	-.758	.451

**Table 4. Rorschach contents of patients with and without binge eating**

### Contents

The statistical analysis highlighted (Table 4) that patients without binge eating gave a greater number of Animal Responses (A) ( $p = .030$ ), Animal detail (Ad) ( $p = .035$ ), Anatomical (An) ( $p = .008$ ), and Mask ( $p = .023$ ) content, compared to the group of patients with binge eating.

This could indicate increased adherence to group thinking, mechanisms of displacement on the somatic side (somatization of anxiety) and attempts to dissimulate emotional states such as the feelings of shame, which, however, this time greater characterizes the group of obese people without binge eating.

In the entire sample, the predominance of animal perception over the human one (A>H) in adults may be connected to a greater component of affective immaturity and difficulties of relational adaptation.

## 4. Discussion

This study focused on a rather neglected aspect in the literature on ED: the quantitative and qualitative analysis of the possible differences between obese patients with and without binge eating and the comparison between self-reported vs. projective personality measures.

### Differences in eating behavior

When compared to the EDI, obese subjects with BED show worse scores than subjects without BED on “Drive for Thinness”, “Bulimia” and “Body Dissatisfaction” subscales. These results are congruent with other studies that revealed a worse psychological functioning in subjects with BED, who are more frequently characterized by poorly controlled impulsive-aggressive tendencies (10), low self-directedness, poor self-awareness, (11) early maladaptive schemas (12).

Moreover, there is evidence that obese patients examined at 6 and 12 months after bariatric surgery reported higher scores on the “Drive for Thinness” and “Body Dissatisfaction” EDI sub-scales, and they also had a worse outcome in reducing BMI compared to subjects who resulted negative on the same scales (13). The literature has shown a strong correlation between the subscales “Drive for Thinness”, “Body Dissatisfaction”, “Ineffectiveness” and the BMI; as known, according to the BMI severity subscales, EDI scores tend to increase/worsen (14). In conclusion, the element that seems to distinguish between obese patients with and without BED is the “Interceptive Awareness”. This result suggests that BED may be characterized by a poor awareness of emotional and bodily stimuli, related to hunger and satiety, with dysregulated behaviors towards food (15), but this hypothesis needs further studies to be confirmed.

### The differences in self-assessed personality

The literature review showed that a specific personality profile characterizing the target population of obese patients has never been identified. We found that in the personality assessment, that was carried out with BFQ, no statistically significant increase emerged. However, the fact that no differences emerged in obese subjects with and without BEDs in the so-called OCEAN dimensions (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism), does not mean that these two groups are homogeneous. Moreover, it does not justify the qualitative differences between different groups of subjects during the delicate phase of the pre-surgical evaluation, so this assumes clinical relevance.

### Differences in personality in the Rorschach Inkblot Test

When compared according to the clinical and projective methods, differences in psychological functioning emerge.

First, patients with binge eating have lower productivity in terms of total responses compared to the subgroup without binge eating. This result could depend on multiple factors: ambition for quality, affective inhibition, pessimistic or depressive tendencies. Furthermore, these protocols showed contents full of insufficiencies and concreteness, with a scarce thought processing capacity.

The second element that differentiates the two groups is represented by a lower number of Common Detail answers (D) in patients with binge eating, which was interpreted as a symptom of greater imaginative insufficiency, concrete intelligence, and greater difficulties in facing the actual problems of everyday life.

Still, the comparison highlighted statistically significant differences in general Form responses (F) and especially few responses of Superior Form (F+).

These elements could lead to hypothesize that these subjects have poor awareness of their own internal experiences, which tend to be misinterpreted, developing a tendency to use food more or less indiscriminately in the presence of various types of emotional stimuli, mainly with an unpleasant connotation (emotional eating) (16).

As for the analysis of the contents, from the comparison between the subgroups, the subjects without binge eating reported a higher number of anatomical responses, including masks and popular contents. The presence of anatomical responses could be a sign of polarization on the body, experiences of poorly controlled and somatic anxiety, which is consistent with the aforementioned review on the subject of Rorschach and obesity (17).

As for the differences that emerged regarding the mask content, it must be specified that this did not appear in the group of subjects who binge, while it is slightly more represented in the group of subjects who do not binge. This content could be read in light of its symbolic meaning. Some authors (18; 19) argue that the mask underlies a defensive mechanism, such as affective isolation, aimed at separating painful emotions and negative effects from experiences in order to protect the ego from anguish.

Moreover, we found that in the group of binge-eating patients there are on average fewer popular responses per protocol. The popular answers represent an indication on the subject's capacity for intellectual and social adaptation, as they represent the degree of participation in the way of adhesion to public opinion conformity. Any "normal" adult subject should perceive at least the three most common popular responses ("humans" in table III, "bat" or "butterfly" in table V, "quadruped animals" in the side details of table VIII).

This last criterion is not met in obese patients with BED, which could indicate the subject's inability or unwillingness to provide the most obvious answer, or it may still be the consequence of a defective reality test and contact difficulty of the patient staying in a human and social environment. On the contrary, patients without binge eating would seem to show a better degree of socio-relational adaptation, taking refuge in a rather conformist and socially shared way of thinking.

The lack of popular answers, therefore, together with concrete thinking, the tendency to somatization, and the insufficient awareness of the affective and impulse drive sphere, seem to characterize the subgroup of obese patients with observed BED.

## 5. Conclusions

This study makes a cognitive contribution to the evaluation of obese subjects, who are candidates for bariatric surgery with and without binge eating. It also highlights the issue related to the use of psychological self-report personality assessment instruments. The following implications must be taken into account.

The subjects underwent an evaluation, during the test completion, in a mental attitude of willingness to obtain the eligibility for the surgical intervention. For this reason, the use of a projective clinical method is recommended, since by definition it allows an individual to overcome the most conscious defenses. The Rorschach Inkblot Test interpretation gives a qualitative reading of the individual functioning, highlighting the differences in the experience of obese subjects who have an uncontrolled eating behavior and allowing us to better understand the psychic functioning and the inner world representation. The last one appears characterized by poor awareness of one's emotional sphere, emotional dysregulation, difficulty in impulse control associated with the presence of somatic anxiety, expression of underlying and almost always unconscious psychic conflicts, which cannot emerge with the self-report assessment.

An in-dept analysis of the study of the long-term personality can finally facilitate the structuring of a personalized psychotherapeutic strategy, in association with multidisciplinary interventions aimed at the treatment of obesity and its complications. A psychological assessment can give valuable support in helping these patients recognize and manage the dynamics of their suffering and clinicians to improve disease outcomes.

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