Psychopathology, body uneasiness and self-identity in patients with non-BED obesity compared to healthy controls

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Introduction: Obesity represents a major public health problem associated with medical and psychological impairment. Obesity is frequently studied with Binge Eating Disorder (BED) comorbidity. Less evidence is available for non-BED obesity, in spite of its correlation with psychological impairment and body image disturbance. In this study, we explored psychopathological features, eating behaviors, body image disturbance and self-identity impairment in patients with obesity and a control group. In patients, we also studied the relation between specific eating/body features and psychopathological symptoms. Finally, we explored the latent factorial structure that describes these features.

Material and methods: The clinical sample was composed by twenty patients suffering from obesity without BED (16 females). The control group included twenty-eight healthy and normal-weight subjects (20 females) enrolled from the general population. All participants underwent a clinical interview and filled out questionnaires about body image and psychopathological symptoms.

Statistics: The Student t test was applied to compare obese patients and healthy controls in all psychological dimensions. In the clinical sample, gender differences were tested through multivariate analyses of variance (MANOVA). Then, correlational analyses explored the relation between specific eating/body features and psychopathological symptoms. Lastly, a principal-components factor analysis was performed to explore the existence of a latent factorial structure emerging from assessment evaluation in obese population.

Results: Obese patients reported significantly higher scores than healthy controls in several psychopathological dimensions, i.e. Somatization, Obsessive-Compulsive, Depression, Hostility, Phobic Anxiety, and Psychoticism. Patients also reported higher body uneasiness and self-identity impairment resulting from some scores on Body Uneasiness Test and Identity and Eating Disorders questionnaire. Avoidant behaviours were more frequently reported in men whereas women reported higher body distress/dissatisfaction. In the clinical sample the questionnaires were correlated and a three-factor structure emerged: “Weight and body control”, “Weakness of Self-Identity”, and “Psychopathological distress”.

Discussion: The present study found that obese patients might present several disturbances in body image, self-perception and general psychopathological distress. Clinicians should be aware of these issues to improve therapeutic strategy in the treatment of obesity.

Keywords: obesity, eating disorders, psychopathology, body image, self-identity, body uneasiness.
of binge eating, defined as abnormal food intake (e.g. excessive amount of food) with a sense of loss of control and without compensatory behaviours (American Psychiatric Association, 2013). BED being a relatively recent construct, early studies did not discriminate between BED and non-BED obesity. In this mixed group, it has been found that compared to controls, patients with obesity tend to overestimate their body size and to have a tendency to an external attribution of causality of events (external locus of control) (Garner et al., 1976). More recently, mental health surveys add evidence on this mixed population (obesity being defined by computing BMI from self-reported height and weight), suggesting statistically significant albeit modest associations between obesity and depressive and anxiety disorders, mainly in women (Scott et al., 2008).

Once differentiated from non-BED obesity, several researches on the psychological and psychopathological profile of patients with obesity focused on BED, and this is not surprising considering that it is the only kind of obesity recognized as an official mental disorder by the DSM 5 (American Psychiatric Association, 2013).

Patients with BED present high rates of mood (depression) and anxiety disorders, alcohol dependence, and impulsiveness; they have several neurovegetative symptoms and higher score on neuroticism; as expected, they also present significant disturbances related to eating and body experience: overeating, emotional eating, weight and body concerns, hunger, unhealthy forms of restraint, negative evaluation of their global physical appearance, global body uneasiness and body dissatisfaction with specific areas of the body, and low self-esteem (Lloyd-Richardson et al., 2000; Cuzzolaro et al., 2008; Grilo et al., 2008; Wilfley et al., 2016; Herbozo et al., 2015; Bulik et al., 2002). Moreover, explorative studies suggest that BED can also be related to paranoid ideas, psychoticism, and interpersonal sensitivity (Aragona et al., 2015). Finally, obsessivity-compulsivity, interpersonal sensitivity, paranoid ideas and psychoticism are related to the severity of BED independently from other factors (Fandiño et al., 2010).

In the majority of studies, obesity without BED is not the focus of research but it is occasionally used as control condition, thus making the appraisal of findings questionable. However, a few studies considered non-BED obesity as the primary object of study suggesting that also this condition may be related to psychological health impairment, high harm avoidance, emotional eating and restrained eating, and low self-directedness (Villarejo et al., 2014; Baños et al., 2014; Bulik et al., 2002, Peterson et al., 2010). Moreover, it is claimed that obesity in general is linked with poor body image, although not all obese persons suffer from this problem or are equally vulnerable, the risk factors influencing this correlation being degree of overweight, being female, and binge eating (Schwartz and Brownell, 2004).

Considering that the availability of evidence on non-BED obesity is limited, it is relevant to specifically assess in this group psychopathological features, eating behaviors and concerns, body image, self-evaluation and satisfaction, and self-identity. Accordingly, in this study we compare psychopathological dimensions, body experience, body concerns and self-identity in patients with obesity without BED and controls.

We also explored the relationship between specific eating/body features and psychopathological symptoms, and the latent factorial structure that best describe the dimensions underlying these features.

**MATERIALS AND METHODS**

**Sample**

The clinical sample is composed by twenty patients suffering from obesity without BED (16 females and 4 males). The mean age of patients is 49.75 (Standard Deviation= 13.78). All patients were recruited in a service dedicated for treatments of eating disorders and obesity. The patients were clinically interviewed by a psychiatrist expert in eating disorders. Exclusionary criteria were diagnosis of Binge Eating Disorder, substance abuse/dependence, and pregnancy or childbirth within the last 12 months.

The control group is composed by twenty-eight subjects (20 females and 8 males) enrolled
from the general population, the mean age of control group is 39.89 (Standard Deviation= 22.78). Exclusionary criteria were the presence of psychiatric disorders and eating disorders traits, pregnancy or childbirth within the last 12 months.

All participants were Caucasian.

Procedure

All subjects signed an informed consent and accepted to enter in this study. The protocol was approved by the local Ethics Committee.

After a clinical interview, participants filled out questionnaires about body image and psychopathological symptoms. In the same session BMI was computed.

Assessment

Participants were evaluated through a semi-structured interview that assessed eating behaviours and other anamnestic information. We used the following instruments to explore psychopathological features, body concerns, body experience, and self-identity.

Symptom Checklist-90R (SCL-90-R; Derogatis, 1994)

The Symptom Checklist-90-R is a questionnaire composed by 90 item evaluating psychopathological traits in both psychopathological and healthy individuals. The SCL-90-R identifies nine symptoms dimensions and a Global Severity Index (GSI). The subscales are Somatization (SOM), Obsessive-

### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Patients (N = 20)</th>
<th>Controls (N = 28)</th>
<th>Student's t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE (Years)</td>
<td>49.75 (13.78)</td>
<td>39.89 (22.78)</td>
<td>-1.86</td>
<td>NS</td>
</tr>
<tr>
<td>BMI</td>
<td>41.10 (7.82)</td>
<td>23.02 (2.94)</td>
<td>-9.85</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>IDEA GEO</td>
<td>0.68 (0.80)</td>
<td>0.46 (0.55)</td>
<td>-1.05</td>
<td>NS</td>
</tr>
<tr>
<td>IDEA OM</td>
<td>1.51 (1.16)</td>
<td>0.52 (0.66)</td>
<td>-3.43</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>IDEA EB</td>
<td>0.92 (1.19)</td>
<td>0.15 (0.19)</td>
<td>-2.89</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>IDEA S</td>
<td>1.24 (0.79)</td>
<td>0.63 (0.58)</td>
<td>-3.02</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>IDEA TOTAL</td>
<td>0.99 (0.77)</td>
<td>0.43 (0.40)</td>
<td>-2.98</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BUT GSI</td>
<td>1.61 (1.35)</td>
<td>0.65 (0.66)</td>
<td>-2.95</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BUT PSDI</td>
<td>1.15 (0.86)</td>
<td>0.60 (0.45)</td>
<td>-2.56</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>BUT WP</td>
<td>2.15 (1.55)</td>
<td>0.91 (1.05)</td>
<td>-3.09</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>BUT BIC</td>
<td>2.05 (1.46)</td>
<td>0.94 (0.95)</td>
<td>-2.96</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BUT A</td>
<td>1.38 (1.59)</td>
<td>0.23 (0.44)</td>
<td>-3.13</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BUT CSM</td>
<td>1.03 (1.07)</td>
<td>0.64 (0.56)</td>
<td>-1.48</td>
<td>NS</td>
</tr>
<tr>
<td>BUT D</td>
<td>1.20 (1.27)</td>
<td>0.21 (0.42)</td>
<td>-3.38</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>SCL-90-R GSI</td>
<td>0.99 (0.65)</td>
<td>0.55 (0.26)</td>
<td>-2.88</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>SCL-90-R SOM</td>
<td>1.18 (0.75)</td>
<td>0.65 (0.38)</td>
<td>-2.90</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>SCL-90-R O-C</td>
<td>1.32 (0.82)</td>
<td>0.80 (0.43)</td>
<td>-2.57</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SCL-90-R I-S</td>
<td>0.82 (0.76)</td>
<td>0.64 (0.45)</td>
<td>-0.97</td>
<td>NS</td>
</tr>
<tr>
<td>SCL-90-R DEP</td>
<td>1.19 (0.72)</td>
<td>0.57 (0.32)</td>
<td>-3.58</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>SCL-90-R ANX</td>
<td>0.96 (0.76)</td>
<td>0.59 (0.37)</td>
<td>-2.02</td>
<td>NS</td>
</tr>
<tr>
<td>SCL-90-R HOS</td>
<td>0.83 (0.80)</td>
<td>0.43 (0.34)</td>
<td>-2.11</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SCL-90-R PHOB</td>
<td>0.53 (0.59)</td>
<td>0.18 (0.27)</td>
<td>-2.50</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SCL-90-R PAR</td>
<td>0.84 (0.6)</td>
<td>0.61 (0.38)</td>
<td>-1.51</td>
<td>NS</td>
</tr>
<tr>
<td>SCL-90-R PSY</td>
<td>0.72 (0.77)</td>
<td>0.28 (0.29)</td>
<td>-2.42</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

IDEA GEO: Feeling oneself only through the gaze of the other and defining oneself only through the evaluation of the other.
IDEA OM: Feeling oneself only through objective measures. IDEA EB: Feeling extraneous from one’s own body.
IDEA S: Feeling oneself only through starvation.
Compulsive (O-C), Interpersonal Sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR) and Psychoticism (PSY).

**Body Uneasiness Test (BUT; Cuzzolaro et al., 2006)**

The BUT is a 71 item self-report questionnaire exploring body uneasiness. It is composed by two sections: section A, 34 item, explores body image concerns and more specifically eating behaviour; section B, 37 item, identifies specific worries about particular body parts. In this study the following subscales were considered: Weight Phobia (WP), Body Image Concerns (BIC), Avoidance (A), Compulsive Self-Monitoring (CSM), Depersonalization (D), Global Severity Index (GSI) and Positive Symptoms Distress Index (PSDI). These scales evaluate the intense fear of gaining weight or of becoming fat, worries related to body and physical appearance, restrictive behaviours and compulsive monitoring of weight gain, personal alienation of own body, general body uneasiness and general body dissatisfaction, respectively.

**Identity and Eating Disorders (IDEA; Stanghellini et al., 2012)**

The IDEA questionnaire is composed by 23 items exploring self-identity related to the body image and the embodiment. It identifies one global score and 4 specific dimensions: ‘Feeling oneself through the gaze of the other and defining oneself through the evaluation of the other’. ‘Feeling oneself only through objective measures.’ ‘Feeling extraneous from one’s own body.’ ‘Feeling oneself only through starvation.’

**Table 2**

Pearson’s correlation between IDEA and BUT scales for obese patients

<table>
<thead>
<tr>
<th>BUT</th>
<th>IDEA GEO</th>
<th>IDEA OM</th>
<th>IDEA EB</th>
<th>IDEA S</th>
<th>IDEA TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUT GSI</td>
<td>0.636**</td>
<td>0.844**</td>
<td>0.617**</td>
<td>0.416</td>
<td>0.823**</td>
</tr>
<tr>
<td>BUT PSDI</td>
<td>0.698**</td>
<td>0.384</td>
<td>0.745**</td>
<td>0.330</td>
<td>0.708**</td>
</tr>
<tr>
<td>BUT WP</td>
<td>0.640**</td>
<td>0.812**</td>
<td>0.702**</td>
<td>0.399</td>
<td>0.832**</td>
</tr>
<tr>
<td>BUT BIC</td>
<td>0.690**</td>
<td>0.847**</td>
<td>0.669**</td>
<td>0.387</td>
<td>0.855**</td>
</tr>
<tr>
<td>BUT A</td>
<td>0.516*</td>
<td>0.760**</td>
<td>0.568**</td>
<td>0.434</td>
<td>0.728**</td>
</tr>
<tr>
<td>BUT CSM</td>
<td>0.467*</td>
<td>0.739**</td>
<td>0.330</td>
<td>0.383</td>
<td>0.628**</td>
</tr>
<tr>
<td>BUT D</td>
<td>0.701**</td>
<td>0.758**</td>
<td>0.752**</td>
<td>0.394</td>
<td>0.856**</td>
</tr>
</tbody>
</table>

* p<0.05, ** p<0.01

**Table 3**

Pearson’s correlation between SCL-R, IDEA and BUT for obese patients

<table>
<thead>
<tr>
<th>GSI</th>
<th>SOM</th>
<th>O-C</th>
<th>I-S</th>
<th>DEP</th>
<th>ANX</th>
<th>HOS</th>
<th>PHOB</th>
<th>PAR</th>
<th>PSY</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDEA GEO</td>
<td>0.706**</td>
<td>0.500*</td>
<td>0.629**</td>
<td>0.733**</td>
<td>0.670**</td>
<td>0.684**</td>
<td>0.253</td>
<td>0.702**</td>
<td>0.729**</td>
</tr>
<tr>
<td>IDEA OM</td>
<td>0.769**</td>
<td>0.597**</td>
<td>0.681**</td>
<td>0.591**</td>
<td>0.656**</td>
<td>0.750**</td>
<td>0.404</td>
<td>0.747**</td>
<td>0.624**</td>
</tr>
<tr>
<td>IDEA EB</td>
<td>0.776**</td>
<td>0.537*</td>
<td>0.825**</td>
<td>0.665**</td>
<td>0.647**</td>
<td>0.703**</td>
<td>0.301</td>
<td>0.682**</td>
<td>0.752**</td>
</tr>
<tr>
<td>IDEA S</td>
<td>0.420</td>
<td>0.435</td>
<td>0.369</td>
<td>0.243</td>
<td>0.395</td>
<td>0.370</td>
<td>0.340</td>
<td>0.249</td>
<td>0.311</td>
</tr>
<tr>
<td>IDEA TOTAL</td>
<td>0.810**</td>
<td>0.620**</td>
<td>0.749**</td>
<td>0.707**</td>
<td>0.722**</td>
<td>0.793**</td>
<td>0.374</td>
<td>0.795**</td>
<td>0.734**</td>
</tr>
<tr>
<td>BUT GSI</td>
<td>0.554**</td>
<td>0.275</td>
<td>0.548**</td>
<td>0.612**</td>
<td>0.452**</td>
<td>0.511**</td>
<td>0.196</td>
<td>0.619**</td>
<td>0.573**</td>
</tr>
<tr>
<td>BUT PSDI</td>
<td>0.749**</td>
<td>0.509**</td>
<td>0.749**</td>
<td>0.590**</td>
<td>0.628**</td>
<td>0.721**</td>
<td>0.310</td>
<td>0.716**</td>
<td>0.695**</td>
</tr>
<tr>
<td>BUT WP</td>
<td>0.785**</td>
<td>0.579**</td>
<td>0.695**</td>
<td>0.667**</td>
<td>0.679**</td>
<td>0.764**</td>
<td>0.398</td>
<td>0.797**</td>
<td>0.659**</td>
</tr>
<tr>
<td>BUT BIC</td>
<td>0.676**</td>
<td>0.580**</td>
<td>0.595**</td>
<td>0.530</td>
<td>0.585**</td>
<td>0.622**</td>
<td>0.282</td>
<td>0.668**</td>
<td>0.495*</td>
</tr>
<tr>
<td>BUT A</td>
<td>0.635**</td>
<td>0.499**</td>
<td>0.467**</td>
<td>0.476**</td>
<td>0.545**</td>
<td>0.654**</td>
<td>0.442</td>
<td>0.608**</td>
<td>0.459*</td>
</tr>
<tr>
<td>BUT CSM</td>
<td>0.842**</td>
<td>0.663**</td>
<td>0.779**</td>
<td>0.648**</td>
<td>0.728**</td>
<td>0.805**</td>
<td>0.452*</td>
<td>0.737**</td>
<td>0.711**</td>
</tr>
</tbody>
</table>

* p<0.05, ** p<0.01

IDEA GEO: Feeling oneself only through the gaze of the other and defining oneself only through the evaluation of the other.
IDEA OM: Feeling oneself only through objective measures.
IDEA EB: Feeling extraneous from one’s own body.
IDEA S: Feeling oneself only through starvation.
of the other’ (GEO), ‘Feeling oneself through objective measures’ (OM), ‘Feeling extraneous from one’s own body’ (EB) and ‘Feeling oneself through starvation’ (S). These scales explore personal sensibility to evaluation of the other and overvalued thoughts regarding body shape, overvaluation of weight concerns, estrangement feelings towards one’s own body and emotion, and overvalued thoughts concerning eating behaviours and dietary restriction, respectively.

**ANALYSIS**

The Student t test was applied to compare patients with obesity and healthy controls in psychopathological dimensions, body experience, body concerns, and self-identity.

In the sample of patients with obesity, gender differences were tested through multivariate analyses of variance (MANOVA).

Then, correlational analyses were run to study the correlations between subjects’ performances on the tests.

In order to explore the existence in the group of patients with obesity of a latent factorial structure emerging from the tests, a principal-component factor analysis (PCA) was performed with independent varimax rotations. The varimax rotation of the consensus matrix (VCM) method, recommended by Kiers (1998) for optimizing simple structure and similarity across samples, was used for this purpose.

**RESULTS**

### Comparison between control subject and obese patients

The general characteristics of the studied samples and the t values are reported in Table 1. Obese patients reported significantly higher scores than healthy controls on the following variables: SCL-90-R’s Somatization, Obsessive-Compulsive, Depression, Hostility, Phobic Anxiety and Psychoticism; BUT’s Weight Phobia, Body Image Concerns, Avoidance and Depersonalization; IDEA’s ‘Feeling oneself through objective measures’, ‘Feeling extraneous from one’s own body’, and ‘Feeling oneself through starvation’.

### Manova

MANOVA on gender showed that sex affects patients’ performance on the BUT, with men showing higher scores in the Avoidance, (F(1,17) = 6.02; p < .05) and women showing higher scores in the Positive Symptoms Distress (F(1,17) = 4.55; p < .05) indices.
Correlations

Correlational analyses revealed high degree of correlation between several scales. Table 2 shows the correlation matrix between IDEA and BUT scales. Table 3 shows the correlation matrix of these scales with the SCL-90-R. This result allowed us to implement the consecutive factorial analysis.

Principal-components factor analysis (PCA)

As depicted in Table 4, the PCA analysis produced a three-factor simple-structure solution, explaining the 82.72% of the total variance. The three resulting factors are: “Weight and body control”, “Weakness of Self-Identity”, and “Psychopathological distress”.

DISCUSSION

This study explored the psychopathological dimensions, body experience, body concerns, and self-identity of patients with non-BED obesity. Individuals with non-BED obesity are often used as control group for patients with BED, but although the latter usually report higher distress and symptoms, the question remains if non-BED patients with obesity may be considered “obese without an eating disorder” or “normal obese” (as they are often referred to) or if also in this group there are eating disordered beliefs, behaviours, personal vulnerability, and general psychopathology. Moreover, a recent study reported significantly greater impairments concerning body image in BED compared to non-BED obesity but some group differences failed to reach significance after Bonferroni corrections, suggesting that there may be also some continuity between the two groups (Lewer et al., 2016). Our prediction was that patients with non-BED obesity may present eating concerns, self-identity impairment, and psychopathological disturbances that make them different from healthy controls and that need to be known and assessed during psychiatric assessment.

As expected, our sample of obese patients had higher BMI and significantly more eating concerns and behaviours, personal vulnerability and psychopathological features than healthy subjects.

These phenomena were overlapping since in our clinical sample we found several positive correlations between scores on the IDEA, BUT, and SCL-90-R subscales. In our view, this result is justified in part by an overlap between some items of the IDEA and BUT (e.g., those exploring personal body image and self-identity), and in part by a correlation between specific features related to eating disturbances and some SCL-90-R dimensions of general psychopathology that may underlie such disturbances.

In our sample the phenomena of psychopathological interest were clustered in three basic factors. The first is “Weight and body control”. This factor comprises the IDEA’s subscales ‘Feeling oneself through objective measures’ and ‘Feeling oneself through starvation’, and BUT’s Global Severity Index, Weight Phobia, Body Image Concern, Avoidance, Compulsive Self-Monitoring, and Depersonalization. The IDEA’s subscales ‘Feeling oneself through objective measures’ and ‘Feeling oneself through starvation’ identify a phenomenon that is typical of patients with Eating Disorders, i.e. the use of external indexes (count of calories, objective weight with continuous weight-checking) and overvalued thoughts concerning eating behaviours and dietary restriction. As expected, patients with non-BED obesity reported higher scores than healthy controls on these phenomena. These results are in line with Van Strien et al. (2009) who reported forms of weight control behaviours and restrained eating also in patients with non-BED obesity. BUT’s ‘Weight Phobia’, which explores uneasiness relating to weight gain and identifies the personal fear of being or becoming fat was also higher in patients with obesity than in controls. This result is in line with previous researches that described different eating styles in overweight adults, obese patients, and healthy controls, restrained eating being associated to overweight and overeating (Baños et al., 2014; Van Strien et al. 2009). Accordingly, in patients with obesity there would be a tendency to weight control, unsuccessful dieting being probably related to regulatory difficulties, emotional eating and impulsiveness (Baños et al., 2014). Weight phobia is also an expression of body image impairment that is related to body...
uneasiness and body dissatisfaction in patients with eating disorders and obesity (Castellini et al., 2014; Cuzzolaro et al., 2008; Sarwer et al., 2005; Lloyd-Richardson et al., 2000; Schwartz and Brownell, 2004). In our study, body image was assessed with the BUT’s ‘Body Image Concerns’ subscale and its score was correlated to previous scales and significantly higher than in healthy controls, in line with previous data on body image (Gatineau and Dent, 2011). Other BUT’s scales that were included in this first factor are ‘Avoidance’ and ‘Compulsive Self-Monitoring’. The former explores some avoidant behaviours (e.g. “I avoid mirrors”; “The thought of some defects of my body torments me”), and reflects body dissatisfaction and fear of stigmatization related to physical defects. The latter evaluates repeated checking of physical appearance and as expected was strictly correlated to the other measures. In literature, there are conflicting results on avoidance and body checking behaviour in patients with obesity with and without BED comorbidity (Grilo et al., 2005; Legenbauer et al., 2011; Lewer et al., 2016). In one study, Grilo et al. (2005) reported that these features are more frequently displayed in BED patients with obesity with higher overvaluation of body concerns than in patients with non-BED obesity. However, more recent research did not find significant differences between these two groups (Legenbauer et al., 2011; Lewer et al., 2016). Further researches are needed to explore these dimensions but our findings add some evidence supporting the idea that also patients with non-BED obesity tend to avoid those situations that may be stigmatizing or disappointing in relation to their body image and eating behaviour and that they indulge quite frequently in body checking behaviour. Lastly, BUT’s ‘Depersonalization’ is also included in this first factor and was significantly higher in obese patients than in healthy controls. This scale is related to estrangement and detachment feelings toward the body. Some items explore these features more specifically (e.g. “I feel detached from my body”, “I have the sensation that my body does not belong to me”; “I look at myself in the mirror and have a sensation of uneasiness and strangeness”) while others are less specific (e.g. “I don’t trust my appearance: I’m afraid it will change suddenly”, “Eating with others causes me anxiety”, “I am ashamed of the physical needs of my body”). While the specific items explore personal alienation respect to the body, leading to an expected correlation with IDEAs’ ‘Extraneity from one’s own body’, the more general items overlap with issues concerning body control and avoidance behaviours, and it is probably for this reason that this scale is included within this factor and not in the following factor.

The second factor which emerged in our sample describes phenomena related to a basic “Weakness of Self-Identity”. This factor includes the IDEA’s total score, its subscales ‘Feeling oneself only through the gaze of the other and defining oneself only through the evaluation of the other’ and ‘Feeling extraneous from one’s own body’, BUT’s ‘Positive Symptoms Distress Index’, and SCL-90-R’s ‘Interpersonal-Sensitivity’, ‘Phobic anxiety’, ‘Paranoid Ideation’ and ‘Psychoticism’. Although not all scales included in this factor were significantly higher in patients with obesity than in controls, it is interesting that they were correlated in a unique factor that can be interpreted as a very basic phenomenal area related to core self-identity, deep body dissatisfaction, and altered body personal experience. Of the scales included in this factor, SCL-90-R ‘Phobic Anxiety’ was designed to assess avoidant behaviors, as for example avoiding places or situations. We found higher scores on this scale in clinical subjects than in healthy controls. This may reflect a general proneness to anxiety, which is in line with previous data on the association between anxiety spectrum disorders and obesity (Scott et al., 2008), or a more specific kind of anxiety related to interpersonal issues. Recent research reporting high prevalence of social phobia in obese subjects before and after surgery (Mirijello et al., 2015) suggests that interpersonal anxiety might be a key issue in these patients; the fact that in our study the same factor includes this scale together with other scales specifically exploring the basic theme of identity in relation to intersubjectivity (e.g. the IDEA’s ‘Feeling oneself only through the gaze of the other and defining
oneself only through the evaluation’) apparently supports this view. Identity is a basic dimension defined as a global construct related to the process of building a self-definition as well as to products of this process including knowledge about personal attributes and social roles (Stein and Corte, 2007). Phenomenologically oriented studies suggest that patients with eating disorders may present a profound disturbance of self-identity in which feeling extraneous from one’s own body would be a core vulnerability feature (Stanghellini et al., 2015). These features are explored particularly by the IDEA’s ‘Feeling extraneous from one’s own body’ subscale that identifies the extraneity of own’s body that also impairs interpersonal relationships. To our knowledge, no specific data are reported on non-BED obesity concerning this particular phenomenon. In this study, we found significantly higher levels of body extraneousness than in controls, suggesting that this phenomenon could be a core vulnerability feature in non-BED obesity as well. Moreover, as a basic alteration in body experience, feeling extraneous from one’s own body may be related to those profound self-experience disturbances that sometimes are at the basis of the development of possible psychotic phenomena. In general, psychotic phenomena are not so frequently studied in relation to eating disorders; however, some reported psychotic symptoms in anorexia, bulimia and BED (Miotto et al., 2010; Fandiño et al. 2010; Aragona et al., 2015). Our study extends this issue to non-BED obesity, because our patients scored significantly higher on both IDEA’s ‘Feeling extraneous from one’s own body’ and SCL-90-R’s ‘Psychoticism’ a scale exploring putative psychotic experiences like believing that other people control your thoughts, having thoughts that are not your own, etc. Moreover, we found a strong correlation between these two scales and other scales exploring possible psychotic phenomena like paranoid tendencies and reference ideas.

Lastly, the third factor represents symptoms of general “Psychopathological distress”, it includes the SCL-90-R’s Global Severity Index and SCL-90-R’s subscales ‘Somatization’, ‘Obsessive-Compulsive’, ‘Depression’, ‘Anxiety’, and ‘Hostility’. The following four scales were significantly higher in patients than controls: a) Somatization. It evaluates somatic symptoms not explained by pathological findings (e.g. headache; nausea, etc.), suggesting a physical distress possibly related to psychological impairment and/or difficulties in coping strategy and emotional regulation. Previous evidence shows that this scale frequently correlates to BMI in obese patients (Papelbaum et al., 2010). Our result was not surprising considering that (i) it is expected that obese patients are cognitively more focused on body issues, hence increasing the likelihood to report somatic complaints (Petroni et al., 2007), (ii) there may be some overlap between the items of this scale and body symptoms related to obesity, and (iii) obese patients are reported to have difficulties in coping strategy and emotional regulation which are related to psychological distress (Hemmingsson, 2014) and somatization (Petroni et al., 2007). b) The Obsessive-Compulsive scale. It usually evaluates obsessive-compulsive symptoms and reflects recurrent thoughts, difficulties remembering things, problems in concentrating. Previous literature data suggested that these psychopathological features are more present in obese women with BED than in obese non-BED, but there is no evidence for obese non-BED compared to healthy control (Fandiño et al. 2010; Wilfey et al., 2016). Our data are an interesting exploratory finding that can be heuristically useful for future studies. c) Depression. This scale evaluates specific negative mood symptoms like loss of energy, loneliness, feeling depressed, being pessimistic about the future. Our results are in line with previous data displaying a strong relation between lifetime prevalence of obesity and depression (Atlantis and Baker, 2008; Simon et al., 2006). Moreover, the degree of obesity, depression and self-esteem can be related to body image disturbances and body dissatisfaction (Atlantis and Ball, 2008; Friedman et al., 2002), suggesting the need for further studies exploring these issues in more detail. d) Hostility. It evaluates the presence of specific symptoms as easily getting angry, annoyed, destructive impulses, etc. This dimension may be related to impulse dysregulation and has been studied in patients.
with BED suggesting an association between uncontrolled eating, overeating, impulsivity (Villarejo et al., 2014), and executive function impairment (Calvo et al., 2014). Our finding may extend this evidence to non-BED obesity. Overall, this factor is indicative of a general distress that in our sample might be specific of the eating disorder or the underlying personality features, but it may also be secondary to the chronic medical conditions involved in obesity or to its influence on the quality of life.

Before concluding, potential limitations should be considered. In this study, the sample size was rather small. Moreover, our clinical group was composed by severely obese adults enrolled in a service dedicated for treatments of eating disorders and obesity, for this reason our findings may not be generalizable to non-treatment seeking obese patients. Future studies are needed to confirm our preliminary results in a larger sample of non-BED obese including both obese patients (seeking medical/psychological and surgical) and obese adults from the general population. Future studies are also needed to explore body image and self-identity disturbances in obese children and adolescents to understand possible keys to contrast obesity rising. Finally, the possible relationship between basic alterations in body experience and psychotic like experience needs to be addressed in depth with more specific instruments.

Despite limitations, our study found that obese patients without BED may present several disturbances at three levels: a) disordered beliefs and behaviors specifically related to their problems with eating, body size and body image; b) more nuclear disturbances of basic self-perception which may be at the basis of the disordered eating; and c) a general psychopathological distress that might be a primary comorbidity or secondary to the consequences of obesity on medical conditions and/or quality of life. These disturbances need to be known and assessed during medical evaluation, because clinicians’ awareness of these areas of discomfort may improve the understanding of the patients’ problems, their involvement in therapeutic alliance, and consequently the compliance to obesity treatment.

**REFERENCES**


