Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

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Abstract

Aim of the Study: Aim of this study was to assess the reliability, validity and psychometric properties of the Greek translation of the body dysmorphic disorder Yale-Brown obsessive compulsive (BDD-YBOCS) scale.

Method: The BDD-YBOCS scale was administered to 88 healthy individuals (57 women and 32 men) and 32 subjects suffering from body dysmorphic disorder (BDD) (20 women and 12 men) matched for age. 57 subjects from the 88 healthy individuals and all subjects from the BDD group, completed also: Symptom Checklist-90-R(SCL-90) scale, Eysenck Personality Questionnaire (EPQ), State-Trait Anxiety Inventory (STAI 1 and STAI -2), Zung Self-Rating Depression scales.

Results: Principal components factor analysis, revealed two factors accounting for 61,52% of the total variance. Cronbach's alpha for Factor 1 was 0.885 and for Factor 2 was 0.886. The YBOCS-BDD scale and its factors, presents highly correlation with most items of SCL-90, ZUNG and STAI-2 (p < 0.005) scales.

Conclusion: The Greek translation of the YBOCS-BDD scale is both reliable and valid and is suitable for clinical and research use with satisfactory properties.

Keywords: Body Dysmorphic Disorder; Reliability; Validity

Introduction

Body dysmorphic disorder (BDD) is a relatively common and often severe psychiatric disorder. It belongs to the Obsessive-Compulsive and Related Disorders. According DSM-V diagnostic criteria: BDD disorder is characterized by distress and excessive preoccupation with one or more perceived defects or flaws in appearance that are not observable or appear only slight to others [1]. In particular, repetitive behaviors or mental acts are performed in response to the patient's appearance related preoccupations (e.g., mirror checking, skin picking, excessive grooming, comparing with others) [1]. Most common preoccupations relate to facial features, including the nose, face, eyes, skin and hair but patients can become preoccupied with any aspect of appearance [2].

Prevalence of BDD disorder in the general population of 1.7 - 2.4%. This percentage increases reaches a maximum of 7.4% among psychiatric patients and 15.6% in cosmetic surgery settings [3,4]. The disorder typically follows a chronic course and is associated with marked functional impairment including, poor quality of life with social dysfunction, unemployment and reduced academic performance, while high comorbidity with major depressive, social anxiety and obsessive - compulsive disorder are also frequently reported [5]. BDD

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

885

sufferers are four times more likely to experience suicidal ideation (17 - 80%) and 2.6 times more likely to engage in suicidal attempts (24%) compared to healthy subjects [6,7]. All the above has led to increased need to focus on understanding the phenomenology, aetiology and treatment of the disorder [8].

Cognitive factors, such as selective processing of threat stimuli [9] and increased discrimination of facial stimuli [10] may play an important role in the development and persistence of the disorder. BDD disorder often is undiagnosed, despite it's prevalence because patients are not ask for mental health support due to poor insight and often ask for cosmetic surgery or other treatment [11,12] in an attempt to correct their perceived appearance defect, with 33 - 76% of patients undergoing surgical and invasive cosmetic treatments, typically associated with negative outcomes and persistent or worsening BDD symptoms [13]. Therefore, it is important to increase awareness regarding this serious disorder and to promote its detection, diagnosis and treatment. The use of psychometric instruments can facilitate the accurate diagnosis of BDD in primary and secondary care settings [14].

The Yale-Brown Obsessive- Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS) [15]; is a 12-item, semi-structured, rater-administered measure that assesses BDD severity during the past week. Item 1 through 5, assess obsessional preoccupation with the perceived defect in appearance (time devoted, interference with functioning, subjective distress due to preoccupation and control over preoccupation). Item 6 through 10, assess compulsive behaviors (time allocated to the behavior(s), degree of disruption of the patient's daily routine caused by the behavior(s), distress experienced due to the behavior(s), resistance of the behavior(s) and control over the behavior(s). Last but not least, Item 11 measures the degree of insight and item 12 avoidance. Each of the 12 items is rated 0 - 4 points (0 = not at all to 4 = every day) on a Likert scale. The total BDD-YBOCS score is the total sum of items 1 - 12 (range 0 - 48).

The scale was adapted from the Yale- Brown Obsessive-Compulsive Scale (Y-BOCS), the most widely used measure of obsessive-compulsive disorder (OCD) severity [16], because BDD has many similarities to OCD [17]. The BDD-YBOCS has been the most widely used measure of BDD severity in research studies, including studies evaluating the efficacy of psychosocial (cognitive-behavioral) and pharmacological treatments for BDD [18,19].

Aim of the Study

The aim of this study is to translate, culturally adapt, and validate the BDD-YBOCS for Greece. Internal consistency, convergent and discriminant validity have also been adapted to fit the Greek version of the instrument.

Materials and Methods

The YBOCS-BDD is a scale used in evaluation of symptom severity and treatment outcome in Body Dysmorphic Disorder.

In order to develop a Greek version of YBOCS-BDD scale, the scale was translated in Greek by 2 psychiatrists. Then, the Greek version of YBOCS-BDD scale was back-translated by a person who did not have any knowledge about the original scale or purpose of the study or the original English version. The back-translated version was reviewed in order to establish whether is consistent with the original English version and thus the final Greek version of YBOCS-BDD scale was obtained. Permission to translate and validate instrument was obtained from Professor Katharine Philips, senior author of the original version of the YBOCS-BDD. Written inform consent was obtained from all participants.

Study procedure

The scale was administered to 88 healthy from random sample among the general population: 57 women (mean age 32.42 ± 10.967 years, range 19 - 55) and 31men (mean age 32 ± 7.229 years, range 22 - 44). A clinical interview confirmed that they did not suffer from BDD or any other mental disorder.

57 subjects from the 88 healthy individuals: 39 women (mean age 30.82 ± 10.9, range 19 - 53) and 18 men (mean age 32.27 ± 7,23, range 22 - 43) and all subjects from the BDD patients group, completed also: SCL-90 scale, EPQ, STAI- 1, STAI -2, ZUNG scales.

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

886

In addition, the scale was administered to 32 subjects with BDD: 20 women (mean age 31.65 ± 7.909 years, range 20 - 49) and 12 men (mean age 29 ± 7.261 years, range 20 - 39). When considering the severity of symptoms, the mean BDD-YBOCS score was for women 27.9 ± 6,707 and for men32 ± 8.644. All of them completed also, SCL-90, EPQ, STAI- 1, STAI -2 and Zung scales.

BDD was diagnosed according to DSM-5 criteria for the disorder during a detailed clinical interview, by two psychiatrists.

Eysenck Personality Questionnaire (EPQ) is a questionnaire to assess the personality traits of a person. The Eysenck personality questionnaire consists of 84 items evaluated by the patient with a yes or no. The purpose of this questionnaire is to explore four dimensions of personality: psychoticism (P), neuroticism (N) extraversion (E) and lying (L) [20,21].

The Symptom Checklist-90-R (SCL-90-R) is a relatively brief self- report psychometric instrument, designed to evaluate a broad range of psychiatric and symptoms. The primary symptom dimensions that are assessed are: i) somatization ii) obsessive - compulsive iii) interpersonal sensitivity iv) depression v) anxiety vi) hostility vii) phobic anxiety viii) paranoid ideation ix) psychoticism. The questionnaire includes 90 questions in total. All entries are rated from 0 to 4, giving a total score of 360. The scale also assesses 3 aggregate indexes: i) the general gravity index ii) the positive symptoms distress index iii) the set of positive symptoms [22,23].

The Zung Self-Rating Depression Scale is a 20-item self-report questionnaire that is widely used as a screening tool, evaluating affective, psychological and somatic symptoms associated with depression. Each item is scored on a Likert scale ranging from 1 to 4. A total score is derived by summing the individual item scores, and ranges from 20 to 80 [24,25].

The State-Trait Anxiety Inventory (STAI) is an instrument that quantifies adult anxiety. This particular instrument is used to separate between state anxiety (S-Anxiety) and trait anxiety (T-Anxiety), feelings of anxiety and depression [26,27]. It can be used in clinical settings to diagnose anxiety and to distinguish it from depressive syndromes. STAI includes a 40-question response taking approximately 10-20 minutes for completion. All items are rated on a 4-point scale.

A weighted Greek version of all scales is available

Statistical analysis

All statistical analyses were carried out with STATISTIKA 12.5 STATSOFT INC. and we use 5% significant levels for all statistical. Internal consistency reliability of the instrument was evaluated with Cronbach's alpha coefficient. The contribution of each item to the total score was evaluated with Spearman Rank Order correlations, that also use for evaluation of convergent and discriminant validity, that is the relationship between total BDD-YBOCS and each factor scores BDS-1, BDS-2, BDS-1T and BDS-2 T and scores of other scales: SCL-90 (n = 57), EPQ (n = 57), ZUNG (n = 57) and STAI-1 and STAI-2 (n = 56).

Principal component factor analysis was conducted using orthogonal (varimax) rotation. The number of factors was based on an examination of eigenvalues greater than 1.

Discriminant validity was determined by comparing scores in psychometric scales (SCL-90, EPQ, ZUNG, STAI-1, STAI-2) of two groups (88 subjects without BDD diagnosis and 32 patients with BDD). Differences were evaluated using a non-parametric test (Man-Whitney U test) and applying the Bonferroni criterion, as most of variables involved did not meet the homogeneity criterion.

In addition, we recoded the BDS factor scores using the 2XSD cut-off thus splitting the subjects into two groups, those with a T-Score of below 70 and those with a score of 70. The BDS factor 1 T-score and BDS factor 2 grouping was cross tabulated against the control/body dysmorphic dimension.

In order to further investigate the ability of the BDS scales to differentiate between Body Dysmorphic patients and healthy controls, we used the MedCalc software to perform ROC analysis using the BDS raw scores as well as the corresponding factor scores, i.e. BDS factor 1 and BDS factor 2.

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

887

Results

Kayser-Meyer-Olkin Measure of Sampling Adequacy is 0,778, Barlett's test of Sphericity 451.90, (p < 0,0001), rejects the null hypothesis that the correlation matrix is an identity matrix. Taken together, these tests provide a minimum standard which should be passed before a factor analysis (or a principal components analysis) should be conducted.

Principal components factor analysis was conducted using orthogonal (Varimax) rotation and revealed two factors accounting for 61.52% of the total variance. The number of factors identified was based on an examination of eigenvalues greater than one and the scree plot (Figure 1). Factor 1 had high loadings mainly on thought items with the exception of 'time spend on behaviors' and 'interference due to behaviors' and explains 50.169% of total variance. Factor 2 had high loadings mainly on behavior items and explains 11.36% of total variance. In this respect, one could consider Factor 1 as an internal, covert behavior factor and Factor 2 as an external overt behavior factor (Table 1).

	Factor Loadings (varimax row)	
	Factor 1	**Factor 2**
Time preoccupied with thaughts	0.757	0.104
Interference due to thaughts	0.668	0.304
Distress due to thoughts	0.712	0.314
Control over thaughts	0.742	0.305
Time spent on behaviours	0.769	0.253
Interference due to behaviours	0.697	0.375
Distress due to behaviours	0.432	0.709
Resistance against behaviours	0.151	0.868
Control over behaviours	0.161	0.867
Insight	0.389	0.503
Avoidance	0.304	0.677
Exolained Variance	4.133	3.249
Proportion of Total variance	0.344	0.270

***Table 1:** Components extracted.*
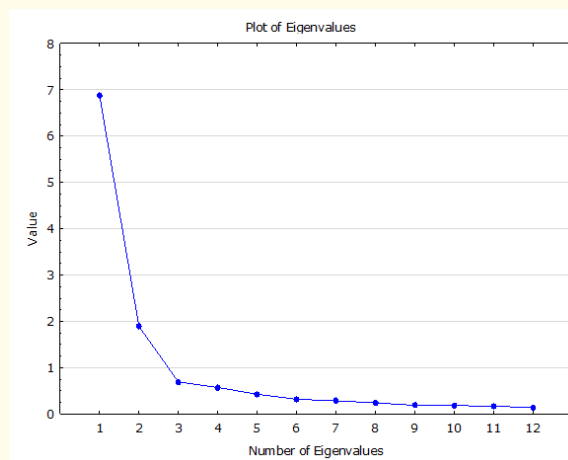
***Figure 1:** The plot of the eigenvalue of each factor.*

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

888

Cronbach's alpha for Factor 1 was 0.885 and for Factor 2 was 0.886. Both these values are totally acceptable for further analysis and interpretation of the scales (Table 2).

The instrument showed excellent internal consistency (Cronbach alpha for the total scale 0.875). All items favorably contributed to the internal consistency of the scale (Table 2).

Table 2 presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. We can see that removal of any question, would result in a lower Cronbach's alpha. Therefore, we would not want to remove any item.

Summary for scale: Mean 0.818, sd 3.721, Valid N88, Cronbach alpha: 0.885, standarized alpha:0.836, Average inter item correlation:0.537	Scale Mean if item deleted	Sd if item deleted	Item total correlation	Cronbach's a if item deleted
Time preoccupied with thaughts	3.045	3.261	0.619	0.875
Interference due to thoughts	3.352	3.205	0.645	0.872
Distress due to thoughts	3.147	3.149	0.699	0.866
Resistance against thoughts	3.431	3.186	0.731	0.862
Control over thoughts	3.318	3.149	0.731	0.861
Time spent on behaviours	3.170	3.212	0.734	0.877
Interference due to behaviours	3.443	3.246	0.612	0.866
Summary for scale: Mean 2.471, sd 3.435, Valid N88, Cronbach alpha: 0.839, standarized alpha:0.886, Average inter item correlation:0.533	Scale Mean if item deleted	Sd if item deleted	Item total correlation	Cronbach's a if item deleted
Distress due to behaviours	2.083	2.407	0.678	0.799
Resistance against behaviours	1.988	2.385	0.706	0.991
Control over behaviours	2.045	2.358	0.711	0.789
Insight	1.655	2.333	0.531	0.850
Avoidance	2.904	2.406	0.690	0.808

***Table 2:** Cronbach' alpha if item deleted*

In order to investigate the criterion based validity of the YBOCS-BDD scale we compare it with the SCL-90, EPQ, ZUNG and STAI scales. The YBOCS-BDD scale and its factors BDS-1, BDS-2, BDS-1T and BDS-2T presents highly correlation with most items of SCL-90 (general index of psychopathology, sum of positive symptoms, somatization, obsessive compulsive, interpersonal sensitivity, depression, hostility, phobic anxiety, paranoid ideation, psychoticism) ZUNG and STAI-2 ($p < 0.005$) scales.

Discriminant validity, was determined by comparing scores of psychometric scales of 57 subjects without BDD 32 patients with BDD diagnosis. The two groups, differed in almost every item of SCL-90 scale: general index of psychopathology, sum of positive symptoms, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism ($p < 0,005$, Table 4) with patients with BDD having higher scores.

In addition, we recoded the BDS and DCQ T factor scores using the 2X SD cut-off thus spitting the subjects into two groups, those with a T-Score of below 70 and those with a score of 70+. The BDS factor 1 T-score and BDS factor 2 grouping was cross tabulated against the control/body dysmorphic dimension. The results were as follows.

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

889

	N	BDS score	p	BDS factor1	p	BDS factor2	p	BDS factor2	p	BDS T1 factor1	p	BDST2 factor2	p
SCL-90 index	57	0.400	0.002	0.242	0.069	0.420	0.001	0.477	0.000	0.477	0.000	0.233	0.003
SCL-90 sum of positive	57	0.417	0.001	0.209	0.117	0.470	0.000	0.434	0.000	0.434	0.000	0.244	0.002
SCL-90 preoccupation	57	0.133	0.325	0.069	0.605	0.234	0.093	0.385	0.004	0.305	0.004	0.160	0.139
SCL-90 somatization	57	0.306	0.021	0.211	0.113	0.370	0.003	0.385	0.004	0.305	0.004	0.172	0.112
SCL-90 obsessive compulsive	57	0.400	0.002	0.200	0.135	0.475	0.001	0.386	0.000	0.386	0.000	0.232	0.031
SCL-90 interpersonal sensitivity	57	0.346	0.008	0.300	0.023	0.255	0.055	0.485	0.000	0.485	0.000	0.090	0.388
SCL-90 depression	57	0.386	0.003	0.223	0.095	0.368	0.004	0.447	0.000	0.447	0.000	0.194	0.072
SCL-90 anxiety	57	0.284	0.090	0.084	0.523	0.308	0.119	0.350	0,000	0.350	0.000	0.208	0.053
SCL-90 hostility	57	0.406	0.001	0.226	0.090	0.382	0.003	0.397	0.000	0.397	0.000	0.297	0.005
SCL-90 phobic anxiety	57	0.287	0.031	0.117	0,381	0.308	0.119	0.424	0.000	0.424	0.000	0,092	0.393
SCL-90 paranoid ideation	57	0.393	0.002	0.195	0.144	0.414	0.001	0.409	0.000	0.409	0.000	0.216	0.045
SCL-90 psychoticism	57	0.366	0.006	0.211	0.117	0.448	0.000	0.350	0.000	0.350	0.000	0.160	0.140
STAI-1	56	0.155	0.262	0.080	0.544	0.114	0.401	0.355	0.000	0.355	0.000	0.176	0.106
STAI-2	56	0.377	0.004	0.229	0.089	0.247	0.066	0.559	0.000	0.555	0.000	0.098	0.368
EPQ_P	57	0.080	0.545	0.128	0.304	0.090	0.500	0.235	0.020	0.235	0.020	0.032	0.766
EPQ_N	57	0.178	0.187	0.115	0.264	0.079	0.556	0.362	0.000	0.362	0.000	-0.014	0.894
EPQ_E	57	0.001	0.921	0.099	0.450	-0.073	0.588	-0.089	0.421	-0.087	0.421	0.130	0.231
EPQ_L	57	-0.247	0.066	-0.261	0.049	-0.017	0.897	-0.254	0.010	-0.254	0.018	-0.004	0.970
ZUNG	57	0.341	0.009	0.341	0.070	0.324	0.013	0.452	0.000	0.482	0.000	0.095	0.387

Table 3: Correlation of BDD-YBOCS scale with SCL-90, EPQ, and ZUNG scales.

Man-Whitney U-test	Runk sum controls	Runk sum BDDs	U	Z	p	P (after Bonferroni correction)
BDS factor 1-T	4377.500	2882.000	461.500	-5.614	0.000	0.000
BDSfactor 2-T	5245.500	2014.500	1329.500	-0.462	0.643	9.650
SCL-90 Index	2049.00	1779.000	396.000	-4.094	0.000	0.000
SCL-90 Sum of positive	2125.500	1702.000	472.500	-3.411	0.000	0.010
SCL-90 Preoccupation	2241.500	1586.500	588.500	-2.375	0.017	0.260
SCL-90 Somatization	2250.000	1578.000	597.000	-2.299	0.021	0.320
SCL-90 Obsessive compulsive	2127.000	1700.500	474.500	-3.393	0.000	0.010
SCL90 Interpersonal sensitivity	2143.000	1685.000	490.000	-3.254	0.001	0.020

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

890

SCL-90 Depression	2070.000	1758.000	417.000	-3.906	0.000	0.000
SCL-90 Anxiety	2117.000	1711.000	464.000	-3.487	0.000	0.012
SCL-90 Hostility	2170.000	1658.000	517.000	-3.013	0.002	0.041
SCL-90 Phobic Anxiety	2003.500	1824.000	350.500	-4.500	0.000	0.000
SCL-90 Paranoid ideation	2170.000	1658.000	517.000	-3.013	0.002	0.031
SCL-90 Psychoticism	2154.000	1674.000	501.000	-3.156	0.001	0.023

Table 4: Comparison between subjects without BDD and with BDD patients.

BDS factor 1-T_R	< 70	> = 70	Row Totals
Controls	88	0	88
Column%	80.00%	0.00%	
Row%	100.00%	0.00%	
Total%	73.33%	0.00%	73.33%
BDD patients	22	10	32
Column%	20.00%	100.00%	
Row%	68.75%	31.25%	
Total%	18.33%	8.33%	26.67%
Totals	110	10	120
Total%	91.67%	8.33%	100.00%

Table 5: Cut-off score according T score.

There were no control subjects with a score of 70+ in the control groups whereas there were 10 out of the 32 patients with BDD with such a score (31.25%) and this difference was statistically significant. The phi index was 0.5 indicating a moderate correlation between the body dysmorphic condition and the high BDS factor 1 T-score (p < 0.001).

No such correlation was observed in the BDS factor 2 T-score.

As it can be seen in figure 2, BDS score and the BDS factor 1 score were the most potent in differentiating the body dysmorphic patients from the healthy control group with areas under curve (AUC) 0.823 and 0.834 respectively.
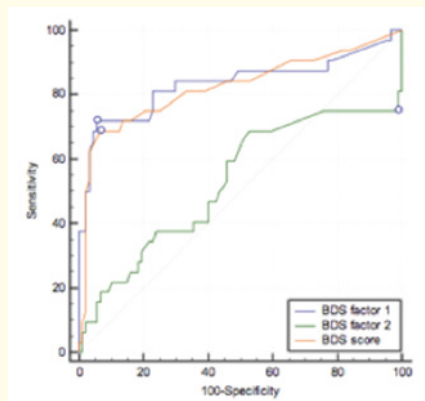

Figure 2: Receiver operating characteristic (ROC) curve for the Greek version of the YBOCS-BDD scale.

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

891

More specifically the raw BDS score had sensitivity 68.75 and specificity 93.10 at a cut-off point > 16. The BDS factor 1 score had sensitivity 71.87 and specificity 94.32 at a cut-off point of > 0.5.

Discussion

The current study reports observations on the reliability, validity and psychometric properties (of the YBOCS-BDD scale as adapted for Greece). YBOCS-BDD is a specialized, concise and easily administered instrument that measures the severity of BDD symptoms.

The Greek version of the YBOCS-BDD scale has been tested and validated on a sample of 88 healthy subjects selected via psychiatric interview evaluation.

The translation-adaptation process was relatively straightforward with no differences between the original and the back-translated version of the questionnaire. The Greek version of the BDD-YBOCS is characterized by excellent internal consistency (Cronbach's alpha coefficient of 0.875 compared to 0.80 for the original measure).

Factor analysis has revealed two factors that account for 61.52% of the total variance: Factor 1: time spent on BDD-related thoughts, interference caused by these thoughts, distress due to these thoughts, resistance to these thoughts, control over these thoughts, time spent on BDD-related behavior(s) and interference due to these behavior(s). Factor 2: distress due to BDD-related behavior(s), resistance to these behavior(s), control over these behavior(s), insight and avoidance.

Furthermore, we have re-coded the BDS factor scores using the 2X SD cut-off, thus splitting the subjects into two groups, those with a T-Score of -70 and those with a score of 70+.

According to the original validation of the YBOCS-BDD by Philips [15], three factors account for 60% of the total variance: Factor 1: 'core symptoms' (time, interference and distress due to thoughts, interference due to compulsions, insight and avoidance) accounts, according to Philips, for 22.4% of the total variance; Factor 2: 'compulsions' (this Factor, consisting of all five compulsion-measuring items accounts for 20.3% of the variance); Factor 3: resistance and control of thoughts, accounts for 16.1% of the variance. The same author [28], in a second validation of the scale, based on a larger sample and broader ascertainment of subjects, recorded two factors that, according to him, account for 66% of the total variance. The first factor accounts for 56.2% of the variance, and includes all items, except for interference due to thoughts and avoidance. The second factor accounts for 9.6% of the variance and includes avoidance, as well as, core DSM-5 symptoms (preoccupation, interference, distress due to thoughts, time spent, distress and interference due to repetitive behaviors and control over thoughts).

Please bear in mind that items 11 and 12, that assess the degree of insight and avoidance behavior associated with appearance are those that differentiate BDD -YBOCS from YBOCS. Individuals with BDD focus on small details, affecting their level of insight. The Insight specifier included in the diagnostic criteria of BDD in DSM-5, enables clinicians to identify patients with delusional dysmorphic beliefs, thus avoiding a separate diagnosis of delusional disorder. On the other hand, it is hard to assess the degree of insight as patients are, often, convinced of the presence of the perceived defect and their insight is frequently rather related to an overvaluation of the defect than to a delusional perception. This could explain why insight has the lowest factor loading of factor 2 (0.503).Our study, in concordance with findings based on the original scale, did not show statistically significant gender and age differences between the two groups.

Two factors of the Greek version of the YBOCS-BDD scale have good convergent and discriminant validity and statistically significant correlation with SCL-90, ZUNG and STAI scales, but not with the EPQ scale.

In order to identify the criterion based validity of the YBOCS-BDD scale, we have compared it with the SCL-90, EPQ, ZUNG and STAI scales. The YBOCS-BDD scale, and its factors BDS-1, BDS-2, BDS-1T and BDS-2T correlate highly with most items of the SCL-90 scale (general index of psychopathology, sum of positive symptoms, somatization, obsessive compulsive, interpersonal sensitivity, depression, hostility, phobic anxiety, paranoid ideation, psychoticism), the ZUNG depression scale and the STAI-2 trait anxiety scale (p < 0.005). On the contrary, no statistically significant correlation with the EPQ personality scale and the STAI-1 state anxiety scale has been detected.

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

892

The same seems to apply with the study outcomes of Philips., *et al.* [15], according to which there is strong correlation between the YBOCS-BDD total score and depression (BDI total score). On the same note, according to Philips, Hart, Menard [28], there is strong correlation between the YBOCS-BDD score and the HAM-D score. The related literature reports frequent presence of other psychiatric symptoms in patients with BDD, including high prevalence rates of major depression (60%) and in particular, atypical depression (14%) [18,29] and obsessive compulsive disorder (8 - 37%).

Based on the above, Philips [30], assessed the symptoms and well-being with regard to depression, anxiety, somatisation, and anger/hostility, by administering the Symptom Questionnaire. The authors demonstrated that, compared to normal controls, BDD patients presented elevated scores *o*n all four scales, indicating severe distress and psychopathology. In this context, Mancuso, Knoesen, Chamberlain, Cloninger, Castle [31], using the Temperament and Character Inventory (TCI), reported a higher harm avoidance score, higher Novelty Seeking [32], lower self directedness and cooperativeness scores, anxiety and anger [33].

As regards to discriminant validity, the comparison between BDD patients and healthy controls revealed statistically significant differences in almost every item of the SCL-90 scale (p < 0.005); in particular, the recorded patient scores were higher in: general index of psychopathology, sum of positive symptoms, obsessive compulsive disorder, interpersonal sensitivity, depression, anxiety, phobic anxiety, hostility, paranoid ideation and psychoticism (p < 0.05).

Interestingly, there was no statistically significant difference between the two groups with regard to the EPQ personality traits scale, as well as the STAI -1 and STAI -2 anxiety state-trait scales and ZUNG depression scale.

Additional research is required in order to compare YBOCS-BDD with other questionnaires with respect to the assessment of cultural differences. The factor structure of YBOCS-BDD should be evaluated across a wider range of ages and clinical samples to further assess validity. A confirmatory factor analysis (CFA) should also be performed to confirm the suitability of the above mentioned, factor structure. Future research should consider those aspects and replicate these findings. However, in our opinion, the present outcomes may contribute to the evaluation of symptom severity and treatment outcomes of Body Dysmorphic Disorder.

Conclusion

The YBOCS-BDD is a scale widely used in evaluation of symptom severity and treatment outcome in Body Dysmorphic Disorder. Philips., *et al.* [28] presented a psychometric version of it with two factors. In the present study we aimed to test this model in a sample of Greek population including both healthy controls and BDD patients and found also a two factor, psychometric version. The psychometric strength of YBOCS-BDD-Greek version scale is both reliable and valid and is suitable for clinical and research use with satisfactory properties.

Conflict of Interest

No conflict of interest to declare.

Acknowledgment

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Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

893

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Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS): Greek Translation, Validation and Psychometric Properties

894

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