DOI:
10.1016/j.bjps.2011.09.007

Document Version
Peer reviewed version

Development of a cosmetic procedure screening questionnaire (COPS) for Body Dysmorphic Disorder

David Veale[1], Nell Ellison[1], Tom G Werner[1], Rupa Dodhia[1], Marc Serfaty[2], Alex Clarke[3]

[1] NIHR Specialist Biomedical Research Centre for Mental Health at the South London and Maudsley NHS Foundation Trust and The Institute of Psychiatry, King's College London

[2] Research Department of Mental Health Sciences, University College London

[3] Royal Free Hospital, London

ACCEPTED MANUSCRIPT

Published in: *Journal of Plastic Reconstructive and Aesthetic Surgery* (2012), 65:530-532 http://dx.doi.org/10.1016/j.bjps.2011.09.007

Address for correspondence: Dr David Veale, Centre for Anxiety Disorders and Trauma, The Maudsley Hospital, 99 Denmark Hill, London SE5 8AZ. Tel: 0203 228 3461. Fax: 0203 288 5215. Email: David.Veale@kcl.ac.uk

Abstract:

Background: Practitioners in a cosmetic setting need a screening questionnaire to identify people with Body Dysmorphic Disorder (BDD). Method: Two groups who desired a cosmetic procedure completed the Cosmetic Procedure Screening Questionnaire (COPS): (a) a group diagnosed with BDD (n =97) and (b) a community control group (n=108). Both groups desired a cosmetic procedure. Item characteristics, reliability and factorial structure were analysed. Convergent validity with selected questionnaires was determined. Sensitivity to change during cognitive behaviour therapy was also determined in a sub-sample of BDD patients. Results: The most sensitive items discriminating between the two groups were used to form the final questionnaire. Receiver Operating Characteristics analysis was used to assess sensitivity and specificity of the COPS to discriminate between the groups and a cut-off score of 40 was chosen. Conclusions: The COPS is a sensitive and specific screening measure for BDD that can be used in cosmetic settings and as a potential research tool to predict dissatisfaction or changes in BDD symptoms after any treatment.

Background:

Guidelines recommend screening patients for Body Dysmorphic Disorder (BDD) prior to cosmetic surgery to identify those who may require further psychological assessment [1] but there are few validated instruments available. The aim of the current study was therefore to develop a screening questionnaire that (a) was brief, free to download and could identify people with BDD, (b) might predict either dissatisfaction with a cosmetic procedure or no change or deterioration in symptoms of BDD, and (c) may be sensitive to change after an intervention. The new scale was informed by the diagnostic criteria, expert opinion and a previous study that compared patients satisfied with cosmetic rhinoplasty with BDD patients who craved rhinoplasty but had not been able to obtain it [2].

Method:

Two groups of participants were recruited:

a) Community group

We recruited a community group of both genders who were either planning or very motivated to have a cosmetic procedure in the future. The questionnaire was completed by n=108 participants.

b) BDD group

A psychiatrist conducted an interview based on DSM-IV to diagnose BDD in a clinical setting. Ninety-seven patients with BDD seeking a cosmetic procedure were recruited.

All participants completed the following:

1) Cosmetic Procedure Screening (COPS) questionnaire

The questionnaire asks for the feature(s) that the person finds unattractive, the nature of the cosmetic procedures they are seeking and diagnostic criteria of BDD. The final version of COPS questionnaire comprises 9 items. Items are scored from 0 (least impaired) to 8 (most impaired). The scale and a full version of this paper is available to download from: http://www.iop.kcl.ac.uk/cadatquestionnaire. The score is

achieved by summing Q 2-10. Items 2, 3 and 5 are reversed. The total ranges from 0 to 72 with a higher score reflecting greater impairment.

2) Hospital Anxiety and Depression Scale (HAD)

3) Body Image Quality of Life Inventory (BIQLI)

4) Body Image Disturbance Questionnaire (BIDQ)

Results

Items on the COPS that showed a significant difference between the two groups, which did not have a significant group x sex interaction and had an effect size (Cohen's d) of at least 0.80 were retained in the item discriminatory analysis. Nine items met these criteria and were used to form the final questionnaire (see Table 1).

Internal Consistency

Reliability analysis resulted in an internal consistency of Cronbach's $\alpha = 0.91$ with corrected item total ranging from 0.41 to 0.86.

Test-retest Reliability

67 participants in the community group repeated the COPS after 1 week. The COPS had good test–retest reliability ($r = 0.87$, $p < 0.01$). First administration (M=27.94, SD=13.89), second administration (M=30.71, SD=14.04).

Convergent validity

Based on the data from both groups the COPS correlated highly with the HAD depression subscale ($r = 0.7$, $p < 0.01$) and anxiety subscale ($r = 0.66$, $p < 0.01$). COPS also correlated highly with the BIQLI ($r = -0.68$, $p<0.01$). Thus higher scores on COPS are associated with lower body image quality of life.

Cut-off value and ROC analysis

Figure 1 represents the ROC curve for BDD patients compared with community controls. The area under the curve (AUC) for this analysis was .905 (95% CI = .862 - .948) indicating that the COPS is an accurate diagnostic test. Based on the discrimination of BDD patients from the community group, a cut-off value of ≥ 40 resulted in a maximal kappa coefficient ($k = 0.69$, $p<0.001$). On the basis of this cut-

off value, 88.9% of BDD patients and 80.6% of the community group were classified correctly.

Sensitivity to change

We examined sensitivity to change in a sub-sample of 5 patients with BDD who were undergoing cognitive behaviour therapy [3,4]. Scores on the COPS were examined at baseline, 6 weeks, and 12 weeks. The mean and SD on the 9-item COPS was 52.40 (SD= 16.70) at baseline and 35.00 (SD= 22.88) at 12 weeks. A one-way repeated measures ANOVA was conducted to compare scores across these 3 treatment points. There was a significant effect across the 3 treatment points [F (1.10, 4.38)= 7.35, p = .047].

Discussion

We have developed a brief (nine item) screening questionnaire (COPS) that can be used in a cosmetic procedure setting to screen patients with BDD. The scale has acceptable internal consistency, test-retest reliability, and convergent validity. It has a high sensitivity for the diagnosis of BDD in people who are likely to seek a cosmetic procedure. Individuals who score 40 or more should be referred for further assessment. The COPS was also sensitive to change in patients receiving cognitive behaviour therapy [3,4]. It may therefore be used an outcome measure after any treatment (including cosmetic procedures) to determine (a) if there is any improvement in *symptoms* of BDD on a continuous dimension (b) whether it may predict persistence of symptoms or dissatisfaction with a cosmetic procedure (in the absence of any surgical complications).

Conflict of interest: None

Funding: None

Ethical Approval: Brighton and Sussex Ethics Committee

Acknowledgements: David Veale and Nell Ellison are supported by the National Institute for Health Research (NIHR) Specialist Biomedical Research Centre for Mental Health award to the South London and Maudsley NHS Foundation Trust and the Institute of Psychiatry, King's College London.

References:

1. National Institute of Clinical Excellence (NICE). Obsessive-compulsive disorder: core interventions in the treatment of obsessive-compulsive disorder and body dysmorphic disorder. Clinical Guideline 31, 2005.
2. Veale D, De Haro L, Lambrou C. Cosmetic rhinoplasty in body dysmorphic disorder. *British Journal of Plastic Surgery* 2003; **56**: 546-551.
3. Veale, D., & Neziroglu, F. (2010). *Body Dysmorphic Disorder: a treatment manual*. Chichester: John Wiley & Sons.
4. Veale D, Gournay K, Dryden W, Boocock A, Shah F, Willson R, et al. Body dysmorphic disorder: A cognitive behavioural model and pilot randomised controlled trial. *Behaviour Research and Therapy* 1996; **34**: 717-729.

Figure 1. Receiver operating characteristics plot of COPS scores of BDD patients compared with community controls.

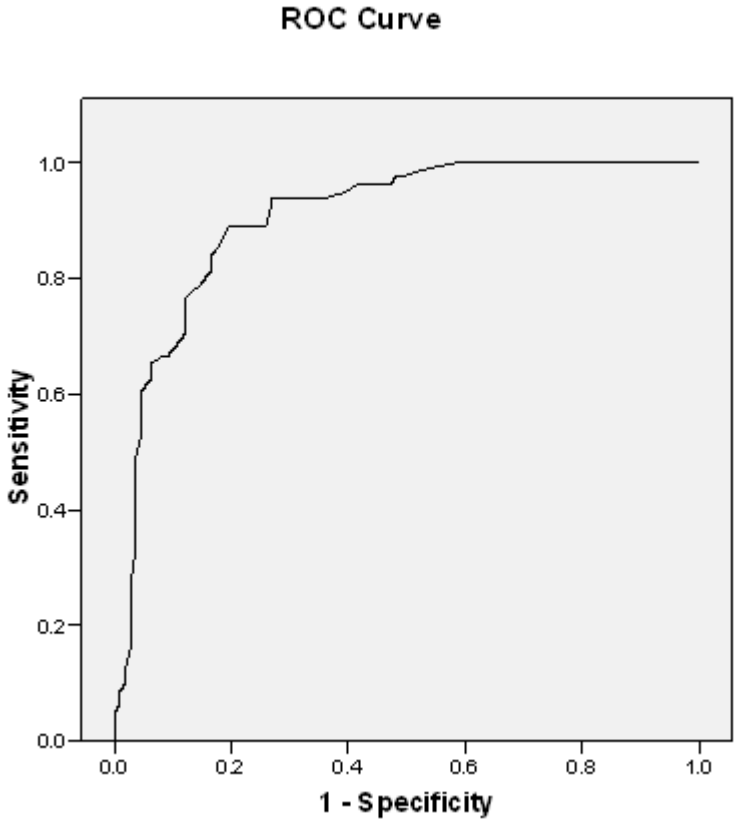

Table 1. Difference between the community group and BDD group, effect size and group x sex interaction for all items (items in bold were retained for use in the final questionnaire)

Variable	Community group	BDD Group	Difference between Groups		Effect Size (d)	Group x Sex interaction
	M (SD)	M (SD)	U value	p value		p value
1. Avoid looking at my feature(s)	3.32 (2.71)	3.00 (2.62)	4346.5	0.615 **ns**	0.12	Men:>0.05 **ns** Women: >0.05 **ns**
2. Frequency of checking feature(s)	**2.82 (2.05)**	**5.15 (1.66)**	**2891**	**<0.001**	**1.25**	**Men: <0.01 Women: <0.001**
3. How ugly, unattractive or 'not right' feature(s) are	**4.83 (2.19)**	**7.15 (1.60)**	**2615.5**	**<0.001**	**1.22**	**Men: <0.001 Women:<0.001**
4. Distress caused by feature(s)	**3.92 (2.27)**	**7.05 (1.1)**	**1640**	**<0.001**	**1.84**	**Men: <0.001 Women:<0.001**
5. Avoid situations or activities because of feature(s)	**2.64 (2.43)**	**5.95 (1.9)**	**2609**	**<0.001**	**1.53**	**Men: <0.01 Women:<0.001**
6. Preoccupation with feature(s)	**3.28 (2.14)**	**7.15 (1.27)**	**993**	**<0.001**	**2.26**	**Men: <0.001 Women:<0.001**
7. Interference with relationship/dating	**3.10 (2.74)**	**6.25 (1.62)**	**2008**	**<0.001**	**1.79**	**Men:<0.001 Women:<0.001**
8. Interference with sexual relationship	2.68 (2.74)	3.7 (3.13)	2257	<0.001	0.35	Men: <0.05 Women:<0.001
9. Inability to work/study due to feature(s)	**1.32 (4.22)**	**5.25 (1.86)**	**1231**	**<0.001**	**0.83**	**Men: <0.001 Women:<0.001**
10. Interference with social life	**2.42 (2.4)**	**6.2 (1.77)**	**1301.5**	**<0.001**	**1.8**	**Men: <0.001 Women:<0.001**
11. Noticeability of feature(s) to other people	4.74 (2.43)	5.95 (2.28)	3067.5	<0.001	0.51	Men: <0.01 Women:<0.001
12. Frequency of comparing feature(s) to other people	4.33 (1.7)	6.2 (1.32)	1606.5	<0.001	0.62	Men: <0.001 Women:<0.001
13. Trying to please self or others by having procedure	6.44 (1.53)	7.35 (0.93)	2251	<0.001	0.74	Men:<0.01 Women:<0.01
14. Amount of discouragement from having procedure	4.03 (2.8)	3.7 (2.9)	2405	0.54 **ns**	0.11	Men:>0.05 **ns** Women:>0.05 **ns**
15. Understanding from family/friends about feature(s)	4.3 (2.47)	4.92 (2.50)	3064	0.086 **ns**	0.25	Men: >0.05 **ns** Women:>0.05 **ns**
16. Importance of appearance in defining who you are	**3.77(1.79)**	**5.65(1.97)**	**1900.5**	**<0.001**	**0.96**	**Men: <0.001 Women: <0.001**