



BODY DYSMORPHIC DISORDER: A COGNITIVE BEHAVIOURAL MODEL AND PILOT RANDOMISED CONTROLLED TRIAL

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Summary—A cognitive behavioural model of body image is presented with specific reference to body dysmorphic disorder (BDD). We make specific hypotheses from the model for testing BDD patients in comparison with: (i) patients with “real” disfigurements who seek cosmetic surgery; (ii) subjects with “real” disfigurements who are emotionally well adjusted; and (iii) healthy controls without any defect. There have been no randomised controlled trials of treatment for BDD and therefore the model has clear implications for the development of cognitive behavioural therapy. This was evaluated in a pilot controlled trial. Nineteen patients were randomly allocated to either cognitive behaviour therapy or a waiting list control group over 12 weeks. There were no significant pre–post differences on any of the measures in the waiting list group. There were significant changes in the treated group on specific measures of BDD and depressed mood. Cognitive behaviour therapy should be further evaluated in a larger controlled trial in comparison with another psychological treatment such as interpersonal therapy and pharmacotherapy. Copyright © 1996 Elsevier Science Ltd

INTRODUCTION

Body image has been defined as “the picture we have in our minds of the size, shape and form of our bodies; and to our feelings concerning these characteristics and our constituent body parts” (Slade, 1994). Body image is thus viewed as having two main components, a perceptual component and an attitudinal component. Slade (1994) has argued that eating disorder patients have a loose mental representation of their body image such that when confronted by enthusiastic researchers and clinicians, they err on the side of caution and over-estimate their body size. He cites evidence that over-estimation of body size in eating disorders is not primarily a perceptual phenomenon, but highly influenced by cognitive, affective and other variables such as history of weight fluctuation and cultural norms. Body dysmorphic disorder (BDD) is another disturbance of body image which consists of a preoccupation with an “imagined” defect in appearance (American Psychiatric Association, 1994), and is similarly influenced by biological, cognitive, affective, behavioural and cultural variables. The term “dysmorphophobia” is more commonly used in Europe and is now subsumed in ICD10 under the diagnoses of hypochondriacal disorder (World Health Organization, 1992).

There are no biopsychosocial models for the development and maintenance of BDD. We believe that any model of BDD needs to be integrated with other body image disorders to account for why one individual may be emotionally well adjusted to severe burns or a large port wine stain on their face, whilst another patient with a small hump on his nose is emotionally disturbed and can psychologically benefit from cosmetic surgery. We were interested therefore in constructing a cognitive behavioural model of body image with particular emphasis on BDD which would guide a pilot controlled trial of treatment. Previous theories and treatment manuals of body image have tended to focus on patients with eating disorders or *Ss* who are preoccupied with their weight and shape (Slade, 1994; Thompson, 1990). In this paper, we set out certain hypotheses which should be tested in future studies with BDD *Ss* in comparison with patients with other body image disorders, before describing a pilot study which examines the overall efficacy of a cognitive

behavioural approach. The particular groups of body image disorders that seem relevant to our discussion are:

1. Patients with delusional disorder somatic type (DDST) in addition to BDD (referred to by some authors as "BDD psychotic sub-type"; McElroy, Phillips, Keck, Hudson & Pope, 1993).
2. Patients with "real" disfigurements who are emotionally distressed and likely to benefit from cosmetic surgery.
3. Subjects with "real" disfigurements who do not seek cosmetic surgery or for whom surgery cannot offer any help and are emotionally well adjusted. We may also learn much from the attitudes and behaviours of such individuals for helping patients with BDD.
4. Healthy controls who do not have any disfigurement.

Cognitive behavioural theories utilize a three systems analysis as a way of conceptualising clinical phenomena (Lang, 1970). The following analysis therefore considers the cognitive, affective and behavioural components of BDD.

Cognitive

The cognitive components are divided into perception and attitudes.

Perception of body image. A plastic surgeon, Harris (1981), has proposed the term "aestheticity" to describe sensitivity of aesthetic perception in the sense that musicality denotes quality of musical appreciation. He argues that this variation in sensitivity of aesthetic proportions determines why an individual may be severely disturbed by a small defect and seek cosmetic surgery. One hypothesis therefore might be that BDD patients are like patients with "real" disfigurements who seek cosmetic surgery (and presumably cosmetic surgeons and some artists) who have a higher degree of aestheticity than most of the population. The hypothesis is difficult to test until there is an objective measure of "aestheticity". We shall return to this concept later but first we examine an alternative explanation that relates to a person's heightened perception of his or her body image.

Selective attention is an important factor in the maintenance of several emotional disorders (Wells & Matthews, 1994). For example, self-focused attention will increase a S's awareness of internal bodily sensations (Scheier, Carver & Matthews, 1983). One example is panic disorder in which patients are more accurate when they estimate their heart rate than normal controls (Ehlers & Breuer, 1992). A heightened awareness of bodily sensations does not necessarily increase the accuracy of appraisals concerning the cause of the sensations and a patient with panic attacks who has a heightened perception of his heart is likely to misinterpret the sensations as evidence of heart disease (Gibbons & Gaeddert, 1984).

A central hypothesis to be tested is therefore that BDD patients are selectively attending to their perceived defect and that this is a maintaining factor in their disorder. The hypothesis predicts that BDD patients should be extremely discerning and more accurate about their appearance than healthy controls. The only indirect evidence for this so far is by Jerome (1980) who studied a group of 19 patients on a waiting list for cosmetic rhinoplasty and 15 healthy controls. All the patients had an initial screening by a cosmetic surgeon, but were not considered to require urgent attention and were placed on a waiting list.

Jerome found that the patients were more accurate than healthy controls in estimating the size of their nose and spent more time looking at their feature in mirrors. The patients were rated by the clinician on a disfigurement scale of between 1 ("perfect feature") and 9 ("very marked imperfection"). The range of observer ratings were from 2 ("almost perfect feature") to 8 ("marked imperfection") with a lot of variation within and between raters. No formal psychiatric diagnoses were recorded and it is therefore not known what proportion of Ss might have received a diagnosis of BDD. If the findings are generalised to BDD patients, then BDD patients should have a heightened and more accurate representation of those parts of their body regarded as defective. This heightened perception is likely to have a negative influence over any aesthetic judgement or beliefs about their body image in the same way that a heightened perception of the heart rate has a negative influence on its meaning in panic disorder.

The difference in perception between BDD patients and patients (without BDD) who undergo cosmetic surgery is not known. We hypothesise that BDD patients have a greater selective attention

to their perceived defect than patients undergoing cosmetic surgery because of their greater preoccupation with body image. It is further hypothesised that patients with DDST selectively attend to their perceived body defect more than BDD patients as their beliefs about their body image are even more rigid. By contrast, some eating disorder patients are more likely to avoid observing their bodies (for example in parallel mirror gazing) and process information by selective "avoidance". This may be a further factor that contributes towards the loose mental representation of body image and the over-estimation of body size which is not discussed in Slade's (1994) model of body image distortion. Exposure to mirror gazing has also been shown to reduce body size estimation in eating disorder patients compared with controls (Norris, 1984). Perception in patients with major disfigurements who are emotionally well adjusted may be more complex. Some may be selectively avoiding their disfigurements by not reminding themselves of their defect. Others, however may be "selectively neutral" and similar to healthy controls.

Beliefs or attitudes towards body image. Attitudes towards body image may include a demand for perfectionism or symmetry in one's appearance. In a survey of 50 BDD patients, 69% strongly endorsed the belief "I have to have perfection in my appearance" (Veale, Boocock, Gournay, Dryden, Shah, Willson & Walburn, 1996). Such beliefs will need to be compared with populations of other body image disorders and healthy controls to determine their specificity. It is also difficult to separate out rigidly held beliefs from an increased biological drive for symmetry or perfection which may help to explain why a condition such as BDD persists. Darwinian theories of beauty predict that sexual selection favours those traits that advertise resistance to infections and healthy genes (Thornhill & Gangestad, 1993). There is evidence that animals and humans seek symmetry perhaps because it advertises biological quality and serves to attract individuals to partners resistant to developmental disruptions and the absence of infections. These include exposure to parasites, pollutants, and extreme temperatures which all serve to increase asymmetry (Gangestad, Thornhill & Yeo, 1994). For example, male Japanese scorpion flies with the most symmetrical wings have been shown to obtain the most mates and similar biases can be found in other animals (Concar, 1995). A male swallow's chances of finding a mate can be ruined by making their tails less symmetrical (Moller, 1993). In humans, women with evenly matched breasts were found to be more fertile than a less evenly endowed matched control group of women (Moller, 1995). In another study, men preferred photographs of women with symmetrical facial features and vice versa. They also found that symmetry correlated positively with self-reported age at first copulation and number of lifetime partners (Thornhill & Gangestad, 1994). The size of secondary sexual characteristics that develop during puberty are also important in ratings of attractiveness (Thornhill & Grammer, 1994). High levels of testosterone are necessary for the production of large secondary sexual traits during puberty in men. High levels will lower immunocompetence and only healthy organisms can cope with the high levels required. Enlarged jaws, chins and cheekbones are examples of facial secondary sexual traits which are enlarged by testosterone in men and largeness of these features are considered by women as sexually attractive perhaps because of advertised immunocompetence. Female attractiveness is correlated with the opposite—tiny lower faces, big lips and slender lower jaw. High levels of oestrogen are required for these changes which also lowers immunocompetence.

The emerging evidence from the animal and human literature suggests a number of possible hypotheses about the aetiology of BDD that need to be excluded:

1. BDD patients are less symmetrical in their appearance and have less attractive secondary facial sexual characteristics than healthy controls or patients with other psychiatric disorders.
2. BDD patients and patients with disfigurements seeking cosmetic surgery are more sensitive in their aesthetic perception to the lack of symmetry and size of secondary sexual characteristics compared with healthy controls.

If the first hypothesis were proven, the current definition would become fundamentally flawed. Could it really be that BDD patients are less attractive according to the classical rules of beauty and biological theories of sexual selection? Certainly most BDD patients are preoccupied with aspects of their face or skin (Veale *et al.*, 1996) these being observable certificates of developmental health and the absence of infection. There is limited support for the hypothesis in a study by Thomas and Goldberg (1995) who conducted morphanalysis on three groups: 11 patients with

dysmorphophobia, 11 patients prior to cosmetic rhinoplasty and a reference population of healthy controls. They did not specifically examine for asymmetry or size of secondary sexual characteristics but measured a number of dimensions between anatomical landmarks such as distance between eyes on a frontal and lateral image. Eight patients with dysmorphophobia and 7 patients in the surgical group had one or more measures greater than 2 standard deviations from the mean. Both groups deviated from the normal population but were not significantly different from one another. It will be particularly important in future studies that test our hypotheses to have a control group which consists of another psychiatric disorder to determine if the degree of asymmetry or size of secondary sexual characteristics is specific to BDD. If the first hypothesis is correct then the second hypothesis is that BDD patients may be better at detecting such differences. It could be that most health professionals and the general public are not aware of subtle differences in facial asymmetry or the size of secondary sexual facial characteristics. This is linked to the concept of "aestheticality" as proposed by Harris (1981). The alternative hypothesis is that BDD patients are just as symmetrical and have the same size of secondary sexual characteristics and are no better at detecting attractiveness in others but they have become more aware of these features in themselves because of their selective attention and greater demand for symmetry and perfection in their attitudes.

The need for symmetry and precision in objects or activities is a well recognized symptom in obsessive compulsive disorder (OCD) which is usually associated with ordering, hoarding, repeating and counting compulsions (Baer, 1994). The symptoms in BDD are very similar to Janet's description of OCD patients who were tormented by an inner sense of imperfection and felt that their actions were never completely achieved to their satisfaction (Pitman, 1987). The association with a demand for symmetry strengthens the hypothesis that BDD is on the spectrum of obsessive compulsive related disorders (Hollander, 1993). In this case, the need for symmetry is focused on appearance rather than an object or activity.

Other attitudes about a perceived defect were studied in a pilot questionnaire administered to 50 patients with BDD (Veale *et al.*, 1996). BDD patients strongly endorsed such assumptions as "if I am unattractive then I will be alone and isolated all my life", or "if I am unattractive then I am unloveable". Catastrophic beliefs about being unattractive are linked to powerful biological and cultural factors that relate to a person's ability to attract a partner. Walster, Aronson, Abrahams and Rottman (1966) first demonstrated that for students assigned to a blind date, only one factor predicted satisfaction with their date—their physical attractiveness. Social psychologists have repeatedly demonstrated that attractiveness is extremely important in any social context as individuals respond more positively to physically attractive persons.

It is therefore hypothesised that:

1. Patients with real defects undergoing cosmetic surgery should hold such attitudes about appearance less strongly than those with BDD or DDST and make them more conditional upon circumstance.
2. Patients with real disfigurements who are emotionally well-adjusted will endorse these attitudes even less strongly than those who are emotionally distressed and seeking cosmetic surgery but will still rate them more strongly than healthy controls without any defect.

Self-focused attention

There is some overlap in our model with that of social phobia in which there is an excessive self-focused attention (Clark & Wells, 1995). When social phobics think they are in danger of negative evaluation by others, they shift attention to detailed monitoring and observation of themselves. They appear to use the information produced by self-focus to construct a belief or image which they then assume other people hold about them. Instead of being involved in the external world and attending to other people or what they are saying, the social phobic turns inwards for information about himself and assumes that others are evaluating him in the same way. This is described by various thinking errors, namely "emotional reasoning" ("because I *feel* inadequate, it is fact that I am inadequate") and "mind reading" (assuming that others think the same way without the evidence). An analogous situation is likely to occur in BDD in social situations in which patients excessively monitor themselves instead of being concerned with external cues. The main difference between social phobics and BDD patients is that the latter evaluate

themselves in terms of their appearance and are slightly more concerned with their internal aversion to their appearance (Veale *et al.*, 1996).

Affective and physiological systems

We have found that BDD patients tend to experience a mixture of emotions which they may find difficult to articulate or unravel. We believe they feel disgust at their body which becomes stronger whenever they are exposed to cues that are associated with their perceived defect. They may also feel anxiety and physiological arousal which is increased in social situations. There is a high frequency of depressive symptoms which if severe enough may be part of a comorbid disorder. The depressive symptoms may partly be secondary to the social isolation and frustration of not being able to convince others about their perceived defect and beliefs of worthlessness and hopelessness in the future. Patients accepted for cosmetic surgery should have less emotional distress about their body than BDD because their attention is less focused on their appearance, their attitudes are less rigid and they have hope of change by cosmetic surgery.

Behaviour

Behaviours in BDD are either excessive, in terms of hours of self-inspection and checking in mirrors or other reflective surfaces such as shop windows or consist of a myriad of avoidance behaviours in social situations which will perpetuate the disorder. We have identified a number of different checking and repeating rituals which have different functions for different patients.

1. *Camouflage checking.* Repeated checking of a perceived defect in a mirror may be directed at ensuring that any camouflage, (for example, make up, dark glasses, or the position of the hair) is adequately hiding the perceived defect in public. This type of checking would also include seeking reassurance from others that the defect was adequately hidden. It is hypothesised that camouflage checking should be more prominent in those most concerned with social evaluation, irrespective of whether they suffer from BDD, DDST or have been accepted for cosmetic surgery. Camouflage checking should occur less frequently in patients with real disfigurements who are emotionally well adjusted.

2. *Checking for comfort.* Repeated checking of a defect in a ritualistic manner may be directed at achieving a sense of inner satisfaction until the patient feels "comfortable". An example of this is provided by a patient who repeatedly combed and groomed her hair for hours until it felt "just right and was in a perfect bob". Another patient repeatedly peeled her skin by facial saunas until it felt "comfortable". The criteria used for stopping a ritual bears a striking resemblance to those described by OCD patients. Richards (1995) found that OCD patients were more likely than non-clinical controls to use criteria that were focused on the subjective quality of experience (for example "feeling comfortable" or things being "right") or the use of an idiosyncratic rule to terminate a ritual. Non-clinical controls were more likely to use criteria on external references (for example perception of specific change occurring "till it didn't move anymore"). The hypothesis is that this type of checking based upon internal criteria should be prominent in DDST and BDD but should not occur in patients with "real" disfigurements who are accepted for cosmetic surgery or who are emotionally well adjusted.

3. *Checking over-doubts.* Checking of the perceived defect may also occur because of doubts about its severity. It is hypothesised that this type of checking should be driven by a heightened perception of the body image leading patients to check repeatedly the nature of the defect and collect more information. In this regard, patients may also mentally be comparing their perceived abnormality with others or seeking reassurance from others about the severity of the defect. It is hypothesised that:

1. Patients with "real" defects who are accepted for cosmetic surgery should check less for this reason as the surgeon and patient can agree on the abnormality and there is no doubt about the severity of the defect.

2. Patients with real defects who are emotionally well adjusted should also check less than BDD patients as there is no doubt in their mind about the severity of their defect.

3. DDST patients should also be checking less than BDD patients as they are firmly convinced about the defect and have no doubts about the severity.

In our survey of 50 BDD Ss (Veale *et al.*, 1996), we found that 80% could be classified as “checkers” (if they were checking their perceived defect on at least half the days of the previous month) and 18% were classified as “avoiders” (if they were avoiding looking at their perceived defect with the same frequency). Ten percent reported themselves to be both checking and avoiding with the same frequency, perhaps depending on their mood or situation. It is hypothesised that avoidance of a perceived defect should be prominent whenever the feeling of disgust is high. Checking should be more prominent if there is a high need for certainty about one’s appearance or need for comfort that one’s appearance is “just so”. Whether the individual checks or avoids his or her perceived defect, there is frequent avoidance of social and public situations. Some patients may become completely housebound and avoid showing their perceived defect in public. More subtle avoidance behaviours and safety behaviours include growing or cutting one’s hair to hide an abnormality; excessive use of beauty products, scarves, or bulky clothes; hiding a perceived defect with one’s hands or even putting objects such as paper-bags over one’s head. They may avoid intimate relationships or physical contact, employment, shopping and normal sporting or social activities or become housebound.

We believe a more detailed functional analysis on checking rituals and avoidance behaviour needs to be carried out with BDD patients which links these behaviours with their specific beliefs.

A cognitive behavior model of BDD

In common with other cognitive behavioural theories, it is proposed that the core schemata in BDD patients develop through a mixture of biological predispositions, early childhood experiences and cultural factors. Early childhood experiences might include general factors that predispose an individual towards a low self-esteem. We have already discussed the important factor of physical attractiveness in finding a potential romantic partner. Fears of rejection especially during adolescence is probably biologically innate (Marks, 1987). An increased biological drive for aestheticity in terms of a need for symmetry or size of sexual characteristics in one’s appearance would further predispose an individual towards BDD. A critical event or series of events such as comments or teasing by others during adolescence might activate the schema resulting in the symptoms described above. Many Ss however do not report any specific triggers.

The model suggests that once the disorder has developed, a S selectively attends to the perceived defect and develops a heightened and more accurate body image with all its imperfections, lack of symmetry or smoothness of the skin. BDD patients then become hypervigilant for any minor changes that occur in their appearance.

We hypothesise that BDD patients compare their perceived body image with an impossible ideal of perfection which they demand. The large discrepancy between the perceived body image and the unrealistic goal is associated with emotional distress. Furthermore, the meaning of this discrepancy becomes distorted out of proportion to its importance and reinforced by assumptions about the importance of appearance. In common with other emotional disorders, BDD patients tend to ignore or distort information that does not fit in with their beliefs (Padesky, 1993). Information processing is also more likely to be distorted when there are high levels of arousal such as in social situations or when examining themselves in a mirror.

It is hypothesised that the discrepancy between the perceived body image and the ideal body image should be:

1. greater in patients with DDST than BDD;
2. less for patients with disfigurements seeking cosmetic surgery than in BDD; and
3. even less for Ss who are disfigured but are emotionally well adjusted and not seeking cosmetic surgery compared with healthy controls.

The excessive self-focused attention on the negative body image leads the person to assume that others have exactly the same view of themselves and to avoid social situations or to use excessive camouflage. Learning theory would predict that the avoidance of social situations is reinforcing and prevents an individual from habituating to his fear and making a more realistic appraisal of the social threat and disconfirming evidence. Checking behaviour and reassurance seeking are also reinforcing because they may provide a short-term reduction in discomfort. The rituals maintain

the dysfunctional beliefs and selective attention in a vicious circle analogous to OCD and other phobic behaviour.

Biological theories and pharmacotherapy of BDD

BDD has been linked to the spectrum of obsessive compulsive disorders and should therefore preferentially respond to selective serotonin reuptake inhibitors (SSRIs) (Hollander, 1993). Most biological research in OCD is focused on the neuronal loops between the basal ganglia and frontal lobe and structural abnormalities of the corpus striatum (Wise & Rapoport, 1988; Robinson, Wu, Munne, Ashtari, Alvir, Lerner, Koreen, Cole & Bogerts, 1995). As yet, there have been no neuropsychological or neuroimaging studies in BDD to determine the similarities and differences to OCD or other anxiety disorders. The only evidence for serotonin dysregulation comes from individual case studies. Craven and Rodin (1987) have reported a case of a woman who developed BDD after the chronic abuse of cyproheptadine, which is a serotonin antagonist and this presumably led to dysregulation of serotonin receptors. Acute tryptophan depletion has been found to exacerbate symptoms of BDD and depression in a single female patient (Barr, Goodman & Price, 1992). Hollander (personal communication) has found an exacerbation of BDD symptoms in a single patient with BDD with a potent serotonin agonist, m-CPP (1-[3-chlorophenyl]-piperazine): a result similar to that found in OCD (Hollander, Fay, Cohen & Campeas, 1988; Zohar, Mueller & Insel, 1987). Such research is extremely preliminary and dysregulation of serotonin receptors is now very non-specific. There have been no randomised controlled trials of SSRIs in BDD. Patients certainly appear to respond preferentially to potent or selective serotonin reuptake inhibitors in case studies and retrospective reports (Hollander, Liebowitz, Winchel & Klumker, 1989; Hollander, Cohen, Simeon & Rosen, 1994) but do not respond in all cases (Neziroglu & Yaryura Tobias, 1993a; Neziroglu & Yaryura Tobias, 1993b; Thomas, 1984; Vitiello & de Leon, 1990). It is not known what proportion of patients in any of the studies also had a comorbid delusional disorder or major depressive episode. Such patients should be clearly identified in controlled trials. Another approach might be the use of monoamine reuptake inhibitor anti-depressants which are partly successful in social phobia (Sanderson, Wetzler, Beck & Betz, 1994).

Our cognitive behavioural model of BDD would predict that affective variables should strongly influence the strength of the dysfunctional beliefs and therefore the urge to ritualise and engage in avoidance behaviour. There is a particular need to demonstrate that the benefits of SSRIs in dysmorphic symptoms are independent of any decrease in depressed mood or general anxiety. Conversely, the high frequency of affective symptoms and low motivation for treatment in BDD suggests that it will be important to evaluate whether there is any added benefit to combining such anti-depressants with cognitive behaviour therapy. The refusal rate of medication is also not known as it may be higher than for other psychiatric disorders because of the difficulty of engaging patients in treatment.

Cosmetic surgery

It is usually assumed that cosmetic surgery or dermatological treatment is an *absolute* contra-indication for BDD patients but some patients with minimal deformity might have good psychological results if they have realistic expectations about the outcome (Hay & Heather, 1973). A plastic surgeon, Harris (1989) argues that a cosmetic operation is likely to be psychologically successful in a patient if, *inter alia*, he or she can clearly describe the perceived defect and the desired correction and the surgeon can agree with it. Therefore this is probably the most important factor in determining outcome. Another surgeon, Reich (1969) states that surgery is contra-indicated if it was predicted that a patient was unable to cope with an imperfect result. These views would fit with our proposed model that in BDD there is a large discrepancy between a heightened perceived defect and the patients' ideal and that when BDD patients seek cosmetic surgery, they usually have unrealistic expectations about the outcome. Jerome (personal communication) has also hypothesised that a good psychological result is more likely when there is positive expectation from supportive others especially in the post-operative period when a patient may no longer have the opportunity to selectively attend to their perceived defect if it is swathed in bandages. It is unlikely however that there will ever be a randomised controlled trial of BDD patients who have a minimal deformity that compares cosmetic surgery with cognitive behaviour therapy or a pharmacological

treatment. It is, however, important to define clearly the population studied in any controlled trial—for example whether they have “imagined” or “minor physical anomalies” as stated in DSM-IV, and exclude patients that would be successfully treated by a cosmetic surgeon.

Behavioural and cognitive therapy

Patients with BDD are generally regarded as difficult to treat or to engage in psychological therapies. It is not surprising as there is a high degree of comorbidity including depression, over-valued ideation, personality disorder and avoidance behaviour, all factors that are known to predict failure in the treatment of OCD (Foa & Emmelkamp, 1983; Cottraux, Messy, Marks, Mollard & Bouvard, 1993). There are now several case reports describing the use of behaviour therapy with various forms of exposure and response prevention. Previous reports have not usually distinguished between patients with BDD and those with an additional diagnosis of delusional disorder somatic subtype and these should be clearly identified in future studies. There will also be a bias in under-reporting treatment failures. Amongst the case reports Munjack (1978) described the successful treatment of a patient with a complaint of an overly red complexion by desensitisation (a form of exposure). Beary and Cobb (1981) treated by exposure and response prevention three patients with the delusion that they stank of flatus or bad breath. Braddock (1982) described an adolescent who complained of a wrinkled forehead who was treated by assertiveness training and ignoring the complaints of the patient (response prevention). Marks and Mishan (1988) reported the treatment of 5 patients by exposure and response prevention. Two of their patients had anti-depressant medication for concurrent depression and one was also treated with a neuroleptic. Gomez-Perez, Marks and Gutierrez-Fisac (1994) from the same unit reviewed the treatment of 30 cases by behaviour therapy and adjunctive treatment of anti-depressants in 6 cases. Neziroglu and Yaryura Tobias (1993a,b) describe the use of exposure and response prevention in 5 cases unresponsive to medication. In all the above examples, daily exposure might involve entering social situations without the use of camouflage or a means of hiding their defect. Response prevention strategies included not questioning others about the perceived defect and training the relatives not to respond to requests for reassurance. If the patient is checking the defect in reflective surfaces, then they would be encouraged to resist. One of the main difficulties in treating such patients is their difficulty in engaging in a programme of exposure because of their overvalued ideation, depressed mood and lack of motivation to therapy. Alternatively, patients may comply with exposure, but continue to believe strongly that they are defective and ugly. Newell and Shrubbs (1994) and Cromarty and Marks (1995) have attempted to shift the over-valued ideation by reverse role play in which the patient argues the case for alternative beliefs such as beauty being subjective. The therapist plays “Devil’s advocate” by arguing the case for the patient’s previous beliefs. The strategy is sometimes used in cognitive therapy for personality disorders—but usually later in therapy to consolidate alternative beliefs (Padesky, 1994).

Rosen, Reiter and Orosan (1995) have conducted a randomised controlled trial of group cognitive behaviour therapy for 16 hr which they found to be superior to a waiting list. The treatment package included training in the correct estimate of body part size or shape; self-exposure in a mirror; modification of the over-valued beliefs about the importance of physical appearance; techniques to challenge intrusive thoughts about appearance; exposure to provoke self-consciousness about appearance; and response prevention of checking, reassurance seeking and comparing themselves to others. The Ss in their trial were however atypical as they were all women who were mainly preoccupied by their weight or shape either alone or in combination with other complaints which is a different population to that described in other surveys (Veale *et al.*, 1996). Rosen *et al.* (1995) describe strategies which involve training in the correct estimate of size and shape. This may be helpful for patients who are avoiding examining their perceived defect, but most BDD patients are probably checking their appearance and are more accurate in their perception than healthy controls (Jerome, 1980). A strategy of self-exposure to a mirror may therefore be counter-productive although Rosen states that it may still be useful if it is carried out with cognitive restructuring.

From a review of the literature, there seems little doubt that successful treatment would need to involve exposure to social situations without camouflage and response prevention for all checking in mirrors, repeating rituals and reassurance seeking. The problem remains of helping the

individual to seek psychiatric help and then engaging the patient in therapy. Warwick and Salkovskis (1989) attempt to engage hypochondriacal patients in cognitive behaviour therapy as a hypothesis testing exercise for a limited period. They suggest to the patient that because he or she has looked for evidence of a physical cause to their symptoms (often for several years), then he or she might be willing to look for an alternative explanation of their symptoms for 3 months and if no progress is made in therapy, then the therapist would ask the patient's GP to refer them on to another physician. This strategy could be used for BDD patients and we believe that there should be good links between clinicians treating BDD and cosmetic surgeons and dermatologists. Patients who have not had an opinion from a cosmetic surgeon or dermatologist might benefit from one at the beginning of treatment so that they can be clearly informed whether their expectations for change are realistic. We believe that providing an alternative psychological model of BDD (such as we have described) is crucial at an early stage to engage patients. The concept of motivation to change is important and we suspect that many patients referred to psychiatrists by cosmetic surgeons and dermatologists may not be ready to engage in treatment in their stage of change and that a request from the patient to seek psychological help is a powerful predictor of engagement.

We made the following guidelines in our treatment protocol:

1. Patients need to have a good understanding of a cognitive behavioural model about the development and maintenance of BDD and that no treatment should begin until patients are fully engaged in therapy.

2. Once a patient is engaged, then some form of attentional training may be required that involves helping the patient to shift away from self-focusing especially during exposure to cues that trigger disgust and anxiety (Wells, 1990). External focusing frees up attentional capacity so that alternative beliefs can then be processed. We believe this need to be acted on behaviourally with response prevention at an early stage in treatment by not inspecting or checking their perceived defect in reflective surfaces. It means teaching patients to terminate rituals on the basis of external criteria rather than an inner sense of satisfaction or feeling "just right". Socratic questioning can be used to lead the patient to realising the impossibility of satisfying some of the criteria based upon the subjective quality of experience or aesthetic judgements (Richards, 1995).

3. The wider goal of cognitive restructuring is to develop alternative beliefs that include accepting that beauty is subjective and that human beings are far too complex to esteem on the sole basis of a defect in their appearance. BDD patients tend to overgeneralise from their perceived defect being one aspect of themselves to the whole of themselves. In this respect they define the essence of their selves by their perceived defect. Patients therefore need to learn to view their appearance as a whole and to accept that their appearance is just one aspect of themselves. They also need to accept unconditionally the uncertainty about whether a defect exists in their appearance.

We believe that one pitfall is to challenge directly the patient's subjective judgement of aesthetics about appearance or their belief that a defect does not feel "right". Such judgements are not amenable to challenge by empiricism or logic and are likely to be based upon emotional reasoning. In this respect, cognitive therapy of BDD may resemble that of OCD in challenging not the obsessions themselves but the meaning of them (Salkovskis, 1985; Van Oppen & Arntz, 1994). This will include work on assumptions such that patients have to be perfect in appearance or that if they are ugly, they are worthless or unloveable.

The process of attitude change may be assisted by:

1. collecting positive and neutral information about patients' assumptions that is normally discounted or distorted to build more realistic assumptions about body image (Padesky, 1994);
2. encouraging the use of a continuum to rate patients' ugliness or defectiveness so that they appear like most people in the middle of a continuum. For example "The Elephant Man" may be at one extreme of their continuum and a popular beauty model at the other extreme;
3. reversed role play as described by Newell and Shrubbs (1994).

In common with other disorders, cognitive restructuring is most likely to be effective when there is some emotional arousal (but not too high or the patient is unlikely to be able to develop a case for an alternative belief). Patients may therefore need to practice developing alternative beliefs when confronting themselves in the mirror or being stared at close-up by their therapist.

We investigated the efficacy of this approach in a pilot controlled trial that compared 12 sessions of cognitive behaviour therapy against a 12 week waiting list.

METHOD

Patients were recruited from the first 19 suitable patients in a larger survey of BDD patients (Veale *et al.*, 1996) and were a mixture of self-referrals and referrals from other agencies. Ninety percent of the sample were female and 40% were married. All patients fulfilled the diagnostic criteria for BDD in DSMIV (American Psychiatric Association, 1994). The study excluded patients with BDD whose primary concern was with their weight or shape. The study excluded patients with a concurrent dementia or organic brain disorder, schizophrenia, delusional disorder and alcohol or substance abuse or who had suicidal intent. Patients with other comorbid diagnoses (e.g. obsessive compulsive disorder, social phobia, depressive disorder) were included in the trial so long as the patient's primary concern was with the defect in their appearance.

The following measures were used at initial assessment:

1. The Body Dysmorphic Disorder Examination (BDDE) (Rosen & Reiter, 1996).
2. Modified Yale Brown Obsessive Compulsive Scale (Y-BOCS) for BDD (Hollander & Phillips, personal communication).
3. Depression rating scale (observer rated) (Montgomery & Asberg, 1979).

The following self-report questionnaires were administered:

1. Social phobia and anxiety inventory (Turner, Beidel, Dancu & Stanley, 1989).
2. Hospital Anxiety and Depression Inventory (Zigmond & Snaith, 1983).
3. Derriford Scales (Carr & Harris, personal communication).

Details of the rating scales are described in Veale *et al.* (1996).

Patients were randomly assigned to one of two groups and reassessed after 12 weeks. The groups consisted of either cognitive behaviour therapy or a waiting list control. The randomisation was stratified by:

1. degree of avoidance on Body Dysmorphic Disorder Examination (Rosen & Reiter, 1996);
2. severity of depression on Montgomery Asberg Depression Scale. (Montgomery & Asberg, 1979).

These variables were chosen as the degree of avoidance and severity of depressive symptoms may predict prognosis in related disorders such as OCD (Foa & Emmelkamp, 1983; Cottraux *et al.*, 1993).

The therapy was conducted by either DV, WD or KG who are accredited cognitive behaviour therapists. The data were analysed by non-parametric tests of significance, namely the Wilcoxon with SPSS for Windows on a personal computer.

RESULTS

There were no significant differences between the two groups pre-treatment in terms of age, age of onset, average duration or sex distribution (Table 1). There were no differences between any of the measures of psychopathology pre-treatment (Table 2). There were no significant within group differences on any of the measures in the waiting list group which remained stable over 12 weeks. Significant differences were found within and between groups for cognitive behaviour therapy on

Table 1. Demographic characteristics of sample

	CBT 9	Waiting list 10	
Number			
Age (yr)	36.67 (13.65)	34.18 (7.55)	NS
Age at onset (yr)	17.11 (12.99)	19.09 (10.82)	NS
Average duration	14.11 (15.38)	15.32 (10.25)	NS
% Male	9.1	10	NS
% Married	36.4	40	NS

Table 2. Mean and standard deviation of rating scales at baseline and at end of trial by group

Number		CBT 9	Waiting list 10
BDDE Total	Baseline	72.90 (17.04)	91.36 (29.75)
	End	42.37 (25.20) <i>P</i> < 0.02	95.50 (11.41) *** <i>P</i> < 0.01 NS
Y-BOCS Total	Baseline	22.00 (5.07)	21.18 (7.25)
	End	10.75 (9.25) <i>P</i> < 0.5	24.33 (4.55) *** <i>P</i> < 0.01 NS
Depression (MADRS)	Baseline	16.55 (5.70)	18.63 (9.60)
	End	6.87 (4.58) * <i>P</i> < 0.02	18.75 (9.25) * <i>P</i> < 0.02 NS
Hospital Anxiety	Baseline	12.20 (3.92)	11.45 (4.76)
	End	7.85 (4.48) NS	8.45 (5.24) * <i>P</i> < 0.05 NS
Hospital Depression	Baseline	7.44 (3.32)	6.45 (5.24)
	End	3.57 (2.22) <i>P</i> < 0.5	8.00 (2.82) *** <i>P</i> < 0.01 NS
Social Phobia Score	Baseline	74.88 (27.26)	95.10 (30.26)
	End	55.16 (19.08) NS	105.44 (29.86) *** <i>P</i> < 0.01 NS
Derriford Total	Baseline	87.67 (21.40)	102.00 (20.40)
	End	58.85 (10.43) * <i>P</i> < 0.05	99.33 (16.95) *** <i>P</i> < 0.01 NS

the Body Dysmorphic Disorder Examination, the Yale Brown Obsessive Compulsive Scale, the Hospital Depression score, the Montgomery Asberg Depression rating scale, and the Derriford Total score. There were significant differences between the groups but not within the groups on the Social Phobia Score. Seven out of the nine treated patients were rated as having either absent or a sub-clinical body dysmorphic disorder at the end of the trial, whilst all of the patients on the waiting list were rated as having a disorder in the clinical range at the end of the trial.

DISCUSSION

We have outlined a cognitive behavioural model of BDD and demonstrated in a pilot study that it is possible to treat BDD patients successfully. The approach is based upon a model of psychopathology that can be empirically tested in future studies. We have shown that symptoms of BDD are extremely stable over a 12 week waiting list. We were able to obtain a 50% reduction in symptoms on our main outcome measure, the Yale Brown Obsessive Compulsive Scale (modified for BDD). This is of the same order as obtained in OCD for either pharmacotherapy or cognitive behaviour therapy in studies that have used the same scale. The mean score at the end of the trial (10.75) is slightly higher than that obtained in a pilot study of the YBOCS in a non-clinical population of students (8.75). Our approach would ideally have required more sessions to obtain further gains in some patients. These sessions may be especially helpful at the beginning of therapy when it is crucial to engage the patient and reduce the selective attention and rituals. Several of our patients still had some residual symptoms at the end of our trial and we suspect that they may require at least 15 to 20 sessions to reduce the risk of relapse. This has also been the experience of Neziroglu and Yaryura Tobias (1993a,b) who describe a programme of daily therapy at the onset.

This pilot study has encouraged us to further evaluate the role of cognitive behaviour therapy in BDD and the long term follow up in comparison with other approaches. It would be theoretically important to dismantle treatment so as to determine the relative impact of exposure and response prevention alone or in combination with cognitive therapy. However, the clinical trend is towards combined interventions. We believe the research priority is a controlled trial that compares cognitive behaviour therapy with another psychological treatment such as interpersonal therapy which has been successful in depression and body image disorders such as bulimia (Weissman & Markowitz, 1994). However, we do not expect it to be as efficacious as CBT which specifically targets overvalued ideation and avoidance and checking behaviour (Weissman & Markowitz, 1994). Research into pharmacotherapy needs to determine whether the optimum treatment is an SSRI, an MAOI or a neuroleptic. The priority will then be to compare the most effective psychological treatment with the most effective drug treatment and a combination of the

treatments. A combination of treatments may provide a synergistic approach by improving depressed mood and motivation to a psychological treatment. SSRI anti-depressants may also have a direct role in the reduction of dysmorphic symptoms independent of affective variables. However, the experience of SSRI anti-depressants in OCD would suggest that there will be a high rate of relapse on discontinuation of the drug (Gournay, 1995) and that a psychological treatment will be essential to reduce the risk of relapse. The probable heterogeneity of BDD patients also necessitates trials that clearly define the population studied in terms of identifying those who are psychotic, are also depressed and those who are mainly preoccupied by their weight or shape.

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