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Advances in a cognitive behavioural model of body dysmorphic disorder

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Abstract

Body dysmorphic disorder (BDD) is the most distressing and handicapping of all the body image disorders. A cognitive behavioural model of BDD is discussed which incorporates evidence from recent studies and advances in the author's 1996 conceptual model. The model aims to understand the maintenance of symptoms in BDD, to assist in the process of engagement of therapy and to guide the strategies to use. At the core of BDD is an excessive self-focussed attention on a distorted body image, the negative appraisal of such images leading to rumination, changes in mood and the use of safety behaviours. Evidence for possible risk factors in the development of BDD is also discussed.

Keywords: Body dysmorphic disorder; Cognitive behaviour therapy; Risk factors; Body image

Introduction

Body dysmorphic disorder (BDD) is characterised by a preoccupation with an imagined defect in one's appearance or, in the case of a slight physical anomaly, the person's concern is markedly excessive. The person must also be significantly distressed or handicapped in his or her occupational and social functioning (American Psychiatric Association, 1994). There is frequent comorbidity in BDD especially for depression, social phobia and obsessive–compulsive disorder (OCD) (Neziroglu, McKay, Todaro, & Yaryura Tobias, 1996; Phillips & Diaz, 1997; Veale et al., 1996a). There is also heterogeneity in the presentation of BDD from individuals with borderline personality disorder with self-harming behaviours to others with muscle dysmorphia (Pope, Gruber, Choi, Olivardia, & Phillips, 1997), who are less handicapped. They share a common feature of a preoccupation with an imagined defect or minor physical anomaly. The most common preoccupations concern the skin, hair, nose, eyes, eyelids, mouth, lips, jaw, and chin, however any part of the body may be involved and the preoccupation is frequently focussed on several body parts simultaneously (Phillips, McElroy, Keck, Pope, & Hudson, 1993). Complaints typically involve perceived or slight flaws on the face, asymmetrical or

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disproportionate body features, thinning hair, acne, wrinkles, scars, vascular markings, and pallor, or ruddiness of complexion. Sometimes the complaint is extremely vague or amounts to no more than a general perception of ugliness. BDD is characterised by time consuming behaviours such as mirror gazing, comparing particular features to those of others, excessive camouflage, skin-picking, and reassurance seeking. There is usually avoidance of social situations and of intimacy. Alternatively such situations are endured with the use of alcohol, illegal substances or safety behaviours similar to social phobia.

The prevalence rate of BDD in the community is reported as 0.7% in two studies (Faravelli et al., 1997; Otto, Wilhelm, Cohen, & Harlow, 2001) with a higher prevalence of milder cases in adolescents and young adults (Bohne et al., 2002). The prevalence of BDD is about 5% in a cosmetic surgery setting (Sarwer, Wadden, Pertschuk, & Whitaker, 1998) and 12% in a dermatology clinic (Phillips, Dufresne, Wilkel, & Vittorio, 2000). Surveys of BDD patients attending a psychiatric clinic tend to show an equal sex incidence and sufferers are usually single or separated (Neziroglu & Yaryura-Tobias, 1993; Phillips & Diaz, 1997; Phillips et al., 1993; Veale et al., 1996a). Veale et al. (1996a) found a greater preponderance of women but this may be because of a referral bias. It is also possible that, in the community, while more women are affected overall, a greater proportion experience milder symptoms.

Although the age of onset of BDD is during adolescence, patients are usually diagnosed 10–15 years later (Phillips, 1991; Phillips & Diaz, 1997; Veale et al., 1996a). Patients may be secretive because they may think they will be viewed as vain or narcissistic. They are therefore more likely to present to mental health practitioners with symptoms of depression or social anxiety unless they are specifically questioned about symptoms of BDD. BDD patients are the most distressed and handicapped of all the body image disorders with a high rate of depression and suicide or "do it yourself" (DIY) cosmetic surgery. Phillips (2000) used a quality of life measure and found a degree of distress that is worse than that of depression, diabetes or bipolar disorder.

BDD is probably best conceptualised as having both quantitative and qualitative differences from normal body dissatisfaction and body image. For example, the degree of importance attached to one's appearance in defining one's self might be at the extreme end of a normal dimension. However, the distorted imagery experienced by some BDD patients has a more qualitative difference to normal body image.

A cognitive behavioural model of BDD

There are similar features in psychopathology of BDD with OCD and social phobia, with frequent comorbidity. It is not therefore surprising that a cognitive behavioural model of BDD described below has some overlap with that of social phobia (Clark & Wells, 1995), OCD (Salkovskis, 1999) and health anxiety (Warwick & Salkovskis, 1990) which influence I would like to acknowledge. A model for BDD needs to focus on features, which are unique to BDD. One such feature is the relationship with reflective surfaces such as mirrors or old photos, which acts a trigger for the symptoms. The model has some overlap with a cognitive behavioural model of body image developed by Cash and Pruzinsky (2002) which is most commonly applied to dissatisfaction for body weight and shape in a non-psychiatric population.

Cognitive behavioural models are relevant for answering questions about the maintenance of symptoms. For example, why does an individual with BDD "see" a grossly distorted body image in a mirror when others view the person as genuinely attractive and contradict their views? Furthermore, the model needs to be understood by a patient; to provide an alternative explanation for their experience; to assist in the process of engagement and to guide the strategies to use in therapy. For each section of the model, I will discuss the theory, the evidence for the model so far and the clinical implications in therapy. I will discuss putative risk factors for the development of BDD in the second half of the article.

The self as an aesthetic object

The self as an aesthetic object refers to the experience of extreme self-consciousness and self-focussed attention on a distorted image. It is proposed that the cycle begins when an external representation of the person's appearance (e.g. looking in a mirror)

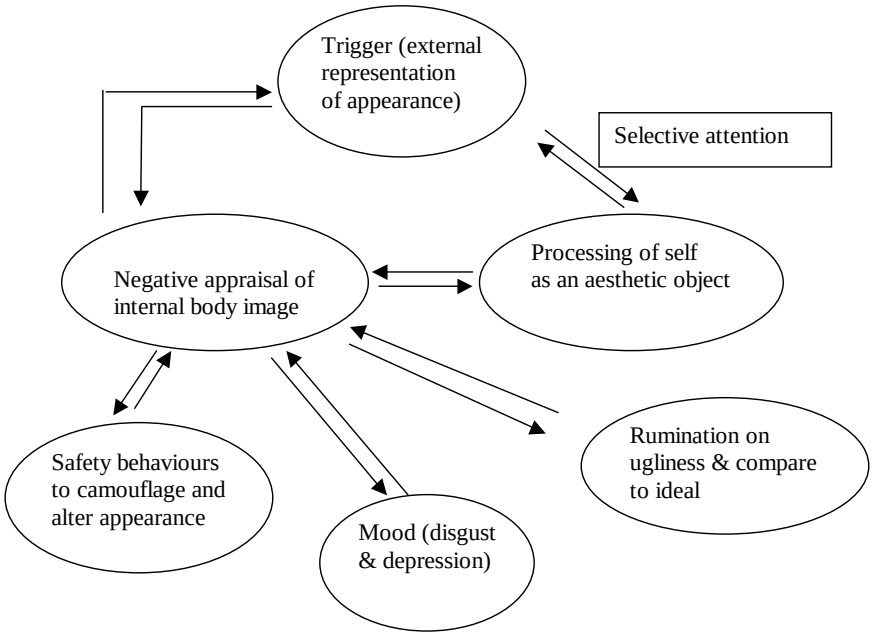

Fig. 1. A cognitive behavioural model of BDD.

activates a distorted mental image (Fig. 1). A mental image is defined as "contents of consciousness that possess sensory qualities, as opposed to those that are purely verbal or abstract" (Horowitz, 1970). The process of selective attention has the effect of increasing awareness of the image and of specific features within the image. The image is used to construct how the person looks in the mirror and provide information about how he or she appears to others (also referred to as the process of "mind reading"). The evidence for imagery in BDD so far is a descriptive study that compared 18 BDD patients with 18 healthy controls using a semi-structured interview and questionnaires (Osman, Cooper, Hackmann, & Veale, 2003). BDD and controls were just as likely to experience spontaneous images of their appearance (like Fig. 1). However BDD patients were more likely to rate the images as significantly more negative, recurrent and vivid than normal controls. Images in BDD patients were more distorted and the "defective" features took up a greater proportion of the whole image. They typically reported visual images, which were sometimes associated with other sensory modalities (e.g. organic sensations of hunger or fatigue). Of particular significance is that the images were more likely to be viewed from an observer perspective compared to a field perspective, similar to a finding in social phobia (Hackmann, Surawy, & Clark, 1998). An observer perspective consists of the individual looking at him or her self from another person's perspective. A. field perspective consists of an individual on the inside looking out of one's own body.

Stopa (2003) has noted that an observer perspective is not abnormal per se but is more likely to occur with trauma and false memories. However, BDD and social phobic patients may use the observer perspective initially in order to distance themselves and avoid emotion associated with negative evaluative experiences. The observer perspective may therefore become a maintaining factor through continued avoidance of emotion. An external perspective may increase its "authority" and increase the tendency to make internal attributions about an event.

It is proposed that activation of imagery is associated with an increased self-focussed attention. Self-focussed attention is defined as an awareness of self-referent, internally generated information (Ingram, 1990). Self-referent information can include a wide range of stimuli from an awareness of sensations, thoughts, images, or emotions from past

memories that influence the self in the present. It is therefore a non-specific process that occurs in a wide range of disorders from social phobia to schizophrenia. The degree of self-focussed attention is likely to be related to the severity of the symptoms and degree of preoccupation (Woodruff-Borden, Brothers, & Lister, 2001). It is proposed that in severe cases of BDD the attentional capacity is taken over by the distorted image and negative appraisal. Furthermore, the system may be so rigid that it is unable to switch to any external information about one's appearance. In less severe cases, there appears some attentional capacity to external information so that the image may be less stable and associated with doubts about how the person appears to others. In this case, the individual may feel driven by a need to know exactly how they look. The person might be rewarded only with certainty whilst he is looking in a mirror, which is then reinforced. However the longer a person looks in front of a mirror, the more self-conscious he becomes, the worse he feels and the more it reinforces his or her view of being ugly and defective. Patients become genuinely confused about how their appearance might alter from day to day or hour to hour. However, this might occur in the context of mood changes and occasional reinforcement of feeling better in a particular light or a "good" mirror when there is less self-focussed attention. Hence patient may believe that in every mirror they look, they see a different image (Veale & Riley, 2001).

Increased self-focussed attention on physical appearance increases the specificity for BDD, but individuals with a disfigurement or an eating disorder will also be more self-conscious about their appearance. The process of selective attention appears to be focussed on specific features of an image leading to a heightened awareness and relative magnification of certain aspects, which contributes to the development of a distorted body image. One might predict that selective attention would lead to increased accuracy of certain aspects of one's body. For example, Jerome (1992) found that patients on a waiting list for cosmetic rhinoplasty (but not diagnosed as BDD) were more accurate than healthy controls in estimating the size of their nose. This work needs to be replicated in BDD patients who may be selectively attending to a distorted body image and may therefore be less accurate.

The role of imagery and self-focussed attention has significant implications for therapy. First, a discussion of the role of imagery, the link with early experiences and the meaning attached to the image will all assist in the process of engagement. First, the therapist and patient can talk about the "image" as the problem rather than the person's appearance. This can lead to a discussion about the way perception is constructed and is not just a picture on the back of the retina that is faithfully reproduced. Second, when assessing patients, more negative self-beliefs can be accessed via images and from earlier memories than via verbal thoughts (Osman et al., 2003). Third there are a number of techniques for modifying the meaning of the image by historical reviews or rescripting an image especially for teasing, bullying and sexual trauma (Arntz & Weertman, 1999; Hackmann, 1998) or the beliefs about the imagery (Layden, Newman, Freeman, & Morse, 1993; Smucker & Niederee, 1995). Lastly, clinicians may find it helpful to explore the role of the observer perspective. For example, is emotion more or less intense with observer or field perspective images? (Stopa, 2003).

The model also suggests that techniques that help to train individuals to increase the proportion of attention away from self-referent information towards tasks or the environment will be of assistance. This strategy has been described for social anxiety (Bogels, Mulkens, & De Jong, 1997) or health anxiety (Wells, 1990, 2000). The principle of increasing attention on a task such as shaving or combing one's hair can also be applied to mirror retraining (Veale & Riley, 2001) or routine activities such as walking down a street and becoming more aware of the environment from a field perspective.

Negative appraisal of body image

The next step is the negative appraisal and aesthetic judgement of the image, by activation of assumptions and values about the importance of appearance. In BDD, appearance has become over-identified with the self and at the centre of a "personal domain" (Veale, 2002). The term, "personal domain", was first used by (Beck, 1976) to describe the way a person attaches meaning to events or objects around them. At the centre of a personal domain are a person's characteristics,

his physical attributes, his goals and values. Clustered around are the animate and inanimate objects in which he has an investment such as his family, friends, and possessions. An idealised value occurs when one of the values develops into such over-riding importance that it defines the "self" or identity of the individual or becomes the very centre of a personal domain. The idealised value in BDD is usually the importance of appearance of certain features but other values may include social acceptance, perfectionism, symmetry or youth. Such values will reinforce processing of the self as an aesthetic object (and in social situations as a social object (Clark & Wells, 1995). Without these idealised values, it might be possible to adapt to a distorted body image in the way that some individuals with a disfigurement may accept themselves and become less self-conscious (Partridge, 1990).

The conditional assumptions and rules about one's appearance will be driven by the values about the importance of appearance to one's identity. Typical assumptions include: "If I am unattractive, then life is not worth living", "If I am defective, then I will be alone all my life" or "I can only do something when I feel comfortable about my appearance" (Veale et al., 1996a). Geremia and Neziroglu (2001) have noted other assumptions such as "If I looked better then my whole life will be better", "How I feel about myself as a person is related to how I feel about how I look". Typical core beliefs that are activated are based on (a) being a failure or generally inadequate; (b) being worthless; (c) being ugly, repulsive or abnormal; (d) being unlovable or unacceptable; (e) being rejected by others and being alone for the rest of their life (Osman et al., 2003). Most of these core beliefs are not specific to BDD but are common themes in depression and personality disorders. The model predicts that activation of the negative appraisals will have a negative feedback and will increase self-focussed attention on the image.

The degree of investment on appearance-related self-schemas has also been explored by Cash and Pruzinsky (2002) and Cash, Melnyk, and Hrabosky (in press) who have developed and revised the appearance schemas inventory (ASI) to assess the degree of importance attached to one's body image. The ASI has two factors—the person's self-evaluative salience which measures the degree to which an individual defines themselves by their physical appearance and a motivational salience—the extent to which they attend to their appearance and engage in appearance management behaviours. Items for the self-evaluative concerns include: "What I look like is an important part of who I am" or "My appearance is responsible for much of what's happened to me in my life". The instrument has not yet been studied in BDD and does not cover specific assumptions or rules such as those described above.

In common with other mood disorders, such appraisals will contribute to the bias towards beliefs that are confirmatory. For example, compliments are easily dismissed in a process of "discounting the positive". Examples include "They are saying it to be nice to me" or "They have to love me because they are my parents". Alternatively neutral comments may be turned into negative and be self-referential.

Therapy involves (a) identifying and helping individuals to question the meaning of the defectiveness (not the defect itself); (b) challenging the assumptions about being defective; (c) modifying values by a pragmatic approach (e.g. questioning their functional cost) (Veale, 2002); (d) reducing the importance of the appearance in defining the self (Dryden, 1998; Lazarus, 1977); (e) reverse role-play to strengthen an alternative belief in which patients can practice arguing the case for their alternative belief whilst the therapist argues the case for the old beliefs or values (Cromarty & Marks, 1995). This is standard cognitive therapy but clinical experience suggests that such strategies are better used later in therapy when an individual is engaged in the model, is using less safety behaviours and has become more functional.

Rumination and comparison with ideal

BDD is defined as a "preoccupation" with many individuals reporting that it is on their mind most hours of the day. Some of the cognitive processes that determine a preoccupation can be explained by the fixed attentional capacity on the distorted imagery and negative appraisal described above. However little is known in BDD about other cognitive processes that contribute to the nature of the "preoccupation" and the similarities or differences to worry or an obsession. For example, the process might include *meta*-cognitions; comparisons with an ideal internal image or with

other individuals, and anticipatory worry about future events.

Theories of social comparison (Festinger, 1954) or social ranking (Allan & Gilbert, 1995; Gilbert, Price, & Allan, 1995) have been applied to body dissatisfaction (Heinberg & Thompson, 1992). The theory assumes that individuals compare themselves with others and engage in upward comparisons or choose inappropriate comparison targets with unrealistic ideals. In BDD, the appearance comparison appears to be on specific feature(s) that are regarded as defective. Those who view their feature as very unattractive may desire to just blend in with an average. A minority who view their feature as average might desire an unrealistic standard or perfectionism. When in front of a mirror the comparison may be another image. Alternatively the comparisons may be with an old photo of him or her self or a picture in the media. In social situations, the comparison is usually of peers the same age and sex. The constant comparison has a negative feedback on increasing negative appraisal and self-focussed attention on the image.

The evidence for repeated comparisons in BDD is limited but we have some data from a study based on self-discrepancy theory (Veale, Kinderman, Riley, & Lambrou, 2003). Self-discrepancy theory proposes three basic domains of self-beliefs: (a) *the actual self*—the individual's representation of the attributes that someone (self or significant other) believes the individual actually possesses; (b) *the ideal self*—the individual's representation of the attributes that someone (self or significant other) would ideally hope the individual to possess; (c) *the should or ought self*—the individual's representation of the attributes that someone (self or significant other) believes the individual ought as a sense of duty or moral obligation to possess. The *ideal* and *should* selves are referred to as self-guides. It is assumed that a discrepancy between the actual self and the self-guides determine the individual's vulnerability to negative emotional states (Higgins, 1987). For example, in a self-actual: self-ideal discrepancy, the individual is vulnerable to dejection-related emotions (e.g. depression, internal shame), resulting from the appraisal that his or her hopes and aspirations are unfulfilled with the absence of positive reinforcement. In a self-actual: other-should discrepancy, the individual is vulnerable to anxiety resulting from the appraisal that one has been unable to achieve one's responsibilities and is therefore liable for punishment (the anticipated presence of negative outcomes seen in social phobia). Veale et al. (2003) explored the role of self-discrepancy theory in 72 BDD patients and 42 controls who completed a modified version of the selves questionnaire (Higgins, Bond, Klein, & Strauman, 1986) requiring them to list and rate physical characteristics according to the following standpoints: (a) self-actual; (b) self-ideal; (c) self-should; (d) other-actual; and (e) other-ideal. Compared to controls, BDD patients displayed significant greater discrepancies between their self-actual and both their self-ideal and self-should. There were no significant discrepancies in BDD patients compared to controls however, between their self-actual and other-actual or other-ideal domains. The results suggest that BDD patients have their own ideal as to how they should look and are more concerned with a failure to achieve their own aesthetic standard than with being punished for failing to achieve the ideals of others. A similar instrument (the Body Image Ideals Questionnaire) has been developed by Cash and Szymanski (1995) to assess evaluative body image and discrepancy between self-perceived physical attributes and internalised standards or ideals from one's own and a significant other's standpoint. In addition, the degree of importance attached to each of these discrepancies is assessed so that body image satisfaction depends on (a) the extent to which body image is matched with ideals; (b) the importance attached to having or attaining those ideals. The BIQ is based upon 10 physical characteristics including height, weight, chest size, physical strength or co-ordination which are not usually relevant for most individuals with BDD who are more likely to focus on aspects of their face. The strength of the BIQ is that it assesses both discrepancy and degree of importance attached to the discrepancy.

Further data on cognitive processes and appearance comparison in BDD were provided by a study exploring attention to emotional faces. Anson, Veale, and De Silva (2003) compared 25 BDD patients with 17 normal controls with a modified dot probe paradigm originally used by Mansell, Clark, Ehlers, and Chen (1999) and Mansell, Clark, and Ehlers (2003). In the study by Mansell et al. (1999), high and low socially anxious individuals (without BDD) were briefly presented with pictures containing a face paired with a

household object. The faces were negative, neutral or happy. Each face–object pair was followed by one of two letters in a location corresponding to the centre of one of the pictures, and participants had to indicate as quickly as possible which letter they saw. The assumption is of a faster reaction time to letters that follow the location of the picture (i.e. face or object) to which subject was attending. Mansell et al. (1999) found that high socially anxious individuals showed an attentional bias away from emotional (negative and positive) faces, but only when tested under conditions of anticipatory social threat.

In the study by Anson et al. (2003), the anticipatory threat induction was modified to include a BDD threat and no threat condition. The threat condition involved an appearance-related social evaluative threat, in which subjects were told that they would be video recorded, and would then observe volunteers watching the video (although this did not actually happen). The authors found that attention to faces as a whole was significantly greater in BDD patients compared to controls in the absence of threat, with the effect being particularly prominent for neutral and positive faces. Under anticipatory threat, attention to neutral and positive faces was suppressed, while attention to negative faces remained unchanged. This effect was in contrast to the results obtained by Mansell et al. in high socially anxious patients. Anson et al. (2003) hypothesised that in the absence of threat, BDD patients may have been comparing themselves to faces, especially neutral and positive images, which they may have rated as more attractive, or relevant in terms of comparison target. However, appearance comparison is likely to be a potentially anxiety-provoking process, which may have been activated under conditions of threat, leading to reduction in attention to neutral and positive faces. A further possible explanation is that social evaluative threat may result in reduced attention to faces belonging to particular groups of people whom BDD patients are most concerned about in terms of negative appearance evaluation.

Clinically a few patients appear to have little or no social evaluative concerns and would still be distressed and looking in mirror if they were left alone on a desert island. Most regard social evaluative concerns as an additional burden and would be less distressed in a hypothetical situation of being left alone on a desert island. Some individuals have almost exclusively social evaluative concerns and believe they would have no symptoms of BDD in the hypothetical situation of being left alone on a desert island. This reflects the heterogeneity and complexity of BDD and the importance of an individual formulation in treatment planning. The importance of this part of the model is that appearance comparisons are another factor that maintains distorted negative appraisals and imagery in a negative feedback loop. Furthermore, the attention is often selective and unrepresentative and likely to interfere with processing of other external information. One goal of therapy therefore involves resisting the frequent comparison and rating of one's appearance against others.

Emotion

Emotions in BDD are complex and will depend upon the exact appraisal of the situation and event. The emotions include (a) internal shame (or self-disgust) when the individual compares and ranks his or her appearance as lower than others; (b) external shame and anticipatory social anxiety based on judgements about how others are likely to scrutinise, humiliate or reject them; (c) depression and hopelessness at the person's failure to reach his or her aesthetic standard, perhaps living in social isolation, inter-personal conflicts and deficits in relationships; (d) anger and frustration at oneself for damaging his or her appearance (e.g. do it yourself surgery, skin-picking); others not understanding or agreeing with their concerns; not having enough money to pay for cosmetic surgery or not obtaining satisfaction in cosmetic surgery; (e) guilt at damaging one's appearance either by oneself or seeking cosmetic surgery. With the prominence of hopelessness and shame, it is not therefore surprising that there is a high degree of comorbidity with depression and risk of suicide (Phillips et al., 1993; Veale et al., 1996a,b). As in other areas, there is a negative feedback loop as increases in emotional arousal will tend to increase the frequency or severity of negative appraisal of one's body image and increase self-focussed attention. Symptoms of arousal are not normally targeted in CBT, but any strategy that improves mood or increased tolerance to negative states would theoretically decrease preoccupation and negative appraisal. In this regard, there is evidence

for the modest benefit of selective serotonergic reuptake inhibitor anti-depressants in two randomised controlled trials (Phillips, 2002; Phillips, Albertini, & Rasmussen, 2002) although the mechanism of their action is unknown. Of note is that patients with or without a delusional disorder did equally well with an SSRI and there is no evidence for the benefit of anti-psychotic medication alone in BDD.

Safety behaviours

BDD is frequently conceptualised as on the spectrum of OCD partly because of the similarities in psychopathology (e.g. "compulsive behaviours" such as mirror checking). This is incorporated in the most widely used outcome measure (Yale Brown Obsessive Compulsive Scale modified for BDD (Phillips et al., 1997). I believe however, it is better to conceptualise all the behavioural strategies to reduce the risk of danger in feared situations including escape and non-repetitive behaviours used by BDD individuals as "safety behaviours" (Salkovskis, 1991, 1996) or from an evolutionary psychology perspective as "submissive behaviours" (Allan & Gilbert, 1997; Gilbert, 2000b; Harper, 1985). It is assumed that such learnt behaviours may have been adaptive in the past in certain contexts.

Traditionally safety behaviours for all anxiety disorders are actions within situations designed to prevent feared catastrophes. The essence of a submissive behaviour in a social situation is damage-limiting self-presentations (Gilbert, 2000b) rather than acquisitive ones. Safety or submissive behaviours include (a) avoidance or active escape behaviours when the emotion is overwhelming; (b) subtle behaviours such as camouflaging to reduce scrutiny by others; (c) compulsive behaviours that are repeated until the person feels "comfortable" or "just right". Safety behaviours are often idiosyncratic and have personal meaning to the individual. Thus one woman may be using excessive make-up to camouflage facial skin. Another woman may be avoiding make-up believing that it would attract attention towards her. Safety behaviours in BDD are generally adapted by the individual to:

(a) avoid thinking about a feature;
(b) alter a feature;
(c) camouflage a feature;
(d) distract attention from a feature; or
(e) reduce uncertainty or distress about an image.

Examples of various safety behaviours are provided below.

(a) A man who tore up all photos of himself to prevent him from thinking about the "wrong" impression that he was giving.
(b) A man who had had three rhinoplasties but was now preoccupied with scarring from the first operation.
(c) A woman who spent time using various beauty treatments to camouflage her face, which she believed to have numerous lines and scars.
(d) A woman who shaved of all the hair on her head and had a large tattoo to distract attention in public away from a "flaw" on her nose. This had the effect of increasing her self-consciousness and attracting negative evaluation of her appearance by others.
(e) A man preoccupied with his nose who stood in front of a mirror and performed mental cosmetic surgery on his nose until he felt "comfortable". This is similar to a compulsive washing or checking in OCD as the person is using problematic criteria for the termination of a compulsion, namely, feeling "comfortable" or "absolutely sure" (Richards & Salkovskis, 1995) or the "right feeling" (Yaryura-Tobias & Neziroglu, 1997).

The importance for the model is that there is another negative feedback loop. Safety behaviours may briefly decrease distress or uncertainty but are counter-productive and increase self-consciousness, preoccupation and negative appraisal. Furthermore, safety behaviours (a) involve enormous mental effort and attention which means less capacity for external information; (b) often lead to further monitoring (e.g. mirror checking to determine if the camouflage is "working"); (c) may objectively make one's appearance worse (for example, skin-picking); (d) increase attention by others to one's appearance (for example, a person holding their hand up against their face).

In clinical practice, an idiosyncratic version of the model is drawn up with the patient which focuses on a specific episode of increased worry about one's appearance (e.g. a person looking in a mirror in the hope that he does not look as bad as he thinks he does in his

image). A behavioural experiment may be constructed to determine the effect of the safety behaviour on the degree of preoccupation, self-consciousness and negative appraisal. Suffice to say all safety behaviours are a major maintenance factor in the preoccupation and distress of BDD and much creativity may be required to help patients stop using their safety behaviours. Similarly, patients will require exposure to situations avoided without their safety behaviours and with maximum attention on tasks (rather than the self).

Risk factors

The cognitive behavioural model described is only relevant for factors that maintain a distorted body image. As yet, only limited data are available on risk factors for the development of BDD and the final pathway described above. One of the most important challenges for any epidemiological investigation in this area is distinguishing between risk factors that are specific to BDD and those that predispose to other disorders. Because of the similarity in phenomenology and reported comorbidity (Phillips, 1996; Veale et al., 1996a), BDD is regarded a being on the spectrum of either OCD (Hollander, 1993; Neziroglu & Yaryura-Tobias, 1993) or affective disorders (Phillips, McElroy, Hudson, & Pope, 1995). Therefore, any study on risk factors needs to include both non-clinical controls and those with depression and OCD. The onset of BDD is in adolescence and therefore particular attention will need to be given to risk factors preceding the onset. For example, not all individuals who have experience of being teased about their appearance develop BDD and one aim of future research is to determine which factors (or combination of factors) predict future persistence of extreme self-consciousness so that interventions may be devised for those at risk. I will review some of the hypothesised risk factors especially during childhood and adolescence.

Genetic factors

As in most psychiatric disorders, genes are likely to predispose an individual when they interact with environmental stresses. As yet there are no genetic studies in BDD and both twin and adoption studies are required. In this regard it will be important to define the various phenotypes such as perfectionism or skin-picking, each of which may have an additive effect. Such an approach has been especially helpful in eating disorders research (Bulik et al., 2003a,b).

Temperament

There is no published evidence on the role of temperamental factors in BDD. Clinical observations suggest that temperament may be an indirect factor for the development of BDD, namely, shyness, perfectionism or an anxious temperament, all of which may be partly genetically determined. If temperamental factors are relevant then they are likely to be non-specific to BDD.

Childhood adversity

Childhood adversity such as teasing or bullying (either about appearance or competence), poor peer relationships; social isolation; lack of support in the family or sexual abuse may all be non-specific factors in the development of BDD.

Body shame has been linked to early sexual and physical abuse. Andrews (1995, 1997) conducted lengthy interviews that covered attitudes and current or past life experiences. In a study with younger women, early abuse was associated with disordered eating and bulimia. In a study with older women, body shame mediated the relationship between early abuse and episodes of chronic or recurrent depression. In the absence of bodily shame, the relationship between early abuse and chronic or recurrent depression was lost. There was no structured interview for the diagnosis of BDD and it is possible that some of the subjects in both studies had BDD.

There is other preliminary evidence for the role of childhood abuse in BDD. Neziroglu, Khemlani-Patel, and Yaryura-Tobias (personal communication) compared 50 OCD and 50 BDD patients. Abuse was reported by 19 (38%) BDD patients compared to 7 (14%) of OCD patients. This was predominantly emotional abuse in 14 (28%) BDD and 1 (2%) OCD patients but also sexual abuse in 11 (22%) BDD and 3 (6%) of OCD and physical abuse in 7 (14%) BDD and 4 (8%) OCD.

In the study by Osman et al. (2003) 15 (88.33%) BDD patients and 2 (13.3%) control participants identified their images to be closely *associated* to a

particular memory during adolescence. Typical themes include being teased and bullied at school for at least a third, e.g. "I was 10 years old and never got on with this boy in school. I remember one day I asked him why he didn't like me and he said it's because you're ugly".

Sexual abuse was linked in 11% of images. These may occur after looking in a mirror either during or after a rape. For example, a patient reported that at the age of 15 she felt pretty before a rape. However during a rape she looked in a mirror and saw her face putrefying and decaying and this image from an observer perspective remained with her and became her view of herself.

There is some evidence that repeated childhood adversity such as bullying and abuse can be internalised as negative self-criticism. This in turn can lead to changes in brain functioning such as decreased activity of the serotonergic system and increases in cortisol production (Gilbert, 2000a). This may be a link with the modest benefits accorded by SSRIs (Phillips, 2002; Phillips et al., 2002).

History of dermatological or other physical stigmata

Many patients report a past history of dermatological disorder (e.g. acne) or other physical stigmata as an adolescent. Such stigmata may either be minor or noticeable and may have attracted teasing. However, the stigmata are usually long since resolved as an adult but the imagery of their previous appearance and associated teasing remains.

Sexual identity

In our clinical experience, we have noted that young homosexual men are at greater risk perhaps because of an increased social pressure to look attractive within the gay community. There may be other communities with similar societal or cultural pressures that lead to an increased incidence of BDD.

Aestheticality

It is proposed that BDD patients may be more aesthetically sensitive (an attribute like being musical, which varies in different individuals). This results in a greater emotional response to more attractive individuals and places a greater value on the importance of appearance in their identity. Secondly, some BDD patients may have greater aesthetic perceptual skills and this is manifested in their education or training in art and design. Lastly, individuals with BDD may hold higher aesthetic standards than the rest of the population, which is a factor in the appearance comparison described in the model above. The role of aesthetics in BDD has been discussed in previous papers (Veale & Lambrou, 2002; Veale et al., 1996b) and the experimental evidence is now required. In brief, we tend to value beauty because it may confer other qualities, which have no other physical markers. Evolutionary psychology might argue that because attractiveness is important for reproduction and social acceptance, then some individuals will idealise the importance of attractiveness for reproduction, which then becomes a factor in the development of BDD.

Harris (1982) has suggested that individuals seeking cosmetic surgery are more aesthetically sensitive and that aesthetic sensitivity may have two components—one related to perception and the other an emotional response. For increased aesthetic sensitivity in perception, BDD patients may be particularly aware of subtle differences in facial asymmetry or the size of secondary sexual facial characteristics or may be better at evaluating harmony in appearance. An objective measure of aesthetic perception is required to test the hypothesis. The problem is that the "gold standard" of aesthetic perception is usually a composite rating by a group of artists for works of art, or by cosmetic surgeons for the human form and are therefore too subjective.

For the emotional component of anestheticality, there may be greater emotional response to beauty or ugliness in BDD. If this is the case then, it may be related to idealised values about the degree of importance that one attaches to attractiveness (Veale, 2002). Wilhelm, Buhlmann, Etcoff, Savage, and Jenike (2001) found that BDD patients rated attractive faces as more attractive compared to normal controls and OCD patients. Interestingly, one might predict that BDD patients would be more averse to unattractive faces but there was no difference between BDD and OCD patients and healthy controls in their rating of neutral and unattractive faces.

Another component of aesthetic sensitivity may be indirectly related to BDD individuals' interests or

skills in art and design. We hypothesized that BDD patients were more likely than comparative groups of psychiatric patients to have had an education or occupation in art and design (Veale, Ennis, & Lambrou, 2002). We extracted data on the higher education, training or occupation from the case notes of 100 consecutive patients with BDD and compared them to 100 consecutive patients with a major depressive episode, 100 consecutive patients with obsessive compulsive disorder (OCD) and 100 consecutive patients with post-traumatic stress disorder (PTSD). We found that 20% of the BDD patients had an education or occupation in art or design compared to 4% in the depressed group, 3% in the OCD group and 0% in the PTSD group. This was highly statistically significant. The differences between the BDD group and the three comparative groups are relatively large and the rate in the three comparative groups is similar. It suggests that the association between an occupation or education in art and design and BDD was relatively robust and deserves further investigation in a prospective study. We do not have any evidence for a causal relationship between BDD and an occupation or education in art and design. The onset of BDD is usually gradual during adolescence and an interest in art and design may be a contributory factor to the development of the disorder in some patients. Patients might develop a more critical eye and appreciation of aesthetics, which is then applied to their own appearance.

BDD is greatly under-researched compared to other body image disorders such as eating disorders. It is only now beginning to attract interest. Many of the suggested risk factors remain very speculative. It is worth emphasising that potential risk factors are likely to be additive and interact with genetic predispositions to then lead to the final pathway of maintaining factors in the cognitive behavioural model.

Evidence for cognitive behaviour therapy

The efficacy of CBT for BDD has recently been reviewed (Neziroglu & Khemlani-Patel, 2002). There are only two randomised controlled studies, both of which used a waitlist comparison group (Rosen, 1995; Veale et al., 1996b). There are also case control studies (Geremia & Neziroglu, 2001) and case series (Wilhelm, Otto, Lohr, & Deckersbach, 1999). A treatment manual is in preparation (Veale & Neziroglu, in press) that will expand upon on this model that it is hoped will lead to a RCT that compares CBT against an attentional control treatment with equal credibility.

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