

**Rate of Body Dysmorphic Disorder
Among Patients Seeking Facial
Cosmetic Procedures**

A Thesis

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DEDICATIONS

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ABSTRACT

Rate of Body Dysmorphic Disorder Among Patients Seeking Facial Cosmetic Procedures

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Body dysmorphic disorder (BDD) is defined as a preoccupation with an imagined or slight defect in appearance resulting in significant distress or impairment in important areas of functioning (APA, 2000). BDD patients are often concerned with facial features and are also likely to present to cosmetic surgery settings for treatment of their perceived defect (Phillips & Diaz, 1997). Studies have reported rates of BDD of 7-12 % in patients from cosmetic surgery and dermatology settings (Sarwer, Wadden, Pertschuk, & Whitaker, 1998; Phillips, Dufresne, Wilkel, & Vittorio, 2000). Methodological weaknesses, including lack of control groups, reliance on surgeons' judgments of slight or minimal deformity, and the use of different measures to assess for BDD, necessitate further study of the rate of BDD in patients seeking cosmetic procedures.

This study was designed to further establish the rate of BDD among patients seeking cosmetic procedures. Ninety-one patients seeking facial cosmetic surgery and 50 patients seeking non-cosmetic facial procedures were recruited from a university cosmetic surgery practice, a university otorhinolaryngology practice, and a private cosmetic surgery practice. Prior to their initial visit, patients completed packets of questionnaires, including demographic questions and measures to assess body image dissatisfaction, BDD symptoms, and depression. Surgeons and nurses rated the severity of patient appearance concerns using a rating scale. Surgeons, nurses, and laypersons also rated a sample of patient photographs. Percentages of patients who screened positive

for BDD on a self-report measure in combination with a surgeon rating of minimal or no deformity were calculated. Eight percent of the cosmetic group and 7% of the non-cosmetic group met criteria for BDD. Patients with BDD symptoms reported greater depression and body image dissatisfaction as compared to patients without BDD symptoms. There was poor diagnostic correspondence between the two self-report measures of BDD. Nurses and surgeons rated defects similarly. Surgeons rated appearance concerns as more noticeable as compared to laypersons. These results suggest that BDD is not uncommon among patients seeking facial cosmetic procedures.

1. INTRODUCTION

More than 50% of women and slightly less than 50% of men report dissatisfaction with their appearance (Garner, 1997). These statistics are hardly surprising given the over-emphasis American culture places on physical appearance. Dissatisfaction with one's physical appearance is thought to motivate many behaviors—weight loss, exercise, cosmetic use, and cosmetic medical treatments including plastic surgery (Sarwer & Didie, 2002). According to the American Society of Plastic Surgeons (ASPS), 6.6 million people underwent cosmetic procedures in the United States in the year 2002.

While some body dissatisfaction can be considered “normative”, for a minority of individuals, preoccupation with bodily flaws (though slight or even non-existent) can result in excessive psychological distress and significant functional impairment in daily activities. These individuals are thought to suffer from the psychiatric disorder body dysmorphic disorder (BDD). BDD is defined as an extreme preoccupation with an imagined or slight defect which causes significant distress and impairment in everyday functioning (APA, 2000).

An incidence study of BDD in a cosmetic surgery population determined that approximately 7% of patients have BDD (Sarwer, Wadden, Pertschuk, & Whitaker, 1998). Prior to this study, the rate of BDD among cosmetic surgery patients had only been estimated at 2% (Andreasen & Bardach, 1977). Recently, Phillips and colleagues published the first incidence study of BDD among patients seeking dermatologic procedures; 12% screened positive for BDD (Phillips, Dufresne, Wilkel, & Vittorio, 2000). However, methodological weaknesses of these studies necessitate the replication of these findings.

Examination of the incidence of BDD among patients seeking facial cosmetic procedures is warranted for several reasons. First, BDD sufferers often report extreme dissatisfaction with facial features, such as the nose or skin (Phillips, McElroy, Keck, Pope, and Hudson, 1993; Phillips & Diaz, 1997). Second, despite having a psychiatric illness, BDD sufferers frequently seek cosmetic procedures as a means of alleviating their distress (Phillips, et al., 1993; Veale, 2000; Phillips, Grant, Siniscalchi, & Albertini, 2001).

According to the American Society of Aesthetic Plastic Surgery (ASAPS), a variety of medical specialists, including dermatologists and otorhinolaryngologists, perform cosmetic procedures each year (ASAPS, 2002). However, the prevalence of BDD has only been investigated in cosmetic surgery and dermatology populations (Sarwer et al., 1998; Phillips et al., 2000). Additionally, case reports from oral and maxillofacial practices suggest that BDD appears within these patient populations (Cunningham, Bryant, Manisali, Hunt, & Feinmann, 1996; Cunningham, Harrison, Feinmann, & Hopper, 1998). Thus, it is likely that individuals with BDD would also present to otorhinolaryngology practices. Studies investigating the rates of BDD in cosmetic settings have included patients seeking cosmetic surgery for any part of the body (Sarwer et al., 1998; Phillips, et al., 2000). However, to date, the rate of BDD in cosmetic and medical settings has not been firmly established, nor has it been investigated among patients seeking only facial cosmetic procedures.

In summary, BDD is a psychiatric disorder which causes significant distress and functional impairment for its sufferers. While those with BDD are in need of psychiatric treatment, they are more likely to present to medical settings for treatment of their

perceived defect. Studies of the clinical features of BDD have found that the majority of patients are concerned with a facial feature (Phillips, McElroy, Keck, Pope, et al., 1993; Phillips & Diaz, 1997). Although recent studies have reported incidence rates of BDD among cosmetic surgery and dermatology clinics, future studies are needed to further establish the rate of BDD among patients seeking facial cosmetic procedures. Thus, the present study was designed to investigate the rate of BDD among patients seeking facial plastic surgery in cosmetic surgery and otorhinolaryngology clinics. Information about the rate of BDD among these populations may play an important role in the identification and assessment of these patients.

2. LITERATURE REVIEW

2.1. History of the Diagnosis

BDD was first described in the European medical literature by Morselli in 1886 and referred to as “dysmorphophobia” (Morselli, 1886). The condition was described as a subjective feeling of ugliness coupled with shame, despite a normal appearance. Similar symptoms have been categorized under a variety of names. Janet (1903) reported cases of “l’obsession de la honte du corps” (obsession with shame of the body). Later, Kraepelin (1909) described a “dysmorphophobic syndrome”, and urged that this syndrome be classified as a compulsive neurosis. In the psychoanalytic literature, the case of the Wolf Man, who was so obsessed with his nose that he neglected all else, was described by Freud (1918) as “hypochondriacal paranoia.”

Reports of BDD in the United States predated the International Classification of Disease (ICD) and DSM descriptions. In fact, reports of this disorder may have first surfaced in the cosmetic and dermatology literature. In the 1960s, Edgerton and colleagues described “minimal deformity” and “insatiable” patients in the cosmetic surgery literature (Edgerton, Jacobson, & Meyer, 1960; Knorr, Edgerton, & Hoopes, 1967). These patients often requested multiple surgeries to correct slight or nonexistent defects, and reported high levels of dissatisfaction with their postoperative results, despite a technically successful procedure (Edgerton, et al., 1960). Requests for multiple surgeries on slight or non-existent defects and dissatisfaction with surgical outcomes are features that are often observed among BDD patients who present for cosmetic procedures today.

Body dysmorphic disorder debuted in the U.S. psychiatric nosology in DSM-III where it is mentioned as an example of an atypical somatoform disorder (APA, 1980). BDD achieved diagnostic status and was officially termed ‘body dysmorphic disorder’ in DSM-III-R (APA, 1987). The DSM-III-R differentiated the delusional and non-delusional variants of BDD, with the former being classified as a delusional disorder, somatic type. With the publication of DSM-IV (APA, 1994), the differentiation between the 2 subtypes is less clear. This may reflect the growing body of research which suggests that the delusional and non-delusional subtypes are not distinct disorders but variations of the same disorder (BDD), which has a spectrum of symptomatology (Phillips, McElroy, Keck, Jr., Hudson, & Pope, Jr., 1994). (*See Theoretical Issues below*)

Terms such as “beauty hyponchondria” and “dermatologic hypochondriasis” were used to describe BDD in the European literature prior to its entrance into psychiatric nosology (Sobanski & Schmidt, 2000). These descriptive terms were initially classified as a form of monosymptomatic hypochondriacal psychosis (Thomas, 1984). The condition was finally termed “body dysmorphic disorder” in the International Classification of Disease-10 (WHO, 1992). ICD-10 criteria differentiate the non-delusional and delusional variants of BDD, with the non-delusional subtype being classified as a hypochondriacal disorder, and the delusional variant as a persistent delusional disorder, not otherwise specified (WHO, 1992).

DSM-IV-TR diagnostic criteria. In the DSM-IV-Text Revision (DSM-IV-TR), BDD is defined as (1) a preoccupation with an imagined defect in appearance or if a slight physical defect is present, the person’s concern is excessive (2) the preoccupation causes significant distress or impairment in social, occupational, or other important areas

of functioning and (3) the preoccupation is not better accounted for by another psychiatric disorder (APA, 2000). Individuals with BDD who have preoccupations with imagined defects in appearance that are held with delusional intensity can also receive a diagnosis of Delusional Disorder, Somatic Type. Currently, BDD is classified as a Somatoform Disorder. However, this classification has been criticized as being neither “nosologically nor etiopathologically informed” (Phillips & Castle, 2002, pp. 101), and several researchers have argued that it should be considered an obsessive-compulsive spectrum disorder (Hollander, Cohen, & Simeon, 1993; Phillips, McElroy, Hudson, & Harrison, Jr., 1995). (*See Theoretical Considerations, below*)

2.2. Clinical and Demographic Features

To date, no large epidemiological studies of BDD have been conducted. As a result, we must rely on smaller studies and case reports. These studies have provided important information about the clinical features and demographic characteristics associated with BDD.

Clinical Features

Appearance preoccupations. The hallmark characteristic of BDD is a preoccupation with appearance. These preoccupations often focus on the face, head, skin, hair, nose, and facial asymmetry (Phillips, McElroy, Keck, Pope, et al., 1993; Phillips & Diaz, 1997). Any area of the body can become the focus of preoccupation, and the complaint can be specific or vague (APA, 2000). For example, a BDD patient may complain of “devious-looking eyebrows” (Phillips, 1991) or complain that a body part is simply ugly. In one of the largest published studies of the clinical and demographic features associated with BDD to date (n = 188), Phillips and Diaz (1997)

reported that the most common areas of concern were the skin, hair, and nose. People with BDD are usually concerned with more than one body part; the average BDD sufferer is concerned with three to four features (Phillips, McElroy, Keck, Jr., Pope, Jr., & Hudson, 1993; Phillips & Diaz, 1997). Forty percent of BDD patients are concerned with one body part or one set of body parts (i.e., head), while approximately 37% are initially concerned with one body part and then develop preoccupations with more areas over time (Phillips, 1996). Furthermore, in approximately 21% of those diagnosed with BDD, concerns with one body part disappear and shift to another feature over time (Phillips, 1996).

Intrusive thoughts. Most people with BDD describe being unable to stop thinking about their perceived defect, some to the extent that they are able to focus on little else. These obsessions are difficult to resist and control, and can become more intense in situations in which the person feels self-conscious or expects to be scrutinized (Hollander et al., 1993; Rosen, Reiter, & Orosan, 1995). The meanings of these thoughts and preoccupations (i.e., the defective feature renders the person a failure, repulsive, and unattractive) have been characterized as overvalued ideas that can result in significant psychological distress (Rosen, et al., 1995).

Many BDD sufferers are unable to recognize that their concerns are excessive; others can acknowledge that their concern is exaggerated. Level of insight can vary over the course of the disorder, ranging on a continuum from good insight to delusional thinking (Phillips & McElroy, 1993). As noted above, while DSM-IV makes a classification distinction between BDD with delusions (delusional disorder, somatic type) and the non-delusional (somatoform disorder) variants of BDD, empirical investigation

has demonstrated that patients with non-delusional and delusional BDD do not differ in regard to demographics, clinical features, comorbidities, or treatment response (Phillips, McElroy, Keck, Jr., Hudson, & Pope, Jr., 1994). Phillips and colleagues have suggested that BDD and its delusional variant may actually be one disorder in which thinking spans a continuum from obsessional thinking through overvalued ideation to delusional thinking (Phillips, et al., 1994).

Compulsive behaviors. People with BDD often engage in compulsive and time-consuming behaviors, such as mirror checking, excessive grooming, skin picking, camouflaging, and excessive reassurance seeking about their appearance (Phillips, 1996). For example, 87% of BDD patients reported excessively checking their appearance in mirrors and other reflective surfaces (Phillips & Diaz, 1997). Eighty-eight percent also reported camouflaging behaviors, such as using a hat to hide perceived facial or hair defects, using one's hand to hide the defect, or wearing special clothing and makeup (Phillips & Diaz, 1997). Individuals with BDD frequently avoid situations and clothing that might expose their defect. For example, Phillips and colleagues reported that 97% of their BDD case report sample (n = 30) experienced avoidance of situations such as examining oneself in mirrors, swimming, gym class, shopping, dating, and sex (Phillips, et al., 1993).

These types of compulsive behaviors are often performed repeatedly in an attempt to calm anxieties surrounding appearance, or to avoid the feared ridicule and rejection of others (Phillips, 1996). Many feel that they cannot resist engaging in some of these behaviors, even though the behaviors themselves may actually worsen their distress. For example, skin picking or excessive mirror checking can actually increase worries about

the defect. Skin picking can also worsen the defect itself (Phillips & Taub, 1995; Phillips, 1996). These behaviors are often difficult to resist and as evidenced by case reports, can last for hours every day (Phillips, et al., 1993; Rosen, et al., 1995). Compulsive and avoidant behaviors are thought to contribute to the maintenance of BDD, as they prevent sufferers from habituating to the sight of their appearance and keep attention focused on the defective feature (Rosen, et al., 1995).

Impairment of functioning. The time spent in these compulsive behaviors often impairs social and occupational functioning (Phillips, et al., 1993). Avoidance of social situations is common among sufferers of BDD so that they may avoid the feared scrutiny of their defect by other people (Phillips, 1996). In severe cases, patients may become housebound, only leaving their homes at night to avoid the ridicule of others, dropping out of school, avoiding job interviews or not working at all to avoid public exposure (APA, 2000). For example, 98% of persons with BDD reported interference with their social and occupational functioning, and approximately 30% reported becoming housebound as a result of their condition (Phillips & Diaz, 1997).

High levels of perceived stress have been reported among BDD sufferers (DeMarco, Li, Phillips, & McElroy, 1998). The emotional distress experienced by people with BDD spans a spectrum, ranging from mild distress to severe and disabling emotional pain, sometimes to the extent that the individual considers or attempts suicide (Phillips, 1996). Phillips (2000) conducted an investigation of the quality of life of 62 BDD sufferers using the Medical Outcomes Study 36-item Short-Form Health Survey. Scores of individuals with BDD were compared to quality of life norms for the general U.S. population and for patients with depression or a medical illness. BDD sufferers

scored lower in all areas of mental-health related quality of life (i.e., role limitations due to emotional problems, social functioning) as compared to the U.S. norms and patients with diabetes, depression, or myocardial infarction (Phillips, 2000). Furthermore, BDD severity was negatively associated with quality of life even after depression was controlled. BDD sufferers with delusions reported poorer quality of life than those with the non-delusional variant of the disorder (Phillips, 2000).

Self-harm and suicidality. For some sufferers with BDD, the emotional desperation to correct the perceived defect can lead to damage to their bodies (Phillips, 1996). Utilization of harsh chemicals is not uncommon in the pursuit of perfection. For example, Phillips (1996) reports an incident in which a BDD sufferer super-glued his ears because they “stuck out” too much (p. 147). Skin picking can involve the use of implements such as knives and razor blades, which can cause noticeable damage (Phillips & Taub, 1995). In some cases, individuals with BDD have become so desperate that they have performed surgery on themselves. Veale (1996) described nine BDD patients who reported that they performed “Do It Yourself” procedures in order to reduce their appearance-related distress. For example, one male patient reported stapling his facial skin in order to make his “loose” skin appear more taut. Another case report described a female BDD sufferer who picked at a pimple on her neck until her carotid artery was exposed, an incident that was life-threatening and required emergency surgery (O'Sullivan, Phillips, Keuthen, & Wilhlem, 1999).

The emotional pain and desperation experienced by BDD sufferers can lead to suicidal ideation and suicide attempts. According to one study, 40% of BDD sufferers experienced suicidal ideation during the course of their illness (Phillips, McElroy, Keck,

Harrison, et al., 1993). A recent study that compared Axis I comorbidity among treatment-seeking and non-treatment seeking BDD patients reported rates of lifetime suicidal ideation to be as high as 85% (Gunstad & Phillips, 2003).

Attempted suicide rates gathered from studies investigating the clinical features of BDD appear to range from 17% to 33% (Phillips, et al., 1993; Phillips & Diaz, 1997; Veale, et al., 1996; Phillips & Taub, 1995). In the dermatology literature, case reports of completed and attempted suicides have indicated that the majority of these individuals suffered from BDD (Cotterill, 1981; Cotterill & Cunliffe, 1997). While the rates of suicide attempts vary among these studies, it is evident that suicidality is a significant problem associated with BDD.

Demographic Features

Age of onset. BDD typically begins in adolescence, however, it is usually diagnosed years later, partly because of the sufferers' reluctance to discuss their concerns (APA, 2000). Phillips & Diaz (1997) determined in their large sample that the mean age of patients who present for treatment is early to mid-thirties, while the mean age of onset was 16. Another study investigating the demographic features associated with BDD reported that the average age of onset was 17.9 years (Veale, et al., 1996).

Course. No prospective studies have elucidated the course of BDD. Case reports suggest that BDD tends to be a chronic rather than episodic disorder, with symptoms waxing and waning over time (Phillips, 1996). One study examining gender differences in BDD found that 83% of female BDD sufferers and 86% of male sufferers reported a continuous course of illness; 17% (female) and 14% (male) reported episodic courses (Phillips & Diaz, 1997). Severity and delusionality can vary with time as well, sometimes for no apparent reason (Phillips, et al., 1993). Phillips & Diaz (1997)

reported that approximately 60% of BDD patients report that their symptoms had worsened with time. Remission from BDD symptoms without treatment appears to be infrequent. A chart review study of BDD patients who entered into psychiatric treatment determined that only a few patients maintained a full remission (Phillips, Grant, & Albertini, 1999).

Gender differences. Several studies have examined gender differences among BDD patients. BDD appears to be diagnosed with approximately equal frequency in women and men (APA, 2000). In one of the largest studies of BDD patients published to date (n = 289), 48% were male and 52% were female (Phillips, Grant, Siniscalchi, & Albertini, 2001). Nevertheless, there is some debate regarding the sex ratio for body dysmorphic disorder. Some studies have reported greater incidence of female sufferers. For example, one study of British patients with BDD found that 76% of their sample (n = 50) was female (Veale, et al., 1996). Still, other studies have reported a preponderance of male patients. For instance, a retrospective chart review study of 50 patients with BDD revealed that 62% of the sample was male (Hollander, et al., 1993).

Culture and its influence on sex roles may be another factor impacting the gender ratio among BDD patients. A study which examined demographic and clinical characteristics of Japanese BDD sufferers who sought cosmetic surgery reported that 70% of their sample was male (Fukuda, 1977). Another study of demographic features of Japanese patients seeking cosmetic surgery found a similar difference, with 20% (n = 85) of male patients receiving a diagnosis of BDD, compared to only 2.7% of women in the sample (n = 113) (Ishigooka, Iwao, Suzuki, Fukuyama, Muraski, & Miura, 1998). The authors of this study suggest that the gender difference may reflect the sex roles in

Japanese culture regarding the initiating of interpersonal relationships after adolescence (Ishigooka, et al., 1998).

Two studies have specifically investigated gender-related differences among BDD sufferers (Phillips & Diaz, 1997; Perugi, Akiskal, Giannotti, Frare, Di Vaio, & Cassano, 1997). One found that while both men and women were similar in terms of most demographic and clinical characteristics (i.e., age of onset, course of illness, symptom severity and impairment in functioning), men were more likely to be single than their female counterparts (Phillips & Diaz, 1997). Additionally, gender appears to impact the area of preoccupation, with women being more likely than men to be concerned with their hips and weight; women were also more likely to use make-up for camouflage and to pick their skin. In contrast, men were more likely to be preoccupied with their genitals, body build (i.e., being too skinny or not muscular), and hair thinning (Phillips & Diaz, 1997).

The second published study of gender differences among BDD sufferers (n = 58) also reported differences in areas of preoccupation (Perugi, et al., 1997). Women in this sample were more likely to be preoccupied with breasts and legs, while men again were more likely concerned with their genitals, height, and excessive body hair.

Muscle dysmorphia. While the gender ratio among BDD sufferers appears to equal, a newly investigated form of BDD, muscle dysmorphia is thought to affect more men than women. The term ‘muscle dysmorphia’ refers to a preoccupation with being insufficiently large and muscular (Pope, Gruber, Choi, Olivardia, & Phillips, 1997). The difference in gender ratio is thought to be a result of the differing beauty and appearance ideals for men and women. Similar to “general” BDD, patients with muscle dysmorphia

tend to engage in compulsive behaviors (e.g., compulsive work-outs, weight lifting and dieting/use of food supplements), reassurance seeking, and camouflaging behaviors (e.g., wearing extra layers of clothing to appear bulkier). Additionally, patients with this disorder may abuse anabolic steroids in order to 'correct' their defect, a supposed lack of muscle. Individuals with muscle dysmorphia also experience significant social and occupational impairment, often because their weight lifting and eating regimens consume so much time. While not included in the DSM-IV, further research is needed to investigate the epidemiology and etiology of this disorder (Pope, et al., 1997).

2.3. Prevalence

BDD is not considered to be a rare disorder. It is estimated that it affects 1-2% of the general population and 4-5% of people seeking medical treatment in outpatient settings (Phillips, 1996). These prevalence rates may be underestimates given the extreme embarrassment and reluctance of people with BDD to seek psychological assistance for their symptoms. Furthermore, because BDD is often accompanied by depression, anxiety, and other symptoms that are easier to discuss, the rates of misdiagnosis for this disorder are potentially quite high (Phillips, 1996). People with BDD often have their distress trivialized by others, or they are thought to be excessively vain, thus further inhibiting them from seeking treatment (Phillips, 1996). Veale and colleagues (1996) reported that 38% of their sample (n = 50) would not disclose their concerns to their general practitioners for fear of embarrassment, not being understood, or not being taken seriously. Of the remaining 62% who did mention their concerns to their general practitioner, 83% were dissatisfied with their response. These statistics

underscore the need for education about BDD among medical professionals in order to facilitate diagnosis and treatment.

To date, no large-scale epidemiological surveys investigating the prevalence of BDD in the general population have been completed. However, studies have examined the prevalence of BDD in a variety of settings, including university, community, medical, cosmetic surgery, and psychiatric populations.

University populations. An early study of the prevalence of BDD was conducted among a sample of American undergraduate students (n = 258; 57% female) (Fitts, Gibson, Redding, & Deiter, 1989). Using three questions derived from DSM-III-R diagnostic criteria for BDD, investigators asked the students to rate the extent to which they agreed with each question on a Likert scale (1 = strongly disagree to 6 = strongly agree).

Seventy percent of the sample reported some dissatisfaction with their bodies. Forty-six percent reported experiencing preoccupation with some aspect of their appearance, and 48% noted that they tend to exaggerate the extent of the defect (Fitts, et al., 1989). Twenty eight percent of the sample endorsed agreement with all three questions, suggesting the presence of some BDD symptoms. However, this number is likely inflated, given that the questions used to assess for BDD symptoms did not assess for functional impairment and weight-related concerns were excluded from analysis. Furthermore, this study did not incorporate a measure of defect severity. Sex differences were also noted among this sample, with significantly more women reporting agreement with each of the questions (Fitts, et al., 1989).

Results of this study suggested that the diagnostic criteria for BDD are vague and may incorrectly diagnose large portions of the population, given the discontent many people (especially women) report about their bodies. Furthermore, it calls into question the validity of using measures based solely on diagnostic criteria.

Another study investigated the rate of BDD among college undergraduate students but used DSM-IV diagnostic criteria (Biby, 1998). In this study, 102 students (78 females, 24 males) completed a self-report questionnaire, which incorporated questions related to the DSM-IV diagnostic criteria for BDD and eating disorders on a Likert scale (1 = strongly disagree to 5 = strongly agree). Individuals who reported eating disordered symptoms were excluded from the analyses. Results of this study indicated that 13% of the sample met criteria for BDD. The small sample size, reliance on a self-report measure (without reported psychometric properties), and lack of a rating of the severity of the participants' appearance concerns limit the significance of these results.

More recently, Sarwer and colleagues (2004) examined the rate of BDD among a sample of 559 college women using the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 1996), a measure that is based upon DSM-IV diagnostic criteria for BDD. When women who reported primary concerns with weight and shape were excluded from analyses, 2.5% ($n = 14$) met criteria for BDD (Sarwer, Cash, Magee, Williams, et al., 2004).

Another recent study investigated the prevalence rate of BDD in a sample of German college undergraduates (Bohne, Wilhelm, Keuthen, Florin, Baer, & Jenike, 2002). One hundred thirty-three students completed self-report questionnaires that

assessed BDD symptoms, as well as obsessive-compulsive and depressive symptoms and skin picking. Approximately 5% of this sample ($n = 8$) met DSM-IV criteria for BDD as assessed by the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 1996).

Bohne and colleagues also conducted a cross-cultural comparison study investigating the rates of BDD among American and German college students (Bohne, Keuthen, Wilhelm, Deckersbach, & Jenike, 2002). One hundred one American college undergraduates completed self-report questionnaires, including the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 1996). The American college students' responses were then compared to those of German college students, who had been reported to have a 5.3% rate of BDD (Bohne, Wilhelm, Keuthen, et al., 2002). Seventy-four percent of American students reported being very concerned about parts of their body, a rate similar to that reported by Fitts (1989). However, when individuals reporting weight-related preoccupations were eliminated from analyses, 4% ($n = 4$) of the American sample met DSM-IV criteria for BDD (Bohne, Keuthen, Wilhelm, et al., 2002). The difference in rates of BDD among German and American students in this study was non-significant.

The reliance upon self-report measures and small sample sizes in these university investigations limits the significance of their findings. Furthermore, these studies did not sufficiently assess for the first diagnostic criterion for BDD, which states that the individual's excessive concern is related to an imagined or minimal defect in appearance. However, these studies confirm the hypothesis that BDD is not a rare disorder, as the rates obtained in these studies are similar to the expected population rates.

A recent study of the rates of BDD among a Turkish college student population has attempted to address the limitations of other university prevalence studies (Cansever, Uzcun, Donmez, & Aytakin, 2003). Four hundred and twenty female college students were asked to complete a self-report questionnaire that included questions based upon DSM-IV criteria for BDD as well as several items from the Body Dysmorphic Disorder Examination (BDDE; Rosen & Reiter, 1996). If participants answered “yes” to the BDD diagnostic questions, they were asked to complete a face-to-face clinical interview with a psychiatrist, who then administered the Structured Clinical Interview for DSM-IV (SCID). Specific questions were also asked by the psychiatrist to determine the level of insight the participants had regarding their appearance concerns. Participants with visible appearance defects, including high body mass indices, were excluded from the final analyses.

Results of this study indicate that 4.8% ($n = 20$) of the students met criteria for BDD. Similar to other reports, the most common areas of concern were related to the head or face. None of the students who met criteria for BDD were deemed to have delusional levels of preoccupation, although 40% were classified as having over-valued ideas about their appearance (Cansever, et al., 2003).

The larger sample size, use of clinical interviews, and exclusion of participants with weight-related concerns add strength to the validity of the findings from this study. It is also noteworthy that the rate obtained (4.8%) is similar to those found among American (4%) and German (5.3%) college student samples (Bohne, et al., 2002). However, most of these university prevalence studies have used predominantly female samples. For example, in Bohne and colleagues' (2002) cross-cultural comparison study,

82.2% of the American and 73.7% of the German college undergraduates were female, whereas other studies have relied upon exclusively female samples (Cansever, et al., 2003; Sarwer, Cash, et al., 2004). Thus, the rates of BDD reported in these studies may underestimate the prevalence of BDD in university samples, since BDD is thought to be equally prevalent among men and women (APA, 2000).

Community samples. Bienvenu and colleagues (2000) investigated the rate of BDD in a randomly selected community sample of 73 individuals and 300 of their first-degree relatives as part of a larger study investigating the family history of patients with OCD. Using structured clinical interviews, 3% of control participants and 1% of first-degree relatives were diagnosed with BDD (Bienvenu, et al., 2000).

One study to date has examined the prevalence of BDD in a sample of community women in the United States. Otto and colleagues (2001) investigated the rate of BDD among a large ($n = 976$), population-based sample of depressed and non-depressed women who were participating in the Harvard Study of Moods and Cycles. Structured clinical interviews were used to assess for the presence of BDD in this sample. A .7% prevalence rate for BDD was found among this population (Otto, Wilhelm, Cohen, & Harlow, 2001). However, the authors note that this prevalence rate is likely an underestimate of the true prevalence of BDD in the population at large, notably because younger women (e.g., under 36 years of age) were not included in the sample. Given that adolescence is typically the age of onset for BDD symptoms, samples including younger women would likely have higher prevalence rates of this disorder. The higher rates of BDD obtained in university student samples (which were comprised of mostly women) support this contention (Bohne, et al., 2002).

Rates of BDD have also been investigated in an Italian epidemiological study of somatoform disorders (Favarelli, Salvatori, Galassi, Aiazzi, et al., 1997). This study used an interview based upon DSM-III-R criteria to diagnose BDD as well as other somatoform disorders. Results indicate that .7% (n = 5) of the 673 participants met criteria for BDD. All five participants who met criteria for BDD were women.

Of note, the rate reported in the Italian sample is identical to the rate reported by Otto and colleagues (2001). However, the use of DSM-III-R criteria, which does not include impairment in functioning, limits the generalizability of the Italian sample finding. Additionally, more women than men were included in the Italian study (55% versus 45%), and there was a tendency in this sample for younger people to decline participation (Faravelli, et al., 1997). Thus, the rates of BDD reported among community samples to date are likely underestimates of the true rate of BDD in the population.

General medical populations. To date, only preliminary data on the prevalence of BDD in a general medical outpatient setting has been collected. Phillips and colleagues have reported that of 316 patients screened in an outpatient clinic, 4.4% were found to have BDD (Phillips, 1996). Given that most patients are required to obtain referrals from their primary care physicians to see other specialists, BDD may be relatively common in this setting. More research about the rates of BDD among patients seeking general medical treatment is necessary.

Cosmetic surgery and dermatology clinics. Investigations of the prevalence of BDD in specialty medical settings have found higher rates of BDD in these populations as compared to the general population rate. Based on a clinical interview, 15% of Japanese cosmetic surgery patients (n = 415) were diagnosed with BDD (Ishigooka, et

al., 1998). Diagnosis was made using ICD-10 criteria for BDD. The majority of patients (90.6%) sought facial cosmetic procedures, with the nose, eyelids, and chin being the top three features for which surgery was desired (Ishigooka, et al., 1998). In contrast, an investigation of American cosmetic surgery patients that used a questionnaire specifically designed to assess the presence of BDD (Body Dysmorphic Disorder Examination, Self-Report form; Rosen & Reiter, 1996) found that 7% met diagnostic criteria (Sarwer, et al., 1998). Patients in this sample sought a variety of procedures, with rhytidectomy (facelift) and blepharoplasty (correction of sagging eyelids) being the most common (Sarwer, et al., 1998). Of the 7 patients who screened positive for BDD, 5 sought correction of a facial feature, consistent with clinical reports that the face is the most common focus of the preoccupation.

An investigation of the prevalence of BDD in dermatology clinics that also used a questionnaire (Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV); Dufresne, Phillips, Vittorio, & Wilkel, 2001) to assess the disorder determined that approximately 12% (n = 268) of patients met diagnostic criteria (Phillips, et al., 2000). When patients with obvious appearance defects were excluded from the sample, the rate of BDD increased to 15% (n = 211) (Phillips, et al., 2000). Patients were sampled from a community dermatology clinic and a university-based outpatient dermatology clinic. The rates of BDD differed among these samples (14.4% for the community dermatology practice and 10% for the university-based practice). However, when patients with obvious appearance defects were excluded, the rates between the two settings were nearly equal (15.6% for the community setting, and 14.7% for the university setting) (Phillips, et

al., 2000). Of the 12% who met criteria for BDD, the majority reported concerns with acne or benign vascular lesions (Phillips, et al., 2000).

A smaller study investigating the rate of BDD in 46 patients seeking dermatological cosmetic surgery found that 15% met criteria for BDD (Dufresne, et al., 2001). This study utilized 2 measures of BDD symptomatology: 1) The Body Dysmorphic Disorder Diagnostic Module (BDDDM), a brief, semi-structured interview, and 2) the BDDQ-Dermatology version, a modified version of the original BDDQ (Phillips, 1996) which substituted Likert scales for questions inquiring about symptom severity instead of the 'yes/no' responses found in the original version (Dufresne, et al., 2001). The BDDQ-Dermatology version was found to over-diagnose BDD by 4% when compared to the BDDDM (Dufresne, et al., 2001). Still, these results indicate that BDD is relatively common in dermatology settings.

A recent study of 156 patients seeking treatment for mild acne at a university-based dermatology clinic in Turkey found that 8.8% (n = 14) of this sample met DSM-IV criteria for BDD (Uzun, Basoglu, Akar, Cansever, Ozsahin, et al., 2003). This study utilized a self-report questionnaire as well as the Structured Clinical Interview (SCID) for DSM-IV that included diagnostic criteria for BDD. Participants who met criteria for BDD were re-examined by a second psychiatrist who was blind to the results of the first assessment. Of the patients who met criteria for BDD, all had preoccupations with areas in addition to their skin, with hair, nose, and facial concerns predominating. While the rate of BDD in this sample was lower than that reported by Phillips and colleagues (2000), this sample was restricted to patients with acne. Overall, the 8.8% rate found in

this investigation suggests that BDD is more common in dermatology settings than in the general population.

The incidence of BDD has also been investigated among individuals with visible deformities undergoing reconstructive surgical procedures (Sarwer, Whitaker, Pertschuk, & Wadden, 1998). Sixteen percent reported distress and preoccupation consistent with BDD, although the nature of the defect precludes the formal application of the diagnosis. BDD cases also have been reported in orthodontics and maxillofacial surgery clinics although the prevalence rates in these clinics have not been investigated (Cunningham, et al., 1996; 1998).

Given that surgeons from a variety of fields perform cosmetic procedures, it is likely that BDD patients also present to other specialty clinics. The need for further assessment in other specialty clinics is underscored by the results of a study investigating the rate of non-psychiatric treatment sought by patients with BDD (Phillips, et al., 2001). BDD patients in this sample reported receiving treatment from orthodontists and paraprofessionals who perform treatments such as electrolysis in addition to cosmetic surgery and dermatological treatments.

In summary, the rate of BDD appears to be higher in cosmetic settings as compared to the general population. Previous studies have reported rates of BDD ranging from 7%-15% in cosmetic and dermatological settings (Sarwer, et al., 1998; Phillips, et al., 2000; Dufresne, Jr., et al., 2001; Uzun, et al., 2003). However, the use of different assessment tools, lack of appropriate control groups, and the lack of defect severity ratings in most of these studies limit the generalizability of their findings.

Psychiatric Populations

Other investigations have sought to identify the rates of BDD among individuals with other psychiatric disorders. These studies suggest that this disorder may be more common than previously thought.

Heterogeneous psychiatric populations. The importance of specifically inquiring about BDD symptoms is further demonstrated by an investigation that compared the prevalence of BDD in 2 groups of 500 heterogeneous psychiatric patients presenting for treatment (Zimmerman & Mattia, 1998). One group was assessed for the presence of BDD using the Structured Clinical Interview for DSM-IV, and the other group was evaluated with a routine, unstructured clinical interview. No patients in the group that was assessed via clinical interview received a diagnosis of BDD. However, sixteen patients (3.2%) of the SCID-assessed sample were found to have BDD. Among those receiving a diagnosis of BDD, depressive and anxiety disorder were the most common comorbid conditions (Zimmerman & Mattia, 1998).

Brawman-Mintzer and colleagues (1995) investigated the rate of BDD among patients with a primary diagnosis of social phobia (n = 54), obsessive-compulsive disorder (n = 53), generalized anxiety disorder (n = 32), panic disorder (n = 47), major depressive disorder (n = 42), and among a sample of normal comparison subjects (n = 33). Patients were assessed for the presence of BDD with a “SCID-Patient version-like module” developed by Phillips and colleagues (1995) (Brawman-Mintzer, et al., 1995). Results of this study revealed an overall rate of 5% (n = 11) of BDD among patients. Specifically, 11% of patients with a primary diagnosis of social phobia, 8% with OCD,

and 2% of patients with panic disorder received a diagnosis of BDD. None of the depressive, generalized anxiety, or normal comparison subjects met criteria for BDD.

The rate of BDD has also been investigated among adult and adolescent psychiatric inpatients (Grant, Kim, & Crow, 2001). One hundred twenty two consecutively admitted patients at a university hospital completed the BDDQ. If patients screened positive for BDD on this measure, they were evaluated using a semi-structured clinical interview based upon DSM-IV BDD diagnostic criteria. Thirteen percent ($n = 16$) of this sample met diagnostic criteria for BDD. Ninety-two percent of those diagnosed with BDD also carried an affective disorder diagnosis, and 69% of those with BDD had a comorbid substance abuse diagnosis (Grant, et al., 2001). Of note, none of these patients had been diagnosed with BDD by their treating hospital physician. All sixteen patients indicated to the research team that they would not voluntarily discuss their appearance concerns unless directly queried. This study further underscores the need for assessment of BDD in psychiatric settings as well as the tendency of patients with BDD to be reluctant to discuss their concerns.

Specific psychiatric populations. Assessment of BDD among patients with depression is of importance given the high rates of comorbidity for these two disorders (Gunstad & Phillips, 2003). In a study that utilized a semi-structured interview to assess for BDD among atypical depression patients (Phillips, Nierenberg, Brendel, & Fava, 1996), 13.8% ($n = 80$) met criteria for BDD. Of note, in this sample, no patients mentioned their appearance concerns during the extensive assessment they underwent prior to being administered the diagnostic module for BDD. This study underscores the

need for professionals to ask about symptoms of BDD even if the patient initially presents for another disorder.

Another study also investigated the prevalence of comorbidities among patients with atypical depression using a clinical interview and the SCID for DSM-III-R (Perugi, Akiskal, Lattanzi, Cecconi, Mastrocinque, Patronelli, Vignoli, & Berni, 1998). In this sample, 42% of patients ($n = 86$) reported a lifetime history of BDD, suggesting that BDD may commonly occur with atypical depression.

More recently, the prevalence of BDD was investigated in a sample of 350 consecutive outpatients with major and atypical depression (Nierenberg, Phillips, Petersen, Kelly, Alpert, et al., 2002). Patients were evaluated with the Structured Clinical Interview for DSM-III-R SCID, the SCID for personality disorders (SCID-II), and a module designed to assess for BDD symptoms (BDDM; Phillips, 1996). This study found an 8% lifetime prevalence of BDD, whereas 6.6% of the total sample currently met diagnostic criteria (Nierenberg, et al., 2002). Patients with BDD had an earlier age of onset for depression, as well as longer duration of current episodes. Interestingly, this study also found that a higher percentage of patients with atypical depression had a lifetime diagnosis of BDD (14%) as compared to patients with major depression (5%). Similarly, a significantly higher rate of current BDD was found among patients with atypical depression (12%) as compared to patients with major depression (4%). These findings are consistent with previous studies that have found high rates of atypical depression among patients with BDD (Perugi, et al., 1998; Phillips, Nierenberg, Brendel, & Fava, 1996).

The prevalence of BDD has also been investigated among outpatients with a primary diagnosis of an anxiety disorder (Wilhelm, Otto, Zucker, & Pollack, 1997). BDD was assessed using the SCID-II with specific questions regarding BDD (Wilhelm, et al., 1997). Approximately 7% of patients met diagnostic criteria for BDD (11 out of 165). Specifically, 12% of the social phobia patients, 7.5% of OCD patients, and 3.8% of panic disorder patients met criteria for BDD.

In the DSM-IV field trial for obsessive-compulsive disorder (OCD), the prevalence of BDD was assessed in a sample of 442 patients with a primary diagnosis of OCD using the Columbia Body Dysmorphic Disorder Diagnostic Questionnaire and the Yale-Brown Obsessive Compulsive Scale (version modified for BDD) (Simeon, Hollander, Stein, Cohen, & Aronowitz, 1995). Twelve percent of patients with OCD also met lifetime criteria for BDD (Simeon, et al., 1995). Other studies of OCD patients have reported higher rates of BDD among OCD patients, ranging from 14.5% to 37% (Bienvenu, Samuels, Riddle, Hoehn-Saric, et al., 2000; Phillips, Gunderson, Mallya, McElroy, & Carter, 1998; Piggot, L'Heureux, Dubbert, Bernstein, & Murphy, 1994; Hollander, et al., 1993).

A study investigating psychological correlates of trichotillomania patients reported high rates of body image dissatisfaction unrelated to hair pulling among their sample. Twenty-two percent ($n = 62$) were rated as having probable BDD (Soriano, O'Sullivan, Baer, Phillips, McNally, & Jenike, 1996), although it should be noted that BDD was assessed via a screening form and not a diagnostic measure.

The rate of BDD among inpatients with anorexia nervosa has also been investigated using the Body Dysmorphic Disorder Questionnaire and a semi-structured

diagnostic interview based upon DSM-IV BDD criteria (Grant, Kim, & Eckert, 2002). Thirty-nine percent (n = 16) of this sample met diagnostic criteria for BDD due to appearance concerns that were unrelated to weight or shape. In this sample, a comorbid diagnosis of BDD was associated with lower overall functioning, as assessed by the Global Assessment of Functioning (GAF) scale (APA, 1994). Comorbid BDD was associated with earlier onset of anorexia, higher levels of delusional related to appearance concerns, and a history of more hospitalizations and suicide attempts as compared to anorexic patients without BDD. Despite the small sample size, this study suggests that BDD may be more common among patients with eating disorders than previously thought.

In summary, studies investigating the prevalence of BDD among specific and heterogeneous psychiatric populations indicate that BDD frequently co-occurs with mood and anxiety disorders. There is growing evidence that BDD also co-occurs with eating disorders, particularly anorexia nervosa. These findings suggest the need for assessment of BDD symptoms among patients seeking treatment for other psychiatric disorders.

2.4. Comorbidity

Other studies have investigated comorbidities associated with BDD by assessing the frequencies of other psychiatric disorders among patients with a primary diagnosis of BDD. According to a study which investigated comorbidities among 293 patients with BDD, the mean number of lifetime comorbid Axis I diagnoses was two (Gunstad & Phillips, 2003). Depression, obsessive-compulsive disorder, social phobia, and substance abuse disorders are the most common co-occurring disorders with BDD. Personality disorders are also common among patients with BDD.

Depression. Depression has the highest rate of co-occurrence with BDD, with a lifetime rate of 82% and a current rate of 60% (Phillips & Diaz, 1997). A more recent study comparing comorbidity rates between a sample of BDD patients from a phenomenology study (n = 175) and a sample of BDD patients participating in pharmacotherapy treatment studies (n = 118) found a lifetime rate of major depression of 84 - 90% and a current rate of 54-69% (Gunstad & Phillips, 2003). Onset of depression in patients with BDD tends to be either concurrent with or occurring after the onset of BDD (Phillips, et al., 1993; Gunstad & Phillips, 2003). Onset of depression preceded the onset of BDD symptoms in 22% of cases (Gunstad & Phillips, 2003). The high rate of comorbidity between these two disorders has led to speculation that these disorders share a common etiology and may both be considered affective spectrum disorders (Phillips, et al., 1995). (*See Theoretical Issues*)

Obsessive compulsive disorder (OCD). While there are similarities among the clinical features of OCD and BDD, rates of OCD among patients with a diagnosis of BDD are lower as compared to rates of depression. Current comorbid rates of OCD range from 6% (Veale, et al., 1996) to 30% (Gunstad & Phillips, 2003; Phillips & Diaz, 1997; Phillips, et al., 1993); lifetime rates of OCD range from 30% (Gunstad & Phillips, 2003; Phillips, et al., 1993) to 78% (Sobianski & Schmidt, 2000). As with depression, there is speculation that these disorders share a common etiology, with the degree of comorbidity supporting this hypothesis (*See Theoretical Issues*).

Social phobia. Social phobia also appears to be another common condition that co-occurs with BDD, with a lifetime rate of 38% (Phillips & Diaz, 1997). A larger study of BDD and its comorbidities has confirmed this finding, with reported current rates of

social phobia of approximately 32% and lifetime rates of 37% (Gunstad & Phillips, 2003). Social phobia appears to predate the onset of BDD in almost all cases, according to several studies (Phillips, et al., 1993; Wilhelm, et al., 1997; Gunstad & Phillips, 2003). Wilhelm and colleagues have suggested that this pattern of comorbidity may have implications for uncovering the etiology of BDD (*See Etiology*).

Substance abuse. Co-occurring substance abuse and dependence disorders are also relatively common among patients with BDD. Current rates ranging from 2% (Veale, et al., 1996) to 35% (Phillips & Diaz, 1997) have been reported in the literature, with lifetime rates reported to be 47% (Phillips, et al., 1993). In a large study of BDD and Axis I comorbidity, the current rate of substance use disorders was reported to be 13%, with a lifetime rates between 25-30% (Gunstad & Phillips, 2003). Case reports indicate that BDD sufferers often use drugs or alcohol as an attempt to cope with their BDD symptoms (Phillips, 1996). Recent age of onset data suggests that substance use disorders tend to develop after the onset of BDD symptoms (Gunstad & Phillips, 2003).

Axis II disorders. Personality disorders have also been found to co-occur with BDD. Among 50 cases of BDD, 72% were diagnosed with a personality disorder, with avoidant (38%), paranoid (38%), and obsessive-compulsive personality (28%) disorders being the most common (Veale, et al., 1996). In a sample of 17 BDD patients, all patients had at least one personality disorder, with 13 (76.5%) having four or more Axis II diagnoses (Neziroglu, McKay, Todaro, & Yaryura-Tobias, 1996). The majority of patients (94%) had cluster C personality disorders (Avoidant, Dependent, Obsessive-Compulsive) (Neziroglu et al., 1996). Another study revealed that 57% (n = 148) had at least one diagnosable personality disorder, with cluster C disorders again being the most

frequently diagnosed (Phillips & McElroy, 2000). Thus, it appears that cluster C personality disorders, and particularly avoidant personality disorder are frequently comorbid with BDD.

Gender differences in comorbidities. The two studies that investigated gender differences among BDD sufferers have suggested that there are differences among men and women with respect to comorbid conditions (Phillips & Diaz, 1997; Perugi, et al., 1997). Two studies have suggested that women are more likely than men to have a history of eating disorders and anxiety disorders (Perugi, et al., 1997; Phillips & Diaz, 1997). Men are more likely to have a history of substance abuse or dependence (Phillips & Diaz, 1997) or bipolar disorder (Perugi et al., 1997).

In summary, comorbidity rates among BDD patients appear to be quite high. Comorbidity rates also reflect the complexity of BDD, particularly with respect to diagnosis and treatment. Recent data on comorbidity rates among patients with BDD suggest that comorbidity is associated with increased impairment in functioning and higher rates of suicidal ideation and attempts (Gunstad & Phillips, 2003). Further study of comorbidity among individuals with BDD is needed to improve treatment of this disorder and to determine possible etiological relationships.

2.5. Etiology

To date, the etiology of BDD has received little attention in the literature. However, it has been purported that there are multiple factors involved in the etiology of BDD, including psychological, sociocultural, and neurobiological factors (Phillips & Castle, 2002).

Psychological Theories

Psychoanalytic perspectives. As discussed in Phillips (1991), psychoanalytic theories suggest that BDD arises from an unconscious displacement of sexual or emotional conflict or feelings of inferiority, guilt, or poor self-image onto a body part. Other psychoanalytic theories suggest that the perceived defect may symbolize another body part which is dysfunctional (i.e., preoccupation with the nose may indicate an impotent penis) (Phillips, 1991). From this perspective, BDD symptoms may also be seen as an attempt to explain failures in life, particularly interpersonal problems, as it is seemingly less threatening to blame one's appearance than oneself (Phillips, 1996). While these hypotheses are intriguing, they have not been empirically validated.

Cognitive-behavioral theories. Explanations from a cognitive-behavioral perspective suggest that BDD arises from an interaction of cognitive, emotional, behavioral, and sociocultural factors. Cognitive-behavioral models of the development of BDD have suggested that preoccupations with appearance are likely to develop during adolescence, since concerns about appearance are typically heightened during this developmental phase (Rosen, Reiter, & Orosan, 1995; Veale, Gournay, Dryden, Boocock, et al., 1996). Often, changes in physical appearance are noticeable to others during adolescence, and this increased attention, particularly if it is negative, can predispose a person for developing dysfunctional beliefs about his appearance (Rosen, et al., 1995).

Cognitive factors that appear to be instrumental in the development of BDD include unrealistic attitudes about body image that insist upon perfection and symmetry (Veale, et al., 1996). For example, distorted beliefs, such as "If I am not perfect, no one

will accept me” may develop. Such negative thoughts are then rehearsed, to the point that they become automatic and held with conviction. Emotional distress, including feelings of disgust and shame, are thought to result from these distorted thinking patterns (Veale, et al., 1996; Rosen, et al., 1995). Other cognitive factors, such as selective attention to the perceived defect and increased self-monitoring for the presence of appearance flaws, are thought to be maintaining factors in BDD (Veale, et al., 1996).

As discussed above, BDD patients tend to engage in repetitive and time-consuming rituals, which typically serve to either check or avoid the perceived flaw (Veale, et al., 1996). These compensatory behaviors appear to be attempts to reduce the distress resulting from the increased attention on the flaw. However, they are thought to prevent the person from habituating to his appearance, and thereby maintain the cycle of increased attention, compulsive behaviors, and increased distress about one’s appearance (Rosen, et al., 1995).

Socio-cultural perspectives. Socio-cultural theories derive explanations for the etiology of BDD from the social histories of patients. For example, being raised in a family that is rejecting, neglectful, and critical may be a social factor related to the development of BDD (Phillips, 1991; Phillips, 1996). Phillips and colleagues (1996) have explored the hypothesis that early relationships with family, particularly one’s parents, may play a role in the etiology of BDD. Utilizing the Parental Bonding Instrument, a measure of patients’ perceptions of parental care and overprotection, BDD patients in this sample reported lower scores of parental care as compared to published norms (Phillips, 1996).

As previously discussed, several studies have noted that among BDD patients with social phobia, the social anxiety concerns predate the bodily preoccupation in the majority of patients (Wilhelm, et al., 1997; Phillips, et al., 1993; Gunstad & Phillips, 2003). Wilhelm and colleagues (1997) suggested that negative evaluation of the self in relation to other people (a core feature of social phobia) may predispose individuals to develop other self and appearance distortions characteristic of BDD. However, this hypothesis warrants testing in future investigations.

The developmental period of adolescence (the typical age of onset for this disorder) and its accompanying physical and psychological changes may play a role in the onset of BDD. Adolescence is a time when relationships with peers become increasingly important. It is also a time when physical changes in appearance may become more noticeable to others. It has been hypothesized that added attention from others about appearance might play a role in the development of BDD, particularly if the attention is negative (Rosen, et al., 1995). For example, teasing by one's peers could cause an individual to question the normality of his appearance, even if it is not in fact deformed. While these hypotheses are intriguing, more research is needed to clarify the role of social factors in the development of BDD.

The influence of the media on the development of an ever more perfect beauty ideal is also thought to be a potential socio-cultural factor involved in the development of BDD. In recent decades, there has been a substantial increase in the amount of coverage appearance receives in the media. Society is bombarded with images of beauty ideals and messages regarding how to attain the ideal (Phillips, 1996; Sarwer & Crerand, 2004). This increased emphasis on physical perfection is hypothesized to be a potential factor in

the development of both general body image dissatisfaction as well as the appearance preoccupations among persons with BDD (Phillips, 1996; Heinberg, 1996; Sarwer & Crerand, 2004). Specifically, it is thought that media images and messages reinforce the distorted beliefs that BDD patients hold (Phillips, 1996). However, given the complexity of BDD, and the fact that it has existed for centuries prior to the increase in media attention on appearance, media messages are unlikely to be direct causative factors in the development of BDD. However, they may play an important role in the maintenance of preoccupations with appearance.

Neurological theories. Abnormal serotonergic function is thought to play a role in the development of BDD, as evidenced by the fact that patients seem to respond preferentially to SSRI medications (Hadley, Newcorn, & Hollander, 2002). Additional evidence for the role of serotonin in BDD comes from neurochemical challenge studies, which have demonstrated that BDD symptoms tend to increase when patients are exposed to serotonin agonists (Hollander & Wong, 1995). Treatment response studies have also revealed that dopamine may also play a role in the development of BDD (Hadley et al., 2002). Neuropsychological testing of patients with BDD has revealed deficits in verbal and nonverbal memory skills, as well as with organizational encoding abilities (Deckersbach, et al., 2000). These impairments may be indicative of abnormalities in the frontal-striatal and dopaminergic systems (Hadley, et al., 2002).

Given the similarities of BDD to other obsessive-compulsive spectrum disorders (Phillips, et al., 1995), it is also hypothesized that anatomical regions of the brain implicated in OCD may also be involved in the development of BDD (Hadley, et al., 2002). For example, imaging of patients with obsessive-compulsive spectrum disorders

have shown hyperfrontality, increased caudate metabolism, and increased serotonergic sensitivity (Hollander, et al., 1993). Dysfunction of the corticostriatal system, which regulates the processing and filtering of information and mediates repetitive automated behaviors, has also been implicated as a possible factor in the etiology of obsessive-compulsive spectrum disorders (Hadley et al., 2002). However, these findings need to be replicated in samples of patients with only BDD.

2.6. Theoretical Issues

Although classified as a somatoform disorder in the DSM-IV and a hypochondriacal disorder in ICD-10, there has been much debate among researchers regarding the proper diagnostic classification of BDD. Many researchers purport that BDD is better classified as an obsessive-compulsive spectrum disorder (OCSD) (Phillips, et al., 1995). OCSD is an umbrella term used to describe psychiatric disorders that share features with obsessive-compulsive disorder (OCD). A disorder is considered a member of this spectrum if it is similar to OCD in terms of phenomenology, treatment response, comorbidity, family history, sex ratio, age at onset, course, and presumed etiology (Phillips, et al., 1995).

There is much evidence to support the hypothesis that BDD is an OCD spectrum disorder. Specifically, BDD and OCD share symptom similarities, preferential response to SSRI medications, similar neurobiological findings, and, as detailed above, high rates of comorbidity with each other and other disorders like depression and anxiety disorders (Phillips, et al., 1995). Family history data suggests that OCD is the most common disorder in relatives of BDD patients (Hollander, et al., 1993). There is also evidence to suggest that BDD occurs with greater frequency among first-degree relatives of patients

with OCD (Bienvenu, et al., 2000). Additional support for this hypothesis is found in the similar age of onset, course, and sex ratios for these disorders (Phillips, et al, 1995).

While BDD and OCD may share similarities, the defining difference is that the preoccupation and compulsive behaviors are centered on aspects of physical appearance. Additionally, BDD is associated with greater impairment than OCD as evidenced by the low rate of marriage among BDD patients and the greater frequency of comorbid social phobia in BDD sufferers (Phillips & Diaz, 1997; Phillips, Gunderson, Mallya, McElroy, & Carter, 1998). The apparent similarities among these disorders has led some researchers (Phillips, et al., 1995; Hollander, Neville, Frenkel, Josephson, & Liebowitz, 1992) to question the classification of BDD as a somatoform disorder, and to propose the reclassification of BDD as an anxiety disorder.

Researchers have also suggested that BDD may be a form of affective spectrum disorder (Hudson & Pope, 1990). Like OCSD, affective spectrum disorder is a term used to describe a family of disorders that share a common pathophysiologic abnormality (Hudson & Pope, 1990). Disorders including bulimia, major depression and several anxiety disorders (OCD, GAD, panic disorder) have been grouped as affective spectrum disorders based on their response to antidepressant medications, common comorbidities, and family studies (Phillips, et al., 1995). Unlike the OCSD categorization, the affective spectrum disorder classification hypothesis includes operationalized criteria, namely that the shared pathophysiology is evident in similar treatment responses, comorbidity, and family history studies. Phillips and colleagues (1995) have argued that it is not unreasonable to include BDD in this family of disorders, based on the high rates of comorbidity of BDD with depression and social phobia, response to selective serotonin

reuptake inhibitors, and the high prevalence of major depressive disorder among relatives of BDD patients.

In summary, the classification of BDD remains an issue of debate, although there is evidence to suggest that this disorder shares features of both obsessive-compulsive spectrum disorders and affective disorders. However, research on the phenomenology of this disorder provides evidence that this disorder may be better classified under another diagnostic grouping, such as the anxiety disorders.

2.7. Diagnosis and Assessment

As noted above, the identification and diagnosis of BDD is difficult. This is true not only within the mental health field, but also in disciplines like cosmetic surgery that encounter these patients frequently. Diagnosis is further complicated by the fact that the majority of BDD patients do seek medical and not psychiatric treatments to ease their distress. For example, diagnosis of BDD can be particularly challenging in cosmetic surgery practices, namely because of the objective of cosmetic procedures, which is to improve slight “defects” in appearance. The judgment of any body feature as having an appearance “defect” is subjective. Thus, in diagnosing BDD, the degree of emotional distress and behavioral impairment are thought to be more accurate indicators of the disorder among cosmetic surgery candidates (Sarwer, et al., 1998; Sarwer & Crerand, 2003).

Because a diagnosis of BDD is unlikely to be made unless the patient is asked specifically about the disorder and its symptoms, several self-report, diagnostic assessment tools have been developed to aid in the detection of BDD in clinical and medical populations.

Assessment Tools

The Body Dysmorphic Disorder Questionnaire (BDDQ), developed by Phillips (1996), is a brief, self-report measure which assesses appearance concerns and their impact on functioning in daily life. Derived from DSM-IV diagnostic criteria, the BDDQ asks patients if their appearance concerns are sources of preoccupation and which body parts are of concern. In order to obtain a positive screen, a person must indicate a preoccupation with a perceived appearance flaw and report moderate distress and/or impairment in functioning (Phillips, 1996). This measure is intended as a screening tool, and not as a diagnostic instrument (Phillips, 1996). A modified version of the BDDQ, the BDDQ-Dermatology Version has been recently developed (BDDQ-DV; Dufresne, Phillips, Vittorio, & Wilkel, 2001). (*See Method for further description of the BDDQ-DV; See Appendix A for a copy of the BDDQ-DV*)

Phillips and colleagues have developed a structured clinical interview known as the Body Dysmorphic Disorder Diagnostic Module (BDDDM; Phillips, 1996). The format of this interview is similar to that used in the Structured Clinical Interview for DSM-IV (SCID), and the questions are based upon DSM-IV criteria for BDD. The BDDDM has been shown to have excellent inter-rater reliability ($\kappa = .96$) (Phillips, 1996). The BDDQ has been found to excellent agreement with the BDDDM (Phillips, 1996; Dufresne, et al., 2001).

The Body Dysmorphic Disorder Examination (BDDE) (Rosen & Reiter, 1996) is a 34-item semi-structured interview designed to assess for the presence and severity of BDD symptoms. Specifically, this instrument assesses for preoccupation with and negative evaluation of appearance, self-consciousness, embarrassment, excessive

importance given to appearance in self-evaluation, avoidance of activities, body camouflaging, and body checking. A self-report version has also been developed (Rosen & Reiter, 1996). (*See Method for further description; See Appendix E for copy of BDDE*).

2.8. Treatment

Pharmacological treatments for BDD typically involve the use of selective serotonin reuptake inhibitor (SSRI) antidepressant medications. Psychological treatments most often utilize cognitive-behavioral techniques to address BDD symptoms.

Pharmacotherapy. Research on the pharmacological treatment of BDD is relatively new. Case report studies have demonstrated the efficacy of SSRI antidepressant medications for the treatment of BDD in some patients (Phillips, 1998). For example, Hollander and colleagues reported a case series of 5 BDD patients who demonstrated a preferential treatment response for SSRIs (Hollander, Liebowitz, Winchel, Klumker, & Klein, 1989). Studies which assessed treatment response also provided evidence for the efficacy of SSRIs. Phillips and colleagues retrospectively assessed treatment response in 130 BDD patients, who collectively received 316 medication trials. Forty-two percent of the 65 SSRI trials resulted in symptom improvement, compared to 30% of 23 trials with monoamine oxidase inhibitors, and 15% of 48 tricyclic antidepressant trials (Phillips, 1996). Another retrospective chart review study of treatment response among 90 BDD patients yielded similar results, with 65% of 55 adequate SSRI trials resulting in symptom improvement (Phillips, Albertini, Siniscalchi, Khan, & Robinson, 2001).

Two open label studies have been conducted with fluvoxamine. One study reported that 63% of their BDD patients responded to fluvoxamine (Phillips, Dwight, & McElroy, 1998). Another investigation reported similar results with an open-label trial of fluvoxamine; two-thirds of the sample responded favorably to treatment (Perugi, Giannotti, Di Vaio, Frare, Saettoni, & Cassano, 1996). Both studies, however, had small sample sizes.

A 12-week, open label study has recently been conducted with another SSRI, citalopram (Phillips & Najjar, 2003). Of the fifteen patients participating in this trial, 73.3% responded to treatment, as measured by significant score decreases on the Yale-Brown Obsessive Compulsive Scale Modified for BDD (YBOCS-BDD) and improvements in global functioning (Phillips & Najjar, 2003). However, the small sample size and lack of a control group limit the significance of these findings.

Hollander and colleagues (1999) conducted the first controlled pharmacotherapy trial (n = 40) for BDD. Clomipramine, an SSRI, was found to be more effective than desipramine, a non-SSRI, with 65% responding to positively to clomipramine, compared to 35% responding to desipramine. More recently, Phillips and colleagues have conducted a randomized, placebo controlled trial (n = 67) of fluoxetine for the treatment of BDD (Phillips, Albertini, & Rasmussen, 2002). Results of this study suggest that fluoxetine treatment was significantly more effective than placebo, with 53% of the sample responding to fluoxetine, compared to 18% responding to placebo. These studies suggest that SSRIs are potentially effective treatment options for BDD symptoms.

Delusional variants of BDD appear to respond to SSRIs as well as the non-delusional variant (Phillips, et al., 1998; Hollander, et al., 1999; Phillips, Albertini, &

Rasmussen, 2002), whereas anti-psychotic medications have been shown to be ineffective for the treatment of both BDD variants (Phillips, et al., 1994). There is some evidence to suggest that anti-psychotics may have some benefit when used in conjunction with SSRIs (Phillips, Albertini, Siniscalchi, Khan, & Robinson, 2001). Higher doses and longer trials of SSRIs are often necessary to manage BDD symptoms (Phillips & Castle, 2002). More clinical trials including placebo controls are needed to further investigate the effectiveness of SSRIs in the treatment of BDD. Further controlled trials are also needed to identify appropriate augmentation strategies and to investigate the effectiveness of other classes of anti-depressants medications and anti-psychotics in the management of BDD symptoms.

Cognitive behavioral therapy. Psychological treatments for BDD have also been investigated. Preliminary research suggests that insight-oriented and supportive psychotherapy do not appear to be effective for the treatment of BDD (Phillips & Castle, 2002). Cognitive behavioral therapy, however, appears to be a more promising mode of treatment.

Several investigations utilizing cognitive and behavioral techniques have reported favorable treatment responses for patients with BDD. One study of 5 patients with BDD used a combination of exposure and response prevention techniques (i.e. exposing the defective body part in a social setting) and challenging the patients' cognitive distortions (Neziroglu & Yaryura-Tobias, 1993). This treatment strategy resulted in reductions in symptom severity for 4 out of the 5 BDD patients.

Rosen and colleagues (1995) conducted a larger, randomized trial of cognitive-behavioral therapy (CBT) for BDD. Fifty-four patients were randomly assigned to either

CBT or a no treatment, wait-listed control group. Therapy consisted of cognitive restructuring, along with exposure to avoided body image situations and the elimination of body checking (Rosen, et al., 1995). Results indicated that 82% of patients in the treatment group achieved significant improvements in their BDD symptoms as compared to only 7% of patients in the control group. Furthermore, these effects were still noted at follow-up in 77% of treated patients (Rosen, et al., 1995).

Similarly, Veale and colleagues (1996) conducted another study of CBT in nineteen patients with BDD who were randomized to either a CBT treatment or no treatment, wait-listed control group. The CBT treatment group attained a 50% reduction in BDD and depression symptom severity at the end of treatment (Veale, et al., 1996).

Wilhelm and colleagues (1999) have reported similar successful findings for CBT in a study of 13 women with BDD. After receiving CBT in a group format over 12 weekly sessions, patients achieved significant improvements in BDD and depressive symptoms as assessed by the Yale-Brown Obsessive-Compulsive Scale modified for assessing BDD (BDD-YBOCS) and the Beck Depression Inventory (Wilhelm, Otto, Lohr, & Deckersbach, 1999).

A recent review of randomized clinical trials for the treatment of somatoform disorders (including BDD) found support for the efficacy of CBT for treating BDD (Looper & Kirmayer, 2002). While studies investigating CBT have yielded promising results, well-controlled studies and follow-up data are still needed to further evaluate its efficacy and ultimate effectiveness. Although exposure and response prevention techniques have been utilized in most studies, the relative importance of this treatment

approach is unknown. Additionally, no studies to date have evaluated the utility of combining CBT and pharmacotherapy. Future studies are needed to address these issues.

Non-psychiatric medical treatment. Cosmetic surgical procedures are frequently the self-prescribed treatment of choice for individuals with BDD. Among one sample of BDD patients, 70% (n = 188) had previously sought non-psychiatric treatments from a variety of medical specialists, including surgeons, dentists, and dermatologists, with 58% having received treatment (Phillips & Diaz, 1997). An update on Phillips & Diaz's 1997 study found that among 250 adults with BDD, 76.4 % had sought non-psychiatric treatment, with 66% of this group actually receiving some form of treatment (Phillips, Grant, Siniscalchi, & Albertini, 2001). The most common form of treatment received in this sample was dermatological (45.2 %), followed by cosmetic surgery (23.2%), with rhinoplasty being the most common type of surgery received (Phillips, et al., 2001). Approximately 35% of treatments requested were not received, and the most common reason for not receiving the treatment was physician refusal (Phillips, et al., 2001).

Veale and colleagues (1996) reported that 48% of their sample (n = 50) had sought cosmetic or dermatological treatment at least once, and 26% had undergone one or more surgical procedures on their perceived defects. Another study investigating the prevalence of BDD in a sample of 442 patients with a primary diagnosis of OCD determined that over half of those with BDD (57%; n = 20) had consulted plastic surgeons or dermatologists for treatment, and 15% had actually undergone plastic surgeries, with some patients reporting up to 6 surgeries on the same feature (Simeon, Hollander, Stein, Cohen, & Aronowitz, 1995).

The aforementioned studies, although not prevalence studies, speak to the rates at which patients with BDD seek medical treatment. These statistics illustrate the need for assessment of BDD in medical populations, as patients tend to seek medical treatments for an undoubtedly psychiatric problem. Surgeons performing facial procedures are likely to see an over-representation of individuals with this disorder, as the most common areas of concern involve the skin, nose and face (Phillips, et al., 1993; Phillips & Diaz, 1997).

Despite their insistence upon having cosmetic procedures, it appears that persons with BDD rarely benefit from these treatments. Surgery frequently leads to an exacerbation of symptoms or the preoccupation may shift to another physical feature. Phillips and Diaz (1997) reported that 83% of procedures performed on BDD patients in their sample lead to an exacerbation or no change in BDD symptoms. In their larger sample of BDD patients, Phillips and colleagues (2001) reported that the most frequent outcome (72% of cases) for non-psychiatric treatments was no change in overall BDD severity. Even though 23% of treatments were found to result in decreased concern with the perceived defect, 68% of these treatments led to no improvement or worsening in overall BDD symptoms (Phillips et al., 2001). The lack of improvement and/or worsening of overall symptoms was due to preoccupation shifts to other areas of the body, the development of new appearance concerns, or development of concerns that the treated area would become ugly again (Phillips, et al., 2001).

Similarly, Veale and colleagues (1996) reported that among 25 BDD sufferers who underwent cosmetic surgery, 76% reported being dissatisfied with the postoperative result. In addition, there is some evidence to suggest that these individuals may threaten

or take legal action against the surgeon, or become violent with the surgeon and his or her staff (Phillips, 1996; Sarwer, Crerand, & Didie, 2003).

In summary, identification of patients presenting with BDD is a critical component of the psychological assessment of facial plastic surgery patients. Persons with BDD frequently have unrealistic expectations for surgical outcomes, seeing surgery as a magical cure for all problems, and often demand additional surgeries on the same or different body features. Recent studies suggest that persons with BDD do not benefit from cosmetic treatments, and often experience a postoperative exacerbation of their symptoms. Although cosmetic treatments are unlikely to improve BDD symptoms, facial plastic surgeons are in an ideal position to identify and refer BDD sufferers for psychiatric evaluation and treatment.

3. RATIONALE FOR CURRENT INVESTIGATION

As described previously, the prevalence of BDD among patients seeking cosmetic procedures is not well known. Sarwer and colleagues (1998) reported a rate of 7% in a cosmetic surgery population. The study, however, had some methodological limitations. For example, the investigation lacked a control group. Surgeons and nurses made informal ratings of appearance defects for patients who met criteria for BDD. However, ratings for other patients in the sample were not provided. Of the seven patients diagnosed with BDD in this sample, five were described as having defects that were “not observed” or “observed, although not unusual or abnormal” (Sarwer, et al., 1998, p. 1647). Two patients in their sample who met criteria for BDD had “more notable deformities of their respective features” (Sarwer, et al., 1998, p.1647). Thus, the authors acknowledged that the 7% rate of BDD obtained might be inflated, given that two patients were concerned with features that were readily visible. Additionally, surgeons’ judgments of slight or minimal deformity were used to help make a diagnosis of BDD. It is possible that cosmetic surgeons, who are trained to identify and correct slight imperfections, may be more likely to under-diagnose BDD in cosmetic patients.

Phillips and colleagues (2000) reported a rate of BDD of 12% among patients seeking dermatological treatments. This investigation also lacked an appropriate control group. Furthermore, the measure used to assess BDD in this sample, the BDDQ-Dermatology Version (BDDQ-DV), may have over-diagnosed BDD. The BDDQ-Dermatology Version has a limited positive predictive value (70%) as compared to a clinician-administered, semi-structured diagnostic interview (BDDDM; Phillips, 1996) in a dermatology setting, thus the BDDQ-DV may have overestimated the rate of BDD by

as much as 30% (Phillips, et al., 2000). A smaller study that utilized this measure in a dermatology cosmetic surgery population found that it over-diagnosed BDD by 4% as compared to a brief, semi-structured interview (Dufresne, et al., 2001).

Measures based solely on DSM diagnostic criteria, like the BDDQ, have been criticized as being too vague (Fitts, et al., 1989). Using the DSM-III-R BDD criteria in a sample of 258 college students, 70% of students reported some preoccupation with their appearance, while 28% endorsed all three diagnostic criteria (Fitts, et al., 1989). The results of this study provide support for the contention that diagnostic criteria-based measures may over-diagnose appearance concerns. However, DSM-III-R criteria for BDD did not include a requirement of impairment in functioning, therefore, the over-estimation of BDD may not be as significant with measures based upon DSM-IV criteria.

Summarizing the results of these investigations, the rate of BDD in cosmetic surgery samples has not been firmly established. Studies utilizing appropriate control groups and assessments which are able to distinguish between less severe body image dissatisfaction, thought to be a motivational component to cosmetic medical treatments (Sarwer & Crerand, 2003), and BDD are needed. Additionally, studies that incorporate non-physician raters of defect severity may be able to more accurately capture the rate of BDD among patients seeking cosmetic procedures.

The present study is an attempt to address some of the methodological limitations of these studies and to further investigate the rate of BDD among patients who seek cosmetic procedures. Given that most BDD patients report a preoccupation with facial features, this study specifically targeted patients seeking facial procedures. In an attempt to identify the rate of BDD among other medical specialties that perform facial cosmetic

surgery, an otorhinolaryngology clinic was included in this study. Control participants, defined as patients presenting to these clinics for non-cosmetic procedures, were included in this study. Patients' areas of concern were rated for degree of severity by their treating physician, a staff nurse, and a group of layperson raters. Additionally, two measures of BDD, the BDDE-SR and the BDDQ-Dermatology Version, were used to account for the difficulties related to using a diagnostic-criteria based, self-report measure and to provide some data on the correspondence between the measures.

3.1. Research Questions and Hypotheses

Hypothesis 1. The primary aim of this study was to provide additional information on the rate of BDD among patients seeking cosmetic facial procedures. Patients who sought cosmetic facial procedures were predicted to have a higher rate of BDD than the rate obtained among patients seeking non-cosmetic procedures. Rates in the range of 7 - 15% were expected among the cosmetic sample, as these are the rates obtained in previous cosmetic surgery settings. The expected rate of BDD in the non-cosmetic group was 2%, or the hypothesized rate of BDD in the general population.

Hypothesis 2. Correlates of BDD, namely body image dissatisfaction and depression, were assessed using the Multi-Dimensional Body Self Relations Questionnaire-Appearance Scales (MBSRQ; Cash, Winstead, & Janda, 1986; Brown, Cash & Mikulka, 1990) and the Beck Depression Inventory-II (BDI-II; Beck et al., 1996). The Body Dysmorphic Disorder Examination-Self Report (BDDE-SR; Rosen & Reiter, 1996) is primarily used to assess for the presence of BDD. However, the total score obtained on this questionnaire provides a measure of body image dissatisfaction.

Higher levels of body image dissatisfaction and depressive symptoms were expected among patients who screened positive for BDD.

Exploratory analyses. An exploratory aim of this study was to determine if there was a difference in rates of BDD dependent upon which self-report measure was used to assess for its presence (BDDQ-DV vs. BDDE-SR). As these are the only available self-report screening questionnaires for the disorder, an investigation of the correspondence between these measures is needed in order to better understand differences in rates of BDD obtained in various studies. It was hypothesized that more participants would meet criteria for BDD with the BDDQ-DV than with the BDDE-SR, as the BDDQ-DV is a diagnostic criteria-based measure that may be less stringent than the BDDE-SR which assesses specific behaviors associated with the disorder.

A further exploratory aim was to determine if there are differences in severity ratings based upon type of rater (nurse, surgeon, or layperson raters). Surgeons were expected to be more likely to rate the perceived defects of patients as being “present/noticeable” as compared to nurses and laypersons. This hypothesis is based upon the fact that cosmetic surgeons are trained to notice even slight defects in appearance and to correct them using cosmetic medical treatments.

It was hoped that exploratory analyses could be conducted to compare rates of BDD in a cosmetic surgery practice with those obtained in an otorhinolaryngology practice. Exploratory analyses were also initially proposed to determine if there were differences in rates of BDD based upon the type of setting (university-based clinic versus community practices). The otorhinolaryngology and community practices were unable to recruit large numbers of participants. Therefore, the percentage of patients screening

positive for BDD at each site was calculated although not statistically tested, since these analyses would have been underpowered to detect differences between the practices.

4. METHOD

4.1. Participants

One hundred forty-one patients participated in this study. Three sites provided participants: 1) Four plastic surgeons (Drs. Scott Bartlett, Donald LaRossa, David Low, and Linton Whitaker) from the Division of Plastic Surgery at the University of Pennsylvania School of Medicine; 2) Dr. Daniel Becker, an otorhinolaryngologist at the University of Pennsylvania School of Medicine; and 3) Dr. Paul Glat, a plastic surgeon with a suburban practice. The majority of patients were recruited from the surgeons in the Division of Plastic Surgery - (80.1%); 9.9% and 10.6% of patients were recruited from the practices of Drs. Becker and Glat.

Patients were considered eligible to participate if they were new patients (i.e., presenting for treatment with the surgeon for the first time), over the age of 18, and seeking cosmetic or non-cosmetic procedures of the face. Exclusion criteria included seeking cosmetic or non-cosmetic procedures for areas other than the face (i.e., abdominoplasty) and being unable to read or understand English. There were no exclusion criteria based upon race or gender. All patients were asked to provide written consent prior to participating in this study. Institutional review board approval for this study was obtained from both Drexel University and the University of Pennsylvania.

4.2. Procedure

Packets containing consent forms, demographic questionnaires, and measures (see description below) were provided to patients prior to their first appointment with their surgeon. Patients seeking facial procedures (cosmetic and non-cosmetic) were identified from the schedules of participating physicians. At the University of Pennsylvania sites,

packets were mailed to eligible participants approximately two to four weeks prior to their initial consultation. This packet included a cover letter, signed by the principal investigator (CEC), a consulting psychologist (DBS) and the treating physician. Patients were provided with no incentive for participating. At the community private practice setting, support staff and the treating surgeon recruited potential participants.

Patients were instructed to return the packets to office staff at the time of their initial consultation. Of the 820 patients eligible to participate, 82% (n = 676) attended their scheduled appointments. Of those who attended appointments, 21% (n = 141) completed packets. Seventy-five percent did not respond to the request to participate. The remaining four percent of patients indicated that they were not interested in participating.

The treating surgeon and his nurse were asked to complete a Defect Rating Scale (see Measures section below) after meeting with a given patient in order to obtain a measure of defect severity that is necessary for the diagnosis of BDD. The nurse's rating was included to assess if surgeons may be more likely to rate slight defects in appearance as more severe or noticeable.

During the course of their initial consultations, most patients (83%) had photographs taken of their face. Sixteen patients (11%) did not have photographs taken either because the surgeon deemed photographs to be unnecessary (as in the case of a patient who was having skin cancer lesions removed) or because the patient did not consent to having photographs taken. Thus, defect ratings were not available for these patients. Defect ratings were not obtained for 10 additional patients (7%). Ratings were

not collected in these instances because surgeons and nurses forgot to obtain ratings, and in two cases, the patients completed packets but failed to show for their appointments.

A sub-sample (n = 52) of patient photographs was also rated by a group of laypersons (n = 21). These laypersons were recruited from the staff of the Weight and Eating Disorders Program at the University of Pennsylvania and from the undergraduate psychology class instructed by Dr. David Sarwer. These ratings allowed for an additional assessment of the potential difference in ratings from medically trained and non-medically trained persons.

The medical charts of patients who completed packets were reviewed by CEC in order to verify the treatment as either cosmetic or non-cosmetic. Ninety-one patients who completed packets sought cosmetic procedures. Patients were classified as “cosmetic” if they sought a procedure because of dissatisfaction with their appearance unrelated to a medical condition or illness. Examples of cosmetic facial procedures include rhytidectomy (facelift), botulinum toxin type A (Botox®) or calcium hydroxylapatite (Radiesse®) injections for facial wrinkling, brow/forehead lifts, blepharoplasty (correction of sagging eyelids), rhinoplasty, and chin augmentation. Table 1 provides a listing of procedures sought by the cosmetic sample.

Fifty patients classified as seeking non-cosmetic procedures completed questionnaire packets and served as the comparison group. Participants were classified as “non-cosmetic” if the procedure they sought was related to a medical illness or condition. The term “non-cosmetic” is often used in clinical settings to designate reconstructive procedures that may be eligible for insurance reimbursement. Non-cosmetic procedures would include any facial surgical procedure performed for a medical

reason (e.g., blepharoplasty to remove drooping eyelid skin that causes vision impairment, lesion or mole removal), and not solely for an appearance reason. Table 2 provides a listing of non-cosmetic procedures sought by participants in this group, and Table 3 provides a description of the medical diagnoses represented in this sample.

Table 1. Types of Cosmetic Procedures (N=91)

<i>Procedure Name</i>	<i>(%)</i>
Blepharoplasty	34.1
Rhinoplasty	29.7
Rhytidectomy	28.6
Laser Treatment	16.5
Browlift	15.4
Fat injection	12.1
Chin implants	7.7
Submental Lipectomy	5.5
Acne scar revision	4.4
Radiance Injection	4.4
Botox Injection	2.2
Platysmaplasty	2.2
Otoplasty	1.1
Chin reduction	1.1
Dermabrasion	1.1
Laser hair removal	1.1

Note: Percentages exceed 100% as some patients desired multiple procedures

Table 2. Types of Non-cosmetic
Procedures (N = 50)*

<i>Procedure Name</i>	<i>(%)</i>
Laser Treatment	16
Fat injections/grafts	16
Scar Revision	14
Nevus excision	14
Septorhinoplasty	10
Skin cancer excision	8
Nerve graft	8
Botox injections	6
Zplasty	6
Cranioplasty	4
Reconstructive	4
Browlift	2
Lipoma excision	2
Blepharoplasty	2
Rhinoplasty	2

Note: Percentage total exceeds 100 as some patients sought more than one procedure

**Non-cosmetic refers to procedures performed secondary to medical conditions or for reconstructive purposes*

Table 3. Non-Cosmetic Patient Diagnoses

<i>Diagnosis</i>	<i>N</i>	<i>%</i>
Nevi	8	16
Scar revision (due to injury)	7	14
Cleft lip/palate revision	5	10
Deviated septum/Nasal deformity	5	10
Facial paralysis	5	10
Skin cancer	3	6
Burns	2	4
Port wine stains	2	4
Jaw reconstruction	2	4
Ptosis	1	2
Vascular malformations	1	2
Rhinophyma	1	2
Rosacea	1	2
Actinic keratosis	1	2
Hemifacial microsomia	1	2
Spider angioma	1	2
Lipoma	1	2
Facial atrophy	1	2
Eye socket reconstruction	1	2
Rohberg's disease	1	2

4.3. Measures (see Appendix for copies of each measure)

Demographic Questionnaire. Patients were asked to provide basic demographic information, such as their age, gender, race, marital and employment status, and education level. Additionally, patients were asked to identify their current medications, referral source, length of time they had been considering surgery, whether they had undergone cosmetic surgery before (and if yes, how many times), what feature is to be

corrected, and whether this feature had been operated on before (if they answered yes to this question, they were asked to indicate the number of previous operations). Patients were asked to indicate if they had experienced stress, depression, anxiety, or an eating disorder in the past year. They were also asked to report if they had sought help from a mental health professional and/or physician for stress, depression, anxiety, or an eating disorder over the past year.

Body Dysmorphic Disorder Questionnaire- Dermatology Version (BDDQ-DV).

The Body Dysmorphic Disorder Questionnaire (BDDQ-DV) is a brief self-report measure which assesses appearance concerns and their impact on functioning in daily life (Dufresne, Phillips, Vittorio, & Wilkel, 2001). This measure is a modified version of the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 1996). The difference between the BDDQ-DV and the original BDDQ is that Likert scales have been substituted for “yes/no” questions regarding functional impairment and distress. Derived from DSM-IV diagnostic criteria, the BDDQ-DV asks patients if their appearance concerns are a source of preoccupation and if so, which body parts are of particular concern. Additional “yes/no” questions assess the degree to which appearance preoccupations have caused distress or interfered with the person’s social life and academic/occupational functioning, or resulted in avoidance of people and situations (Phillips, et al., 2000). A positive screen for BDD is obtained if a patient acknowledges a preoccupation with appearance and at least moderate (Likert scale rating of 3 or above) distress or impairment in functioning related to such preoccupation.

The BDDQ has a reported sensitivity of 100% and a specificity of 89%, as measured in a sample of 66 psychiatric patients (Phillips, 1996). In a dermatological

cosmetic surgery setting, the BDDQ-DV had a reported sensitivity of 100%, specificity of 95%, positive predictive value of 70%, and negative predictive value of 100% (Dufresne, et al., 2001). The sensitivity and specificity data for the BDDQ and BDDQ-DV were obtained by comparing positive scores on these measures with the “gold standard” for BDD diagnosis, a semi-structured, clinician-administered, reliable diagnostic instrument (Body Dysmorphic Disorder Diagnostic Module (BDDDM; Phillips, et al., 2000, p. 437).

Body Dysmorphic Disorder Examination-Self Report (BDDE-SR). The BDDE-SR is a self-report measure that assesses for the presence of BDD symptoms and body image dissatisfaction (Rosen & Reiter, 1996). Patients are asked to rank five bodily features with which they are most dissatisfied. Then, keeping in mind the body part with which they are most dissatisfied, patients answer a series of questions that assess preoccupation with the body part, negative evaluation of appearance, excessive importance of appearance in self-evaluation, avoidance of activities and places, and body camouflaging. For the purposes of this study, participants were asked to rate only the feature(s) for which they were seeking surgery. Specific items directly reflect DSM-IV criteria for the diagnosis of BDD. These items assess for the presence of distress as well as for the frequency of behaviors associated with appearance preoccupations. Higher scores indicate greater body image dissatisfaction. Higher scores on the items thought to reflect DSM-IV criteria suggest the presence of BDD (see Table 4). Adequate internal consistency and test-retest reliability have been established (Rosen & Reiter, 1996). The self-report version has acceptable agreement with the interview version of this measure (BDDE) (Rosen & Reiter, 1996).

Table 4. BDD Items on the BDDE-SR

<i>Criteria</i>	<i>Item #</i>
Preoccupation with appearance	
How often have you thought about appearance and felt distressed	6
How often have you worried about your appearance in public places	7
How often have you worried about your appearance with friends, family	8
How important is your appearance to your self-evaluation	12
How negative are your thoughts about yourself due to appearance	13
Distress or Impairment	
How upset do you become if someone notices or pays attention to appearance	9b
How much have you avoided public areas because of appearance	17
How much have you avoided work or other social situations	18
How much have you avoided close contact with others	19
How much have you avoided physical activities	21

Defect Rating Scale. The severity of the patient’s feature of concern was rated by treating physicians, nurses, and non-medically trained raters on a Likert scale, anchored by 1 (“none”) to 5 (“severe defect present”) (Phillips, et al., 2000). This rating scale has been shown to have good inter-rater reliability (ICC = .88) (Phillips, et al., 2000).

Multidimensional Body-Self Relations Questionnaire-Appearance Scales (MBSRQ-AS). The MBSRQ-AS is a self-report measure designed to assess attitudinal

dispositions towards body image (Cash, Winstead, & Janda, 1986; Brown, Cash, & Mikulka, 1990). This measure is a shortened form of the 69-item MBSRQ version. The Appearance Scales version consists of 36 items with five subscales: Appearance Orientation, Appearance Evaluation, Overweight Preoccupation, Self-Classified Weight, and Body Areas Satisfaction. Individuals are asked to rate questions on a scale from 1 (“definitely disagree”) to 5 (“definitely agree”). Higher scores indicate greater satisfaction with body image. Normative data has been obtained for this measure from a large random sample ($n = 30000$) (Cash, et al., 1986). Adequate psychometric properties have been reported for this measure (test-retest reliability $r = .91$; internal consistency $r = .88$); factor analysis studies have demonstrated the stability and validity of the subscales (Brown, et al., 1990). For the purposes of this study, the Appearance Orientation, Appearance Evaluation, and the Body Areas Satisfaction subscale items were analyzed and reported.

Beck Depression Inventory II (BDI-II). The BDI-II is a 21-item self-report measure which assesses the presence and severity of depressive symptoms based upon DSM-IV diagnostic criteria (Beck, Steer & Brown, 1996). Each item consists of a list of four statements arranged according to increasing severity about specific depressive symptoms. Individuals are asked to rate depressive symptoms over a time frame of the previous two weeks. Psychometric analyses of the BDI-II indicate high levels of internal consistency (coefficient alpha = .92) and test-retest reliability ($r = .93$) (Beck et al., 1996). Convergent and factorial validity have also been demonstrated (Beck et al., 1996). Scores range from 0 to 63, with higher scores reflecting more severe depressive symptoms (Beck et al., 1996).

5. STATISTICAL ANALYSES

Power. A sample size of one hundred sixty had been proposed in order to obtain enough statistical power to detect a difference in the rates of BDD between the cosmetic and non-cosmetic groups (power = .80, alpha = .05; Power and Precision Calculator©; Borenstein, Rothstein, & Cohen, 1997). This power analysis was based upon the estimated frequencies of BDD obtained in cosmetic settings using similar methodologies (12%; Phillips, et al., 2000) and the general population (2%; Bienvenu, et al., 2000). Because of several recruitment problems, only one hundred forty-one patients participated in this study. As a result, the power available for the main analysis was reduced to .60 (alpha = .05).

Demographic variables. Frequencies and means (with standard deviations) were calculated for demographic variables. Independent t-tests and chi-square statistics were used to determine differences on demographic variables among cosmetic and non-cosmetic patients and between patients screening positive for BDD and those who did not. The $p < .05$ significance level was utilized for these tests.

Rate of BDD. The percentage of participants screening positive for BDD (based upon score on the BDDQ-DV, in combination with a surgeon rating of minimal or no deformity) was calculated for the cosmetic and non-cosmetic groups. The BDDQ-DV was selected as the primary diagnostic measure of BDD for this study for two reasons. First, this measure is based on DSM-IV diagnostic criteria for BDD. Second, since the design of the present study was based upon Phillips and colleagues (2000) investigation of the rate of BDD in a cosmetic dermatological setting, use of this measure facilitated comparisons between the rates of BDD determined in each study.

On the BDDQ-DV, positive scores were indicated by answers of “yes” to being preoccupied by appearance concerns (question 2), as well as a report of moderate distress or impairment in functioning (as indicated by a score of 3 or higher on questions 5 and/or 6). Participants who responded “yes” to having had an eating disorder over the past year on the Demographic Questionnaire and participants who described weight preoccupations on the BDDQ-DV were excluded from analysis. The eating disorder and weight/shape concerns exclusions were made to satisfy the third diagnostic criterion for BDD, which states that the preoccupation with appearance is not better accounted for by an eating disorder or preoccupation with weight or shape (APA, 2000). This scoring procedure is consistent with that used by Dufresne and colleagues (2001).

Pearson’s chi-square statistic was used to determine comparisons of BDD rates in cosmetic versus non-cosmetic patients. The $p < .05$ significance level was utilized for this test.

Depression and body image dissatisfaction. Mean scores and standard deviations for the overall sample on the BDI-II, MBSRQ-AS subscales, and BDDE-SR (total score) were calculated. The means on these measures for cosmetic and non-cosmetic patients and BDD and non-BDD patients were compared via independent samples t-tests. Bonferroni’s correction was used to prevent inflation of the type I error rate due to multiple tests on the three subscales of the MBSRQ-AS. Thus, the p value was set at .02 for analyses on this measure (i.e., $.05/3 = .02$). The $p < .05$ significance level was utilized for the BDI-II and BDDE-SR analyses.

Exploratory Analyses

Exploratory analyses were conducted to address the following issues: the rate of BDD as measured by the BDDE-SR, the diagnostic correspondence between the BDDQ-DV and the BDDE-SR, and changes in the rate of BDD on the BDDQ-DV dependent upon rating scale cut-point and type of rater (surgeon or nurse). Further exploratory analyses were conducted in order to determine if there was a difference in defect rating scores for surgeons, nurses, and layperson raters on a sub-sample of patient photographs. Finally, exploratory analyses of the rates of BDD in the community private practice and the otorhinolaryngology samples were conducted.

Rate of BDD using the BDDE-SR. The percentage of cosmetic and non-cosmetic participants who screened positive for BDD on the BDDE-SR was calculated with and without surgeon ratings of minimal or no deformity. These analyses were conducted in order to compare the rate of BDD obtained on this measure with the results of Sarwer and colleagues (1998) study, which used the BDDE-SR to diagnose BDD but did not incorporate defect ratings.

Participants were instructed to complete the BDDE-SR with respect to the facial feature for which they were seeking treatment. Positive scores for BDD were determined by a score of 4 or higher on the items listed in Table 5. These scoring strategies reflect the recommended scoring guidelines (Rosen & Reiter, 1996).

BDDQ-DV vs. BDDE-SR. The percentage of patients who were rated as having BDD on both measures was calculated. Pearson's chi square statistic was used to compare BDD rates obtained using the BDDQ-DV versus the BDDE-SR. The $p < .05$ significance level was utilized for this test.

Defect ratings. Because the third anchor on the rating scale ("present/clearly noticeable") is somewhat vague in terms of defining defect severity, rates of BDD using the BDDQ-DV were also calculated using a surgeon defect rating of 3 or less. Finally, rates of BDD were calculated using the BDDQ-DV and the defect severity ratings of nurses.

Inter-rater reliability. A sub-sample of photographs of participating patients ($n = 52$) was rated by a group of objective raters (i.e., non-medically trained research assistants and students). The inter-rater reliability of the defect severity scale was assessed by calculating the intraclass correlations (ICC) for the groups of raters on the sub-sample of photographs. The ICC statistic was also calculated using the ratings of the surgeons and nurses for the entire sample.

Private practice and otorhinolaryngology rates of BDD. Percentages of patients screening positive for BDD in the community private practice and otorhinolaryngology practice were also calculated. As with the cosmetic and non-cosmetic BDD rate determinations, the BDDQ-DV was used in conjunction with a surgeon severity rating of none or minimal/slight for these analyses.

6. RESULTS

6.1. Overall Sample

Demographic variables. The mean age of the overall sample was 44.79 ± 14.88 years; 83% of participants were female. The majority identified their racial background as Caucasian (89%). The sample averaged 15.47 ± 2.65 years of education and approximately two-thirds (69%) were employed. Participants had considered surgical treatment for an average of 3.80 ± 6.12 years. Nearly 43% ($n = 60$) reported prior cosmetic surgery, with an average of 2.16 ± 2.39 previous surgeries. Table 5 provides further demographic information about the entire sample. Table 6 provides further surgical history information about the entire sample.

Thirty-one percent of patients also reported receiving mental health treatment in the past year. Of those taking prescription medications, 31% ($n = 30$) reported taking anti-depressants, and 4% ($n = 4$) reported taking anti-anxiety medications.

Depression and body image dissatisfaction. Table 7 describes the mean scores on the BDI-II, MBSRQ-AS, and the BDDE-SR total scores for the entire sample.

Table 5. Demographic Characteristics

<i>Variable</i>	<i>Total Sample</i>	<i>Cosmetic</i>	<i>Non-Cosmetic</i>
<i>Age (M, SD)</i>	44.79 (14.89)	46.69 (14.21)	41.34(15.61)
<i>Years of Education (M, SD)</i>	15.48 (2.65)	15.79(2.64)	14.92(2.60)
<i>Gender (%)</i>			
Female	83	90	70
Male	17	10	30
<i>Marital Status (%)</i>			
Married	43	48	34
Single	31	28	38
Divorced	11	9	14
Living with partner	5	8	0
Widowed	5	6	4
Separated	5	2	10
<i>Race (%)</i>			
Caucasian	89	95	80
African American	6	4	8
Hispanic	1	0	4
Asian	1	1	0
American Indian	1	0	2
Other	1	0	4
<i>Employment Status (%)</i>			
Full-time	56	63	44
Part-time	11	11	10
Retired	9	8	10
Homemaker	8	10	4
Student	7	6	10
Disabled	6	0	16
Unemployed	1	1	2

Table 6. Surgical History

<i>Variable</i>	<i>Overall Sample</i>	<i>Cosmetic</i>	<i>Non-Cosmetic</i>
Have you had prior plastic surgery? (% Yes)	43%	48%	32%
Number of previous surgeries (M, SD)	2.17(2.39)	1.66 (1.11)	3.78 (4.17)
Has this feature been operated on before? (% Yes)	31%	28%	36%
Number of previous surgeries (M, SD)	2.5(2.81)	1.78(.95)	3.47(4.03)
Number of years considered having surgery (M, SD)	3.80(6.12)	3.53(4.11)	4.35(8.89)
Referral Source (%)			
Self	40%	44%	32%
Another Doctor	29%	22%	42%
Another Patient	12%	15%	6%
Other	16%	17%	16%

Table 7. Depressive Symptoms and Body Image Dissatisfaction Scores (M, SD)

<i>Measure</i>	<i>Overall Sample</i>	<i>Cosmetic</i>	<i>Non-Cosmetic</i>
BDI-II	8.95 (8.94)	7.64 (7.12)	11.64 (11.47)
MBSRQ			
Appearance Orientation	3.89 (.56)	3.97 (.46)	3.76 (.71)
Appearance Evaluation	3.22 (.81)	3.37 (.74)	2.96 (.87)
Body Areas Satisfaction	3.10 (.71)	3.19 (.66)	2.94 (.78)
BDDE-SR (total score)	47.62 (31.04)	46.23 (28.42)	50.38 (35.91)

6.2. Cosmetic and Non-Cosmetic Groups

Demographic variables. Table 5 and Table 6 provide demographic and surgical characteristics for the cosmetic and non-cosmetic groups. The mean age of the cosmetic group was 46.69 ± 14.21 years. The mean years of education was 15.79 ± 2.64 ; 63% were employed full-time, and nearly half (48%) were married. The majority of cosmetic patients identified themselves as being Caucasian (95%). Twenty-nine percent ($n = 19$) reported taking anti-depressant medication, whereas 2% ($n = 1$) reported taking anti-anxiety medications.

The mean age of the non-cosmetic group was 41.34 ± 15.61 . The majority of non-cosmetic patients identified themselves as Caucasian (80%), and 34% were married. Thirty-four percent ($n = 11$) reported taking anti-depressant medications, and 9% percent ($n = 3$) reported use of anti-anxiety medications. Thirty-two percent reported prior plastic surgery, and 36% reported seeking surgery for a feature that had previously been treated.

Non-cosmetic patients were significantly younger than cosmetic patients ($t(139) = -2.07, p < .04$). Non-cosmetic patients were also more likely to be non-Caucasian ($\chi^2 = 4.44, p < .04$) and more likely to be unmarried than cosmetic patients ($\chi^2 = 7.12, p < .03$). Patients seeking non-cosmetic procedures had undergone a greater number of prior plastic surgeries ($t(52) = 2.98, p < .004$). Cosmetic patients were more likely to be women ($\chi^2 = 5.23, p < .02$) and they were also more likely to be employed ($\chi^2 = 5.24, p < .02$) than non-cosmetic patients. There were no significant differences between groups based upon other demographic variables, including medication usage, surgical history, or report of mental health treatment in past year.

Rate of BDD. Three of the 141 patients in the entire sample indicated that they had been diagnosed with an eating disorder in the past year and were thus ineligible for the diagnosis of BDD. All three of these patients were classified as non-cosmetic. Eight patients (5 cosmetic, 3 non-cosmetic) reported weight/shape concerns on the BDDQ-DV and also were ineligible for the diagnosis. Thus, of the original sample of 141 patients, 130 were eligible for a BDD diagnosis.

Using the BDDQ-DV and a surgeon defect rating of “none” or “minimal/slight”, 7 of 91 cosmetic patients (8%) and 3 of 50 non-cosmetic patients (7%) met diagnostic criteria for BDD. This difference in rates was not significant ($\chi^2 = .10, p < .75$).

In order to demonstrate the importance of incorporating a measure of defect severity, the rate of BDD was calculated using the BDDQ-DV without ratings. The rate of BDD using the BDDQ-DV without any defect rating by the surgeon for the cosmetic group was 23.5% ($n = 20$). For the non-cosmetic group, the rate of BDD was 38% ($n = 17$) when surgeon ratings were excluded. The difference in rates was non-significant ($\chi^2 = 2.93, p < .09$).

BDDE-SR rate. The rate obtained using the BDDE-SR (with surgeon defect ratings of none or minimal/slight) for the cosmetic group was 2% ($n = 2$) whereas the rate in the non-cosmetic group was also 2% ($n = 1$). This difference was non-significant (Fisher’s Exact Test, $p < .73$). When ratings were excluded, as is typically the case with the measure, the rate of BDD was 6% ($n = 5$) for the cosmetic group and 20% ($n = 9$) for the non-cosmetic group. The rate obtained without ratings for the cosmetic group is consistent with the report of Sarwer and colleagues (1998). The rate of BDD for the non-

cosmetic group (without ratings) is slightly higher than the rate obtained by Sarwer and colleagues (1998) in their sample of reconstructive patients (16%).

BDDQ-DV vs. BDDE-SR. An exploratory aim of this study was to compare the rates of BDD obtained with the BDDQ-DV and the BDDE-SR. When surgeon defect ratings (of none or minimal/slight) were combined with the BDDQ-DV, seven cosmetic and three non-cosmetic patients met criteria for BDD. When the BDDE-SR was used in conjunction with surgeon ratings of none or minimal/slight, two cosmetic patients and one non-cosmetic patient met criteria for BDD.

Of the seven patients meeting criteria for BDD in the cosmetic group, two (29%) patients met criteria on both measures. Five patients (71%) met criteria on the BDDQ-DV but did not meet criteria on the BDDE-SR. None of the cosmetic patients met criteria on the BDDE-SR alone. Among the three non-cosmetic patients, all three met criteria on the BDDQ-DV and did not meet criteria on the BDDE-SR. Surprisingly, there was one non-cosmetic patient who met criteria on the BDDE-SR and did not score positively on the BDDQ-DV.

As previously described, on the BDDE-SR, patients were required to obtain a score of four or higher on five of ten questions designed to assess for the first two diagnostic criteria for BDD (preoccupation with appearance and distress/impairment in functioning related to this preoccupation). The five cosmetic patients and three non-cosmetic patients did not meet criteria on the BDDE-SR because they did not report enough preoccupation or worry/embarrassment on the designated items and/or enough impairment in functioning. Examination of these cases suggests that although both measures are designed to assess for the presence of BDD, the BDDE appears to have

more stringent definitions of preoccupation and impairment. This difference in measures may account for the poor diagnostic correspondence between these measures.

Of note, there was one non-cosmetic patient who met criteria on the BDDE-SR but not on the BDDQ-DV. In examining this case, this particular patient did not indicate preoccupation with her appearance concerns on the BDDQ-DV, but did report moderate distress and moderate impairment in functioning.

Chi square analyses were conducted to determine if there were differences between the cosmetic and non-cosmetic groups with respect to the endorsement of responses that are indicative of BDD (i.e., scores of 4 or higher) on the BDDE-SR. Bonferroni's correction was used to prevent inflation of the type I error rate due to multiple tests on these ten items of the BDDE-SR. Thus, the p value was set at .005 (i.e., $.05/10 = .005$).

On Item 8 ("How much have you worried or felt embarrassed about your appearance feature when you were in social settings with coworkers, acquaintances, friends or family?"), non-cosmetic patients were more likely than cosmetic patients to endorse a rating of 4 or higher, indicating moderate to extreme amounts of worrying or embarrassment ($\chi^2 = 8.21, p < .004$). No other significant differences were found between the cosmetic and non-cosmetic groups on the BDD diagnostic items from the BDDE-SR.

In summary, 29% (n = 2) of cosmetic patients met criteria on both measures, whereas 71% (n = 5) met criteria on the BDDQ-DV alone. The difference in rates according to measure was significant for the cosmetic group (Fisher's exact test, $p < .01$). Among non-cosmetic patients, all three met criteria on the BDDQ-DV alone. However,

there was one patient who met criteria on the BDDE-SR and not on the BDDQ-DV. The difference in rates according to measure was non-significant for the non-cosmetic group (Fisher's Exact Test, $p < .93$). Finally, on the BDDE-SR, non-cosmetic patients were more likely to report moderate to extreme worrying about their appearance as compared to cosmetic patients.

Depressive symptoms. The mean BDI-II scores and standard deviations for the cosmetic and non-cosmetic groups are listed in Table 7. An independent samples t-test was used to determine if there were significant differences between the mean scores on the BDI-II for the cosmetic and non-cosmetic groups. Because Levene's Test for the equality of variance was significant, equal variances between groups cannot be assumed. This is not unexpected given the inequality of sample sizes (cosmetic vs. non-cosmetic). Results of the independent t-test (with equal variances not assumed) indicated that the non-cosmetic group had a higher mean score on the BDI-II as compared to the cosmetic group (11.6 ± 11.5 vs. 7.6 ± 7.1 ; $t(59) = 2.12$, $p < .04$), suggestive of more depressive symptoms.

As the non-cosmetic group was significantly younger than the cosmetic group, ANCOVA analyses were used to evaluate differences in means on the BDI-II while controlling for age. Additionally, ANCOVA analyses were conducted using defect severity rating as a covariate in order to determine if defect severity was related to the mean differences obtained on the BDI-II. Because Levene's Test was significant for the analysis using age and defect severity as covariates, ANCOVA results are not reported, as this suggests that assumptions have been violated.

Body image dissatisfaction. Mean scores and standard deviations for the cosmetic and non-cosmetic groups on the MBSRQ-AS subscales and the BDDE-SR are listed in Table 7. On the Appearance Evaluation subscale, the mean score for the non-cosmetic group was significantly lower as compared to the cosmetic group ($2.96 \pm .87$ vs. $3.37 \pm .74$; $t(82) = -2.75$, $p < .007$) indicating less satisfaction with overall physical appearance. There were no significant differences between group means on the Appearance Orientation or Body Areas Satisfaction subscales or on the BDDE-SR.

Several additional analyses were conducted using the BDDE-SR. In order to determine if age or defect severity were related to the mean differences obtained on these measures, separate ANCOVA analyses were conducted using age and defect severity as covariates. Because Levene's Test was significant for the analysis using age as a covariate, ANCOVA results are not reported, as this suggests that assumptions have been violated.

The group differences on the BDDE-SR were significant when controlling for defect severity ($F(2, 116) = 92.73$, $p < .0001$). The adjusted mean score for the non-cosmetic group was higher than the adjusted mean score for the cosmetic group (46.1 vs. 42.1), suggesting more body image dissatisfaction among the non-cosmetic group.

Defect severity and pathology. In order to determine if cosmetic and non-cosmetic patients with more severe appearance defects experience more significant pathology (i.e., depression, body image dissatisfaction), the following analyses were conducted. Rating scale scores were divided into two groups: minimal defect severity (rating scale score of 1 or 2) and noticeable/severe defect severity (rating scale score of 3, 4, or 5). This new severity variable was then used to predict differences on the BDI-II

and BDDE-SR in separate ANOVA analyses among the cosmetic and non-cosmetic groups. In both groups, there were no significant differences between patients with a severity rating of 1 or 2 versus those with ratings of 3 or higher on both the BDDE-SR and BDI-II.

6.3. BDD and Non-BDD Patients

Demographic variables. Table 8 provides the demographic description of the patients meeting criteria for BDD (using the BDDQ-DV and a surgeon rating of none or minimal/slight). Of the ten people who met criteria for BDD in this sample, eight were female. All 10 were Caucasian. BDD patients were significantly younger than non-BDD patients ($t(128) = 2.25, p < .03$), with an average age of 34.60 ± 15.99 . They were also more likely to be seeking surgery for a feature which had previously been treated (Fisher's Exact Test, $p < .01$). Similarly, BDD patients reported having more previous surgeries on the feature for which they were currently seeking treatment ($t(124) = -2.45, p < .02$). There were no other significant differences on demographic variables between BDD and non-BDD patients.

Half of the BDD patients were single and two were married. Three BDD patients reported taking a psychotropic medication (antidepressant or anti-anxiety drug) and six reported having sought mental health treatment in the past year. The majority ($n = 6$) was employed. Table 9 describes the procedures sought by patients with BDD. Of note, rhinoplasty was the most commonly sought procedure, with 4 patients requesting this type of surgery.

Table 8. Demographic Characteristics of BDD and Non-BDD patients

<i>Variable</i>	<i>BDD (n=10)</i>	<i>Non-BDD (n=120)</i>
<i>Age in years (M, SD)</i>	34.6 (15.99)	45.57 (14.75)
<i>Education-years (M, SD)</i>	15.00 (1.56)	15.49 (2.78)
<i>Gender (n, %)</i>		
Female	8 (80%)	99 (83%)
Male	2 (20%)	21 (17%)
<i>Employment Status (n, %)</i>		
Full-time	5 (50%)	65 (55%)
Part-time	1 (10%)	14 (12%)
Homemaker	1 (10%)	10 (8%)
Retired	1 (10%)	10 (8%)
Disabled	0	7 (6%)
Unemployed	0	2 (2%)
Student	1 (10%)	9 (8%)
<i>Marital Status (n, %)</i>		
Married	2 (20%)	55 (46%)
Single	5 (50%)	37 (31%)
Divorced	1 (10%)	10 (8%)
Living with Partner	1 (10%)	5 (4%)
Separated	0	7 (6%)
Widowed	1 (10%)	6 (5%)
<i>Race (n, %)</i>		
Caucasian	10 (100%)	107 (89%)
African American	0	7 (6%)
Hispanic	0	2 (2%)
American Indian	0	1 (1%)
Other	0	2 (2%)
<i>Sought Mental Health Tx (n, % yes)</i>	6 (60%)	33 (28%)
Take antidepressants (n, % yes)	2 (20%)	24 (20%)
Take anti-anxiety meds (n,% yes)	1 (10%)	2 (2%)
<i>Surgical History</i>		
Prior cosmetic surgery (%yes)	6 (60%)	50 (42%)
Feature been treated before (%yes)	7 (70%)	32 (27%)
No. of previous feature surgeries (M, SD)	2.20 (2.90)	.65 (1.82)
<i>Type of Surgery</i>		
Cosmetic	7 (70%)	78 (65%)
Non-Cosmetic	3 (30%)	42 (35%)

Table 9. Types of Procedures Sought by BDD Patients (N = 10)

<i>Procedure Name</i>	<i>Cosmetic (n)</i>	<i>Non-Cosmetic (n)</i>
Rhinoplasty	4	0
Browlift	1	0
Chin Implants	1	0
Fat Injections/Grafts	1	2
Cranioplasty scar revision	0	1
Total	7	3

Table 10. Depression and Body Image Dissatisfaction Among BDD (n = 10) and Non-BDD Patients (n = 120)

<i>Measure</i>	<i>BDD</i>	<i>Non-BDD</i>	<i>t</i>	<i>p</i>
BDI-II (M, SD)	14.33(7.37)	8.36(8.46)	-2.06	0.04
BDDE-SR (Total Score, M, SD)	74.90(32.05)	46.14(30.42)	-2.84	0.005
MBSRQ-AS (M, SD)				
Appearance Evaluation	2.81 (.87)	3.28 (.80)	1.76	0.08
Appearance Orientation	4.23 (.45)	3.86 (.57)	-1.99	0.05
Body Areas Satisfaction	2.72 (.59)	3.16 (.72)	1.87	0.06

Depressive symptoms. Table 10 provides a listing of the means and standard deviations for the BDI-II scores of BDD and non-BDD patients. An independent samples t-test indicated that the difference in means on the BDI-II for BDD and non-BDD patients

was significant (14.3 ± 7.4 vs. 8.4 ± 8.5 ; $t(122) = -2.06$, $p < .042$), with BDD patients reporting higher levels of depressive symptoms.

Body image dissatisfaction. Mean scores for the MBSRQ-AS subscales and the BDDE were compared via independent t-tests for participants who met criteria for BDD and for those who did not. Table 10 provides a description of BDD and non-BDD mean scores on these measures. On the MBSRQ-AS, BDD patients reported more unhappiness with their physical appearance as compared to non-BDD patients (Appearance Evaluation subscale); placed more importance on their appearance as compared to non-BDD patients (Appearance Orientation subscale); and reported lower satisfaction with several areas of their bodies as compared to non-BDD patients (Body Areas Satisfaction subscale). However, the differences between groups on each of these subscales only approached significance.

On the BDDE-SR, BDD patients, as compared to non-BDD patients, had significantly higher scores (74.9 ± 32 vs. 46.1 ± 30.4 ; $t(109) = -2.84$, $p < .005$) suggesting more overall dissatisfaction with the feature for which they were seeking surgery.

6.4. Exploratory Analyses

Defect ratings. To evaluate differences in the rate of BDD obtained when different rating cut-points were used, the rate of BDD was calculated when surgeon ratings of “present/noticeable” were included. Using the BDDQ-DV and a doctor rating of 3 (present/noticeable) or less, the rate of BDD was 11% ($n = 9$) for the cosmetic group, and the rate for the non-cosmetic group was 13.3% ($n = 6$). These rates suggest

that more patients would meet diagnostic criteria for BDD if a surgeon rating of 3 or less was used (*See Tables 11 and 12*).

Nurse ratings. Another exploratory aim of this study was to evaluate differences between nurses and surgeons in terms of their defect severity ratings. It has been suggested that plastic surgeons may be more likely to under-diagnose BDD. Their specialized training may lead them to see a slight defect as a correctable feature and not as a potential symptom of BDD. Table 11 and 12 provide a listing of the rates of BDD obtained according to rater (surgeon and nurse) and cut-point on the Defect Rating Scale (ratings of none or minimal/slight vs. noticeable).

When nurse ratings of none or minimal/slight were used in conjunction with the BDDQ-DV, the rate of BDD for the cosmetic group was 8.2% ($n = 7$), whereas none of the non-cosmetic patients met criteria for BDD. Thus, the rate of BDD was identical for the cosmetic group as compared to when surgeon ratings of none or minimal/slight were used. The finding that none of the non-cosmetic patients met criteria when the nurse ratings were included suggests that the nurses rated these patients as having more noticeable defects in appearance as compared to surgeons.

When a nurse defect rating of 3 (present/noticeable) was used along with the BDDQ-DV, the rate of BDD in the cosmetic group was 12% ($n = 10$). For the non-cosmetic group, the rate of BDD using nurse ratings was 13% ($n = 6$).

These findings suggest that overall, the surgeon and nurse defect severity ratings were similar for patients who met criteria for BDD on the BDDQ-DV. The percentage of cosmetic and non-cosmetic patients who met criteria for BDD increased when ratings of

“noticeable/present” were utilized. Of note, among non-cosmetic patients, nurses were more likely to rate patients as having more noticeable defects.

Table 11. Percentage of Cosmetic Patients Meeting Criteria for BDD By Defect Rating Scale Level and Rater

<i>Type of Rater</i>	<i>Defect Rating Scale Level</i>	
	<i>None/Minimal (1, 2)</i>	<i>Present/Noticeable (3)</i>
Surgeon	8%	11%
Nurse	8%	12%

Note: Percentage reflects positive score on BDDQ-DV in conjunction with ratings

Table 12. Percentage of Non-Cosmetic Patients Meeting Criteria for BDD By Defect Rating Scale Level and Rater

<i>Type of Rater</i>	<i>Defect Rating Scale Level</i>	
	<i>None/Minimal (1, 2)</i>	<i>Present/Noticeable (3)</i>
Surgeon	7%	13%
Nurse	0%	13%

Note: Percentage reflects positive score on BDDQ-DV in conjunction with ratings

Inter-rater reliability. In addition to collecting ratings from nurses and surgeons, a sub-sample (n = 52) of patient photographs was rated by a group of 21 female laypersons. The degree of inter-rater reliability among the three rating groups for the sub-sample of photographs was assessed by calculating the intraclass correlation (ICC) statistic. The ICC value when all three groups were included was .86, indicating adequate agreement on the defect rating scale between groups. For the nurses and

surgeons, the ICC value was .84. Similarly, the ICC value for the nurses and laypersons was .83. For the layperson and surgeons, the ICC was .77, which is indicative of less agreement between these groups of raters. From examining the frequencies of ratings for the surgeons and layperson raters on the sub-sample of photographs, 60% of the layperson ratings fell into the categories of “none” or minimal/slight.” Among surgeons, none of the photographs received a rating of “none”, while 27% of the surgeon ratings fell into the “minimal/slight” category. Thus, it appears the surgeons tended to rate patient defects as being more noticeable than the layperson raters.

The ICC value for the nurse and surgeon ratings (based upon all ratings available for the sample) was .86, suggesting good agreement between nurses and surgeons with respect to ratings. Of note, the ICC value obtained in this study is nearly identical to the value of .88 reported by Phillips and colleagues (2000).

Private practice and otorhinolaryngology rates. A final exploratory aim of this study was to report the rates of BDD in a community-based private practice and in an otorhinolaryngology clinic. Fourteen percent of patients (n = 2) in the otorhinolaryngology clinic met criteria for BDD (based upon score on the BDDQ-DV and a surgeon defect rating of “none” or “minimal/slight”). One patient sought rhinoplasty, whereas the other sought a browlift. No patients from the community private practice met criteria for BDD. However, the number of patients from each site is small, leading to concerns about the validity of these findings.

7. DISCUSSION

7.1. Review of Findings

This study was designed to investigate the rate of BDD among patients who sought cosmetic facial procedures. The rates of BDD in the cosmetic and non-cosmetic groups were nearly identical (8% vs. 7%). As predicted, patients screening positive for BDD reported significantly higher levels of depression and body image dissatisfaction. There was a poor degree of diagnostic correspondence between the BDDQ-DV and the BDDE-SR, with only 29% (n = 2) of cosmetic patients meeting criteria on both measures. None of the non-cosmetic patients met criteria on both measures. There were no differences in the rates of BDD obtained when nurse ratings were used instead of surgeon ratings among the cosmetic group. However, when nurse ratings were used to calculate the rate of BDD in the non-cosmetic group, none of the patients met criteria. Overall, there was good consistency between the nurse and surgeon ratings. There was less consistency between surgeon and layperson ratings, as surgeons were less likely to rate appearance defects as “not visible” or “minimal/slight” as compared to layperson raters.

Rate of BDD. The rate of BDD obtained in this study for cosmetic patients (8%) is consistent with previous reports of BDD rates in cosmetic settings (7%; Sarwer et al., 1998). This finding is of interest given that the present study utilized the BDDQ-DV and Sarwer and colleagues (1998) used the BDDE-SR. However, in the present study, when the BDDE-SR was used (in conjunction with surgeon defect ratings of “none” or “minimal/slight”), the rate of BDD in the cosmetic sample was only 2%, a rate that is lower than the 7% rate reported by Sarwer and colleagues (1998).

The discrepancy in rates between the present study and Sarwer and colleagues' study may be related to several factors. First, the present study used a formal rating scale. Sarwer and colleagues used "informal" surgeon ratings of patient defects in their sample. These informal ratings consisted of having the surgeon note whether the patient's area of concern was "not observed", "observed, although not unusual or abnormal", or "more notably deformed" (Sarwer, et al., 1998, p. 1647). Since two patients in their sample were rated as having notable deformities, the authors acknowledged that their reported rate of 7% might be inflated (Sarwer et al., 1998). If these two patients were eliminated, the rate of BDD in their sample would then be 5%.

The degree of correspondence between Sarwer and colleagues' informal ratings and the rating scale used in the present study is unknown. However, their rating category of "observed" appears to be similar to the Defect Rating Scale anchor of "present/clearly noticeable." In the present sample, the rate of BDD among cosmetic patients increased to 4% when a surgeon rating of "present/clearly noticeable" was used in conjunction with the BDDE-SR. This result, although tentative, suggests that the difference in rates of BDD among cosmetic patients in these two samples may indeed be related to the rating scales used in each study. Further investigation of the rate of BDD using the BDDE-SR and the Defect Rating Scale is warranted.

Another possible reason for the discrepancies between the rate obtained with the BDDE-SR in the present study as compared to the rate in Sarwer and colleagues' study may be related to the types of procedures sought by the patients in each investigation. Sarwer and colleagues (1998) included patients seeking cosmetic procedures for any body part, whereas the current sample was limited to patients seeking facial procedures.

While the literature suggests that the head and face are the most common areas of concern for patients with BDD, any part of the body can become an area of concern (Phillips & Diaz, 1997; Phillips, et al., 2001). Therefore, the difference in rates could be related to the fact that Sarwer and colleagues did not limit their sample to facial procedures.

The BDDQ-DV was selected as the primary diagnostic measure of BDD in this study in part so that a comparison could be made with the rate of BDD obtained by Phillips and colleagues (2000), as they used the BDDQ-DV and the Defect Severity Rating Scale to assess for BDD in their sample of cosmetic dermatology patients. The rate obtained in this study (8%) is lower than the rate of 12% obtained in Phillips' report. The difference in rates could be related to differences in the types of patients studied in each sample (dermatology patients vs. facial cosmetic patients). Phillips and colleagues (2000) also had a larger sample size ($n = 268$). Despite these differences, the rate obtained in this study provides further evidence that BDD is not uncommon in settings that offer cosmetic medical treatments.

BDDE-SR vs. BDDQ-DV. An exploratory aim of this study was to compare the rates of BDD obtained when using the BDDQ-DV or the BDDE-SR. Previous investigations of the rates of BDD in cosmetic settings have utilized either measure (Phillips, et al., 2000; Dufresne, et al., 2001; Sarwer et al., 1998) but no study to date has incorporated both measures. In this study, only two of the seven cosmetic patients met criteria for BDD on both measures. Similarly, none of the non-cosmetic patients met criteria on both measures. Results from this study suggest that a higher percentage of participants met criteria for BDD according to the BDDQ-DV as compared to the BDDE-

SR, a finding that was consistent in both cosmetic and non-cosmetic patients. These results also suggest that there is poor diagnostic correspondence between the measures (29%).

Reasons for the difference in rates obtained on each measure may have to do with the fact that the BDDE-SR quantifies impairment and distress in terms of how much time is spent worrying about appearance and how often activities are avoided. Thus, the BDDE-SR assesses not only for the presence of distress or impairment in functioning, but it also provides a measure of the frequency and severity of these symptoms. While the BDDQ-DV also assesses for severity of distress and impairment in functioning, frequency is not directly evaluated. These distinctions between the measures may account for the differences in the rate of BDD obtained using the BDDQ-DV as compared to the BDDE-SR.

Based upon this investigation, it is possible that the BDDE-SR is capturing more severe cases of BDD, whereas the BDDQ is sensitive to milder symptoms of BDD. It is also possible that the BDDQ-DV may be overestimating the rate of BDD. Phillips and colleagues (2000) have reported that the BDDQ-DV has a positive predictive validity of 70% in a cosmetic dermatology setting to a brief, structured clinical interview, a finding that suggests that this measure may overestimate the rate of BDD by 30%. Because the current study did not incorporate the use of a clinical interview, the predictive validity of the BDDQ-DV and the BDDE-SR in this sample is unknown. Further comparisons of the rates obtained using each measure are needed, particularly with studies incorporating the use of a diagnostic clinical interview. From a clinical perspective, use of the BDDQ-

DV may be more appropriate in cosmetic surgery settings as it would be able to alert surgeons to the need for further assessment of a patient's psychological health.

Cosmetic vs. non-cosmetic patients. It was hypothesized that the rate of BDD would be higher among patients seeking cosmetic procedures as compared to those seeking facial plastic surgery for non-cosmetic reasons. This hypothesis was not supported, as the rates of BDD were similar in each group. This finding was surprising, as the rate of BDD in the non-cosmetic group was hypothesized to be similar to the rate of BDD in the general population. The non-cosmetic group was considered to be an appropriate comparison group because these patients were undergoing similar procedures to cosmetic patients but for primarily medical or reconstructive reasons. The similar rate of BDD obtained in the non-cosmetic group suggests that the potential for body image distress among patients with disease or trauma related facial appearance concerns was underestimated. Unfortunately, underestimation of the body image concerns of patients seeking medical treatment is quite common, even in settings that treat patients with largely visible disfigurements (Pruzinsky, 2004).

Among patients with acquired or congenital disfigurements, the location of disfigurement is thought to play a role in how well an individual adjusts to appearance changes. Pruzinsky notes that it is likely more difficult for patients with visible disfigurements (i.e., facial) to adjust to appearance changes as compared to those with disfigurements which are more easily camouflaged (i.e., bodily scars). Thus, it is possible that the non-cosmetic patients were more likely to experience distress and impairment because their medical conditions or injuries affected their facial appearance.

However, it is important to note that there is no direct correlation between the extent of disfigurement and the degree of body image distress (Pruzinsky, 2002). This is largely because body image is subjective in nature. Therefore, it is possible for patients with minimal or slight disfigurements to report greater distress and impairment as compared to patients with objectively severe disfigurements.

The finding of a nearly identical rate of BDD between the non-cosmetic and cosmetic groups suggests that these patients are equally as likely to have appearance preoccupations and that the source of the appearance concern (e.g., medically caused or based purely on cosmetic concerns) may not be relevant. These findings also confirm the subjective nature of body image dissatisfaction, in that heightened body image concerns may exist regardless of the cause or objective appearance of the perceived defect.

While the cause of the appearance concern may not be relevant (e.g., a scar from acne vs. a scar from a lesion), the visibility and severity of the defect is critical to making a diagnosis of BDD. Patients with visible defects, as in the case of patients seeking reconstructive procedures, would not be eligible for a BDD diagnosis. However, those with minimal defects in appearance who experience disproportionate distress and impairment in functioning may indeed meet criteria for BDD.

Of note, 38% (n = 17) of non-cosmetic patients reported symptoms consistent with BDD on the BDDQ-DV when ratings were not used. When ratings were used, the rate of BDD in the non-cosmetic group decreased to 7%. However, it is notable that nearly a third of the overall sample reported significant distress and/or impairment in functioning because of concerns with their appearance. Given that this study included patients seeking reconstructive procedures for visible appearance concerns (i.e., burn

reconstruction, cleft palate revision), this rate is not entirely unexpected. Sarwer and colleagues (1998) reported that 16% (7 of 43) of patients seeking reconstructive procedures reported significant distress and impairment in functioning related to their appearance. They suggested that the distress and impairment reported by reconstructive patients might be indicative of underlying depressive or anxiety disorders (Sarwer, Whitaker, et al., 1998).

At present, there is no diagnostic category in the DSM-IV TR that could be used to describe distress and impairment in functioning related to disfigurement. As a means of capturing and validating the body image distress and dysfunction experienced by patients with visible as well as minimal or imagined appearance concerns, Thompson (1992) proposed criteria for a new diagnostic category, Body Image Disorder (BID).

BID is defined as persistent dissatisfaction or concern with an aspect of physical appearance that results in distress and/or impairment in social or occupational functioning. Two or more of the following criteria would also be required in order to receive a diagnosis of BID: 1) affective distress or anxiety experienced as a result of the appearance concern or exacerbation of distress in social situations; 2) appearance-related cognitive distortions which accompany distress; 3) avoidance of situations in which appearance evaluation by others may occur; 4) perceptual overestimation of body size (Thompson, 1992). Furthermore, the proposed diagnostic criteria include specifiers to indicate the severity of the dissatisfaction (i.e., mild, moderate, severe); the visibility of the appearance concern (i.e., noticeable or imagined); and the target of the disturbance (i.e., weight/shape or specific body parts). Such a diagnostic category would allow for a distinction to be made between BDD and those with appearance concerns related to

objective deformities, despite similarities in behavioral impairment and distress. To date, BID has not been adopted as a diagnostic category within the DSM. However, the findings of the present study provide support for the inclusion of such a diagnostic category in order to promote assessment of the body image concerns of patients with real and imagined appearance preoccupations.

Although patients with visible appearance defects may experience symptoms similar to those that characterize BDD, it is inappropriate to diagnose them with BDD, as they do not meet the first criteria, namely that the appearance concern is imagined or slight. However, it may be appropriate to use measures of BDD to assess for appearance-related distress and impairment in functioning in order to fully capture the symptoms experienced by patients with visible appearance concerns. Furthermore, cognitive-behavioral treatments that have been developed to treat patients with body image concerns, including BDD, may also be appropriate interventions for patients with visible disfigurements. The findings of the present study further highlight the need for the assessment of body image dissatisfaction and distress among patients seeking treatment for visible appearance defects. Surgeons and nurses in cosmetic settings are in an ideal position to make referrals for psychological treatment for individuals experiencing appearance related distress and impairment in functioning (Sarwer et al., 1998).

In addition to the underestimation of the appearance concerns of non-cosmetic patients, it is possible that the lack of difference in rates of BDD between the cosmetic and non-cosmetic groups is due to insufficient statistical power. Due to slow recruitment and a low response rate, the number of participants included in this study was smaller than anticipated. Recruitment was hampered by staff changes in the otolaryngology

practice and inconsistent enrollment at the private practice setting. In general, the cooperation of staff members at all sites was less than ideal, in part because of their clinical demands. These factors likely contributed to the smaller number of patients recruited for this study which subsequently limited the statistical power.

Of note, the cosmetic and non-cosmetic groups differed on measures of body image satisfaction and depression. Specifically, the non-cosmetic group reported less satisfaction with their overall appearance as compared to patients in the cosmetic group. The non-cosmetic group also reported more depression than the cosmetic group. When defect severity was controlled, non-cosmetic patients had greater body image dissatisfaction as compared to cosmetic patients. These findings may be related to the fact that the non-cosmetic group included patients seeking treatment for visible (and in some cases, severe) acquired or congenital defects in appearance. Nearly 40% of the non-cosmetic patients received a surgeon or nurse defect rating of “moderately severe” or “severe”, suggesting that these patients had obvious appearance disfigurements. This percentage is not surprising, given the medical diagnoses responsible for the defects in appearance. For example, two patients who participated in this study were evaluated for reconstructive procedures secondary to severe facial burns, and another patient presented with a disfiguring hypertrophic port wine stain on his cheek and lips. Furthermore, 10% of the non-cosmetic patients were seeking cleft-lip/palate revisions and another 10% sought treatment for facial paralysis.

The higher levels of depression and body image dissatisfaction reported by non-cosmetic patients may be indicative of distress and poor adjustment to the physical and psychological effects of the underlying medical condition. These results are also

consistent with a previous study of the body image concerns of patients seeking reconstructive procedures for facial trauma. Compared to age and gender-matched controls, facial reconstructive patients reported higher levels of depression and body image distress (Pruzinsky, 2002).

Demographic differences between the cosmetic and non-cosmetic groups may also provide an explanation for the higher rate of depression in the non-cosmetic group. For example, non-cosmetic patients were more likely to be unemployed as compared to the cosmetic group. In fact, 16% of the non-cosmetic group reported their employment status as disabled. Thus, it is possible that some of the non-cosmetic patients were experiencing health-related impairment in their everyday functioning, which in turn may contribute to depressive symptoms.

In summary, the higher rates of depression and body image dissatisfaction found in the non-cosmetic group may be due to the severity and visibility of their appearance concerns. The findings of this study suggest that individuals who seek treatment for appearance concerns related to medical conditions should also be screened for the presence BDD as well as body image concerns and depressive symptoms. According to Pruzinsky (2004), the body image concerns of patients are often neglected by medical professionals, even among those patients with visible disfigurements. These concerns can impair quality of life and cause significant suffering. More studies of the body image concerns of patients with obvious appearance concerns are needed. However, cosmetic surgeons may be in a unique position to treat the physical complaints of these patients and to identify those who may be in need of psychological treatment.

BDD vs. Non-BDD. It was hypothesized that individuals screening positive for BDD would obtain higher scores on measures of depression and body image dissatisfaction. BDD patients had significantly higher scores on the BDI-II than patients who did not meet criteria for BDD. The mean score of 14.8 on this measure for patients with BDD suggests that their depressive symptoms were of mild severity. The standard deviation of the BDD patient depression scores was 7.37, suggesting that a subset of these patients had depressive symptoms of moderate severity. The higher level of depression reported among BDD patients is consistent with previous reports in the literature of the comorbidity of depression and BDD (Gunstad & Phillips, 2002; Phillips & Diaz, 1997).

As expected, patients screening positive for BDD did report significantly more dissatisfaction with the feature for which they sought treatment as assessed by the BDDE-SR. The mean score on the BDDE-SR for the BDD group was 75.91. The standard deviation for the BDD group on the BDDE-SR was 30.59, suggesting that a subset of these patients had levels of body image dissatisfaction similar to those of patients seeking body image therapy (Rosen & Reiter, 1996). On the MBSRQ subscales, patients screening positive for BDD reported greater investment in their appearance and less satisfaction with their overall physical appearance and with specific areas of their bodies as compared to patients who did not meet BDD criteria, although these differences were not statistically significant.

Patients meeting criteria for BDD in this study were more likely to have had prior plastic surgery on the feature for which they were currently seeking treatment than those without BDD. This finding is consistent with previous reports of BDD patients seeking

multiple cosmetic procedures in order to treat their appearance-related distress (Phillips, et al., 2001; Veale, 2000). Similarly, BDD patients in this sample also reported a greater number of previous surgeries on the feature for which they were seeking treatment as compared to patients without BDD. It is not uncommon for BDD patients to seek revisions of prior cosmetic procedures (Phillips, et al., 2001). BDD patients were also significantly younger than non-BDD patients, a finding that is consistent with another study of the rate of BDD in a cosmetic dermatological setting (Phillips, et al., 2000). Similar to other reports, rhinoplasty was the most common procedure sought by patients with BDD in this sample (Phillips, Grant, Siniscalchi, & Albertini, 2001).

Eight of the ten patients who met criteria for BDD in this sample were women (80%). However, women were not significantly more likely to meet criteria for BDD as compared to men. This finding is consistent with another study in which 75% of patients diagnosed with BDD were women, although women were not significantly more likely to meet BDD criteria in this sample either (Phillips, et al., 2000). BDD is thought to affect men and women equally (APA, 2000; Phillips & Diaz, 1997; Phillips, et al., 2001). According to the American Society of Plastic Surgeons (ASPS), 85% of cosmetic surgery patients in 2002 were women. The finding that more women met criteria for BDD in both of these samples may be due to the fact that generally more women present for cosmetic surgery as compared to men.

In sum, the results of this study suggest that in cosmetic surgery settings, patients seeking surgery for features which have been previously treated and patients of younger ages may be more likely to present with BDD. These demographic characteristics may serve as potential indicators of BDD in cosmetic settings. Further research is needed to

determine the clinical characteristics of BDD patients who present for cosmetic treatment. Patients presenting for cosmetic surgery, regardless of their demographic characteristics, should be screened for the presence of BDD given that they typically do not benefit from cosmetic surgery (Phillips, Siniscalchi, et al., 2001). Furthermore, there is some evidence to suggest that patients with BDD may become violent toward themselves or the surgeon and his staff (Sarwer & Crerand, 2003). Given the tendency of BDD patients to seek cosmetic cures for their psychiatric difficulties, surgeons are in an ideal position to identify patients with BDD.

Ratings. Sarwer and colleagues (1998) have suggested that due to the subjectivity involved in rating an individual's appearance, the degree of distress and/or behavioral impairment experienced by a patient may be more indicative of BDD. This may be particularly true in cosmetic settings, where surgeons may be more likely to notice even slight appearance defects as a result of their specialized training. This study incorporated nurse and layperson raters as a preliminary attempt to determine if there is evidence to support the hypothesis that surgeons are more likely to notice slight defects in appearance. There was a good level of consistency between the surgeon and nurses on the defect rating scale. Nurses and surgeons were more likely to rate appearance defects as being visible or noticeable as compared to laypersons. The finding that nurses and surgeons made similar severity ratings of patient defects is not entirely surprising, given that the nurses in this sample have been working in a cosmetic setting for several years and may have become more aware of slight defects in appearance as a result of their experience.

There was less agreement regarding defect severity between laypersons and surgeons. Laypersons were more likely to rate defects as being minimal/slight or not visible as compared to surgeons. Thus, it is possible that as a result of their specialized training, surgeons are more likely to rate appearance defects as being more noticeable and to consequently under-diagnose cases of BDD. Laypersons, such as office support staff, may be able to assist in the diagnosis of BDD in cosmetic settings as they may provide a more objective perspective on the appearance concerns of patients. Furthermore, these findings suggest that surgeon ratings may differ from those of mental health professionals in diagnosing cases of BDD. While these findings are intriguing, further investigation and replication are needed.

The rate of BDD in this sample varied depending upon rater (nurse vs. surgeon) and cut-off point on the Defect Rating Scale. These findings suggest that overall, the surgeon and nurse defect severity ratings were similar for patients who met criteria for BDD on the BDDQ-DV. More cosmetic and non-cosmetic patients met criteria for BDD when ratings of “noticeable/present” were utilized. Of note, among non-cosmetic patients, nurses were more likely to rate patients as having more noticeable defects. These findings suggest that even with use of a rating scale, there is still a certain degree of subjectivity inherent in evaluating appearance. This subjectivity may be more pronounced when comparing types of patients or types of raters (e.g., surgeons and nurses) given that surgeons have more specialized training in detecting appearance defects.

A further issue related to the differences in rates of BDD obtained with different cut-points has to do with the Defect Rating Scale itself. The middle item on the Defect

Rating Scale (“present/clearly noticeable”) seems to assess the visibility of the patient’s perceived defect as opposed to its severity. This is potentially problematic when using such a rating to assess for the presence of BDD, given that it is possible for an appearance feature to be visible without necessarily being disfiguring. A rating scale that incorporates a measure of both visibility and severity may be more appropriate for the assessment of BDD.

Psychiatric treatment. Thirty-one percent of the overall sample reported having sought mental health treatment for anxiety or depression over the past year. Thirty-four percent of the overall sample reported taking psychotropic medications (either anti-depressants or anti-anxiety medications). Among patients in the cosmetic group, 29% reported taking psychotropic medications, whereas 42% of the non-cosmetic patients reported use of these medications. A recent study investigating psychiatric medication usage in a sample of patients seeking plastic surgery for cosmetic (n = 232) and non-cosmetic reasons (n = 200) found that 18% of the cosmetic group reported taking a psychiatric medication at the time of their initial consultation (Sarwer, Zanville, LaRossa, Bartlett, Chang, Low, and Whitaker, in press). Only 5% of the non-cosmetic patients reported taking a psychiatric medication at the time of their initial consultation (Sarwer et al., in press).

The rate of psychiatric medication usage in the cosmetic group from the present study is higher than the rate reported in the Sarwer study. It is possible that this difference is due to sampling method. For example, Sarwer and colleagues used a sample obtained from a chart review, whereas the present study’s results are based upon a sample of volunteer participants.

The rate of psychiatric medication usage in the non-cosmetic group is strikingly higher compared to Sarwer and colleagues' results. One potential reason for this difference may be related to the types of procedures sought by the non-cosmetic patients in each sample. In Sarwer and colleagues' study, the majority of patients were seen for lesion removal. In contrast, the non-cosmetic patients from the present study were seeking treatment for more noticeable appearance concerns, such as facial palsy or cleft palate revision. Furthermore, the sample of non-cosmetic patients in the present study was limited to patients seeking facial cosmetic treatments. The greater visibility and severity of the appearance concerns, in combination with the higher rates of depression and body image dissatisfaction found in the non-cosmetic group may account for the difference in rates of psychotropic medication usage in these two samples.

The high rate of psychotropic medication usage among patients in this sample may have implications for the treatment of patients in cosmetic settings. Sarwer and colleagues (in press) have suggested that psychotropic medication usage may be considered a "marker" of psychopathology. A patient's report of psychotropic medication usage may alert the surgeon to the need to gather further psychiatric history. Given the high comorbidity rate of anxiety and depressive disorders with BDD, patients presenting with psychiatric histories should be assessed for BDD symptoms. While the use of psychotropic medications may provide an indication of the psychological health of a patient, screening for BDD should not be limited to those with psychiatric treatment histories, as many BDD patients do not seek psychiatric treatment as a result of their distress (Phillips, et al., 2001; Phillips & Diaz, 1997). In the case of patients with

objective deformities, use of psychotropic medication may be an indicator of distress and impairment in functioning related to appearance concerns.

7.2. Limitations

The present study has several limitations. First, the finding that only 21% of the eligible patients completed the packet suggests that there is some degree of selection bias present in this sample. The study by Phillips and colleagues (2000) reported a participation refusal rate of 34%. In that study, participants were recruited by on-site research assistants, suggesting that there may be other reasons aside from recruitment strategy that affect participation in studies of BDD. Also, Sarwer and colleagues (1998) had a refusal rate of about 20%. The higher refusal rate obtained in the present study may be due to a lack of participation incentives and the recruitment strategy utilized.

Another factor that likely contributed to the low participation rate was that non-cosmetic patients might have thought that the measures were irrelevant given the nature of their appearance issues. This issue was specifically addressed in the cover letter sent to eligible patients, however, the impact of this is unknown. Furthermore, the staff at the surgical practices did not participate in the recruitment of patients. Changes in the support staff at the otorhinolaryngology clinic resulted in discontinuation of data collection for a period of time. The recruitment of participants from the private practice was inconsistent. As a result, the numbers of patients recruited from these settings was low, which subsequently prohibited a formal comparison of the rate of BDD in these settings.

Finally, many individuals with BDD are reluctant to discuss their appearance concerns with others for fear of shame or ridicule (Phillips, et al., 1993; Veale, et al.,

1996). Individuals with BDD are known to persistently pursue cosmetic treatments. Thus, it is possible that patients with BDD declined to participate for fear of embarrassment or for fear of being prevented from having their desired surgical procedure.

A second limitation of the present study is related to the fact that self-report questionnaires were used to assess for BDD symptoms, as well as symptoms of depression and body image dissatisfaction. Although the measures utilized in this study have adequate psychometric properties, there is always the risk that participants answered questions in a socially desirable or otherwise biased manner. The lack of use of a clinical interview to confirm the presence of BDD among patients who screened positive for this disorder is a further limitation. A clinical interview, such as the SCID module for BDD, would have provided additional information on the comparison of hit rates on the BDDQ-DV and the BDDE-SR.

The inclusion of a measure of defect severity in this study was an improvement over prior studies investigating the rate of BDD in cosmetic settings. The finding that surgeons and nurses were more likely to rate appearance concerns as noticeable as compared to layperson raters is intriguing. However, methodological issues may limit the ability to generalize this finding. For example, only a sub-sample of photographs was rated by laypersons in part because of the different ways each surgeon took and stored photographs (i.e., computerized photographs stored on CDs versus Polaroid photographs stored in charts or in slide versions). Photographs were not available for some patients either because the surgeon deemed photos to be unnecessary or because the patients did not consent to have photographs taken. An additional methodological weakness is that

some of the nurse and surgeon ratings were made from photographs, whereas other ratings were made at the patient's initial consultation. It is possible that photographs may not capture the extent of a patient's appearance concern, particularly if the defect is only noticeable from certain angles.

Furthermore, the validity of the rating scale is also questionable, as it is possible that surgeons may judge the appearance concerns of cosmetic patients differently than those of patients presenting for non-cosmetic treatment. For example, one surgeon noted that he uses "a different scale in his mind" for assessing the severity of reconstructive patients' appearance concerns as opposed to those of cosmetic patients. He noted that it is assumed that there is a deviation from normality present in the non-cosmetic patient's facial appearance. The goal in treating acquired or congenital appearance defects is to make facial features appear more "normal," whereas the goal for cosmetic procedures is often to improve an otherwise "normal" appearance. Thus, a rating of "minimal/slight" for a non-cosmetic patient may in fact reflect a more noticeable, abnormal appearance concern as compared to the same rating given to a cosmetic patient wanting to improve an otherwise "normal" facial feature.

Finally, demographic characteristics (such as the age or gender) of the raters may play a role in the defect severity rating given to patients who do not share the same demographic characteristics. In this study, female college students and research assistants were used as layperson raters, a group whose mean age was considerably younger than the mean age for this sample of patients (22.05 ± 2.64 years vs. 44.79 ± 14.89 years). It is possible that younger raters or raters of different genders may rate

appearance concerns as more or less noticeable as a function of age. The relationship between these variables requires further investigation.

7.3. Future Directions

Further investigations of the rate of BDD in cosmetic settings are needed. Future studies should incorporate the use of structured clinical interviews (such as the Body Dysmorphic Disorder Diagnostic Module (BDDDM; Phillips, 1996) or the Body Dysmorphic Disorder Examination (BDDE; Rosen & Reiter, 1996)) as well as self-report questionnaires in order to better estimate the rate of BDD in this population. For example, patients could complete both the BDDE-SR and BDDQ-DV prior to their visit. A clinician (who is blinded to the patient scores on the BDDE-SR and BDDQ-DV) then could administer a structured clinical interview to assess for the presence of BDD. This design would allow for a more accurate assessment of diagnostic correspondence between the self-report measures as well as diagnostic confirmation should a patient meet criteria on one of the self-report measures. An investigation of the degree of diagnostic correspondence between the self-report measures is needed, particularly in light of the poor rate of diagnostic correspondence between the BDDE-SR and BDDQ-DV found in this study.

In the present study, patients reporting weight and shape concerns were eliminated from analyses of the rate of BDD. Other studies investigating the rate of BDD have also excluded those with weight and shape concerns (e.g., Sarwer, Cash, et al., 2004; Bohne, Keuthen, Wilhelm, et al., 2002, Cansever, et al., 2003). The rationale for excluding patients with weight and shape concerns is related to the third diagnostic criterion for BDD, namely that the appearance concerns are not better accounted for by

the weight and shape concerns which often characterize eating disorders. However, there has been little empirical investigation into the relationship between weight and shape dissatisfaction and other bodily appearance concerns. There is evidence to suggest that BDD may co-occur with eating disorders at a higher rate than previously reported (Grant, et al., 2002). Furthermore, in one of the largest studies of the clinical features of BDD patients, 20% of women and 8% of men reported weight concerns in addition to other appearance preoccupations (Phillips & Diaz, 1997).

Thus, it may be premature to exclude weight and shape concerns in determining if patients meet criteria for BDD. Specifically, studies examining the rate of BDD among patients with eating disorders, as well as studies investigating the occurrence of eating pathology and weight concerns among those with BDD would help to further evaluate the relationship between these disorders and the body image disturbances that characterize each.

Future studies should also utilize strategies to limit selection biases in their samples. For example, incorporation of the BDDQ-DV or BDDE-SR with the initial paperwork that patients are typically asked to complete while actually in the office may be a better strategy for studying the rate of BDD in this population.

Studies investigating the rate of BDD among patients seeking non-facial cosmetic procedures are also needed, given that any part of the body can become an area of preoccupation for a person with BDD. Furthermore, future studies should examine the rate of BDD among patients seeking specific procedures, such as rhinoplasty, considering that many BDD patients report preoccupations with their noses.

Although this study incorporated a small number of patients from an otorhinolaryngology clinic, the rate of BDD in this population has yet to be adequately investigated. Studies should also be conducted in other settings, such as oral and maxillofacial surgical practices and orthodontic practices because of the growing number of cosmetic procedures performed by these specialists. To date, the rate of BDD has primarily been investigated in university-based cosmetic practices. Studies of the rates of BDD in community settings are needed in order to determine if there are differences in the rates dependent upon type of practice setting.

The present study attempted to improve upon previous investigations by incorporating a comparison group of patients seeking non-cosmetic procedures. As previously noted, there were significant differences in depression and body image dissatisfaction between the non-cosmetic and cosmetic groups in this study. Furthermore, the rates of BDD between these two groups were nearly identical. These findings suggest that non-cosmetic patients may not have been the most appropriate patients to use as a comparison group.

Additional studies utilizing more appropriate control groups are needed. For example, a sample of individuals from the general population matched for gender and age may provide a more appropriate control group. Age-matched control samples may be of particular importance, given that BDD patients in this sample were significantly younger than patients without BDD. It may also be useful to match patients based upon procedure. Controlling for these factors may facilitate more meaningful comparisons between patients with and without BDD.

A further strength of this study was the incorporation of a measure of defect severity, as well as the use of nurse, surgeon, and layperson raters. However, the Defect Severity Scale utilized in this study appears to confuse the issue of visibility and severity on one of its items. The development of a rating scale which measures both visibility and severity may be more useful in determining if a patient meets criteria for BDD. While different raters were utilized in this study, differences in ages between the layperson raters and the patients in this sample may have biased the layperson ratings. Furthermore, the fact that some ratings were based upon photographs and others based upon “live” views of the patients’ defects, may have led to differences in ratings. These methodological issues should be appropriately addressed in future studies.

In summary, the present study identified a BDD rate of 8% in the cosmetic group and a rate of 7% in the non-cosmetic group. There was no difference between the rates of BDD obtained in the cosmetic sample as compared to the non-cosmetic group. Patients who met criteria for BDD reported more depression and body image dissatisfaction, a finding that is consistent with the previous literature. The rate of BDD varied depending upon which self-report measure was utilized, suggesting that these measures may be assessing different constructs (e.g., presence of BDD symptoms vs. severity of BDD symptoms). Surgeons and laypersons differed in their ratings, with surgeons being more likely to rate the appearance concerns of patients as noticeable. Together, these findings illustrate the need for assessment of BDD in among patients presenting to cosmetic settings, regardless of the reasons why they are seeking treatment.

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**APPENDIX A: Body Dysmorphic Disorder Questionnaire – Dermatology Version
(BDDQ-DV; Dufresne, Jr., Phillips, Vittorio, & Wilkel, 2001)**

1. Are you very concerned about the appearance of some part of your body, which you consider especially unattractive? YES NO

IF NO, THANK YOU FOR YOUR TIME AND ATTENTION. YOU ARE FINISHED WITH THIS QUESTIONNAIRE.

2. If yes, do these concerns preoccupy you? That is, you think about them a lot and they are hard to stop thinking about? YES NO

3. What are these concerns? What specifically bothers you about the appearance of these body parts? _____

4. What effect has your preoccupation with your appearance had on your life?

5. Has your defect often caused you a lot of distress, torment, or pain? How much? **(Please circle the best answer)**

1	2	3	4	5
(No distress)	(Mild, and not too disturbing)	(Moderate and disturbing but still manageable)	(Severe, and very disturbing)	(Extreme, and disabling)

6. Has your defect caused you impairment in social, occupational, or other important areas of functioning? How much? **(Please circle the best answer)**

1	2	3	4	5
(No limitation)	(Mild interference, but overall performance not impaired)	(Moderate, definite interference, but still manageable)	(Severe, causes substantial impairment)	(Extreme, incapacitating)

7. Has your defect often significantly interfered with your social life? YES NO
7a. If yes, how? _____

8. Has your defect significantly interfered with your school work, your job, or your ability to function in your role? YES NO

9. Are there things you avoid because of your defect? YES NO

APPENDIX B: Defect Rating Scale (Dufresne, Phillips, Vittorio, & Wilkel, 2001)

None	Minimal/Slight	Present/Clearly noticeable at a conversational distance	Moderately severe	Severe
(1)	(2)	(3)	(4)	(5)

APPENDIX C: Demographic Questionnaire**Date of Birth:** __ / __ / __**Gender:** Female Male**Race:** Caucasian
African American
Asian
Hispanic
American Indian
Other**Marital Status: (circle best answer)**Single
Married
Living with partner
Separated
Divorced
Widowed**Employment Status: (circle best answer)**Employed full-time
Employed part-time
Retired
Disabled
Homemaker
Student**Educational Level (circle highest level completed)**Less than High School
High School diploma
Associate degree
Vocational Training
Some college
College Degree
Graduate Degree**Please list your current medications:** _____

Who referred you to this clinic?
 (circle all that apply)

Self Another physician Another patient	Other
--	-------

Have you ever had cosmetic surgery before? YES NO
 If yes, how many times? _____

How long have you considered having this current surgery?

For what feature/body part are you seeking this current surgery? _____

Have you ever had this feature/body part operated on before? YES NO
 If YES, how many times before? _____

Is your main concern with your appearance that you aren't thin enough or that you might become too fat? YES NO

Within the past year, have you experienced....(circle all that apply)

Stress
 Depression
 Anxiety
 Eating Disorder (anorexia, bulimia)

Have you ever sought help from a mental health professional and/or your physician for these issues?

YES NO

**APPENDIX D: Body Dysmorphic Disorder Examination – Self Report
(BDDE-SR; Rosen & Reiter, 1996).**

The following questions will ask you to think about your “**appearance feature**” – this refers to the body part you ranked as number “**1**” on the list of the previous page. **Answer according to the past four weeks.** To answer the questions, you may choose any number from 0 – 6, even if there is no description next to it. Please circle only one number for each question.

1. Over the past four weeks: How common have you felt it is for people your age and sex to have an appearance feature just like the one you believe you have?
 - 0 everyone has the same feature
 - 1
 - 2 many people have the same feature
 - 3
 - 4 few people have the same feature
 - 5
 - 6 no one else has the same feature (or the extent of the problem in others is not as severe)

2. How frequently during the past four weeks have you checked out your appearance feature (for example, looked at it, felt it, measured it in some way) in order to evaluate the extent of the problem?
 - 0 (0 days) no checking
 - 1 (1-3 days)
 - 2 (4-7 days) checking once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) checking on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) checking every or almost every day

3. How dissatisfied have you been with your appearance feature?
 - 0 no dissatisfaction
 - 1
 - 2 slight dissatisfaction (but no feelings of distress)
 - 3
 - 4 moderate dissatisfaction (with some feelings of distress)
 - 5
 - 6 extreme dissatisfaction (with extreme distress; could not imagine feeling more upset or dissatisfied)

4. How dissatisfied have you been with your overall appearance?
 - 0 no dissatisfaction
 - 1
 - 2 slight dissatisfaction (but no feelings of distress)
 - 3
 - 4 moderate dissatisfaction (with some feelings of distress)
 - 5
 - 6 extreme dissatisfaction (with extreme distress; can't imagine feeling more dissatisfied)

5. How frequently have you tried to get reassurance from someone that your appearance feature isn't as bad or abnormal as you think it is?
- 0 (0 days) never sought reassurance
 - 1 (1-3 days)
 - 2 (4-7 days) sought reassurance once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) sought reassurance on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) sought reassurance every or almost every day
6. How often have you thought about your appearance feature AND felt upset as a result?
- 0 (0 days) never think about the appearance feature with upset feelings
 - 1 (1-3 days)
 - 2 (4-7 days) think about it and feel upset once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) think about it and feel upset on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) think about it and feel upset every or almost every day
7. How much have you worried or felt embarrassed about your appearance feature when you were in public areas such as shopping malls, grocery stores, city streets, restaurants, movies, clubs, buses or planes, waiting in lines, parks or beaches, public restrooms, or other areas where mainly there were people you didn't know? (When answering, think about how many of these situations you worry in and how intense your worrying is.)
- 0 no worrying or embarrassment
 - 1
 - 2 slight amount of worrying or embarrassment
 - 3
 - 4 moderate amount of worrying or embarrassment
 - 5
 - 6 extreme worrying or embarrassment
8. How much have you worried or felt embarrassed about your appearance feature when you were in social settings with co-workers, acquaintances, friends, family, or family members (for example, at work, parties, family gatherings, meetings, talking in groups, having a conversation, dating, or going on an outing with others, speaking to a boss or supervisor)?
- 0 no worrying or embarrassment
 - 1
 - 2 slight amount of worrying or embarrassment
 - 3
 - 4 moderate amount of worrying or embarrassment
 - 5
 - 6 extreme worrying or embarrassment

9. a) How often have you felt that other people were noticing or paying attention to your appearance feature? (Include times when you realize you might be imagining it.)
- 0 (0 days) never occurred
 - 1 (1-3 days)
 - 2 (4-7 days) occurred once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) occurred on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) occurred every or almost every day
- b) How upset have you become when you felt someone was noticing or paying attention to your appearance feature? (When answering, think about whether you feel differently depending on who the person is that notices.)
- 0 not upsetting (or others do not notice)
 - 1 slightly upsetting when certain people are involved, but not others
 - 2 slightly upsetting regardless of who is involved
 - 3 moderately upsetting when certain people are involved, but not others
 - 4 moderately upsetting regardless of who is involved
 - 5 extremely upsetting when certain people are involved, but not others
 - 6 extremely upsetting regardless of who is involved
10. a) How often has someone unexpectedly made a positive or negative comment on your appearance feature? (Only include comments that came from “out of the blue,” not comments you might have tried to get from the person.)
- 0 (0 days) never occurred
 - 1 (1-3 days)
 - 2 (4-7 days) occurred once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) occurred on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) occurred every or almost every day
- b) How upset have you become when someone commented – positively or negatively – on your appearance feature? (When answering, think about whether you feel differently depending on who the person is that made the comment.)
- 0 not upsetting (or others did not comment)
 - 1 slightly upsetting when certain people commented, but not others
 - 2 slightly upsetting regardless of who commented
 - 3 moderately upsetting when certain people commented, but not others
 - 4 moderately upsetting regardless of who commented
 - 5 extremely upsetting when certain people commented, but not others
 - 6 extremely upsetting regardless of who commented
11. a) How often has someone done something to you or for you, that you think is a result of your appearance feature?
- 0 (0 days) never occurred
 - 1 (1-3 days)
 - 2 (4-7 days) occurred once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) occurred on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) occurred every or almost every day

b) How upset have you become when someone has done something to you or for you because of your appearance feature? (When answering, think about whether you feel differently depending on who the person is that made the comment.)

- 0 not upsetting (or others did not treat me differently)
- 1 slightly upsetting when certain people were involved, but not others
- 2 slightly upsetting regardless of who was involved
- 3 moderately upsetting when certain people were involved, but not others
- 4 moderately upsetting regardless of who was involved
- 5 extremely upsetting when certain people were involved, but not others
- 6 extremely upsetting regardless of who was involved

12. How important has appearance been in how you evaluate yourself as a person? Before answering, think about other things that influence how you judge yourself – such as personality, intelligence, work or school performance, quality of your relationships with others, ability in other areas, and so on. Compared to these (and maybe others), how much importance have you given to appearance when evaluating yourself?

- 0 no importance
- 1
- 2 some importance (definitely an aspect of self-evaluation)
- 3
- 4 moderate importance (one of the main aspects of self-evaluation)
- 5
- 6 extreme importance (nothing is more important as a means of evaluating yourself)

13. How negatively have you thought of yourself as a person as a result of your appearance feature? This question is not asking whether you think your appearance is attractive or unattractive. Rather, it is asking how much your appearance made you feel that you had a personal flaw or were undesirable or inadequate in a *non-physical* way.

- 0 no negative evaluations of yourself resulting from your appearance feature
- 1
- 2 slightly negative evaluations of yourself
- 3
- 4 moderately negative evaluations of yourself
- 5
- 6 extremely negative evaluations of yourself; the appearance feature makes you unable to find positive qualities in yourself

14. How negatively (if at all) have you felt *other people* evaluated you as a person as a result of your appearance feature? Again, this question is not asking how attractive or unattractive other people think you are. Rather, it is asking how much you think your appearance made other people see you as undesirable or inadequate in some *non-physical* way.

- 0 no negative evaluations by others resulting from your appearance feature
- 1
- 2 slightly negative evaluations by others
- 3
- 4 moderately negative evaluations by others
- 5
- 6 extremely negative evaluations by others; the appearance feature makes others unable to find positive qualities in you

15. How attractive physically do you feel other people thought you were? (If friends view you differently than strangers, how attractive *on average* do you feel people think you are?)
- 0 attractive, or at least not unattractive
1
2 slightly unattractive
3
4 moderately unattractive
5
6 extremely unattractive
16. a) Have you ever thought your appearance feature might not be as bad as you generally think or have there been times that you've felt significantly better about your appearance feature?
Yes _____ No _____
- b) Have you ever felt during the past month that your appearance is basically normal?
Yes _____ No _____
17. How much have you avoided public areas because you felt uncomfortable about your appearance feature? (Such areas might include shopping malls, grocery stores, city streets, restaurants, movies, clubs, buses or planes, waiting in lines, parks or beaches, public restrooms, or other areas where mainly there would be people you don't know.)
- 0 no avoidance of public situations
1
2 avoided with slight frequency
3
4 avoided with moderate frequency
5
6 avoided with extreme frequency
18. How much have you avoided work or other social situations with friends, relatives, or acquaintances because you felt uncomfortable about your appearance feature? Social situations could include going to work or school, parties, family gatherings, meetings, talking in groups, having a conversation, hanging out with others, or speaking to a boss or supervisor.
- 0 no avoidance of social situations
1
2 avoided with slight frequency
3
4 avoided with moderate frequency
5
6 avoided with extreme frequency
19. How much have you avoided close contact with others because of your appearance feature? This includes sexual activity as well as close contact such as shaking hands, hugging, kissing, or dancing close.
- 0 no avoidance of physical contact
1
2 avoided with slight frequency
3
4 avoided with moderate frequency
5
6 avoided with extreme frequency

20. When making contact physically with others (for example, lovemaking, hugging, shaking hands, kissing, dancing close), how often have you tried to restrict the amount of actual contact that occurs (for example, by changing your posture, limiting your movement, or preventing contact with certain body parts)?
- 0 never deliberately restricted physical contact
 - 1
 - 2 restricted on less than half the physical contact occasions
 - 3
 - 4 restricted on about half the physical contact occasions
 - 5
 - 6 restricted on every or almost every physical contact occasion
21. How much have you avoided physical activities such as exercise or outdoor recreation because of feeling self-conscious or uncomfortable due to your appearance feature?
- 0 no avoidance of physical activity
 - 1
 - 2 avoided with slight frequency
 - 3
 - 4 avoided with moderate frequency
 - 5
 - 6 avoided with extreme frequency
22. How much have you deliberately dressed, made yourself up, or groomed yourself in some special way in order to cover up your appearance feature or to distract attention from it? (This can include *avoiding* certain clothes or cosmetics). This is called “camouflaging.”
- 0 (0 days) never camouflaged or avoided certain clothes/cosmetics
 - 1 (1-3 days)
 - 2 (4-7 days) camouflaged one or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) camouflaged on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) camouflaged every or almost every day
23. How frequently have you deliberately changed your posture or body movements (such as the way you stand or sit, where you put your hands, how you walk, what side of yourself to show to other people, etc.) in order to hide your appearance feature or distract people’s attention from it?
- 0 (0 days) no changing of posture or body movements
 - 1 (1-3 days)
 - 2 (4-7 days) changed once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) changed on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) changed every or almost every day
24. How often have you avoided looking at your body, particularly at your appearance feature, in order to control feelings about your appearance? This includes avoiding looking at yourself clothed or unclothed either directly or in mirrors or windows.
- 0 (0 days) never avoided looking at body
 - 1 (1-3 days)
 - 2 (4-7 days) avoided once or twice a week
 - 3 (8-11 days)
 - 4 (12-16 days) avoided on about half the days
 - 5 (17-21 days)
 - 6 (22-28 days) avoided every or almost every day

25. How frequently have you avoided other people seeing your body unclothed because you felt uncomfortable about your appearance feature? This includes not letting your spouse, partner, roommate, etc. see you without clothes, or people in public settings such as in health clubs showers or changing rooms.

- 0 no avoidance of others seeing my body unclothed
- 1
- 2 avoided with slight frequency
- 3
- 4 avoided with moderate frequency
- 5
- 6 avoided with extreme frequency

26. How often have you compared your appearance with the appearance of other people around you or in magazines or on television? Include both positive and negative comparisons.

- 0 (0 days) no comparing with others
- 1 (1-3 days)
- 2 (4-7 days) compared once or twice a week
- 3 (8-11 days)
- 4 (12-16 days) compared on about half the days
- 5 (17-21 days)
- 6 (22-28 days) compared every or almost every day

APPENDIX E: Multi-Dimensional Body Self Relations Questionnaire – Appearance Scales (MBSRQ-AS; Cash, Winstead, & Janda, 1986; Brown, Cash, & Mikulka, 1990)

INSTRUCTIONS – PLEASE READ CAREFULLY

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally. Your answers to the items in the questionnaire are anonymous, so please do not write your name on any of the materials. In order to complete the questionnaire, read each statement carefully and decide how much it pertains to you personally. Using a scale like the one below, indicate your answer by entering it to the left of the number of the statement.

EXAMPLE:

_____ I am usually in a good mood.

In the blank space, enter a 1 if you **definitely disagree** with the statement;
 enter a 2 if you **mostly disagree;**
 enter a 3 if you **neither disagree nor agree;**
 enter a 4 if you **mostly agree;**
 or enter a 5 if you **definitely agree** with the statement.

There are no right or wrong answer. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items.

- | 1 | 2 | 3 | 4 | 5 | |
|------------------------|--------------------|-------------------------------|-----------------|---------------------|---|
| Definitely
Disagree | Mostly
Disagree | Neither Agree
Nor Disagree | Mostly
Agree | Definitely
Agree | |
| _____ | | | | | 1. Before going out in public, I always notice how I look. |
| _____ | | | | | 2. I am careful to buy clothes that will make me look my best. |
| _____ | | | | | 3. My body is sexually appealing. |
| _____ | | | | | 4. I constantly worry about being or becoming fat. |
| _____ | | | | | 5. I like my looks the way they are. |
| _____ | | | | | 6. I check my appearance in a mirror whenever I can. |
| _____ | | | | | 7. Before going out, I usually spend a lot of time getting ready. |
| _____ | | | | | 8. I am very conscious of even small changes in my weight. |
| _____ | | | | | 9. Most people would consider me good-looking. |
| _____ | | | | | 10. It is important that I always look good. |

- _____ 11. I use few grooming products.
- _____ 12. I like the way I look without my clothes on.
- _____ 13. I am self-conscious if my grooming isn't right.
- _____ 14. I usually wear whatever is handy without caring how it looks.
- _____ 15. I like the way my clothes fit me.
- _____ 16. I don't care what people think about my appearance.
- _____ 17. I take special care with my hair grooming.
- _____ 18. I dislike my physique.
- _____ 19. I am physically unattractive.
- _____ 20. I never think about my appearance.
- _____ 21. I am always trying to improve my physical appearance.
- _____ 22. I am on a weight-loss diet.

For the remainder of the items, use the response scale given with the item, and enter your answer in the space beside the item.

- _____ 23. I have tried to lose weight by fasting or going on crash diets.
1. Never
 2. Rarely
 3. Sometimes
 4. Often
 5. Very Often
- _____ 24. I think I am:
1. Very Underweight
 2. Somewhat Underweight
 3. Normal Weight
 4. Somewhat Overweight
 5. Very Overweight
- _____ 25. From looking at me, most other people would think I am:
1. Very Underweight
 2. Somewhat Underweight
 3. Normal Weight
 4. Somewhat Overweight
 5. Very Overweight

26 – 34. Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are with each of the following areas of your body.

1	2	3	4	5
Very Dissatisfied	Mostly Dissatisfied	Neither Satisfied Nor Dissatisfied	Mostly Satisfied	Very Satisfied

- _____ 26. Face (facial features, complexion)
 - _____ 27. Hair (color, thickness, texture)
 - _____ 28. Lower torso (buttocks, hips, thighs, legs)
 - _____ 29. Mid torso (waist, stomach)
 - _____ 30. Upper torso (chest or breasts, shoulders, arms)
 - _____ 31. Muscle tone
 - _____ 32. Weight
 - _____ 33. Height
 - _____ 34. Overall Appearance
-

**APPENDIX F: Beck Depression Inventory – II
(BDI-II; Beck, Steer, & Brown, 1996)**

MATERIAL REMOVED AT REQUEST OF HARCOURT ASSESSMENT, THE
PUBLISHER OF THE BECK DEPRESSION INVENTORY, 10/13/2004

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In the Know Scholarship, 1992
Alumni Scholarship, 1992
Dean's List (1992-1996)
Honors Program (1992-1996)

Publications

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