

## Facial attractiveness ratings and perfectionism in body dysmorphic disorder and obsessive-compulsive disorder

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### Abstract

Individuals with body dysmorphic disorder (BDD) suffer from a preoccupation about imagined or slight appearance flaws. We evaluated facial physical attractiveness ratings and perfectionistic thinking among individuals with BDD ( $n = 19$ ), individuals with obsessive-compulsive disorder (OCD;  $n = 21$ ), and mentally healthy control participants ( $n = 21$ ). We presented participants with photographs displaying faces varying in facial attractiveness (attractive, average, unattractive) and asked them to rate them in terms of their physical attractiveness. We further examined how the participants evaluated their own physical attractiveness, relative to independent evaluators (IEs). As predicted, BDD participants perceived their own attractiveness as significantly lower than did the IEs, and they rated photographs from the category “Attractive” as significantly more attractive than did the other groups. Furthermore, both clinical groups were characterized by more perfectionistic thinking than controls. These findings mostly support cognitive-behavioral models of BDD that suggest that individuals with BDD exhibit perfectionistic thinking and maladaptive attractiveness beliefs.

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Body dysmorphic disorder (BDD) is a chronic and debilitating disorder characterized by distress about imagined or slight appearance flaws (American Psychiatric Association [APA], 1994). Individuals with BDD are often preoccupied with flaws in their skin, hair, nose, ears, or other body parts that are either completely imaginary or, if there is a slight physical defect, their concern is excessive. These concerns often compel BDD sufferers to think about their appearance for many

hours a day. Avoidance of everyday activities, and engagement in ritualistic behaviors, such as mirror checking, grooming, and comparing one's own appearance with other people's appearance may lead to substantial social impairment (e.g., Phillips et al., 2006; Phillips, McElroy, Keck, Pope, & Hudson, 1993).

Recent research on maladaptive beliefs and attitudes in BDD (see review by Buhlmann & Wilhelm, 2004) has led to the development of cognitive-behavioral models of the etiology and maintenance of BDD (e.g., Veale, 2004; Wilhelm, 2006). Wilhelm's (2006) model, for example, proposes that individuals with BDD misinterpret visual input from normal features or minor appearance flaws, leading to worry, anxiety, shame, and maladaptive coping rituals, such as mirror checking,

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excessive grooming behaviors, frequent asking for reassurance, or comparing their own appearance with others'. According to this model, most people dislike some aspects of their appearance, but individuals with BDD focus on these details, exaggerating their perceived or slight defects in appearance. Moreover, Wilhelm (2006) states that individuals with BDD have maladaptive beliefs about their attractiveness, such as higher attractiveness standards and perfectionistic thinking, which lead to a negative self-evaluation and low self-esteem. Moreover, higher levels of perfectionism may partly explain why individuals with BDD focus excessively on, and suffer from, their "imperfect" appearance.

According to the self-discrepancy theory (Higgins, 1987), discrepancies between the actual self and the "self-guides" (ideal and ought/should self) are expected to result in negative emotions. Thus, given that individuals with BDD often compare their own appearance with that of others (e.g., Wilhelm & Neziroglu, 2002), it is possible that perfectionistic thinking and discrepancies between one's own perceived attractiveness and the perceived "ideal looking appearance" lead to more unfavorable social comparisons with others. This, in turn, may result in more negative emotions and low self-esteem. Initial support for this hypothesis has been reported by Veale, Kinderman, Riley, and Lambrou (2003) who observed that individuals with BDD exhibited significant discrepancies between their actual self and their "ideal" and "should" selves. So far, the current models of BDD are predominately based on clinical observations. While there is some evidence that attention, interpretations of situations as well as emotion recognition are biased in BDD (e.g., Buhlmann, Etcoff, & Wilhelm, 2006; Buhlmann, McNally, Etcoff, Tuschen-Caffier, & Wilhelm, 2004; Buhlmann, McNally, Wilhelm, & Florin, 2002; Buhlmann et al., 2002) and that individuals with BDD suffer from low self-esteem (e.g., Buhlmann, Teachman, Gerbershagen, Kikul, & Rief, in press; Phillips, Pinto, & Jain, 2004), it has not yet been shown if they see themselves as unattractive or as "not attractive enough." Furthermore, it has not been evaluated how individuals with BDD evaluate the appearance of others. These questions relate to the broader concept of perfectionism. Higher levels of perfectionism have been found in a series of disorders, such as depression (e.g., Enns & Cox, 1999; Hewitt & Flett, 1993; Hewitt, Flett, & Ediger, 1996), eating disorders (e.g., Halmi et al., 2005; Shroff et al., 2006), obsessive-compulsive disorder (OCD; e.g., Frost & Steketee, 1997), and social phobia (e.g., Ashbaugh et al., 2007; Juster, Heimberg, Holt, &

Frost, 1996), supporting the idea that perfectionism is associated with psychopathology. Moreover, it has been found that individuals with BDD endorse beliefs, such as "I have to have perfection in my appearance" (Veale et al., 1996).

To our knowledge, facial attractiveness ratings and perfectionism have not yet been examined in BDD. In the current study, we investigated whether BDD sufferers exhibit higher levels of perfectionism than control participants. Further, we investigated whether BDD participants exhibit idiosyncratic or stricter ratings for physical attractiveness than control participants (and in particular whether these standards apply in general or only for themselves). Additionally, we investigated whether these phenomena are typical only for BDD or whether they characterize a broader spectrum of psychological disorders, such as OCD. Based on clinical observations that BDD sufferers are often characterized by thoughts, such as "As long as I don't look perfect, I won't be able to be happy," we expected that BDD participants would show levels of inflated perfectionistic thinking, as has been shown in previous research in OCD (e.g., Frost & Steketee, 1997). However, because OCD is not characterized by a preoccupation with one's physical appearance, we hypothesized that OCD participants, unlike BDD participants, would exhibit attractiveness ratings similar to mentally healthy control participants.

## 1. Method

### 1.1. Participants

The BDD group was comprised of 19 participants (six men) who met current DSM-IV (APA, 1994) criteria for BDD as determined by structured clinical interviews (Structured Clinical Interview for DSM-IV – Outpatient Version [SCID]; First, Spitzer, Gibbon, & Williams, 1995). The BDD participants had one or more of the following concerns: facial skin ( $n = 14$ ), hair ( $n = 5$ ), breasts ( $n = 1$ ), eyes ( $n = 1$ ), and shape of nose ( $n = 1$ ). Although the BDD was the primary diagnosis in all cases (based on symptom severity), some BDD participants had the following co-morbid diagnoses: major depression ( $n = 7$ ), agoraphobia without panic disorder ( $n = 1$ ), and social phobia ( $n = 1$ ). Thirteen BDD participants were on a stable dose of psychotropic medication at the time of testing: fluoxetine ( $n = 7$ ), paroxetine ( $n = 2$ ), fluvoxamine ( $n = 3$ ), and clomipramine ( $n = 1$ ).

The OCD group was comprised of 21 participants (10 men) who met current DSM-IV (APA, 1994) criteria for OCD as determined by the SCID (First et al., 1995).

The participants had one or more of the following symptoms: contamination fears ( $n = 9$ ), aggressive obsessions ( $n = 5$ ), sexual obsessions ( $n = 2$ ), fear of making mistakes ( $n = 1$ ), obsessions about guilt ( $n = 1$ ), religious obsessions ( $n = 1$ ), rumination ( $n = 1$ ), checking ( $n = 15$ ), hand washing ( $n = 9$ ), counting compulsions ( $n = 2$ ), hoarding ( $n = 1$ ), and rereading ( $n = 1$ ). Although the OCD was the primary diagnosis in all cases (based on symptom severity), some OCD participants had the following co-morbid diagnoses: major depression ( $n = 2$ ), alcohol abuse ( $n = 1$ ), panic disorder without agoraphobia ( $n = 1$ ), and chronic motor tic ( $n = 1$ ). Nine OCD participants were unmedicated at the time of testing. The remaining 11 participants were on a stable dose of the following psychotropic medications: fluoxetine ( $n = 4$ ), paroxetine ( $n = 3$ ), sertraline ( $n = 3$ ), and fluvoxamine ( $n = 1$ ). Data on medication status were missing for one OCD participant.

The mentally healthy control group consisted of 21 participants (nine men). SCID interviews confirmed the absence of any psychiatric history. As evident from Table 1, the groups did not differ with respect to age and education,  $ps > .83$ , and gender,  $\chi^2(2) = 1.1$ ,  $p = .58$ . All of the participants were Caucasian. The patients groups were recruited at the OCD Clinic at the Massachusetts General Hospital (MGH). Control participants were recruited through flyers posted in the Boston community. All participants were native English speakers.

## 2. Material

### 2.1. Stimulus set

The experimental material consisted of 36 black and white head-shot photographs of individuals with neutral facial expressions. All photographs used in this study displayed Caucasian faces. Photographs were standardized by isolating the face in an ellipse and graying out

the surrounding head, neck, and shoulders. The photos were taken of 18 females and 18 males who varied in physical attractiveness (six attractive, six average, and six unattractive facial photographs). Facial attractiveness of each stimuli used in the study was carefully classified by four independent evaluators (IEs) as “unattractive,” “average,” or “attractive.” The IEs were completely independent and not involved in the study otherwise. Only photographs with an inter-rater reliability of Kappa  $\geq .97$  were included. Moreover, the participants were asked to have their own facial photograph taken with a 2.6 megapixel digital camera. All facial photographs were presented on high quality photo paper (6 in.  $\times$  8 in.) in a randomized order.

### 2.2. Questionnaires

All participants completed the Beck Depression Inventory (BDI; Beck & Steer, 1987), and the BDD group completed the Body Dysmorphic Disorder Modification of the Yale-Brown Obsessive-Compulsive Scale (BDD-YBOCS; Phillips et al., 1997).

The Beck Depression Inventory (BDI) is a 21-item inventory that measures the severity of depression. Each item has a series of four self-evaluative statements that indicate the severity of a particular symptom. The total score ranges from 0 to 63.

The Body Dysmorphic Disorder Modification of the YBOCS (BDD-YBOCS) is a widely used 12-item clinician-administered modified version of the Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989). It measures the severity of BDD symptoms during the past week. The total score ranges from 0 to 48.

The Frost Multidimensional Perfectionism Scale is a commonly used 35-item self-report measure developed by Frost and colleagues (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990). This scale consists of six subscales that assess the following dimensions: (1) concern over mistakes (e.g., people will think less of me

Table 1  
Means of psychometric and questionnaire data

Variable	BDD group ( $n = 19$ )		OCD group ( $n = 21$ )		Control group ( $n = 21$ )		Effect size partial eta squared $\eta_p^2$
	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	
BDD-YBOCS	25.21	6.64	–	–	–	–	–
BDI	16.2a	8.1	8.4b	7.9	2.5c	2.2	.42
Age (years)	32.6a	11.2	31.9a	10.3	33.9a	11.3	.01
Education (years)	16.6a	2.5	16.6a	1.9	16.7a	2.1	.00

Notes. BDD-YBOCS: Body Dysmorphic Disorder Modification of the Yale-Brown Obsessive-Compulsive Disorder Scale; BDI: Beck Depression Inventory; BDI data of one OCD participant were missing; means sharing letters do not differ ( $ps > .05$ , as determined by ANOVAs and follow up Bonferroni-corrected *t*-tests).

if I make a mistake), (2) doubts over actions (e.g., even if I do things carefully, I often feel that it is not quite done right), (3) personal standards (e.g., I set higher goals for myself than most people), (4) parental expectations (e.g., my parents wanted me to be best at everything), (5) parental criticism (e.g., as a child, I was punished for doing things less than perfectly), and (6) organization (e.g., I try to be a neat person). The last subscale (organization) was not included in the total score. The total score ranges from 0 to 140. All measures used in this study have good psychometric properties.

### 2.3. Procedure

The study protocol was approved by the Partners Human Research Committee, which oversees research at MGH. Written informed consent of the participants was obtained after the nature of the procedures had been fully explained. All participants were tested individually. The study consisted of two appointments. At the first appointment, participants read and signed the informed consent form prior to receiving a SCID interview. The experimenter (U.B.) also administered the BDD-YBOCS with the BDD participants at the first appointment. Participants were told that the purpose of the study was to increase knowledge about individual preferences. After that, the participants' facial photographs were taken. At the second appointment (2 days later), before the experimental trials, a short practice session was given that consisted of presenting the participants with six additional facial photographs (two of each category). Participants in the BDD group received the photographs in different random orders, and participants in the OCD and control group were yoked to the BDD participants. Furthermore, they were asked to rate each photograph in terms of its physical

attractiveness on a Likert-scale from 1 (very unattractive) to 7 (very attractive). The experimenter emphasized that they ought to rate the photographs (including their own) in terms of how attractive they personally think the individuals displayed on the photographs are and not what other people might think. Of note, the experimenter left the room after the instructions had been fully explained, and the participants then completed the tasks. Afterwards, the participants completed the BDI and FMPS and were asked if they would agree to have their photograph rated by IEs in terms of their physical attractiveness. Finally, they were paid and debriefed about the purpose of the research.

## 3. Results

### 3.1. Perfectionism

One-way analyses of variance (ANOVAs) indicated a group difference in the FMPS total score,  $F(2, 58) = 5.12, p = .009$ . Bonferroni-corrected  $t$ -tests indicated that control participants had lower overall perfectionism scores than BDD participants,  $p = .04$ , and OCD participants,  $p = .01$ , whereas both patient groups did not differ in their level of perfectionism,  $p > .99$  (see Table 2).

We also found significant group differences for the FMPS subscales "Concern over Mistakes,"  $F(2, 58) = 9.98, p < .001$ , and "Doubting of Actions,"  $F(5, 58) = 21.54, p < .001$ . Both patient groups had significantly more concerns over mistakes than controls,  $ps = .001$ , but no difference was observed between the patient groups,  $p > .99$ . Interestingly, scores on the FMPS subscale "Doubting of Actions" showed several significant results. OCD participants had significantly higher scores than BDD participants,

Table 2  
Means of the Frost Multidimensional Perfectionism Scale

Variable	BDD group ( $n = 19$ )		OCD group ( $n = 21$ )		Control group ( $n = 21$ )		Effect size partial eta squared $\eta_p^2$
	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	
FMPS – Total	87.00a	22.63	89.75a	26.20	69.50b	14.56	.15
Subscales							
Concern over mistakes	25.21a	9.70	24.95a	9.43	15.00b	4.51	.27
Personal standards	22.58a	6.42	25.40a	8.40	24.15a	5.43	.03
Parent expectations	15.89a	5.67	14.80a	5.74	14.05a	5.89	.02
Parents criticism	11.74a	4.68	9.60a	5.23	8.65a	4.37	.07
Doubting of actions	11.58a	3.91	15.00b	3.83	7.65c	2.82	.45
Organization	21.68a	6.76	23.40a	6.40	23.55a	4.50	.02

Notes. BDD: body dysmorphic disorder; OCD: obsessive-compulsive disorder; Control: Mentally healthy controls; FMPS: Frost Multidimensional Perfectionism Scale; means sharing letters do not differ ( $ps > .05$ , as determined by ANOVAs and follow up Bonferroni-corrected  $t$ -tests).

$p = .01$ , and control participants,  $p < .001$ , and BDD participants had significantly higher scores than control participants,  $p = .003$ . No other group differences were found for the other subscales (see Table 2).

### 3.2. Facial attractiveness

#### 3.2.1. Idiosyncratic ratings of attractiveness

To analyze whether the BDD participants had more idiosyncratic ratings of beauty, we calculated Spearman's Rho rank order correlation (excluding the ratings of the participants' own facial photographs). We found significant rank order correlations among all groups. Spearman's Rhos  $> .75$ ,  $ps < .001$ , indicating that the groups did not differ in terms of their rank order of attractiveness.

#### 3.2.2. Facial attractiveness ratings

Four BDD participants refused to have their photo taken, and their attractiveness ratings were given only for the other photographs. Facial attractiveness scores were submitted to a two-factor (Groups by Facial Attractiveness Category) ANOVA with repeated measures on Facial Category (Average, Attractive, Unattractive). As expected, the analysis yielded a significant main effect for Facial Category,  $F(2, 116) = 635.70$ ,  $p < .001$ , and a significant Groups by Facial Category interaction,  $F(4, 116) = 3.82$ ,  $p = .006$ . The main effect for Groups, however, was not significant,  $F(2, 58) = 0.70$ ,  $p = .50$ .

As evident from Table 3, Bonferroni-corrected  $t$ -tests indicated that BDD participants rated photographs from the category "Attractive" as significantly more attractive than did controls,  $p = .001$ , and OCD participants,  $p = .02$ . As expected, there was no difference between OCD participants and controls,  $p = .88$ . No significant group differences were obtained for any other facial category,  $ps > .74$ .

Table 3

Mean ratings of the physical attractiveness categories

	BDD group ( $n = 19$ )		OCD group ( $n = 21$ )		Control group ( $n = 21$ )		Effect size partial $\eta_p^2$
	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	
Attractive	6.21a	0.48	5.67b	0.56	5.50b	0.69	.21
Average	3.91a	0.67	3.85a	0.66	4.10a	0.74	.03
Unattractive	1.72a	0.77	1.83a	0.62	1.93a	0.76	.01
Own photograph	3.27a	1.28	4.38b	1.47	4.38b	1.20	.13
IE ratings	3.85a	1.12	3.92a	0.93	3.85a	1.12	.00

Notes. Own photograph: rating of the participant's own photograph by him/herself (BDD group:  $n = 15$ ); IE ratings: rating of the participant's own photograph by the independent evaluators (BDD group:  $n = 13$ , OCD group:  $n = 16$ , Controls:  $n = 19$ ,  $p$ -value determined through Wilcoxon tests); means sharing letters do not differ ( $ps > .05$ ; as determined by ANOVAs and follow up Bonferroni-corrected  $t$ -tests).

### 3.3. Perception of one's own facial attractiveness

To investigate whether the groups differed in their ratings of their own facial attractiveness, we submitted the data for a one-way ANOVA and found a significant difference among the groups,  $F(2, 56) = 3.91$ ,  $p = .03$ . Bonferroni-corrected  $t$ -tests indicated that BDD participants rated their own facial photograph as less attractive than did controls,  $p = .048$ , or OCD participants,  $p = .048$ . No difference was obtained between OCD participants and controls,  $p > .99$ .

### 3.4. Relation between one's own rating and the ratings of others' photographs

To further investigate how the participants rated their own attractiveness compared to the other facial photographs, we computed paired  $t$ -tests, separately for each group. In the BDD group, we found that the participants rated their own facial photographs as slightly less attractive than photographs from the category "Average." This difference, however, fell short of significance,  $t(14) = -1.87$ ,  $p = .08$ . Additionally, BDD participants rated their own photograph as significantly less attractive than they rated photographs from the category "Attractive,"  $t(14) = -9.07$ ,  $p < .001$ , and significantly more attractive than they rated photographs from the category "Unattractive,"  $t(14) = 3.46$ ,  $p = .004$ .

OCD participants rated their own photographs slightly more attractive than they rated photographs from the category "Average,"  $t(20) = 1.77$ ,  $p = .09$ , although this difference was not statistically significant. Like the BDD group, they rated their own photographs as significantly less attractive than they rated photographs from the category "Attractive,"  $t(20) = -3.80$ ,  $p = .001$ , and significantly more attractive than they rated photographs from the category "Unattractive,"  $t(20) = 8.39$ ,  $p < .001$ .

Control participants rated their own photographs as equally attractive to the photographs they rated from the category “Average,”  $t(20) = 0.97$ ,  $p = .34$ . Moreover, like the other groups, they rated their own photographs as significantly less attractive than they rated photographs from the category “Attractive,”  $t(20) = -3.83$ ,  $p < .002$ , and significantly more attractive than they rated photographs from the category “Unattractive,”  $t(20) = 8.30$ ,  $p < .001$ .<sup>1</sup>

### 3.5. Physical attractiveness ratings of participants' photographs by IEs

Four IEs who were blind to the group assignment examined the physical attractiveness of those participants who agreed to have their photograph evaluated (BDD:  $n = 13$ ; OCD:  $n = 16$ ; Controls:  $n = 19$ ). Overall, we found no differences for the physical attractiveness ratings for any group,  $F(2, 47) = .03$ ,  $p = .98$ . This indicates that the participants' level of physical attractiveness, as rated by the IEs, was the same among the groups. We further computed Wilcoxon comparisons to investigate how the participants' ratings differed from the IEs' ratings.

Within the BDD group, the IEs rated the participants' photographs significantly more attractive than did the BDD participants,  $Z = 2.01$ ,  $p = .04$ . Within the OCD group, the IEs rated the participants' photographs equally attractive as the participants themselves,  $Z = 1.14$ ,  $p = .26$ . Within the control group, similar to the OCD group, no difference was obtained between the IEs' ratings and the participants' ratings,  $Z = 1.42$ ,  $p = .16$ .

## 4. Discussion

The aim of the present study was to examine facial attractiveness ratings and perfectionistic thinking in order to evaluate cognitive-behavioral models of BDD. Results indicate that individuals with BDD did not have more idiosyncratic ratings of beauty, compared to individuals with OCD and healthy control participants. That is, they did not rate the facial photographs of people varying in physical attractiveness any different than did the other groups. However, BDD participants rated attractive faces as more attractive than the other groups. Further, individuals with BDD were character-

ized by stricter ratings for physical attractiveness for themselves. That is, they rated the attractiveness of their own faces as significantly lower than did controls or OCD participants, although all groups perceived themselves to be in the average range. All groups rated their own attractiveness as significantly lower than they rated photographs from the category “Attractive” and rated their own attractiveness as significantly higher than they rated photographs from the category “Unattractive.” The difference between BDD participants' ratings of their own facial attractiveness and the ratings for the category “Average” fell short of significance, indicating that BDD participants rated their own facial attractiveness somewhat, but not statistically, lower, than they rated photographs from the category “Average.” This is somewhat surprising given that BDD patients often describe themselves as “ugly” in clinical settings. Given that BDD is associated with higher levels of perfectionism, it is possible that individuals with BDD perceive the label “Average” as more undesirable and negative than do individuals without BDD. Most importantly, BDD participants perceived their physical attractiveness as less attractive than the IEs (a pattern which was not observed in the OCD and control groups), which supports the clinical assumption that other people do not share the BDD sufferers' evaluation of perceived appearance flaws. Thus, it would be interesting to further examine whether individuals with BDD value aesthetics and beauty more than individuals without BDD, which may lead them to be more sensitive and responsive to attractiveness, which, in turn, may lead them to rate attractive people as even more attractive, more desirable, and closer to “perfection” than other individuals would.

Moreover, our findings are consistent with Higgins' (1987) self-discrepancy theory. Specifically, perfectionistic thinking and discrepancies between the perception of one's own appearance versus how other people's attractiveness is perceived may lead to more unfavorable social comparisons with others and consequently to negative emotions and low self-esteem (e.g., the beauty and the beast).

In support of our hypothesis, we also found that BDD participants as well as OCD participants showed higher overall levels of perfectionism than did controls. In particular, both clinical groups exhibited more concerns over mistakes than controls. The “Concern over Mistakes” subscale reflects negative reactions to imperfections, a tendency to interpret imperfections as equivalent to failure, and a tendency to believe that one will lose the respect of others as a result of

<sup>1</sup> To examine whether co-morbid depression had influenced our results, we re-ran the analyses, including the BDI as a covariate. The pattern of results did not change.

imperfection. Thus, future research needs to explore whether concerns about imperfections (perhaps in the form of minor appearance flaws or a perceived appearance defect) and self-worth have become interwoven. This could explain why individuals with BDD are very concerned when they perceive their hair as thinning or their skin as scarred.

In addition, OCD participants had the highest levels of doubting of action, followed by BDD participants, who, in turn, had higher levels of doubting than controls. This result is also consistent with the clinical picture of both disorders, which are characterized by the assumption that certain actions need to be done very carefully, and need to be repeated over and over. In BDD these actions are usually done with the intention to check on, hide or improve appearance, whereas OCD is characterized by other compulsions. To our knowledge, this is the first study investigating perfectionism in BDD relative to individuals without BDD, and the findings are consistent with our clinical experience that when individuals with BDD think that they do not look “just perfect” they are dissatisfied with their appearance.

This study has some limitations. Although the majority of our BDD participants ( $n = 16$ , based on 14 participants with facial skin concerns, one participant with nose concerns, and one participant with concerns related to the eyes) endorsed concerns related to their face, three participants did not endorse these concerns. Thus, it is possible that the results would have been slightly different if we had only included BDD participants with facial concerns. Furthermore, due to the highly sensitive nature of a facial perception study for individuals with BDD, it was impossible to obtain facial photographs of all BDD participants. Furthermore, a large number of individuals in the clinical groups were on a stable dose of psychotropic medication at the time of the testing and future research needs to explore the possible impact of medication on attractiveness ratings. Also, although our results did not change after controlling for depression as a covariate, the possible influence of depression cannot entirely be controlled using an analysis of covariance (see Miller & Chapman, 2001). It would be interesting to replicate our study using (1) nondepressed individuals with either BDD or OCD and (2) a psychiatric control group with a depressive disorder. It should also be noted that all participants of the current study were Caucasian, and all stimuli displayed Caucasian faces. Thus, future research is needed to disentangle the possible influence of ethnic differences in the perception of and/or preference for facial photographs of varying ethnic backgrounds. In addition, out of those BDD participants who agreed to have their photo taken, not

everyone agreed to have their photograph evaluated by the IEs. Thus, those results have to be interpreted with some cautions and larger scale studies are needed to replicate and further investigate this matter. For example, it is possible that those participants who did not agree to have their picture taken or rated by the IEs were more severely impaired, which may have affected our results. In addition, given that our results rely on self-report measures, it would be interesting to examine the underlying cognitions when rating physical attractiveness. For example, it is possible that individuals with BDD, relative to individuals without BDD, might prove more forgiving when confronted with others who have appearance flaws, or who are less attractive. At the same time they might be very impressed by attractive faces manifesting in cognitions, such as “I wish I would look as pretty as she does,” more so than individuals without BDD, which might, in turn, influence their perception of physical attractiveness.

Overall, the findings are mainly supportive of cognitive-behavioral models of BDD, which suggest that individuals with BDD are characterized by perfectionistic thinking and maladaptive beliefs about physical attractiveness (e.g., Veale, 2004; Wilhelm, 2006). Future research needs to address how perceptions of one’s own and other people’s attractiveness can be changed through cognitive-behavioral therapy. For example, it is possible that over the course of the treatment, techniques, such as challenging the utility of perfectionistic thinking, perceptual (mirror) retraining, and decreasing rituals, such as comparing influence the BDD sufferer’s perception of his or her own and other people’s attractiveness.

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