

# Seeing “changes” that aren’t there: Facial and object discrimination in body dysmorphic disorder

Ulrike Buhlmann<sup>a,\*</sup>, Lilith Rumpf<sup>b</sup>, Mara J.L. Gleiss<sup>b</sup>, Katja Zschenderlein<sup>b</sup>, Norbert Kathmann<sup>b</sup>

<sup>a</sup>Westfälische Wilhelms-Universität Münster, Germany

<sup>b</sup>Humboldt-Universität zu Berlin, Germany

## Abstract

Cognitive-behavioral models of body dysmorphic disorder (BDD) suggest the disorder is characterized by several interpretive, attentional, and perceptual biases that contribute to its maintenance or even development. In addition, the role of aesthetic sensitivity has been discussed in BDD. However, previous research examining the ability to identify subtle changes in facial features and geometrical objects has produced mixed results. The purpose of the current study was to further evaluate facial and object discrimination among individuals with BDD ( $n = 35$ ), individuals with a dermatological condition ( $n = 35$ ), and mentally healthy control participants ( $n = 35$ ) using a facial and object discrimination paradigm assessing the sensitivity for changes in symmetry, color, and size. Overall, the groups did not differ with respect to their performance in detecting actual changes in facial or object images. However, there was a significant group difference when they were presented with a series of *unchanged* facial but not object images: the BDD group rated identical facial images significantly more often as being changed, relative to individuals without BDD. The current results are discussed in light of the existing literature on facial and object discrimination in BDD.

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## 1. Introduction

Most people have some concerns about how they look. Yet some people experience such high levels of distress about their appearance that their ability to function in daily life becomes impaired. Such individuals may qualify for a diagnosis of body dysmorphic disorder (BDD; DSM-5, [1]). Its hallmark is a preoccupation with perceived defects or flaws in one’s own physical appearance, frequently tied to the face, skin, hair or head in general (e.g., pimples, size or shape of the nose; [1]).

Several cognitive-behavioral models have been developed to explain BDD’s unique symptom pattern (e.g., [2–6]). The role of enhanced aesthetic sensitivity has also been discussed (e.g., [4,7]), which is based on Harris’ [8] notion of

“aestheticity”. Specifically, the term aestheticity refers to a “sensitivity of aesthetic perception”, which – according to Harris – leads to more self-consciousness about one’s own physical appearance. Although the potential role of enhanced aesthetic sensitivity in BDD has drawn increased attention over the past several years, research is still limited. For example, individuals with BDD are more likely to have an artistic background than individuals without BDD [9,10]. Further, Thomas and Goldberg [11] examined facial discrimination abilities in 11 individuals with BDD, relative to 11 individuals seeking cosmetic surgery and 20 controls from the hospital community. Specifically, participants were presented with a series of distorted images of their own face, followed by the instruction to re-adjust the width of the presented image so that it represented what they had just seen in the mirror. Relative to the other groups, the BDD group significantly underestimated the width of their actual face, when presented with an initially thinner image of their own face. This trend was also present when the initial facial image was wider than reality, but only relative to the control but not the cosmetic surgery groups. The authors interpreted their findings in support of their hypothesis that individuals with BDD are more accurate in assessing their own facial features.

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\* Corresponding author. Westfälische Wilhelms-Universität Münster, Department of Clinical Psychology and Psychotherapy, Fliehdnerstrasse 21, 48149 Münster, Germany. Tel.: +49 251 83 34112; fax: +49 251 83 31331. E-mail address: [ulrike.buhlmann@uni-muenster.de](mailto:ulrike.buhlmann@uni-muenster.de) (U. Buhlmann).

It should be noted though that the authors did not assess the degree of distortion from reality, making it somewhat difficult to draw the conclusion that BDD is associated with enhanced discrimination abilities.

Yaryura-Tobias et al. [12] presented 10 individuals with BDD, 10 individuals with obsessive–compulsive disorder (OCD) and 10 mentally healthy controls with a series of faces (random faces as well as the participant's own face) and round objects on a computer screen. For each image, participants were instructed to identify whether or not it was distorted. They found that both clinical groups, relative to the control group, rated the images significantly more often as being distorted, whereas no difference was obtained between the clinical groups. However, none of the images were distorted by the experimenter, still leaving the question open whether BDD is associated with enhanced discrimination abilities.

Stangier and colleagues found that individuals with BDD, relative to individuals with and without disfiguring dermatological conditions, were more accurate to identify subtle changes with respect to other people's aesthetic characteristics (e.g., size of the nose or distance between eyes), suggesting enhanced facial discrimination abilities in BDD [13]. Interestingly, Reese et al. [14] did not obtain any group differences between BDD, OCD, and mentally healthy controls with respect to paradigms assessing facial symmetry and symmetry of dot arrays.

Recently, Lambrou et al. [15] examined the role of aesthetic sensitivity in individuals with BDD, individuals with an education or employment in art and design related fields, and individuals without such an education or employment. Specifically, they presented each participant with their own photograph as well as photographs of other people's faces. The photographs were modified with respect to their facial symmetry, so that each participant was presented with a series of faces varying in the degree of symmetry as well as the original unmodified face. Interestingly, individuals with BDD were more accurate in detecting their own unmodified photograph, relative to the other groups without BDD. However, there was no group difference with respect to other people's images as well as a control condition (photographs of a building varying in symmetry). However, irrespective of condition (self image vs. other people's image, or building), they selected significantly more symmetrical images as their "idea of being perfect", supporting the idea of generally enhanced aesthetic sensitivity in BDD [15].

As of today, findings on facial discrimination in BDD are mixed. Whereas there is some support for enhanced facial discrimination ability in BDD when presented with other people's faces [13], as well as initial evidence for a response bias to detect "changes" that are not there [12], some studies failed to find such evidence for other people's faces [14] or observed enhanced discrimination abilities only for the participant's own but not others' faces [15]. It is unclear though whether the mixed findings are partly due to the lack

of a mentally healthy control group [13] or small sample sizes (e.g., [12]).

Thus, many open questions remain. For example, with respect to perceived appearance flaws, do individuals with BDD really see what they think they see, or is it just in their imagination? On the one hand, individuals with BDD might be characterized by a heightened ability to detect facial deviations. In other words, they might indeed notice *real* subtle changes in one's appearance that individuals without BDD do not notice, which – in turn – might contribute to enhanced aestheticity. On the other hand, it is possible that individuals with BDD do not differ from individuals without it with respect to their actual ability to detect appearance deviations. Instead, they might be characterized by a bias to "detect" appearance deviations that do not exist in reality, which might foster their negative appearance beliefs.

Thus, the purpose of the current study was to further investigate facial discrimination in BDD. In addition, we intended to explore whether the hypothesized enhanced discrimination abilities are restricted to facial features or whether individuals with BDD are characterized by a more general aesthetic sensitivity including non-facial features as well. Specifically, we evaluated facial and object discrimination abilities among individuals with BDD, individuals diagnosed with a dermatological condition (e.g., neurodermatitis), and a control group that reported no current or past Axis-I psychiatric disorders. We included the dermatology group as a non-psychiatric comparison group in order to control for general skin concerns, given that the skin is among the most frequent preoccupying body area in BDD (e.g., [16]). We hypothesized that the BDD group would be characterized by enhanced facial discrimination abilities, relative to the other groups. In contrast, we expected no difference between the dermatology and mentally healthy control groups. That is, despite possible differences in appearance of and concerns about skin, enhanced aesthetic sensitivity, thought to characterize BDD, was not expected to be evident. Further, we expected that enhanced facial discrimination in BDD would be specific to facial stimuli and not be evident in other appearance-unrelated stimuli such as geometrical shapes.

## 2. Methods

### 2.1. Participants

All participants were recruited through posted flyers in the greater Berlin area, Germany. Specifically, the BDD group was recruited via flyers advertising for a research study on appearance concerns. The dermatology group was recruited with flyers advertising for a research study on dermatological problems. Flyers for the control group advertised for individuals who did not report any current or past psychological problems.

The BDD group was comprised of 35 Caucasian individuals (9 males) whose diagnoses were confirmed by

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