Brief research report

Emotion recognition in body dysmorphic disorder: Application of the Reading the Mind in the Eyes Task

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ABSTRACT

Body dysmorphic disorder (BDD) is characterized by perceived appearance-related defects, often tied to aspects of the face or head (e.g., acne). Deficits in decoding emotional expressions have been examined in several psychological disorders including BDD. Previous research indicates that BDD is associated with impaired facial emotion recognition, particularly in situations that involve the BDD sufferer him/herself. The purpose of this study was to further evaluate the ability to read other people's emotions among 31 individuals with BDD, and 31 mentally healthy controls. We applied the Reading the Mind in the Eyes task, in which participants are presented with a series of pairs of eyes, one at a time, and are asked to identify the emotion that describes the stimulus best. The groups did not differ with respect to decoding other people's emotions by looking into their eyes. Findings are discussed in light of previous research examining emotion recognition in BDD.

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Introduction

Facial emotional expressions are an important means to express negative or positive thoughts, feelings, and attitudes such as sympathy and rejection, and researchers have investigated the ability to recognize facial expressions in individuals with psychological disorders such as schizophrenia and social anxiety (e.g., Addington & Addington, 1998; Kerr & Neale, 1993; Simonian, Beidel, Turner, Berkes, & Long, 2001). Given the strong fear of negative evaluation by others and the frequent presence of ideas of reference (e.g., that other people stare at them), individuals with body dysmorphic disorder (BDD; American Psychiatric Association [APA], 2000) might be particularly sensitive to facial expressions. For example, they might interpret a person's facial expression as negative when it is actually neutral. Further, poor insight and ideas of reference, common in BDD, might be related to a bias for misinterpreting other people's emotional expressions as threatening, and perceiving others as rejecting might reinforce concerns about one's personal perceived ugliness and social desirability. Therefore, the ability to recognize facial expressions may play a role in the maintenance or even etiology of disorders that are characterized by strong fears of negative evaluation such as BDD.

To shed some light on these questions, we assessed emotion recognition in individuals with BDD, relative to individuals with OCD, and mentally healthy controls. Specifically, participants were presented with a series of black and white faces depicting various emotional expressions, one at a time, and were asked to rate each facial expression with respect to its emotional valence. BDD participants, overall, performed poorer in recognizing other people's emotional expressions, relative to the other groups (Buhlmann, McNally, Etcoff, Tuschen-Caffier, & Wilhelm, 2004). In addition, whereas BDD participants were as accurate as the other groups in identifying angry expressions, they misinterpreted other facial expressions, especially disgusted ones, more often as angry than did the other groups (a common phenomenon which is also often found in healthy individuals, Ekman & Friesen, 1976). However, further analyses indicated that the overall emotion recognition bias for angry expressions still existed after excluding disgusted expressions from the analysis. In other words, this bias was not simply caused by an anger–disgust confusion.

We further examined whether individuals with BDD are characterized by a general emotion recognition bias or, more specifically, by a bias restricted to social situations involving themselves (rather than someone else such as a friend; Buhlmann, Etcoff, & Wilhelm, 2006). Thus, we presented the participants with a series of social scenarios displaying a facial stimulus varying in emotional valence as well as a little description of a social situation. The situations were either self-referent (e.g., "Imagine the bank teller is looking in your direction. What is her emotional expression like?") or other-referent (e.g., "Imagine the bank teller is looking in your friend's direction. What is her emotional expression like?"). As in

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our previous study, participants were asked to rate each stimulus with respect to its emotional valence. We found that, overall, participants with BDD, relative to mentally healthy controls, had difficulty identifying emotional expressions, although this difference did not reach statistical significance ($p = .07$, Cohen's $d = 0.64$). Further analyses indicated that these deficits were mostly evident in self-referent scenarios, relative to other-referent situations and mentally healthy controls. In addition, they were characterized by a bias to rate neutral faces as threatening (particularly as contemptuous or angry).

In sum, there is growing evidence suggesting that BDD is characterized by emotion recognition deficits. The purpose of the current study was to further investigate emotion recognition abilities among individuals with BDD and mentally healthy control participants using the "Reading the Mind in the Eyes" test (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). Specifically, the RMET consists of the presentation of 36 photographs of the eyes depicting complex emotional states (e.g., insecurity, jealousy), and has – to our knowledge – not been used in BDD so far.

Method

Participants

The BDD group was comprised of 31 individuals (23 females) whose diagnoses were confirmed by the first author administering the structured clinical interview for DSM-IV (SCID; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). BDD symptom severity was assessed with the widely used, clinician-administered Body Dysmorphic Disorder Modification of the Yale-Brown Obsessive-Compulsive Scale (BDD-YBOCS; Phillips, Hollander, Rasmussen, Aronowitz, DeCaria, & Goodman, 1997; Stangier, Hungerbühler, Meyer, & Wolter, 2000). It consists of 12 items that measure the severity of BDD symptoms during the past week. BDD-YBOCS interviews indicated moderate BDD symptom severity in the BDD group (see Table 2). Internal consistency in the current sample was $\alpha = .86$. Delusionality was assessed using the clinician-administered Brown Assessment of Beliefs Scale (BABS; Eisen, Phillips, Baer, Beer, Atala, & Rasmussen, 1998), which consists of six items assessing the degree of delusionality. The total score ranges from 0 (no delusional thinking) to 24 (complete lack of insight). BABS interviews revealed a mean delusionality score of 16.45 within the BDD group, which indicates poor insight according to the authors' guidelines (see Table 2). Further, internal consistency in the current sample was $\alpha = .87$.

Primary appearance concerns within the BDD group are depicted in Table 1. Although BDD was the primary diagnosis in all cases (based on symptom severity), SCID interviews revealed the following current comorbid Axis I diagnoses: major depression ($n = 15$), social phobia ($n = 14$), specific phobia ($n = 8$), dysthymia ($n = 6$), alcohol dependence ($n = 3$), posttraumatic stress disorder ($n = 3$), alcohol abuse ($n = 1$), anorexia nervosa ($n = 1$), binge eating disorder ($n = 1$), bipolar disorder, currently depressive episode ($n = 1$), bulimia nervosa ($n = 1$), hypochondriasis ($n = 1$), pain disorder ($n = 1$), panic disorder without agoraphobia ($n = 1$), and somatization disorder ($n = 1$).

The control group was comprised of 31 participants (23 females) with no current or past Axis-I psychiatric history, as determined by the SCID. For all groups, a history of psychotic disorders was an exclusion criterion. The groups did not significantly differ with respect to age, $t(60) = 0.14$, $p = .89$, $d = 0.003$, gender, $\chi^2(1) = 0.00$, $p > .99$, and years of education, $t(60) = 0.13$, $p = .89$, $d = 0.004$. All participants were recruited through posted flyers in the greater Berlin area, Germany. Specifically, the BDD groups were recruited through flyers advertising for a research study on body image concerns.

Table 1
Focus of appearance concerns within the body dysmorphic disorder group.

Area of appearance concern	Frequency (%)
Skin	61.3
Hair	54.8
Breasts	35.5
Genitals	25.8
Muscle build	25.8
Nose	25.8
Hands	22.6
Eyes	19.4
Legs	19.4
Mouth	19.4
Buttocks	12.9
Overall face	9.7
Ears	6.5
Stomach	6.5
Forehead	6.5
Teeth	6.5
Back	3.2
Chin	3.2
Height	3.2
Feet	3.2
Overall appearance	3.2

Note. Individuals could report more than one area of concern.

Flyers for the control group advertised for individuals who did not report any current or past psychological problems. Interested study candidates contacted our research group and were provided with a detailed study description by two trained research assistants. If interested, they further underwent a telephone interview asking for specific BDD symptoms according to DSM-IV as well as possible differential diagnoses such as eating disorders, obsessive-compulsive disorder, and social phobia.

Measures

Questionnaires. Participants completed the following self-report measures: the Body Dysmorphic Symptoms Inventory (FKS; Fragebogen Körperdysmorpher Symptome; Buhlmann, Wilhelm, Glaesmer, Brähler, & Rief, 2009), and the Beck Depression Inventory-II (BDI-II; Beck & Steer, 1987; Hautzinger, Bailer, Worall, & Keller, 1995). The FKS is an 18 item self-report inventory assessing the severity of body dysmorphic disorder symptoms during the past week. Total scores range from 0 to 64. Internal consistency in the current sample was $\alpha = .96$. The BDI-II is a widely used 21-item scale examining depressive symptoms during the past two weeks. Total scores range from 0 to 63. Internal consistency in the current sample was $\alpha = .96$.

Reading the Mind in the Eyes Test (RMET). The RMET (Baron-Cohen et al., 2001) consists of the presentation of 36 images of pairs of eyes expressing complex mental states such as insecurity, jealousy, or hostility. Each photograph is surrounded by four words describing the emotional states. Participants are instructed to choose the emotional state that describes the image best. Further, items can be divided into three categories, varying of emotional valence (positive, negative, and neutral; see Harkness et al., 2005). Total scores range from 0 (no correct answer) to 36 (maximum correct answers). Subscores range from 0 to 12 (negative valence), 0 to 8 (positive valence), and 0 to 16 (neutral valence), depending on the number of items in each category. Internal consistency in the current sample is KR-20 = .64.

Procedure

The study consisted of two separate visits. During the first visit, following informed consent, participants underwent the diagnostic