Inferring other people's states of mind: Comparison across social anxiety, body dysmorphic, and obsessive–compulsive disorders

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ABSTRACT

Background: Social anxiety disorder (SAD) and body dysmorphic disorder (BDD) are characterized by fears of negative evaluation by others (related to one's own incompetence or flawed appearance, respectively). Previous research has shown that individuals with SAD and BDD exhibit difficulty identifying facial expressions and interpretive biases for threat in social situations. The current study aimed at further investigating social cognition in SAD, BDD, and mentally healthy controls (35 individuals per group, respectively). Further, 35 individuals with obsessive–compulsive disorder (OCD) as a clinical control group not characterized by evaluation fears were included.
Methods: The Movie for the Assessment of Social Cognition (MASC) was applied. It consists of 45 video sequences depicting interactions among four people at a dinner party. Participants are instructed to evaluate each scenario with respect to the characters' emotions, thoughts, and intentions from a bystander perspective (i.e. other-referent context).
Results: Only the socially anxious groups (SAD and BDD) were overall less accurate than the other groups in correctly interpreting the social situations, whereas no difference was obtained between the OCD and the control group. Further analyses indicated that the SAD and BDD groups were less accurate in identifying other people's thoughts and intentions, whereas, again, no difference was observed between the OCD and control groups. In addition, the SAD group was less accurate in inferring thoughts and intentions than the OCD group. Interestingly, the groups did not differ with respect to identifying other people's emotions.
Conclusions: These results mostly confirm existing cognitive-behavioral models of SAD and BDD emphasizing that biased interpretation of what others think or intend is one of the key factors maintaining social anxiety and appearance-related concerns. Our study shows that this bias generalizes to social situations in which individuals take a third-person observer perspective.

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1. Introduction

Social anxiety disorder (SAD) is a common and disabling anxiety disorder characterized by strong fears and/or avoidance of social or performance situations in which the individual might feel embarrassed or scrutinized by other people (American Psychiatric Association (APA), 2013). Body dysmorphic disorder (BDD) is defined by a preoccupation with perceived defects or flaws in one's own physical appearance, often tied to some facial aspects (e.g.,

size or shape of the nose or eyes). If the person has a slight physical defect, the concern about it has to be markedly excessive (APA, 2013). Both SAD and BDD are characterized by strong fears of negative evaluation by others (related to one's own appearance or feelings of incompetence, e.g., Pinto & Phillips, 2005). Thus, the ability to correctly read other people's minds (intentions, thoughts, and emotions), also referred to as Theory of Mind (ToM), is important in determining threat in social situations.

According to cognitive-behavioral models of SAD (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) and BDD (e.g., Feusner, Neziroglu, Wilhelm, Mancusi, & Bohon, 2010; Veale, 2008) biased interpretation of ambiguous social or appearance-related information is one of the key factors maintaining social anxiety and/or appearance-related concerns. For instance, a person with SAD or BDD might interpret somebody laughing as evidence for having

said something foolish or for looking disgusting, which, in return, leads to significant distress and avoidance of such situations. These behaviors, in turn, are believed to play a crucial role in the maintenance of SAD (Clark, 2001; Hofmann, 2007) and BDD (e.g., Wilhelm, 2006). Someone without SAD or BDD, however, might interpret the same situation in a non-threatening way ("The person is laughing because I said something funny or interesting") and, thus, not be distressed about or avoid the situation.

Indeed, there is clear evidence for biased interpretation of ambiguous social information in SAD (e.g., Amir, Foa, & Coles, 1998; Foa, Franklin, Perry, & Herbert, 1996; Hirsch & Mathews, 1997; Stopa & Clark, 2000) and BDD (e.g., Buhlmann et al., 2002; Clerkin & Teachman, 2009). Amir et al. (1998), for example, used an interpretation questionnaire, in which individuals with SAD, individuals with OCD, and mentally healthy control participants read a series of ambiguous social scenarios (e.g., "someone you are dating says 'hello' to you"). Participants were presented with a negative, positive, and neutral interpretation and were asked to rank them in terms of how likely they would come into their mind (self-referent) or into the mind of another person when being in that situation (other-referent). The authors found that the SAD group was more likely to interpret the scenario in a negative way, relative to the other groups. This bias was specific to the self-referent context. Further, in a previous study, individuals with BDD, individuals with OCD, and mentally healthy controls were presented with ambiguous social scenarios and it was found that only the BDD group interpreted the scenarios as threatening (Buhlmann et al., 2002).

A growing body of research shows emotion recognition deficits and biases in SAD and BDD. Simonian, Beidel, Turner, Berkes, and Long (2001) found deficits in facial expression recognition in socially anxious children. Joormann and Gotlib (2006) showed that individuals with SAD were more sensitive to recognizing facial expressions of anger than of sadness, and that they needed less emotional intensity to recognize angry faces than did depressed and control participants. In another recent study by Hezel and McNally (2014) individuals with SAD exhibited impaired emotion recognition ability for negative affective expressions. When studying individuals with BDD Buhlmann, McNally, Etcoff, Tuschen-Caffier, and Wilhelm (2004) found that they performed poorer in recognizing emotional expressions, and specifically misinterpreted disgust more often as anger than the OCD, and control group. Further, BDD was associated with difficulties in identifying emotions in situations that directly focus on the self rather than someone else (Buhlmann, Etcoff, & Wilhelm, 2006). Given their strong evaluation fear and the frequent presence of ideas of reference (e.g., that others stare at them), individuals with SAD and BDD might be particularly sensitive to facial expressions. For example, they might interpret a person's expression as negative when it is actually neutral. Therefore, an impaired ability to recognize facial expressions and to decode other people's thoughts and intentions may be crucial for maintaining or causing disorders that are characterized by strong fears of negative evaluation.

Taken together, the above-mentioned studies confirm that SAD and BDD are characterized by negative socially-relevant interpretive and emotion recognition difficulties. To the author's knowledge though, these studies used words or static pictures such as faces as the experimental stimuli, leaving the question open about the ecological validity of these paradigms. Further, previous findings suggest that social cognitive deficits related to SAD and BDD are generally less manifest regarding other-referent situations (Amir et al., 1998; Buhlmann et al., 2006). However, the majority of these studies examined the ability to infer mostly cognitive states (rather than emotions) in SAD, and emotional states (but not thoughts or intentions) in BDD. Overall, evidence for the generalizability of these findings remains somehow limited. Thus, this study's aim was to further examine social cognition among individuals with

SAD and individuals with BDD in order to test the hypothesis that they exhibit deficits in accurately inferring cognitive and emotional states in other-referent situations. Individuals with OCD, and mentally healthy participants served as control groups. OCD was chosen as a clinical control condition to examine whether the hypothesized deficits in social cognition would also be evident in other psychological disorders that are not characterized by anxiety and avoidance related to social situations. To test the hypothesis the Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006) was administered. This ecologically valid video-based measure might better capture the specific social anxiety and BDD-related concerns (rather than previously used words or static pictures) since the movie displays dynamic interactions among multiple persons and thus approximates the characteristics of everyday social life. At the same time, it represents an other-referent situation as participants take a bystander perspective observing a self-unrelated interaction. Lastly, a crucial feature of the MASC is that it allows to separately assess the affective vs. cognitive mental state category, which was made use of in order to differentiate the ability to read other people's emotions vs. thoughts and intentions. This feature was also aimed at extending the results of Hezel and McNally (2014) who found lower MASC scores in their SAD group as compared to a non-SAD group. The authors did not, however, quantify to which extent this mindreading deficit was based on the misinterpretation of others' emotional vs. cognitive mental states.

2. Materials and methods

2.1. Participants

The SAD group was comprised of 35 individuals (21 females) whose diagnoses were confirmed by a licensed psychologist (U.B.) administering the German version of the structured clinical interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; SCID; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). Social anxiety symptom severity was assessed with the German version of the widely used Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987; Stangier & Heidenreich, 1997). It consists of the description of 24 social situations that are evaluated with respect to the corresponding anxiety and avoidance during the past week. Internal consistency in the current sample was $\alpha = .95$. The LSAS indicated moderate social anxiety symptom severity in the SAD group (see Table 1). Although SAD was the primary diagnosis in all cases (based on symptom severity), SCID interviews revealed the following current comorbid Axis I diagnoses: specific phobia ($n = 10$), major depression ($n = 5$), dysthymia ($n = 4$), alcohol abuse ($n = 4$), alcohol dependence ($n = 3$), panic disorder without agoraphobia ($n = 2$), panic disorder with agoraphobia ($n = 1$), posttraumatic stress disorder ($n = 1$), and substance dependence ($n = 1$).

The BDD group was comprised of 35 individuals (21 females) whose diagnoses were confirmed by the first author administering the German version of the structured clinical interview for DSM-IV (SCID; Wittchen et al., 1997). Current BDD symptom severity was assessed using the Body Dysmorphic Disorder Modification of the Yale Compulsive Scale (Phillips et al., 1997), which is a clinician-administered interview assessing BDD symptom severity within the past week. BDD-YBOCS interviews indicated moderate BDD symptom severity in the BDD group (see Table 1). Social anxiety was assessed using the LSAS, indicating moderate social anxiety within the last week. Further, internal consistencies of both the BDD-YBOCS ($\alpha = .86$) and LSAS ($\alpha = .95$) were high. As in the other clinical groups, although BDD had to be the primary diagnosis in all cases (based on symptom severity), SCID interviews revealed the following current comorbid Axis I diagnoses: major depression ($n = 14$), specific phobia ($n = 11$), alcohol dependence