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 α = .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 (α = .86) and LSAS (α = .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
(n = 3), dysthymia (n = 3), posttraumatic stress disorder (n = 3), alcohol abuse (n = 2), panic disorder with agoraphobia (n = 2), substance dependence (n = 2), binge eating disorder (n = 1), bipolar I disorder, currently depressive episode (n = 1), hypochondriasis (n = 1), and panic disorder without agoraphobia (n = 1).

The OCD group was comprised of 35 individuals (17 females) with a primary diagnosis of OCD, as determined by the SCID. OCD symptom severity was assessed with the German version of the clinician-administered Yale–Brown Obsessive–Compulsive Scale (YBOCS; Goodman et al., 1989). It consists of 10 items measuring the severity of OCD symptoms during the past week. Internal consistency within the OCD was good (α = .87). YBOCS interviews indicated moderate OCD symptom severity in the OCD group (see Table 1). Further, although OCD was the primary diagnosis in all cases (based on symptom severity), SCID interviews revealed the following current comorbid Axis I diagnoses: major depression (n = 7), panic disorder without agoraphobia (n = 2), specific phobia (n = 2), alcohol abuse (n = 1), chronic tic disorder (n = 1), dysthymia (n = 1), and hypochondriasis (n = 1).

The control group was comprised of 35 participants (21 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. Further, a current or past diagnosis of comorbid SAD (BDD or OCD, respectively) was an exclusion criterion among the clinical groups. As evident from Table 1, the groups did not significantly differ with respect to age, F(3, 136) = 0.22, p = .88, η² = .005, years of education, F(3, 136) = 6.93, p = .05, η² = .015, and gender, χ²(3) = 1.40, p = .71. Except for one participant with a mixed ethnic background (Caucasian/Asian) participants were Caucasians. All participants were recruited through posted flyers in the greater Berlin area, Germany.

### Table 1
Means and standard deviations by group for demographic and symptom-specific measures.

<table>
<thead>
<tr>
<th>Measure</th>
<th>BDD group (n = 35)</th>
<th>SAD group (n = 35)</th>
<th>OCD group (n = 35)</th>
<th>Control group (n = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Mean</td>
</tr>
<tr>
<td>Age (years)</td>
<td>33.46a</td>
<td>11.30</td>
<td>18–63</td>
<td>32.20a</td>
</tr>
<tr>
<td>Education (years)</td>
<td>15.94a</td>
<td>2.01</td>
<td>12–19</td>
<td>16.14a</td>
</tr>
<tr>
<td>LSAS</td>
<td>67.57a</td>
<td>26.23</td>
<td></td>
<td>76.50a</td>
</tr>
<tr>
<td>BDI-II</td>
<td>11.04</td>
<td>15.63a</td>
<td>5.98</td>
<td>14.34a</td>
</tr>
<tr>
<td>YBOCS/BDD-YBOCS</td>
<td>28.21</td>
<td>7.71</td>
<td></td>
<td>24.64</td>
</tr>
</tbody>
</table>

Note. SAD = Social anxiety disorder; BDD = Body dysmorphic disorder; OCD = Obsessive–compulsive disorder; YBOCS = Yale–Brown Obsessive–Compulsive Scale (possible range: 0–48); BDD-YBOCS = BDD Modification of the YBOCS (possible range: 0–48); LSAS = Liebowitz Social Anxiety Scale (possible range: 0–144); BDI-II = Beck Depression Inventory-II (possible range: 0–63); Means sharing subscripts do not differ (p > .05, Bonferroni-corrected).

3. Materials

**Self-report questionnaire.** Participants completed the German version of the Beck Depression Inventory-II (BDI-II; Beck & Steer, 1987; Hautzinger, Bailer, Worall, & Keller, 1995). The BDI-II is a widely used 21-item self-report scale examining depressive symptoms during the past two weeks. Internal consistency in the current sample was α = .92.

**Movie for the Assessment of Social Cognition (MASC).** The MASC (Dziobek et al., 2006) is a video-based test measuring the ability to accurately infer others’ mental states. Participants watch a 15-min movie about four characters (two females, two males) getting together at a dinner party. Participants are instructed to answer 45 multiple-choice questions about the characters’ mental states (emotions, thoughts, and intentions) at given breaks throughout the movie. Questions mainly refer to complex mental states and allow a detection of subtle mindreading difficulties (Dziobek et al., 2006). The MASC allows for a right/wrong response format (one correct response out of four possible responses) and provides a sum total score for all mental state decoding questions. It further allows for the quantification of the mindreading accuracy for the following subcategories: (1) thoughts and intentions (example item see Fig. 1), and (2) emotions (e.g., “What is Sandra feeling?”).

![Fig. 1. Example of an MASC scene, and corresponding multiple-choice responses (text above was not presented to participants). Copyright 2010 by Elsevier Ireland Ltd. Adapted with permission.](image-url)
Participants were presented with positive (e.g., gratitude) as well as negative emotions (e.g., irritation) with varying levels of arousal. Facial and verbal expressions as well as contextual cues provided the relevant information to correctly answer the question. No specific instructions were given with respect to which specific cues are supposed to be used when answering the questions. Participants read a written instruction: “You will be watching a 15 min film. Please watch very carefully and try to understand what each character is feeling or thinking (…) When you answer, try to imagine what the characters are feeling or thinking at the very moment the film is stopped.” The possible scores range from 0 to 45 (total score), 0 to 18 (thoughts and intentions), and 0 to 15 (emotions). Additionally, non-social inferencing is examined using six control questions (e.g., “How was the weather this evening?”) The respective correct answer has to be inferred from the clothing of the arriving protagonists in order to consider general intellectual functioning as a potential confound of social cognitive performance.

3.1. Procedure

The study was part of a larger project on cognitive and psychophysiological factors of BDD, funded by the German Research Society. It consisted of three separate visits. During the first visit, following informed consent, participants underwent the SCID interview conducted by the first author to establish the clinical status (or the absence of any current or past psychiatric history). The clinical groups additionally underwent the corresponding disorder-specific interviews after the completion of the SCID. The second and third visits, between two to six days later, were always kept 24h apart. During the third visit, the MASC was administered, followed by the completion of the BDI-II before being fully debriefed and receiving compensation for their participation.

4. Results

4.1. Demographic and clinical characteristics

Means and standard deviations for the measures of social anxiety, BDD, OCD, and depressive symptoms are listed in Table 1. An analysis of variance (ANOVA) indicated that the groups significantly differed with respect to depressive symptoms, as measured with the BDI-II, \(F(3, 136) = 20.10, p < .001, \eta^2 = .307\). Follow-up Bonferroni-corrected t-tests indicated that the clinical groups had significantly higher scores on the BDI-II, relative to the control group, \(p < .001\), Cohen’s d effect sizes > 1.44, whereas no differences were observed among the clinical groups, \(p > .10\), ds < .50. BDI score and MASC total score were not significantly related (\(r = -.16, p = .06\)). Further, the groups significantly differed with respect to their social anxiety symptoms, as measured with the LSAS, \(F(3, 136) = 36.74, p < .001, \eta^2 = .47\). As expected, both the BDD and SAD groups had significantly higher scores than the OCD and control groups, \(ps < .02\), ds > 1.08, and the OCD group had higher scores than the control group, \(p = .006, d = .81\). Further, the SAD and BDD groups did not differ from each other, \(p = .33, d = .36\).

4.2. MASC performance

First, to evaluate possible differences with respect to the overall ability to decode mental states, a univariate ANOVA with groups as the between-subject factor and the MASC total score as the dependent variable was computed. As evident in Table 2, the groups significantly differed with respect to their overall ability to read other people’s mental states, \(F(3, 136) = 8.74, p < .001, \eta^2 = .16\). Follow up Bonferroni-corrected t-tests indicated that both the SAD and BDD groups had significantly lower scores than the control group, \(ps < .04, ds > .72\). Further, the SAD group had significantly lower scores than the OCD group, \(p < .001, d = .89\), whereas the BDD group scored in-between the SAD and OCD groups. That is, they neither differed from the SAD group, \(p = .45, d = .37\), nor the OCD group, \(p = .15, d = .55\). In addition, the groups did not differ with respect to non-social inferencing (control items), \(F(3, 136) = 1.82, p = .21, \eta^2 = .04\). Furthermore, the above reported group differences in total MASC score were still present when individual differences in non-social inferencing were included as another covariate in the ANOVA (\(F(1, 134) = 8.43, p < .001, \eta^2 = .16\)). Also, follow up Bonferroni-corrected t-tests resulted in the same pattern of significant group differences. Taken together, this indicates that social cognitive deficits were likely independent of non-social intellectual functioning.

The MASC categories. Data were submitted to a ANOVA with groups as the between-subject factor and MASC category (emotion, thoughts and intentions) as the repeated measurement. The ANOVA yielded significant main effects for group, \(F(3, 136) = 8.74, p < .001, \eta^2 = .16\), and category, \(F(1, 136) = 153.54, p < .001, \eta^2 = .53\), but no significant groups by category interaction, \(F(3, 136) = 1.55, p = .21, \eta^2 = .03\). With respect to the category “thoughts and intentions”, exploratory analyses indicated that the pattern of results was similar to that found for the total MASC score, \(F(3, 136) = 9.46, p < .001, \eta^2 = .17\). Specifically, both the SAD and BDD groups had significantly lower scores than the control group, \(ps < .001, ds > .82\). Further, the SAD group had significantly lower scores than the OCD group, \(p = .001, d = .85\), whereas the BDD group scored in-between the SAD and OCD groups. That is, they neither differed from the SAD group, \(p = .45, d = .36\), nor the OCD group, \(p = .15, d = .54\).

<table>
<thead>
<tr>
<th>Measure</th>
<th>BDD group (n = 35)</th>
<th>SAD group (n = 35)</th>
<th>OCD group (n = 35)</th>
<th>Control group (n = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>MASC (total score)</td>
<td>34.23 (4.12)</td>
<td>32.57 (4.88)</td>
<td>36.31 (3.45)</td>
<td>36.74 (2.68)</td>
</tr>
<tr>
<td>Emotions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoughts and intentions</td>
<td>11.71 (1.76)</td>
<td>10.89 (2.55)</td>
<td>12.06 (1.78)</td>
<td>11.94 (1.63)</td>
</tr>
<tr>
<td></td>
<td>13.86 (1.99)</td>
<td>13.03 (2.56)</td>
<td>14.80 (1.43)</td>
<td>15.14 (0.97)</td>
</tr>
</tbody>
</table>

Note. SAD = Social anxiety disorder; BDD = Body dysmorphic disorder; MASC = Movie for the Assessment of Social Cognition (total score and subscores); OCD = Obsessive–compulsive disorder; Means sharing subscripts do not differ (\(ps > .05\), Bonferroni-corrected).
Interestingly, with respect to the category “emotions”, no significant differences were obtained among the groups, F(3,136) = 2.54, p = .06, η² = .05, ps > .08, ds < .53. Only one trend was observed indicating that the SAD group, relative to the OCD group, was slightly worse at identifying other people’s emotions.

5. Discussion

The present study examined social cognition across SAD, BDD, and OCD by using the MASC as an ecologically valid measure, which assesses the ability to interpret others’ cognitive (thoughts and intentions) and emotional states within an other-referent context, i.e., situations where participants interpret social interactions from a bystander perspective. Inferring thoughts and intentions turned out to be significantly impaired in socially anxious individuals with SAD and BDD, which seems to underlie their lower overall mindreading performance in the context of a complex and dynamic social interaction. Interestingly, groups did not differ significantly in inferring other people’s emotional states.

It was found that the overall mindreading performance was actually worse in both SAD and BDD groups. This result partially replicates that of Hezel and McNally (2014) who found a poorer MASC total score performance in individuals with SAD relative to a non-SAD group. More importantly, this finding poses the questions whether the social cognitive deficit actually generalizes over self- and other-referent situations, and if this generalized bias might be more strongly pronounced regarding inferences about others’ thoughts and intentions as compared to inferences about emotional states. The ‘double standard’ hypothesis (Buhlmann, Winter, & Kathmann, 2013) proposes that socially anxious people such as BDD sufferers apply biased interpretation more readily when situations are self-referent (Buhlmann et al., 2006), but are more neutral when performing other-referent tasks such as the “Thinking the mind in the eyes” test (measuring emotion recognition from photographs of the eye region of strangers). This contextual factor might therefore moderate emotion inferring in socially anxious individuals, i.e., they “turn off” the negativity-bias in non-threatening other-referent conditions. However, this mechanism might not work when they infer others’ thoughts and intentions. Merely observing others’ interactions may already stimulate inaccurate and thus misleading interpretations. Supposedly, the ‘double standard’ disappears in socially anxious individuals when they read other people’s cognitive states. An underlying mechanism could comprise that thinking of other’s thoughts and intentions inevitably activates habitual interpretations like “If I was part of this interaction, I would expect the character to have critical thoughts”, since exaggeratedly self-focused apprehensions of social situations are central to social cognitive explanations of SAD (e.g., Rapee & Heimberg, 1997). Ultimately, even though a situation has no self-relevance socially anxious individuals expecting negative social outcomes and threat by others tend to habitually interpret it in a biased way. A similar explanation is proposed by Samson, Lackner, Weiss, and Papousek (2012) who found that increased social anxiety was related to less enjoyment of cartoons requiring the understanding of others’ mental states, and to higher response latencies in rating the funniest cartoons (as compared to non-social state cartoons, respectively). The authors assume that socially anxious individuals experience threat when inferring the (false) beliefs of others which then biases information processing. Clearly, the cartoons used in their study represented an other-referent situation and yet induced biased social understanding. It should be noted that the authors of another previous study in SAD found that biases are specific to self-referent social situations (Amir et al., 1998). Their results are based on written descriptions of other- vs. self-referent social scenarios. The discrepancy between their and this studies’ findings may be explained by the relatively higher ecological validity of the stimulus material used in the present study. Observing a vivid social interaction on a screen resembles a real life other-referent social situation much more closely than being asked to imagine a typical person while reading vignettes. Compared to a movie depicting concrete characters, the sole imagination of a non-specified proto-other unavoidably remains somewhat blurred and too abstract to capture the social significance of an other-referent situation, in which socially anxious individuals may regularly find themselves as a bystander. Especially, they likely take this stance in many kinds of group situations (e.g., parties, work meetings, family gatherings), where social anxiety hinders them from actively participating but rather leads to passive observation of others in social interaction. Thus, the results of the present study indicate that socially anxious individuals’ difficulties in understanding what other people are thinking or intending might generalize beyond self-referent context, i.e., they also misinterpret situations in which they are not directly involved.

Another line of argument explaining why, for these disorders, deficits are more apparent in the ability to infer others’ cognitive states than emotional states may lie in their differing requirements of social cognitive processing of others’ intentions and thoughts vs. emotions. Understanding thoughts and intentions encompasses a rather complex, higher-level mental operation (Frith & Frith, 2003), which can require elaborate multiple-order inference processes such as “A thinks that B believes that C thinks because D said…” (Kinderman, Dunbar, & Bentall, 1998). Inferring emotions, also referred to as empathic accuracy, on the other hand is strongly intertwined with physical mirroring (e.g., facial mimicry) that facilitate automatic sharing of others’ emotional state rather effortlessly (Zaki & Ochsner, 2011). Understanding others’ cognitive states in complex social situations with multiple agents therefore may be a more demanding mindreading task than understanding what a person feels, especially since emotion inference may be already well informed by direct mirroring. Notably, this deficit in reading other people’s cognitive states is unrelated to general non-social cognitive functioning since the study groups did not differ with respect to years of education or performance on the MASC control items. This finding is consistent with a previous study showing that impaired MASC performance in individuals with SAD is unrelated to intellectual ability (Hezel & McNally, 2014).

Taking account of these differing social cognitive demands for cognitive vs. affective state inferencing, and considering etiological models of SAD and BDD (e.g., Clark & Wells, 1995; Feusner et al., 2010), the results can be explained as a consequence of the very cognitive nature of these disorders. Affected individuals who fear negative social evaluation may be particularly prone to disorder-specific biases when they perform complex social cognitive inferencing tasks. For example, the process of reflecting on what a person expresses between the lines is probably much more easily accessible to habitual interpretative biases (i.e., generally expecting threatening social information) compared to more immediate emotion inferring processes operating at a lower cognitive level.

Though overall group differences in emotion inferring ability failed to reach statistical significance, it should be briefly discussed that only the SAD group was slightly worse than the OCD group in identifying other people’s emotions. It is possible that the scenarios used in the MASC were mostly relevant to individuals with SAD and, to some extent, less relevant to individuals with BDD, given that they were not specifically appearance-related.

A final explanation for the result that groups did not differ significantly in inferring other people’s emotional states might refer to the fact that the MASC – unlike in previous studies where emotional stimuli were more static and distinct – provides a rich, audio-visual, dynamic, context-embedded informational basis
which might enable individuals with SAD and BDD to use a broader range of contextual cues flexibly when inferring emotions. Possibly they compensate and combine emotional information from multiple sources allowing them to make up for a general emotion recognition deficit. Thus, future research needs to examine this (e.g., by developing a more self-referent vs. other-referent version of the MAS).

Notwithstanding, when comparing the present results with previous findings, the special quality of emotion recognition biases needs to be considered. It has been shown that inaccurate emotion inferring in BDD and SAD specifically comprises the misidentification of (neutral) faces as angry or contemptuous (e.g., Buhlmann et al., 2004, 2006) as well as an increased sensitivity for recognizing faces as angry (Joormann & Gotlib, 2006), respectively. Thus, the nature of emotion recognition inaccuracy in socially anxious individuals appears to be disorder-specific, i.e. a pronounced tendency to perceive social threat. However, in this study the quality of emotions within this MAS subcategory was not differentiated, and therefore the specificity of the social cognitive bias was not addressed. Taking this into account, the disorder-specific emotion recognition bias perhaps has not been fully provoked in the participants.

The current study has several limitations. First, the SAD and BDD samples consisted of slightly more female participants. Second, given that we recruited for this study using mainly posted flyers, we cannot exclude the possibility that our sample is self-selected and not entirely representative of these clinical populations. However, it should be mentioned that our clinical samples were comparably impaired (as determined with disorder-specific measures such as the (BDD)-YBOCS and LSAS) as clinical BDD, SAD, and OCD samples included in published treatment trials (e.g., Kocovski, Fleming, Hawley, Huta, & Antony, 2013; Wilhelm, Phillips, & Steketee; Williams et al., 2014). Third, another limitation of the presented findings concerns the fact that the group differences were rather small. The MAS is a global measure capturing a broad variety of contents (friendship, flirtting, group dynamics, general social scripts, etc.). Therefore, the content of MAS characters’ mental states are not specifically related to the disorder-specific evaluation of fear that the biases of socially anxious individuals rely upon. Presumably scenarios more closely related to negative evaluation fear might result in larger group differences between socially anxious and healthy control participants. Thus, future research should construct such scenarios for a film-based measure such as the MAS, which should include self-referent situations as well. That is, the movie would comprise scenes displaying characters that look directly into the camera and talk to the participant. In conclusion, it is strongly proposed to further investigate the differentiation between the self- vs. other-referent mode of mindreading in socially anxious individuals in order to better understand the role that social cognition plays for the maintenance or even etiology of disorders such as SAD and BDD.

6. Conclusion

Taken together, the findings provide further support for cognitive-behavioral models of social anxiety and BDD that emphasize the importance of negative socially-related beliefs for the presentation of symptoms directly tied to social anxiety (e.g., anxiety in or avoidance of social situations). One possible implication for cognitive-behavioral therapy of socially anxious patients could be to further expand the treatment focus on in vivo behavioral experiments involving observer-perspective social situations. For instance, SAD patients could be asked to interview non-anxious others about their actual thoughts during a performance evaluation (e.g., a talk) which they attend as a bystander. This external information (e.g., answers like “During the talk I had the feeling that the audience liked it”) could be used by patients to challenge their own interpretations of other people’s thoughts in putatively highly threatening social situations (e.g., “Surely he/she expected to bore the audience.”).

References


