Performance-Based Assessment of Social Cognition in Borderline Versus Psychotic Psychopathology

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Abstract: Individuals diagnosed with borderline personality disorder (BPD) and schizophrenia spectrum disorders (SSD) are known to display deficits in social cognition (SC). Our sample comprised 81 patients enrolled in residential treatment for complex psychopathology. We used performance-based assessments to test the hypothesis that individuals with SSD would display decrements on the cognitive/perceptual facets of SC, whereas individuals with BPD would evidence greater dysfunction on the affective/interpersonal facets of SC, with consideration taken for how gender may interact with diagnosis to influence results. Our findings suggested that women with SSD displayed more impaired understanding of social causality compared with their female BPD counterparts, while female patients with BPD evidenced greater expectation for aggression in their SC compared with women with SSD. These findings provide partial support for our hypotheses while highlighting the importance of accounting for the influence of gender on SC functional disparities between these two groups.

Keywords: borderline personality disorder, Rorschach Test, schizophrenia, Thematic Apperception Test

Individuals diagnosed with borderline personality disorder (BPD) and schizophrenia-spectrum disorders (SSDs) evidence deficits in social cognition (SC; Andreou et al., 2015) and these improvements in SC have been found to correlate with indices of recovery such as social functioning, vocational outcome, and quality of life (Roberts et al., 2014). Currently, pharmacological treatments show little ability to improve SC (Roberts et al., 2014). Enhancing our understanding of these deficits could inform interventions and improve psychosocial treatment (Green, 2016).

SC has been defined as the mental operations underlying social interaction, particularly the perception, interpretation, and responses to the thoughts, feelings, and motivations of others (Pinkham et al., 2013). In the psychiatric literature on SC, there is sometimes terminological confusion, given that different researchers tend to use particular terms depending on which mental disorder they study. For
instance, schizophrenia researchers often use the term *social cognition* whereas borderline personality disorder researchers frequently use the term *mentalization* to refer to very similar constructs (Vaskinn et al., 2015). Other related terms include *theory of mind, reflective functioning, metacognition, empathy, psychological mindedness, and mindfulness* (Choi-Kain & Gunderson, 2008). For the purpose of this paper, we use the term *social cognition* (SC) to refer to the various cognitive domains relevant to social processing.

**Social Cognition and Laboratory-Based Measures**

Laboratory measures, such as the Reading the Mind in the Eyes Test (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) and the Movie for the Assessment of Social Cognition (Dziobek et al., 2006), have identified SC deficits evidenced by individuals with specific mental disorders (e.g., Andreou et al., 2015; Petersen, Brakoulias, & Langdon, 2016), including SSDs and BPD. Fretland et al. (2015) found a correlation between positive symptoms of psychosis and over-mentalizing (e.g., reading too much into the other person's mind), and between thought disorganization and undermentalizing (i.e., reasoning concretely about others' mental states). Montag et al. (2011) likewise found that overmentalizing correlated with positive symptoms while undermentalizing was related to negative symptoms for individuals with paranoid schizophrenia. Individuals with schizophrenia were found to display a wide range of SC deficits, while individuals with negative symptoms had the most impaired SC. Research on BPD and SC has similarly produced mixed findings. While some studies have found no difference between individuals with BPD and healthy controls, a few studies have discovered that individuals with high BPD features are more accurate at emotion detection (Meehan et al., 2017). Petersen et al. (2016) found that individuals with BPD did not show impairment in simple SC tasks that assess the ability to detect the thoughts and feelings of others, although they were less accurate when asked to identify positive feelings. Another study likewise found that individuals with BPD were able to perform well on simple emotion detection tasks but struggled with tasks that involved understanding the intentions of others (Preißler, Dziobek, Ritter, Heekeren, & Roepke, 2010).

Few studies have directly compared SC between individuals with BPD and schizophrenia. Both Andreou et al. (2015) and Vaskinn et al. (2015) found that individuals with schizophrenia evidenced more extensive SC impairment than did individuals with BPD, although Vaskinn et al. (2015) found that individuals with BPD SC deficits were indistinguishable from healthy controls. While certain areas of SC impairment appear to overlap between individuals diagnosed with SSD and BPD, the specific nature of impairments in these two diagnostic groups...
is clinically distinct, and further research is needed to help clarify these differences beyond the simple degree of impairment in specific delimited skill areas.

**Social Cognition and Performance-Based Testing**

Laboratory-based measures, such as those discussed earlier, are often quite narrow in their focus, potentially limiting their ability to capture the complex, multifaceted nature of SC (Lysaker et al., 2010). Additionally, these measures are typically used in research settings, thus limiting their capacity to readily translate findings meaningfully into clinical settings. By contrast, performance-based personality measures such as the Thematic Apperception Test (TAT) and the Rorschach Test are popular clinical assessment tools (Mihura, Roy, & Graceffo, 2017) that assess a range of relevant psychological operations. Indeed, the potential utility of these tests for measuring aspects of interpersonal functioning and SC have been highlighted before in the literature (e.g., Conklin, Malone, & Fowler, 2012; Smith, 2017). It is possible that performance-based measures that assess the internalized social models that influence SC processes may better evaluate how individuals make social predictions based on past experiences and how they adjust their internal models in response to expectancy violations (Griffin & Fletcher, 2017). However, given the paucity of research using these performance-based measures to systematically compare SC between different clinical populations, it remains uncertain whether these tests are sensitive enough to differentiate the SC abilities of individuals with different diagnoses. Thus, in this study, we aimed to compare deficits in SC assessed using the TAT and the Rorschach Test in individuals diagnosed with SSD and BPD.

Few studies have utilized performance-based measures, such as the TAT or the Rorschach, to assess SC. Luyten, Fonagy, Lowyck, and Vermote (2012) suggested that the TAT rated with the Social Cognition and Object Relations Scale-Global Rating Methods (SCORS-G; Westen, Lohr, Silk, Gold, & Kerber, 1990) is one of the few measures that encompass all aspects of SC (including both cognitive and affective components). To our knowledge, there are no studies that have directly compared the TAT performance of individuals with BPD and individuals with SSD. There have been two studies that have used the SCORS on TAT narratives for individuals with schizophrenia (Lysaker et al., 2010; Vaz, Béjar, & Casado, 2002) and multiple studies have examined the SCORS for individuals with BPD (Gagnon & Daelman, 2011; Lewis et al., 2016; Westen et al., 1990; Whipple & Fowler, 2011). These studies reveal that these clinical groups show more pathological object relations in comparison with controls; however, no study has directly compared these clinical groups to examine SC differences. Compared with the TAT, the Rorschach has been used less frequently as a measure of SC,
although Conklin and colleagues (2012) have argued for the utility of the Rorschach as a relevant measure of implicit SC processes. There have been some Rorschach studies comparing individuals with BPD and schizophrenia on more global measures of thought processes and reality testing (rather than an explicit focus on SC), with some finding that individuals with SSD demonstrate greater thought disorganization and others finding no differences between groups (Brand, Armstrong, Loewenstein, & McNary, 2009; Exner, 1986; Hilsenroth, Eudell-Simmons, DeFife, & Charnas 2007; Lerner, Sugarman, & Barbour, 1985).

**Study Hypotheses**

Few studies have directly compared individuals with BPD and SSD in reference to SC, and when this issue has been investigated, researchers have typically relied on laboratory-based measures that assess discrete facets of SC (Andreou et al., 2015; Vaskinn et al., 2015), potentially limiting their capacity to assess more synthetic, complex SC (Lysaker et al., 2010). To our knowledge, this is the first study to compare SC differences between these two clinical populations using performance-based testing. Given that previous studies (Andreou et al., 2015) have found that individuals diagnosed with SSD demonstrate more concrete social reasoning than to individuals with BPD, it was hypothesized that individuals with SSD would score lower on the cognitive and perceptual facets of SC on the TAT and Rorschach. In addition, given that individuals with BPD have been found to demonstrate more disturbed SC compared with other clinical subjects when emotionally aroused and in complex interpersonal situations (Lewis et al., 2016; Preißler et al., 2010; Whipple & Fowler, 2011), we hypothesized that they would demonstrate poorer functioning on the affective and interpersonal components of SC compared with individuals with SSD.

**Method**

**Participants**

The sample consisted of patients \((N = 81)\) admitted to a long-term residential psychiatric treatment center in the northeastern United States between 2002 and 2016. We requested a list of all patients admitted to the treatment center within that time window who had received a primary clinical diagnosis of BPD or SSD (e.g., schizophrenia, schizoaffective disorder, delusional disorder). We excluded patients who presented with comorbid BPD and SSD, as well as patients with a primary diagnosis of either BPD or SSD who carried a comorbid diagnosis of
primary uni- or bipolar mood disorder with psychotic features. This led to an initial sample of 119 participants who were eligible based on our diagnostic criteria; of these, 83 had completed TAT and Rorschach protocols available in their medical record for analyses. The final sample meeting our eligibility requirements ultimately consisted of 40 BPD participants \((n = 38 \text{ female})\) and 43 SSD participants \((n = 20 \text{ female})\). Owing to the high ratio of female-to-male patients in the BPD group, we ultimately excluded the two male BPD patients from our sample and categorized the remaining participants into three groups in order to better account for the influence of gender: a female BPD group \((n = 38, \text{ average age } 29.97 \text{ years, } SD = 11.37)\), female SSD group \((n = 20, \text{ average age } 31.65 \text{ years, } SD = 8.61)\), and a male SSD group \((n = 23, \text{ average age } 28.91 \text{ years, } SD = 8.24)\), yielding a final sample of 81 participants. Demographic details about participants outside of age and gender were unavailable; there were no significant differences in age between the three participant groups.

**Procedures**

Participants completed the TAT and Rorschach Test as a part of their clinical treatment within the first 5 weeks of admission. Clinical diagnoses were assigned to participants during the first 6 weeks of treatment using the Longitudinal, Expert, All Data (LEAD) diagnostic standard (Pilkonis, Heape, Ruddy, & Serrao, 1991; Spitzer, 1983).

**Measures**

**SCORS-G**

The TAT was administered according to the procedures and guidelines outlined by Murray (1943). The following TAT cards were administered in the same order to all patients: 1, 5, 14, Picasso’s La Vie, 13MF, 12M, 2, 18GF, and 12F for women or 7BM for men. The Picasso card was excluded from the sample, given that it is not routinely used in other settings. All TAT narratives were tape-recorded and transcribed. The two raters for the TAT protocols were doctoral-level clinical psychologists who completed a 10-hr training on the SCORS-G (Stein, Hilsenroth, Slavin-Mulford, & Pinsker, 2011) and who had achieved adequate levels of reliability both with each other as well as with the expert TAT ratings provided in the SCORS-G training manual (Stein et al., 2011). Raters were blind to all identifying information and participant diagnoses; each rater coded approximately half of the data set, and additionally scored an overlapping sample of 32 TAT protocols in order to establish interrater reliability. Intraclass correlation coefficients \((2, 1)\) for absolute agreement ranged from \(.65 (SE)\) to \(.93 (AGG; M = .79)\), which suggests acceptable-to-excellent levels of interrater reliability (cf., Cicchetti, 1994).
The SCORS-G (Stein et al., 2011) is a rating system that may be applied to narrative material in order to evaluate SC and quality of object relations. The scoring system may be used to evaluate participant responses to the TAT using eight subscales scored on a 7-point rating scale. Lower scores indicate more pathological responses, while higher scores indicate healthier, more adaptive responses. The eight variables consist of Complexity of Representations of People (COM), Affective Quality of Representations (AFF), Emotional Investment in Relationships (EIR), Emotional Investment in Values and Moral Standards (EIM), Understanding of Social Causality (SoC), Experience and Management of Aggressive Impulses (AGG), Self-Esteem (SE), and Identity and Coherence of Self (ICS). COM measures relational boundaries and the complexity of mental states of self and other. AFF assesses relationship scripts and expectations. EIR measures the level of commitment and empathy in interpersonal relationships. EIM measures compassion and values in interpersonal relationships. SoC assesses the realistic links between the motivations that drive social interaction. AGG assesses the expression and management of anger. SE measures sense of self and adequacy of self-esteem. ICS measures the stability and coherence of an individual’s self-concept. In the present study, COM and SC variables were used as cognitive/perceptual components of SC, with the remaining six variables being used to operationalize the affective/interpersonal domain, in accordance with prior studies (Lewis et al., 2016; Stein & Slavin-Mulford, 2018; Whipple & Fowler, 2011).

**Rorschach**

The Rorschach is a widely used performance-based personality test evidencing good reliability (Meyer et al., 2002) and validity (Mihura, Meyer, Dumitrascu, & Bombel, 2013). The Rorschach protocols were administered following the procedures articulated by Exner (1993), and protocols with fewer than 14 responses were excluded from the study. For the present study, Rorschach variables were selected that were determined based on prior research (Mihura et al., 2013) to measure affective/interpersonal and cognitive/perceptual aspects of SC. All included variables have good empirical support for their validity, as evidenced by (a) being classified as having good or excellent support in a large-scale meta-analysis (Mihura et al., 2013) or (b) being included in the Rorschach Performance Assessment System (R-PAS; Meyer, Viglione, Mihura, Erard, & Erdberg, 2011) as a variable with stronger empirical support (i.e., variables designated to appear on Page 1 of the summary of scores). Specifically, for the Affective/Interpersonal domain, Rorschach variables were included that measure the extent to which one has a healthy and adaptive understanding of others (GHR), desires interpersonal closeness (SumT), envisions relationships as being mutually enhancing...
(MAH) or malevolent (MAP), and has aggressive preoccupations or identifications (AgC). For the Cognitive/Perceptual domain, Rorschach variables were included that measure the extent to which one has distorted perceptions (X-%) and demonstrates an overall level of disturbed thinking (WSum6 & PTI; for additional information on interpretation and empirical support of variables, see Exner, 1993; Meyer et al., 2011; Mihura et al., 2013).

All Rorschach protocols were rated by two advanced doctoral students in an APA-accredited clinical psychology program. Raters participated in a training sequence on Rorschach coding (adapted from Hilsenroth & Charnas, 2007) for the present study and were blind to the study hypotheses and diagnostic classification of participants. Each rater coded approximately half of the data set, and a random sample ($N = 20$) of study protocols were coded by both raters for interrater reliability. Intraclass correlation coefficients ($2, 1$) for absolute agreement ranged from .61 to .85 ($M = .73$), which suggests acceptable-to-excellent levels of interrater reliability (cf., Cicchetti, 1994; Meyer et al., 2002).

**Results**

To examine differences between diagnostic groups on affective/interpersonal and cognitive/perceptual variables, a series of ANOVAs were conducted, using Bonferroni tests for post hoc comparisons. We adopted a three-level one-way ANOVA analytic approach in order to compare groups separately based on their gender and diagnostic condition. The three groups were men with SSD ($n = 23$), women with SSD ($n = 20$), and women with BPD ($n = 38$). Results of significant or trending differences between gender/diagnostic groups based on three-level one-way ANOVAs are reported in Table 1 and Table 2.

No significant group differences emerged for the SCORS affective/interpersonal variables. However, trends emerged for differences in the mean SE and ICS scores among the different groups (full model and post hoc comparison differences $= p < .10$; see Table 1). For SE, there was a trend for male SSD participants to display higher mean scores ($M = 3.92, SD = .16$) compared with female BPD participants ($M = 3.76, SD = .31; p = .08$), with female SSD participants receiving intermediary scores ($M = 3.78, SD = .28$) that were slightly closer to those of female BPD participants. Furthermore, female SSD participants as a group received lower ICS scores on average ($M = 4.33, SD = .81$) compared with their male counterparts ($M = 4.77, SD = .42; p = .08$), with female BPD participants receiving mean ICS scores ($M = 4.44, SD = .63$) falling between the other two groups (but closer to the female SSD group). These trends suggest that women with BPD may evidence more disturbance in self-esteem than men with SSD.
do, while women diagnosed with SSD may experience somewhat greater impairments in identity coherence compared with their male SSD counterparts.

For the Rorschach affective/interpersonal variables, results revealed a statistically significant difference in the AgC score among the different groups, $F(2, 78) = 3.62, p = .03, \eta^2 = .08$. Bonferroni-adjusted post hoc tests suggested that the mean AgC score in the female BPD group ($M = 4.34, SD = 2.58$) was significantly higher than in the female SSD group ($M = 2.40, SD = 2.54; p = .03$), while the average score in the male SSD group was in an intermediate range ($M = 3.83, SD = 2.76$).

Thus, when compared with their female SSD peers, women with BPD may show notably higher aggressive features in their relationship expectations. A trend also emerged suggesting lower SumT responses in female SSD participants ($M = .10, SD = .31$) compared with their female BPD participants ($M = .63, SD = .79; p = .08$), with male SSD participants receiving mean scores ($M = .61, SD = 1.20$) between the other two groups but closer in range to female BPD participants.

### Table 1. Bonferroni comparisons of SCORS-G variables by diagnosis/gender

<table>
<thead>
<tr>
<th>Variables</th>
<th>Participant group (I)</th>
<th>Comparison group (J)</th>
<th>Mean difference (I–J)</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoC</td>
<td>fBPD</td>
<td>fSSD</td>
<td>.49*</td>
<td>.19</td>
<td>[.02, .96]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>mSSD</td>
<td>.33</td>
<td>.18</td>
<td>[-.12, .78]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>mSSD</td>
<td>-.49*</td>
<td>.19</td>
<td>[-.96, -.02]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>fBPD</td>
<td>-.16</td>
<td>.21</td>
<td>[-.68, .36]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>fSSD</td>
<td>-.33</td>
<td>.18</td>
<td>[-.78, .12]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>mSSD</td>
<td>.16</td>
<td>.21</td>
<td>[-.36, .68]</td>
</tr>
<tr>
<td>SE</td>
<td>fBPD</td>
<td>fSSD</td>
<td>-.02</td>
<td>.07</td>
<td>[-.20, .16]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>mSSD</td>
<td>-.16†</td>
<td>.07</td>
<td>[-.34, .01]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>fBPD</td>
<td>.02</td>
<td>.07</td>
<td>[-.16, .20]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>mSSD</td>
<td>-.14</td>
<td>.08</td>
<td>[-.34, .06]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>fSSD</td>
<td>.16†</td>
<td>.07</td>
<td>[-.01, .34]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>fBPD</td>
<td>.14</td>
<td>.08</td>
<td>[-.06, .34]</td>
</tr>
<tr>
<td>ICS</td>
<td>fBPD</td>
<td>fSSD</td>
<td>.11</td>
<td>.17</td>
<td>[-.31, .54]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>mSSD</td>
<td>-.32</td>
<td>.17</td>
<td>[-.73, .09]</td>
</tr>
<tr>
<td></td>
<td>fSSD</td>
<td>fBPD</td>
<td>-.11</td>
<td>.17</td>
<td>[-.54, .31]</td>
</tr>
<tr>
<td></td>
<td>mSSD</td>
<td>mSSD</td>
<td>-.44†</td>
<td>.19</td>
<td>[-.91, .04]</td>
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<td>mSSD</td>
<td>fSSD</td>
<td>.32</td>
<td>.17</td>
<td>[-.09, .73]</td>
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<tr>
<td></td>
<td>fSSD</td>
<td>fBPD</td>
<td>.44†</td>
<td>.19</td>
<td>[-.04, .91]</td>
</tr>
</tbody>
</table>

Note. SCORS-G = Social Cognition and Object Relations Scale – Global rating method. SoC = Social causality. SE = Self-esteem. ICS = Identity and coherence of self. fBPD = female borderline participant group. fSSD = female schizophrenia spectrum disorder participant group. mSSD = male schizophrenia spectrum disorder participant group. 95% CI = 95% confidence interval. †p < .10. *p < .05.
For the SCORS cognitive/perceptual variables, results showed a statistically significant difference in the mean SoC score among the different groups, $F(2, 78) = 3.68, p = .03, \eta^2 = .09$. Bonferroni-adjusted post hoc tests suggested that the mean SoC score in the female BPD group ($M = 3.49, SD = .72$) was significantly higher than in the female SSD group ($M = 3.00, SD = .60; p = .04$), while the average score in the male SSD group ($M = 3.16, SD = .72$) was in an intermediate range. No further between-group differences were found on cognitive/perceptual variables of the SCORS, and there were no significant group differences on the Rorschach cognitive/perceptual variables.

### Discussion

This study investigated the ability of performance-based measures to assess SC impairments in individuals diagnosed with SSD and BPD. While previous research has found that people with BPD have decrements in SC, and individuals with SSD evidence more concrete, simplistic reasoning in social situations (Andreou et al., 2015; Vaskinn et al., 2015), few studies have directly compared SC functioning between these two diagnostic groups or investigated the utility of performance-based measures for assessing implicit deficits in social perception, understanding, and reasoning. In the current study, we hypothesized that individuals with BPD...
would show more disturbances in affective and interpersonal facets of SC while those with SSD would show more disturbances in cognitive/perceptual domains.

Our hypotheses received partial support. Specifically, on the SCORS-G, female BPD participants demonstrated significantly higher understanding of social causality in comparison with women diagnosed with SSD. While this finding was limited to differences between female participants only, it provides partial support for our hypothesis that SSDs are associated with more impaired understanding of social causality compared with the degree of impairment found in borderline psychopathology. In previous studies using laboratory-based measures, individuals with SSD were similarly found to have more concrete, simplistic social reasoning compared with individuals with BPD (Andreou et al., 2015). Our findings provide preliminary support for use of the SCORS-G as an implicit measure of social reasoning.

No significant group differences emerged for the SCORS-G affective/interpersonal variables, although there was a trend for male patients with SSD to show higher scores on both self-esteem and identity coherence in comparison with female participants with BPD and SSD, respectively. It is worth noting that the male SSD mean scores on both SE and ICS trended closely to the neutral scores (i.e., 4 for SE and 5 for ICS) on each subscale, which may suggest that male patients with SSD were in general unable to generate stories with enough evocative content for a more descriptive rating to be rendered. In other words, it is possible that this trend does not represent actual higher capacities in these domains for male SSD patients compared with the other diagnostic and gender groups, but instead demonstrates a limitation of the SCORS-G system in situations where participants produce bland protocols (Stein et al., 2018).

No statistically significant differences were found on the Rorschach cognitive/perceptual variables between the BPD and SSD groups. While some previous studies have shown more global impairment for individuals with SSD (e.g., Exner, 1986; Hilsenroth et al., 2007; Lerner, Sugarman, & Barbour, 1985), others have found no differences (Brand et al., 2009) between these groups. Hilsenroth et al. (2007) noted the importance of considering the context in which performance-based assessment data are collected (e.g., outpatient settings, inpatient units, college counseling centers) and when the assessment takes place in the course of treatment, as these contexts could impact an individual’s performance. For our sample, given the nature of the setting (open residential treatment center, rather than acute care unit), individuals with SSD diagnoses were likely not acutely symptomatic. It is possible, therefore, that patients diagnosed with SSD in our sample had less severe clinical presentations than the general population of SSD patients, and differences in the acuity of symptoms and clinical presentation may have impacted our results.
In contrast to the Rorschach cognitive-perceptual variables, a significant difference was found for one affective-interpersonal variable (AgC) between the female BPD group (with higher scores) and female SSD group (with lower scores). This finding suggests that female BPD patients have more aggressive expectations and malevolent interpersonal attributions compared with women diagnosed with SSDs. In previous studies, patients with BPD have been found to have a bias toward hostile interpretations of the social environment, including in ambiguous social situations (Lobbestael & McNally, 2016) and when interpreting emotional facial expressions (Smeijers, Rinck, Bulten, van den Heuvel, & Verkes, 2017). The current findings suggest an aggressive element of SC may also be detected using the AgC score on the Rorschach. Indeed, the female patients with BPD in this study gave an average of slightly more than four AgC responses on the Rorschach, which is above the empirically derived threshold identified by Baity and Hilsenroth (2002) for detecting aggression in a clinical population. These findings suggest that differences in these affective-interpersonal domains were related both to diagnostic differences as well as participant gender.

While a number of significant differences emerged in our current sample, the relatively low number of significant findings raises important questions for consideration. First, it is possible that performance-based measures are not sensitive enough to detect SC differences between groups with complex psychopathology. Second, it raises broader questions about the validity of our diagnostic categories, especially given recent controversies about the classification of personality pathology into distinct categories and the call for dimensional diagnoses (Hopwood et al., 2018). In addition, recent research (Sharp et al., 2015) examining the structure of personality pathology found that the diagnosis of BPD in the DSM-IV represents a general factor of personality pathology severity rather than a specific factor, in contrast to other PD diagnoses. This raises questions about what BPD actually represents clinically, and whether it is a marker of nonspecific personality pathology. It is possible that a broad diagnosis of SSD does not capture the rich heterogeneity of different psychotic presentations (e.g., the fearful, over-ideational patient with a paranoid delusion compared with the constricted, emotionally flat patient with prominent negative symptoms).

**Limitations**

There were several limitations to this study. First, our group of eligible BPD participants was almost entirely female, which led us to remove male BPD subjects. This gender difference challenges the generalizability of our findings, although the...
DSM-5 (American Psychiatric Association, 2013) reports that BPD is diagnosed more frequently in females (75%) and therefore a higher ratio of female-to-male BPD patients was not unexpected. In addition, our small sample size limits the power to detect differences between groups and the number of ANOVAs we ran potentially increases the risk of Type I errors. However, our significant findings were in alignment with our hypotheses and emerged despite the limited power. Secondly, we relied only on performance-based measures in our assessment of SC and did not integrate other established assessment laboratory-based measures. Future studies should use a range of measures that evaluate various capacities of SC (e.g., social perception, emotion detection, attributional style) and should examine correlations among different dimensions and methods. Finally, given that demographic information about our sample was limited to age and gender, it is possible that factors outside of gender and diagnosis influenced our findings; future studies should examine a wider range of potential demographic, diagnostic, and other psychosocial covariates.

Conclusion

In sum, the current study investigated differences in SC in patients diagnosed with BPD and SSD, using performance-based measures that have previously been found to relate to interpersonal impairments in each diagnostic group. Our findings provided partial support for our hypothesis that individuals diagnosed with SSD would exhibit poorer functioning in cognitive-perceptual domains of SC, while individuals diagnosed with BPD would experience greater impairments in affective domains. Several of our findings indicated that differences between diagnostic groups on these measures may be related at least in part to gender, suggesting that future studies should continue to account for how gender may be related to SC impairments in different diagnostic groups. Deepening our understanding of these various dimensions could enhance our understanding of the challenges individuals face in their daily interpersonal lives and functioning, and thus inform our psychosocial interventions.

References


**History**

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Summary
Individuals diagnosed with borderline personality disorder (BPD) and schizophrenia- spectrum disorders (SSD) are known to display deficits in social cognition (SC). Specifically, individuals with BPD demonstrate impaired SC in the context of heightened affective arousal, while individuals with SSD show evidence of more concrete, simplistic social reasoning. No study to date has explored the value of using performance-based assessments (Thematic Apperception Test and Rorschach Test) to explore deficits in SC functioning across these two diagnostic groups. Our sample comprised 81 patients enrolled in residential treatment for complex psychopathology. We used performance-based assessments to test the hypothesis that individuals with SSD would display decrements on the cognitive/perceptual facets of SC, whereas individuals with BPD would evidence greater dysfunction on the affective/interpersonal facets of SC, with consideration taken for how gender may interact with diagnosis to influence results. Our findings suggested that women with SSD displayed more impaired understanding of social causality compared with their female BPD counterparts, while female BPD patients evidenced greater expectation for aggression in their SC compared with women with SSD. These findings provide partial support for our hypotheses while highlighting the importance of accounting for the influence of gender on SC functional disparities between these two groups.

Résumé
Les personnes chez lesquelles on a diagnostiqué un trouble de la personnalité limite et des troubles du spectre de la schizophrénie sont connues pour présenter des déficits de la cognition sociale. Plus précisément, les individus atteints de DBP présentent une atteinte de SC dans un contexte d’excitation affective accrue, tandis que les individus atteints de SSD montrent la preuve d’un raisonnement social plus concret et simpliste. Aucune étude à ce jour n’a exploré l’intérêt d’utiliser des évaluations basées sur la performance (test d’aperception thématique et test de Rorschach) pour explorer les déficits de fonctionnement du SC dans ces deux groupes de diagnostics. Notre échantillon comprenait 81 patients inscrits dans un traitement en établissement pour une psychopathologie complexe. Nous avons utilisé des évaluations basées sur les performances pour vérifier l’hypothèse selon laquelle les individus atteints de DSS afficheraient une diminution des
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facettes cognitives / perceptuelles de la CS, tandis que les individus atteints de DBP montreraient un dysfonctionnement plus important sur les facettes affectives / interpersonnelles de la CS, en tenant compte de la façon dont le genre peut interagir avec le diagnostic pour influencer les résultats. Nos résultats suggèrent que les femmes atteintes de SSD ont montré une compréhension plus altérée de la causalité sociale par rapport à leurs homologues féminines du DBP, alors que les patientes atteintes de DBP manifestaient des attentes plus grandes en matière d’agressivité dans leur SC par rapport aux femmes atteintes de SSD. Ces résultats apportent un soutien partiel à nos hypothèses tout en soulignant l’importance de tenir compte de l’influence du genre sur les disparités fonctionnelles des CS entre ces deux groupes.

Resumen

Se sabe que las personas diagnosticadas con trastorno de personalidad límite (DBP) y trastornos del espectro de esquizofrenia (SSD) muestran déficits en la cognición social (SC). Específicamente, los individuos con BPD demuestran una SC deficiente en el contexto de una mayor activación afectiva, mientras que los individuos con SSD muestran evidencia de un razonamiento social más concreto y simplista. Ningún estudio hasta la fecha ha explorado el valor de utilizar evaluaciones basadas en el rendimiento (prueba de percepción temática y prueba de Rorschach) para explorar los déficits en el funcionamiento del SC en estos dos grupos de diagnóstico. Nuestra muestra comprende 81 pacientes inscritos en tratamiento residencial para psicopatología compleja. Utilizamos evaluaciones basadas en el rendimiento para probar la hipótesis de que los individuos con SSD mostrarían decrementos en las facetas cognitivas / perceptivas de la SC, mientras que los individuos con BPD evidenciarían una mayor disfunción en las facetas afectivas / interpersonales de la SC, teniendo en cuenta cómo puede el género Interactuar con el diagnóstico para influir en los resultados. Nuestros hallazgos sugirieron que las mujeres con SSD mostraron una comprensión más deficiente de la causalidad social en comparación con sus contrapartes femeninas con BPD, mientras que las pacientes con BPD mostraron una mayor expectativa de agresión en su SC en comparación con las mujeres con SSD. Estos hallazgos brindan un apoyo parcial a nuestras hipótesis, al tiempo que resaltan la importancia de tener en cuenta la influencia del género en las disparidades funcionales de SC entre estos dos grupos.

要約

ボーダーラインパーソナリティ障害（BPD）と統合失調スペクトラム障害（SSD）と診断された人は、社会的認知（SC）の欠陥を示すといわれている。すなわち、SSD患者はより具体的な神経学的な社会的推論を根拠とし、BPD患者は感情的覚醒の一翼を担うという文脈でSCの障害を示している。これまでの研究では、この2つの診断グループのSC機能の欠陥を調査するために、パフォーマンスベースのアセスメント（TATやロールシャッハテスト）は使われてこなかった。我々のサンプルは、複雑な精神障害を持ち、在宅治療に登録されている81名によって構成されている。我々は、SSD患者はSCの認知的/知覚的側面を減少させるが、BPD患者はSCの情動的/対人面においてより大きな機能不全を示すだろうという仮説を検証するために、パフォーマンスベースのアセスメントを使用した。その際、患者の性別と診断が相互作用として結果に影響を与えるかどうかを考慮に入れた。その結果、SSD女性患者はBPDの女性患者と比較して、社会的因果関係の理解に困難さが認められ、一方で、SSDの女性患者は、BPDの女性患者と比較して、SCの中に攻撃性を見込むことが示唆された。