Personality Disorders and Mindreading

Specific Impairments in Patients With Borderline Personality Disorder Compared to Other PDs

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Abstract: The capacity of understanding mental states is a complex function which involves several components. Single components can be selectively impaired in specific clinical populations. It has been suggested that impairments in mindreading are central for borderline personality disorder (BPD). However, empirical findings are inconsistent, and it is debatable whether BPD presents a specific profile of mindreading impairments. The aim of this study is to compare BPD and other PDs in mindreading. Seventy-two patients with BPD and 125 patients with other PD diagnoses were assessed using the Metacognition Assessment Interview. BPD showed difficulties in two mindreading functions, differentiation and integration, even when the severity of psychopathology was controlled. These results suggest a specific mindreading impairment in BPD and a strong relationship between these impairments and the severity of psychopathology.

Key Words: Mindreading, personality disorders, personality psychopathology, severity, DSM V proposal

(*J Nerv Ment Dis* 2015;203: 00–00)

Borderline personality disorder (BPD) is a disorder characterized by impairments in important mental functions such as affect regulation (Glenn and Klonsky, 2009; Linehan, 1993), the ability to construct a coherent self-image and a stable sense of identity, and the ability to regulate social interactions on the basis of a coherent representation of interpersonal relationships (American Psychiatric Association, 2013; Clarkin et al., 1999; Jørgensen, 2010). To regulate effectively our own emotions, we must first recognize them. Similarly, to be able to build a coherent self-image and a stable view of the people we relate to, we have to form realistic representations of the emotions, ideas, aims, values, and intentions which underpin behavior and shape our own mental states and those of others. In other words, the mental dysfunctions typical of patients with BPD seem to related mindreading. Fonagy proposed, over 20 years ago, that an impaired mindreading (or mentalization) is central to BPD, and this hypothesis has, since then, been widely accepted, debated, and further developed (Fonagy, 1991; Choi-Kain and Gunderson, 2008; Dimaggio and Lysaker, 2010).

However, although this is a convincing hypothesis, the supporting empirical evidence available to date is still scant and inconsistent (Gullestad et al., 2013; Semerari et al., 2014). Various studies have focused on the ability to recognize and name emotions or, vice versa, on the ability to interpret other people's mental states by reading facial expressions (skills which are both included in the concept of mindreading), but the results obtained have been contradictory. In the studies focused on alexithymia, which is defined as the difficulty to recognize and label our own emotions (Bagby et al., 1994), some data show that this was a characteristic difficulty of patients with BPD (McMain et al., 2013), whereas in other studies alexithymia was observed mainly together with traits typical of avoidant personality disorder and not with BPD traits (Nicolò et al., 2011). Similarly, investigating the ability to understand other minds, some studies found no differences between patients with BPD and control groups (Fertuck et al., 2009; Ghiassi et al., 2010), whereas other studies discovered that patients with BPD presented a selective dysfunction of cognitive empathy (synonymous with mindreading, or the ability to reflect on other people's minds), but that their emotional empathy was intact (defined as the ability to resonate emotionally with other people's mental states; New et al., 2012). On the same direction, Sharp et al. (2011) highlighted that borderline traits in normal population strongly correlated with the tendency to over-interpret other people's mental states (hypermentalization).

To explain the inconsistency of the experimental data, two hypotheses could be advanced: the selective impairment hypothesis and the heterogeneous disorder hypothesis. The selective impairment hypothesis departs from the premise that the ability to understand and process one's own and others' mental states is a complex mental function composed of several different sub-functions, and different mental disorders may present selective impairments of some sub-functions, but not of others (Choi-Kain and Gunderson, 2008; Gullestad et al., 2013; Semerari et al., 2007). From this perspective, some studies may fail to detect differences between patients with BPD and control groups because they focus on those mindreading skills which are not in fact impaired in BPD patients. On the other hand, the heterogeneous disorder hypothesis departs from the premise that the severity of personality pathology in patients with BPD may vary considerably from patient to patient. Several studies have argued that the clinical severity and the social maladjustment of patients with BPD are more related to the severity of the personalities' psychopatology (measured by the total number of SCID-II criteria met) rather than to the specificity of the categorical diagnosis (Dimaggio et al., 2013; Hopwood et al., 2011). Consequently, poorer mindreading skills could be due to a more severe pathology of the personality, taken as a whole, rather than to the BPD diagnosis. From this perspective, for example, a borderline patient who meets seven criteria for BPD might have better mindreading skills than a patient who satisfied sufficient criteria for BPD diagnosis but also presents 10 or more criteria of other personality disorders.

Both of these hypotheses seem to provide only a partial explanation for the inconsistency of the data available to date. Although the selective impairment hypothesis may explain why some studies fail to detect differences between the borderline patient group and control groups, the heterogeneous disorder hypothesis is persuasive if we compare the experimental results within the BPD's group, *i.e.*, comparing different experimental procedures and the performance of BPD's groups. For example, the contradictory data available, to date, on the emotion understanding may be due to the fact that the BPDs' samples evaluated presented very different degrees of severity of personality pathology.

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ISSN: 0022-3018/15/20308–0000
DOI: 10.1097/NMD.0000000000000339

Recently, some researches provided evidence in support of both hypotheses. Hengartner et al. (2014) found that a reduced emotional empathy (*vs.* cognitive empathy) is significantly related to the severity of dysfunctional personality, valuated as total PD trait-score in normal population. This result also suggested specific profile of empathy associated to specific PD's traits. Semerari et al. (2012) showed that PDs presented a high correlation between metacognitive dysfunctions and the general severity of personality pathology. However, the data also show that when the severity of personalities' pathology was controlled, patients with different personality styles still present specific difficulties in metacognitive skills. In particular, the mindreading profile of BPD seems to be defined by two specific disabilities. Bateman and Fonagy (2004) suggested that these patients have problems distinguishing between internal mental representations and external reality, oscillating between a state where every representation is experienced as real and a state where the outside world seems imaginary and unreal. Clarkin et al. (1999) emphasized the BPD patient's inability to consider multiple and contradictory representations of himself/herself and of others. Consistently with these clinical observations, Semerari et al. (2005), using the Metacognitive Assessment Scale (MAS) to analyze therapy sessions of patients with BPD, found that the most impaired metacognitive sub-functions were the ability to differentiate between representation and reality (differentiation) and the ability to reflect on varied and contradictory mental representations to construct a unified and coherent narrative (integration). In a later study, Semerari et al. (2014) showed that patients with BPD typically presented an "instability" personality style, which correlated to a specific profile of metacognitive dysfunctions characterized by poor differentiation and poor integration (Semerari et al., 2014). In line with these preliminary findings, the present study aims to further investigate the specific profile of metacognitive abilities of patients with BPD compared to patients with other PDs. Our hypothesis is that patients with BPD present specific metacognitive impairments which are associated to the clinical picture of BPD disorder. We hypothesize that these metacognitive impairments are the hard core of BPD's mental dysfunctions, beside symptoms or the global personality psychopathology. Our hypothesis is that specific metacognitive impairments persist in BPD even when symptomatology and the severity of personality pathology are taken into account. To do so, it was necessary to compare BPDs with other clinical populations, other PDs, comparable for global personality dysfunction and symptomatology. Comparing patients with BPD with a similar control group (other PDs), we would expect that only the BPD's group have specific impairments only in two metacognitive sub-functions: the ability to distinguish between internal representations and external reality (differentiation) and the ability to keep together varied and contradictory mental representations to produce a coherent self-narrative (integration).

METHOD

Participants

Participants were 197 adult patients requiring treatment or seeking consultation in an Italian outpatient clinic from 2009 to 2014. The mean age was 34.22 (SD = 10.57), ranging from age 18 to 65. Ninety-five participants (42.8%) were male and 125 (56.8%) were female. All participants met DSM-IV diagnostic criteria for at least one personality disorder. The whole sample was divided into two groups. Seventy-two patients met criteria for BPD diagnosis (BDP group). The control group of 125 patients was selected according to the presence of *any* PD diagnosis except for BPD diagnosis. None of the individuals of PD's group met more than two criteria of the BPD (PD group). Table 1 shows demographic and diagnostic characteristics of the two groups and percentage of PD's diagnosis. Exclusion criteria included the presence of neurological disorders, psychotic disorders, and active substance dependence.

TABLE 1. Demographic and Diagnostic Characteristics

	N	Sex	Age Mean (SD)
PD	125	68M/56F	35.43 (11.17) range (18–65)
BPD	72	18M/54F	31.61 (8.95) range (18–57)
Total	197	86M/110F	34.04 (10.55) range (18–65)

Percentage of diagnosis for PD

AV	DEP	O-C	PA	DE	PAR	ST	SZ	HIS	NAR
29.6	9.8	25.6	4.8	13.8	4.2	1.6	0.8	2.4	7.4

Note. PD indicates Other Personality Disorders' group; BPD, Borderline Personality Disorder's group; M, male; F, female; AV, avoidant PD; DEP, dependent PD; O-C, obsessive compulsive PD; PA, passive-aggressive PD; DE, depressive PD; PAR, paranoid PD; ST, schizotypal PD; SZ, schizoid PD; HIS, histrionic PD; NAR, narcissistic PD.

Instruments

The Metacognition Assessment Interview

The MAI (Semerari et al., 2012) is a semi-structured clinical interview designed to elicit and evaluate metacognitive abilities of the participant in a brief narrative of a psychologically significant experience or event. During the interview, the participant is requested to describe the most troubling interpersonal experience of the previous 6 months, a time frame selected to facilitate recall and to permit test-retest, avoiding recalling biases, in the evaluation of changes during psychotherapy. The reported experience must be autobiographical, personal, and must involve another person, so that the ability to understand the mental state of others can be evaluated. Once the description of the episode is completed, the interviewer asks a list of questions, divided into four modules, to elicit and evaluate the 16 basic facets constituting metacognitive sub-functions (four facets for each sub-function). The interviewer assigns to each of the 16 basic facets a score ranging from 1 to 5 in a Likert scale. The metacognitive functions assessed by the MAI are Monitoring (MON), Integration (INT), Differentiation (DIF), Decentering (DEC), and Global score. Monitoring is the ability to identify and label the components of our mental states in terms of emotions, thoughts, motivations, and desires. People who can monitor effectively find it easy to give appropriate answers to questions like: "What do you think? How do you feel?". Impairment of this function (MON) compromises both the individual's ability to describe his/her internal states and the ability to explain reasons and motivations underlying his/her behavior. Integration (INT) refers to the more general capacity of individuals for reflection upon different mental states, identifying internal contradictions, conflicts, and patterns. This metacognitive function allows us to organize mental contents adaptively in terms of significance and subjective priority and thus to maintain behavioral coherence. An integration disorder makes mental processes and behaviors contradictory and unstable. Differentiation (DIF) indicates the ability to recognize the representational nature of mental states, distinguishing clearly between internal psychological contents and external reality. In presence of differentiation's impairments, imagination takes on the properties of the real world. In this perspective, if the patient is unable to recognize the subjectivity of his/her mental representations, he/she is also unable to have critical distance from his/her own representations. Decentration (DEC) refers to the ability to assume other people's perspective and to make plausible hypotheses about their mental states. Specifically, it

means being able to reflect about other's intentions, thoughts, and desires, independently of our own personal point of view.

The MAI was tested in two preliminary studies. In the first study, factor analysis was used to investigate 175 nonclinical subjects and revealed the presence of two higher order domains which can be described, respectively, as "self mental states awareness" and "others' mental states understanding" (Semerari et al., 2012). In the second study, conducted on the same sample of this study, factor analysis indicated four factors, consistent with the structure of the MAI sub-functions, but also confirmed the higher "two factors" structure of found in the first study (Pellecchia et al., submitted). Additionally, this study showed a significant association between MAI and alexithymia measured with TAS-20 (Bagby et al., 1994). In particular, monitoring scores and MAI global score were associated with all TAS-20 dimensions and total score (correlation coefficients ranging from 0.24 to 0.39, $p < 0.01$). MAI sub-functions and global score resulted associated with the global evaluation of interpersonal problems measured with IIP (Pilkonis et al., 1996), with a correlation coefficients ranging from 0.19 to 0.27 ($p < 0.01$).

In this study, MAI was administered to the whole sample at a very preliminary phase of the project (second or third session) before they were involved in any clinical treatment. The rationale of this strict timing is because we want to obtain a measure of metacognitive abilities for both PD's samples which could represent, as much as possible, an original and genuine picture of mindreading abilities in PDs. The MAI sample was before scored by three senior interviewers blinded to clinical diagnosis. Preliminary inter-rater reliability evaluation was carried out on 20 interviews. To estimate the correlation for every single facet rated by different judges, the intraclass correlation coefficient (ICC) was used. A two-way mixed absolute agreement model was applied to carry out the ICC for each dimension of the MAI. ICC for the MAI's functions ranged from 0.55 to 0.72 for MON; from 0.50 to 0.67 for INT, from 0.49 to 0.78 for DIF, and from 0.45 to 0.61 for DEC. All analyses were significant at the $p < 0.001$ level and provided a good inter-rater reliability. Internal consistency of the MAI dimensions was estimated with Cronbach's alphas that ranged from 0.85 to 0.89.

The Structured Clinical Interview for DSM-IV

The DSM-IV, II diagnoses were obtained using Structured Clinical Interview for DSM Axis II Disorders (SCID-II; First et al., 1997). Twenty SCID-II interviews were rated twice, internal consistency of PDs' traits ranged from 0.70 and 0.89 for the majority of the PD diagnoses; only four PDs, Obsessive-Compulsive, Dependent, Schizotypal, and Passive-Aggressive, had alphas above 0.60. Inter-rater reliability was adequate for both trait scores (a two-way mixed absolute agreement model for intraclass correlation coefficients ranged between 0.88 and 0.99, mean = 0.94) and categorical diagnoses (average $k = 0.89$) (SCID-II).

The Symptom Checklist-90-R

The SCL-90-R (Derogatis, 1977) is a 90-item self-report inventory designed to reflect the psychological symptom patterns of psychiatric and medical patients. It is a measure of current (state) psychological symptom status. The SCL-90-R measures nine primary symptom dimensions and generates an estimate of global psychopathology, the Global Severity Index (GSI), which has been adopted in the current study as measure of symptoms.

Procedure and Data Analysis

Personality disorders evaluation and diagnosis were made by a clinical team (psychologists and psychiatrists) in accordance to DSM-IV criteria. The study was extensively explained to each participant, who signed a written consent form before entering the study, and the evaluation protocol was approved by the local Ethical Committee. After informed consent, all participants completed the SCL-90-R and then were assessed with the MAI interview.

To test our hypothesis, statistical analyses were divided into four phases. In the first phase, we compared the two groups for symptomatic distress (SCL-90-R—GSI) and for their severity in PD diagnosis. To assess PD general pathology, we firstly computed the number of SCID-II criteria met by each individual participating in the study, and the resulting score was considered a global measure of the severity of personality pathology. An analysis of internal consistency and criterion-total correlations supported the view that a general severity composite may be represented in this way (Hopwood et al., 2011).

In the second phase, an analysis of variance was conducted to compare the two groups on MAI sub-functions scores. In the third phase, an analysis of covariance was conducted to compare the two groups on the MAI sub-functions scores controlling for symptomatic distress (SCL-90-R—GSI) and the severity of personality psychopathology dimension (SCID-II total-criterion). Finally, in the fourth phase, a logistic regression analysis was performed with the two groups (BPD *vs*. other PDs) as dependant variable and the mindreading sub-functions, as well as global psychopathology and severity, as predictors. This analysis contributed to isolate the specific weight of each mindreading sub-function and to check whether they predict the adscription of each subject to the BPD or other PDs' group. Statistical analysis of data was performed using SPSS 13.0.

RESULTS

The internal consistency of the severity dimension was 0.91 and the analysis of criterion-total correlations revealed that all PD criteria were positively correlated with severity dimension, reporting correlation coefficients ranging from 0.15 to 0.57, median = 0.26. With respect to all criterion-total correlations, 79.79% were significant ($p < 0.05$) in bivariate correlation. These results support the view that PD symptoms are sufficiently homogeneous to be represented as a reliable unitary dimension of severity in PDs' psychopathology.

Successively, the BPD and PD groups were compared independently on both measures of global psychopathology (SCL-90-R—GSI) and severity scores. The BPD group showed significantly more symptoms than the PD group ($F(1,196) = 31.36$, $p < 0.001$) and were significantly more impaired in global severity dimension ($F(1,196) = 101.32$, $p < 0.001$). Even when the severity and symptoms were controlled, the BPD group reported a significantly greater metacognitive impairment than the control PDs' group on all MAI functions. The only exception was monitoring function, where the difference between the two groups was not significant ($F(1,196) = 2.52$, $p = 0.11$). The comparison of the two groups on the MAI specific metacognitive sub-functions scores reported a significant lower performance in differentiation, integration, and decentration abilities in BDP with respect to PDs [DIF, $F(1,196) = 38.62$, $p < 0.001$; INT, $F(1,196) = 31.37$, $p < 0.001$; DEC, $F(1,196) = 20.63$, $p < 0.001$]. The pattern of results remained stable even after controlling for the weight of symptoms and the severity of personality psychopathology, with the exception of decentration where differences between the two groups became statistically not significant. Results are reported in Table 2.

Results of logistic regression showed the effects of global psychopathology (SCL-90-R-GSI), global severity, and metacognitive functions on the likelihood that participants were adscripted to the BPD group (PD *vs*. BDP). A test of the full model, against a constant only model, was statistically significant, indicating that our set of predictors were able to reliably distinguish subjects between PD and BPD (Table 3). The logistic regression model was statistically significant, $\chi^2(6) = 86.87$, $p < 0.001$. The model explained 50.1% (Nagelkerke R^2) of the variance and correctly classified 80.1% of cases. More specifically, the Wald criterion demonstrated that only global severity ($p < 0.001$), integration ($p = 0.039$), and differentiation ($p = 0.049$) made significant contributions to prediction. Global psychopathology, monitoring, and decentration were not significant predictors. Increasing global severity ($B = 0.175$),

TABLE 2. MAI Global Score and Sub-functions Score Before and After Controlling for Global Psychopathology (One-Way Analysis of Variance/Covariance)

	PD	BPD		
	Mean (SD)	Mean (SD)	*F*	
Measures	(*n* = 125)	(*n* = 72)	(1,196)	Cohen's *d*/Partial Eta Squared
Monitoring	3.14 (0.62)	2.99 (0.67)	2.52 n.s.	0.24
(MAI)	3.08 (0.06)	3.11 (0.08)	0.57 (0.812) n.s.	0.00
Differentiation	3.10 (0.58)	2.56 (0.58)	38.62**	0.94
(MAI)	3.00 (0.05)	2.74 (0.07)	6.11 (0.014)*	0.032
Integration	2.94 (0.60)	2.43 (0.62)	31.37**	0.84
(MAI)	2.86 (0.05)	2.58 (0.08)	6.66 (0.011)*	0.034
Decentration	2.89 (0.74)	2.43 (0.58)	20.63**	0.60
(MAI)	2.83 (0.06)	2.61 (0.09)	2.90 (0.09)	0.015
Global score	12.09 (2.08)	10.42 (1.95)	30.28**	1.01
(MAI)	11.75 (0.195)	10.99 (0.274)	4.42 (0.037)*	0.023
SCL-90-R—GSI	1.19 (0.57)	1.71 (0.69)	31.36**	0.85
PD severity	13.66 (4.54)	22.91 (8.3)	101.32**	1.39

Raw means are reported on the first line. Means on the second line are adjusted for SCL-90-R Global Psychopathology and PD Global Severity. *$p < 0.05$; **$p < 0.001$.

decreasing integration ($B = -0.397$), and decreasing differentiation ($B = -0.247$) were associated with an increase in the likelihood of exhibiting BDP.

DISCUSSION

Our results support the hypothesis that patients with BPD have a distinctive and specific profile of mindreading impairments which differs from other PDs. The borderline patients in our sample performed at a lower level than patients with other PDs in every area of metacognition, with the exception of monitoring. However, they also met a significantly higher number of SCID-II criteria compared to PDs' control group. When general severity of psychopathology was taken into account, the differences between the two groups in the MAI scores emerged more clearly. The BPD group obtained significantly lowest scores in two metacognitive areas: differentiation and integration. Therefore, poor differentiation and poor integration seem to be the "typically borderline" metacognitive profile. This indication was also supported by the logistic regression analysis which confirmed that integration and differentiation, along with global severity, were the main features which predict and identify participants of the BPD group.

This result is consistent with previous studies that highlighted the difficulty of patients with BPD to distinguish between mental representations and reality and to integrate contradictory internal representations (Semerari et al., 2005, 2014). These results are also consistent with several clinical observations (Bateman and Fonagy, 2004). Poor differentiation implies that the individual perceives his/her own representations not as subjective and hypothetical scenarios but as objective, unquestionable fact, concrete realities that call for direct action (Bateman and Fonagy, 2004). Borderline patients are impulsive and they have a tendency to act out; it is plausible that the specific metacognitive dysfunction in differentiation plays a role in generating their behavioral discontrol. Dysfunctional integration, on the other hand, means that the individual finds it difficult to reflect on the contradictions inherent in his own thoughts and feelings. A specific impairment of integration is consistent with the characteristic difficulties encountered by these patients in forming a stable self-image and stable representations of interpersonal relations. Additionally, comparisons of other metacognitive sub-functions, such as monitoring and decentering, in the BPD and PD groups produced further interesting insights. Monitoring scores in the two groups were very similar in mean scores, both before and after controlling for general severity. This indicates that difficulty in recognizing thoughts and emotions, which constitute mental states, could not be considered a defining characteristic of borderline patients in particular, but rather of PDs in general. In contrast, when decentering was assessed, the borderline group performance emerged as weaker than that of the control group. This difference remained constant even after general severity was taken into account, although it became no longer statistically significant. This impairment in decentering in the BPD group is comparable to the lack of cognitive empathy observed in other studies (New et al., 2012, Hengartner et al., 2014). Cognitive empathy involves the ability to consider other people's mental states, while discounting one's own viewpoint and degree of personal involvement (perspective taking). Nonetheless, New et al. highlighted that difficulties in cognitive empathy in BPD do not necessarily imply a similar difficulty in emotional empathy; borderline patients are, indeed, well able to understand other people's emotions quickly and intuitively.

In line with recent studies (Hengartner et al., 2014, Semerari et al., 2014), our results suggest that mindreading difficulties are, first

TABLE 3. Logistic Regression Analysis of Both Groups (BPDs and Other PDs) Predicted by Global Psychopathology, PD Severity, and Mindreading Sub-functions

Predictor	*B*	SE *B*	Wald χ^2 (*df* = 1)	E^B
Monitoring (MAI)	0.23 n.s.	0.17	1.79	1.26
Differentiation (MAI)	−0.39*	0.12	4.27	0.67
Integration (MAI)	−0.24*	0.19	3.74	0.78
Decentration (MAI)	−0.009 n.s.	0.09	0.009	0.99
SCL-90-R—GSI	0.49 n.s.	0.34	2.10	1.64
PD severity	0.17**	0.03	22.06	1.19
Constant	−1.38	1.38	0.99	0.25
Overall model evaluation				
χ^2 (*df* = 6)	86.87**			
Nagelkerke R^2	0.50			
Cox and Snell R^2	0.36			
Percent of correct classification	80.1			

E^B indicates exponential *B*. *$p < 0.05$; **$p < 0.001$.

of all, an expression of general severity of personality psychopathology and, on the other, expression of specific dysfunctions typical of each personality pathologies. This result is also in line with the "Alternative DSM 5 Model for Personality Disorders" proposal for distinguishing between general severity of PDs, defined on the basis of dysfunction of self-representation and interpersonal capacities, and specific PDs' categories. Both self-representation and interpersonal problems are described in the proposal as mindreading, described as the capacity "to reflect on and make constructive meaning of internal experience" and to experience empathy. However, our data suggest the existence of a specific relationship between different PD and specific mindreading impairments (Semerari et al., 2003). One implication of this is that for a clearer understanding of the way mindreading capacity informs and explains each personality disorder, distinctions must first be made between features of general personality pathology and features peculiar of each disorder.

Overall, our findings suggest that there are two useful directions that research can take to further clarify the relationship between mindreading abilities and BPD or, more generally, mindreading and PDs. A first line of investigation concerns how poor mindreading could impact on general functioning of the personality, which would involve the question of reciprocal interactions between the global severity of personality psychopathology and the degree of mindreading dysfunction. The second direction would involve examining the role of selective mindreading impairments in each PD group, and exploring links between the specificity of each mindreading difficulty and particular styles, traits, and categories of PD.

Identifying a BPD-specific profile of mindreading dysfunction has interesting implications for clinical practice and may contribute to the sharpening of clinical focus. A therapist aware of a specific need to strengthen the capacity of integration might, for example, deliberately encourage the patient to reflect on his contradictory representations or might decide to support the patient's understanding of causal factors involved in transitioning between mental states.

Our study presents some limitations. Firstly, we have not considered the heterogeneity within the BPD diagnosis itself. Patients with BPD can be grouped very differently according to the categorical diagnostic criteria taken into account. These groups constitute very different clinical sub-categories, which also had varied response to treatment (Critchfield et al., 2008; McMain et al., 2013). It is plausible that such clinical sub-categories present also different profiles of mindreading impairments, which have not been considered in this study. Further studies might be useful considering a bigger sample and diverse settings. In this study, both groups, BPD and other PDs, were enrolled in an outpatient clinic, and it would be interesting to extend this analysis to other and more severe groups, such as inpatient population.

Second, the overall focus of this study was restricted to comparison of BPD with other PDs, with the aim to identify a specific mindreading profile which distinguishes patients with BPD from other PDs. Further investigations are needed to better clarify the degree and specificity of mindreading impairments in patients with BPD compared to the healthy population.

ACKNOWLEDGMENTS

The authors thank Shonagh McAulay for her valuable, careful, and patient English language revisions of the manuscript throughout the phases of the Journal's acceptance process.

DISCLOSURE

The authors declare no conflict of interest.

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