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Peter, M.; Arntz, A.R.; Klimstra, T.; Vingerhoets, A.J.J.M.

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RESEARCH ARTICLE

Different aspects of emotional intelligence of borderline personality disorder

Mathell Peter[1] | Arnoud R. Arntz[2] | Theo Klimstra[3] | Ad J.J.M. Vingerhoets[4]

[1] Department of Personality Disorders, GGz Breburg, Tilburg, The Netherlands

[2] Department of Clinical Psychology, University of Amsterdam, Amsterdam, The Netherlands

[3] Department of Developmental Psychology, Tilburg University, The Netherlands

[4] Department of Medical and Clinical Psychology, Tilburg University, The Netherlands

Correspondence
Mathell Peter, Department of Personality Disorders, GGz Breburg, Lage Witsiebaan 4, Tilburg, 5000 AT, The Netherlands.
Email: m.peter@ggze.nl

Objectives: The present study investigated deficiencies in different components of emotional intelligence in borderline personality disorder (BPD).

Method: The Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) and the Emotional Quotient Inventory (EQ-i) were used to assess EI dimensions. BPD patients (N = 85; 69 women; M = 33.6 years) were compared with Cluster C personality disorder (PD) patients (N = 39; 23 women; M = 36.6 years) and nonpatients (N = 69; 44 women; M = 35.6 years).

Results: Compared to the Cluster C PD patients and the nonpatient group, BPD patients displayed only deficits in their ability to understand emotions as measured with the Mayer–Salovey–Caruso Emotional Intelligence Test. The Emotional Quotient Inventory only revealed deficits in stress management in BPD patients compared to Cluster C PD patients.

Conclusions: Our findings suggest that BPD patients have the ability to regulate emotions effectively, but they subjectively experience deficits in emotion regulation and therefore may not use this ability when they need it.

KEYWORDS

borderline personality disorder, emotion dysregulation, emotional intelligence, general intelligence

1 | INTRODUCTION

Emotional intelligence (EI) has been described as "the ability to perceive, appraise, and express emotion, to access and/or generate feelings when they facilitate thought; to understand emotion and emotional knowledge; and to regulate emotions to promote emotional and intellectual growth" (Mayer & Salovey, 1997, p. 101).

There currently is preliminary evidence that EI is important for mental health (Austin, Saklofske, & Egan, 2005; Ciarrochi, Chan, & Caputi, 2000; Dawda & Hart, 2000; Martinez-Pons, 1997; Mayer, Salovey, & Caruso, 2002; Saklofske, Austin, & Minski, 2003; Schutte, Malouff, Simunek, McKenly, & Hollander, 2002). More specifically, depression, anxiety, loneliness, low self-esteem, suicidal feelings, aggressive behaviour, poor impulse control, poor interpersonal adjustment, increased stress, and increased alcohol and drug use all have been associated with low EI (Brackett, Mayer, & Warner, 2004; Lopes, Salovey, & Strauss, 2003). In general, research on EI in borderline personality disorder (BPD) patients is currently still scarce. The concept of EI has some overlap with the concept of social cognition (including theory of mind). Several studies have tested the hypothesis that BPD is characterized by diminished social cognitive capacities, but findings are, as with EI, very mixed and do not tend to support gross deficiencies in this area (Arntz, Bernstein, Oorschot, & Schobre, 2009; Franzen et al., 2011). This is remarkable, because deficiencies in the experience and regulation of emotions are considered key factors in (the development of) personality disorders (PDs). Especially patients with BPD are hypothesized to have impairments in the regulation of emotions (Berg, 1990; Levine, Marziali, & Hood, 1997; Trull, Useda, Conforti, & Doan, 1997). According to Linehan (1993), patients with BPD are characterized by (a) heightened sensitivity to emotional stimuli, (b) a stronger and more intense experience of emotions, and (c) a slow return to baseline after emotional stimulation.

Recently, two broad categories of models have been developed for the evaluation of EI. These models are referred to respectively as *ability models* and *mixed models* (Mayer & Salovey, 1997). The difference between these two models is that mixed models of EI include some personality traits in their conceptualization of EI, whereas ability models do not. Because of its conceptual overlap with personality and mood, Mayer, Salovey, Caruso, and Sitarenios (2001) classified their measure as a mixed model of EI (Bastian, Burns, & Nettelbeck, 2005;

Brackett & Mayer, 2003; Dawda & Hart, 2000; Lopes et al., 2003; Saklofske et al., 2003). Proponents of this approach use self-report instruments, rather than performance assessments, to assess EI. Thus, instead of asking people to demonstrate whether they perceive an emotional expression accurately, they ask people to judge and report on how good they are at perceiving others' emotions accurately.

Ability-based EI models emphasize that EI should be viewed as a type of intelligence that is relatively independent of personality traits (Mayer, Roberts, & Barsade, 2008; Mayer & Salovey, 1997). Proponents of the ability model consequently measure EI as a mental ability with the use of performance assessments that have a criterion of correctness. That is, there are correct and incorrect answers, which are determined using complex scoring algorithms. A popular mixed model test of EI is the Emotional Quotient Inventory (EQ-i; Bar-On, 1997) and for the ability model the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2002).

The MSCEIT was designed to measure how well individuals perform emotion-related tasks (e.g., identifying emotions in faces and landscapes; Mayer et al., 2001) and is composed of four scales: emotional management, emotional understanding, emotional facilitation, and emotional perception. Conversely, the EQ-i (Bar-On, 1997) is a self-report inventory that consists of 133 items assessing 15 subscales that are classified under five main factors: intrapersonal functioning (i.e., emotional self-awareness, assertiveness, self-regard, self-actualization, and independence), interpersonal skills (i.e., empathy, interpersonal relationships, and social responsibility), adaptability (i.e., problem solving, reality testing, and flexibility), general mood (i.e., happiness and optimism), and stress management (i.e., stress tolerance and impulse control).

Because EI has been conceptualized in these two different ways, there is confusion about the precise nature of EI and the best way to measure it (Bastian et al., 2005; Roberts, Zeidner, & Matthews, 2001). This also makes it hard to draw firm conclusions about whether or not certain types of psychopathology are associated with EI deficits. The present study addresses this issue by using both types of models to investigate EI in a clinical group of BPD patients.

The limited empirical record of the relationship between PDs and EI reveals an inconsistent picture. Leible and Snell (2003) found a negative relationship between borderline personality symptomatology and emotion regulation. However, they examined a sample of psychology students and only used self-reports to assess EI.

Beblo et al. (2010) failed to show any deficits in EI in BPD patients using the ability test EI, the MSCEIT (Mayer et al., 2002). However, the BPD group in this study was small, and results of EI were compared only with those of nonpatients. Hertel, Schütz, and Lammers (2009), in contrast, found that the ability to understand emotional information and the ability to regulate emotions were significantly impaired in the BPD group compared to other patient groups (i.e., patients with a depression or substance abuse disorder). In their study, only the MSCEIT was used. Finally, a recent study of Peter et al. (2013) demonstrated that patients with BPD show only deficits in the ability to understand emotions compared to patients with other PDs and nonpatients. No deficits were found in the ability to regulate emotions measured with the MSCEIT. In their study, only the MSCEIT was used.

Key Practitioner Message

- For therapists working with BPD patients, it is important to focus interventions on understanding emotions..
- Also, therapists should teach BPD patients to gain confidence in their emotion regulation strategies and use these when they are necessary.

In conclusion, until now, studies in EI in BPD patients have not integrated different models of EI. Also, different comparison groups were included. In studies with BPD patients, only an ability model of EI (MSCEIT) was used and not a mixed model of EI such as the EQ-i (Bar-On, 1997). In the present study, we aim to fill this gap. To be able to draw meaningful conclusions on EI in BPD patients, it is important to compare the findings with both patients with other PDs and nonpatients. By doing this, we expect to find a unique pattern of EI strengths and deficits in BPD patients.

We had two comparison groups, patients with Cluster C PDs and nonpatients. Including a Cluster C PD group has the added advantage of attaining information on the specificity for potential EI challenges to BPD when compared to other PDs. In line with the theory of Linehan (1993), we hypothesized that BPD patients would show impairments in the ability of understanding and regulating emotions (measured with the MSCEIT) compared to both comparison groups.

Given the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) criteria of BPD as a pattern of unstable and intense interpersonal relationships, we also hypothesized deficits in the scales interpersonal functioning and stress management on the EQ-i. The stress management scale of the EQ-i consists of two subscales, stress tolerance and impulse control, which can be seen as a scale for emotion regulation. We further anticipated a negative relation between the severity of the BPD and EI. More precisely, a higher BPD severity index was expected to be related to more impairment on EI. Finally, as found in previous studies (Brackett & Mayer, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006), we hypothesized a positive association between EI and general intelligence measured with the MSCEIT. In this study on EI, we therefore controlled the differences between the three groups and the association of BPD severity with EI for general intelligence.

2 | METHODS

2.1 | Participants

The patient groups consisted of 85 patients (69 women) diagnosed with BPD and 39 patients (23 women) with Cluster C PDs (primary diagnoses: 15 avoidant PDs, 8 dependent PDs, and 17 obsessive PDs).

Within the BPD group, 35 patients showed co-morbidity with Cluster C PDs as they also met the criteria of a Cluster C PD. The primary diagnosis was determined on the basis of the request for help and on what the primary focus of treatment should be to meet the

request for help. The patients were all waiting for outpatient treatment at the Mental Health Institute of Tilburg, GGz Breburg. Acute and chronic psychotic disorders, as well as bipolar disorder, organic disorders, dissociative identity disorder, and mental retardation, were exclusion criteria for both patient groups.

Age of the BPD patients ranged from 23 to 54 (M = 33.6 years, SD = 8.0). The ages of the patients with Cluster C PDs ranged from 21 to 58 (M = 36.6 years, SD = 9.4). The nonpatient control group were recruited by psychology students and consisted of 69 individuals (44 women). Their ages ranged from 19 to 64 (M = 35.6 years, SD = 13.7). Although we did not perform a formal assessment for the presence of psychopathology in the nonpatient sample, an inclusion criterion was that participants had to report good mental health and no prior experience with mental health care.

2.2 | Procedure

Written informed consent was obtained from all participants. DSM-IV classifications of the patient group were based on the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997; Dutch version by Weertman, Arntz, & Kerkhofs, 2000), which is part of the standard intake procedure at GGz Breburg. After the intake, patients were invited to participate in this study. All participants engaged in both EI tests and a general intelligence test. Only the BPD patients engaged in the BPD severity interview. All participants filled out the EI tests on the computer. The study was approved by the institute's Medical Ethics Review Committee (METIGG Kamer Zuid).

2.3 | Measures

EI according to the ability model was measured using the MSCEIT version 2.0 (Mayer et al., 2002). This 141-item test measures how well people perform on emotional tasks and how well they solve emotional problems. It contains four branches: (a) perceiving emotions, (b) using emotions to facilitate thought, (c) understanding emotions, and (d) regulating emotions. The MSCEIT measures *perceiving emotions* by asking people to rate to what extent a particular emotion is expressed in pictures of faces or designs and landscapes. *Using emotions* is measured by asking participants to describe emotional sensations and by having them judge how different moods can facilitate different types of thought. *Understanding emotions* is determined by items addressing how emotions blend to form more complex emotions and how emotional reactions change over time. Finally, the MSCEIT assesses *regulating emotions* by having participants choose effective ways to manage private emotions and the emotions of others in hypothetical situations. The test provides five scores, one for each branch and one for total EI. Split-half reliability coefficients for the four branches range from r = .80 to .91, and for the entire test, it was r = .91 (Mayer et al., 2002).

A mixed-model approach to EI was pursued by using the EQ-i (Bar-On, 1997). The EI is a 133-item self-report measure of EI and yields an overall EQ score as well as scores for five composite scales: (a) intrapersonal, (b) interpersonal, (c) adaptability, (d) stress management, and (e) general mood. Bar-On (1997) reported that the internal consistency reliability of the overall EQ-i was .76. For all the subscales, the internal consistency coefficients were high, ranging from a .69 (social responsibility) to .86 (self-regard), with an overall average internal consistency coefficient of .76, thus indicating a very good homogeneity.

BPD severity in the BPD patient group was measured using the Dutch version of the Borderline Personality Disorder Severity Index (BPDSI; Arntz et al., 2003; Giesen-Bloo, Wachters, Schouten, & Artnz, 2010), a semistructured interview assessing the frequency and severity of manifestations of BPD during the past 3 months. The BPDSI yields highly reliable (intraclass correlation coefficient = .93) and internally consistent (Cronbach's α = .85 in BPD; .96 in mixed samples: Giesen-Bloo et al., 2010) scores. Concurrent validity and construct validity are excellent (Arntz et al., 2003; Giesen-Bloo et al., 2010).

General intelligence was measured with the Dutch version of the Wechsler Adult Intelligence Scale—third edition (1997). This test provides a total IQ score, a verbal IQ score, and a performance IQ score. Reliability of average IQ scores ranges from .94 to .98; reliability of average index scores ranges from .88 to .96 (Psychological Corporation, 1997).

3 | RESULTS

Prior to the main analyses, we compared the three participant groups on relevant background variables. It turned out that BPD patients, Cluster C PD patients, and nonpatients did not differ significantly in terms of age, $F(2, 189) = 1.30$, $p = .276$, but that the proportion of men and women was significantly different in these groups, $\chi^2(2) = 8.29$, $p = .02$. Specifically, the proportion of men was considerably lower in the BPD group than in the other two groups. In addition, Fisher's exact test demonstrated that the level of education differed between the three groups, $\chi^2(16) = 93.446$, $p < .001$. Follow-up pairwise comparisons showed that the level of education was higher for nonpatients when compared to Cluster C PD patients and BPD patients, whereas the two patient groups did not differ from each other. Finally, groups differed in IQ, with nonpatients scoring higher than both patient groups on verbal, performance, and total IQ ($p < .001$; see Table 1 for means and standard deviations). The two patient groups did not differ from each other. The patterns for all IQ variables were very similar, and verbal IQ and performance IQ were both highly correlated with the total IQ score ($r \geq .89$). Hence, we decided to only control for the total IQ score in subsequent analyses.

Furthermore, we examined whether age, sex, level of education, and IQ were associated with our outcome variables (the MSCEIT scales and the EQ-i scales). Age was only significantly, and negatively, associated with two of the subscales (perceiving and understanding emotions) and the total score of the MSCEIT (see Table 2). Multivariate analyses of variance indicated that there was a significant multivariate effect of sex on the MSCEIT scales, $F(5, 181) = 2.921$, $p = .015$, partial $\eta^2 = .075$, but not on the EQ-i scales, $F(5, 179) = 1.578$, $p = .168$, partial $\eta^2 = .042$. In addition, there were significant multivariate effects of educational level on the MSCEIT scales, $F(40, 761.243) = 2.122$, $p < .001$, partial $\eta^2 = .083$, but not on the EQ-i scales, $F(40, 752.525) = 2.632$, $p < .001$, partial $\eta^2 = .094$. Pearson correlations

TABLE 1 Mean scores for verbal, performance, and total IQ and frequencies of different education level for nonpatients, PD patients, and BPD patients

	Nonpatients (*n* = 53)	Cluster C PD (*n* = 37)	BPD (*n* = 83)
Verbal IQ	112.23 (11.05) a	98.84 (11.49) b	97.34 (9.27) b
Performance IQ	110.32 (12.46) a	99.49 (13.00) b	97.70 (11.34) b
Total IQ	112.51 (11.36) a	98.59 (11.82) b	97.02 (9.62) b
Education level			
1	2 (1.1)	0 (0.6)	1 (1.3)
2	0 (0.7)	0 (0.4)	2 (0.9)
3	1 (11.3)	9 (6.5)	22 (14.2)
4	0 (1.4)	0 (0.8)	4 (1.8)
5	1 (8.9)	9 (5.1)	15 (11.1)
6	10 (18.4)	12 (10.6)	30 (23.0)
7	35 (17.7)	7 (10.2)	8 (22.1)
8	0 (.4)	0 (0.2)	1 (0.4)
9	19 (8.1)	2 (4.7)	2 (10.2)

Note. Group means with different lowercase letters (i.e., a or b) are significantly different from each other ($p < .05$). For example, the means for verbal IQ differ between nonpatients and Cluster C PD patients (these groups have different lowercase letters), but not between Cluster C PD patients and BPD patients (these groups have the same lowercase letters). Standard deviations for means of IQ variables are between brackets. For education level, 1 = no education, 2 = only elementary school, 3 up to 6 = different types of vocational education, 7 = higher professional education, 8 = university preparatory education, and 9 = university-level education. Observed frequencies for educational level are presented in the table, with expected frequencies between brackets. BPD = borderline personality disorder; PD = personality disorder.

indicated that IQ was also significantly and positively associated with all EI measures (*r*s ranged from .246 to .523, *p*s < .05), except for the MSCEIT subscale perceiving emotions, which was not significantly associated with IQ. When these analyses were repeated in the nonpatient group only, Spearman correlations (which are more appropriate than Pearson correlations in small samples; Schönbrodt & Perugini, 2013) indicated that none of the EQ-i scales were significantly associated with IQ. The same was true for the perceiving emotions and using emotions subscales of the MSCEIT. However, the two other MSCEIT subscales (i.e., understanding emotions and management of emotions) and the total score were positively associated with IQ (Spearman's ρ = .323, .326, and .355, respectively, *p*s < .05). Because age, sex, and educational level had a significant impact on the dependent variables, we included these variables and the total IQ score as covariates in the analyses. In addition, we conducted extra analyses to examine whether our results changed if we fully matched the nonpatient group with the BPD patient group on IQ, instead of only controlling for IQ.

Table 2 presents the descriptive statistics of the dependent as well as the intercorrelations. All MSCEIT subscales were positively correlated with each other and, substantially stronger, with the MSCEIT total score. Likewise, all EQ-i subscales and the total score were strongly positively correlated with each other. Most of the MSCEIT subscales were also positively correlated with all EQ-i subscales and total score, with two exceptions. That is, the MSCEIT perceiving emotions was only significantly correlated with the EQ-i subscale interpersonal and the EQ-i total scores. The MSCEIT subscale using emotions was only significantly correlated with the EQ-i subscale adaptability.

Next, we compared the three participant groups on the four MSCEIT subscales (i.e., perceiving emotions, using emotions, understanding emotions, and regulating emotions), on the EQ-i subscales (i.e., intrapersonal, interpersonal, adaptability, stress management, and general mood) and on the total scores of the MSCEIT and the EQ-i by three multivariate analyses of covariance (MANCOVAs) with age, sex, level of education, and IQ score as covariates.

Table 3 presents the relevant descriptive statistics. In line with our preliminary analyses, our first analysis with the MSCEIT subscales as dependent variables demonstrated significant effects of the covariates age, Wilks Λ = .88, $F(4, 159) = 5.51$, $p < .001$, multivariate partial $\eta^2 = .122$, and IQ, Wilks Λ = .94, $F(4, 159) = 2.68$, $p = .034$, multivariate partial $\eta^2 = .063$. Importantly, we also obtained a significant effect of participant group, Wilks Λ = .89, $F(8, 318) = 2.31$, $p = .020$, multivariate partial $\eta^2 = .055$. Follow-up univariate tests indicated that the three participant groups differed significantly only in their mean scores on the MSCEIT subscale understanding emotions, $F(2, 162) = 5.60$, $p = .004$, partial $\eta^2 = .065$. Pairwise comparisons based on estimated marginal means further revealed that the BPD group scored significantly lower (*p*s < .05) on the understanding emotions subscale when compared to Cluster C PD patients and nonpatients. Cluster C PD patients and nonpatients did not differ significantly from each other. Although the univariate main effect on the stress management subscale was not significant, pairwise comparisons did reveal that the BPD group differed significantly from the Cluster C PD patients ($p < .05$). However, given that the main effect was not significant, these findings should be interpreted with caution.

The second analysis, with the EQ-i subscales as dependent variables, revealed a significant effect of the covariate age, Wilks Λ = .92, $F(5, 157) = 2.65$, $p = .025$, multivariate partial $\eta^2 = .078$, but not for the other covariates. We also again found a significant effect of participant group, Wilks Λ = .44, $F(10, 314) = 15.87$, $p < .001$, multivariate partial $\eta^2 = .336$. Follow-up univariate tests indicated that the three participant groups differed significantly on all EQ-i subscales. Thus, the groups differed significantly from each other on intrapersonal, $F(2, 161) = 54.75$, $p < .001$, partial $\eta^2 = .405$; interpersonal, $F(2, 161) = 11.49$, $p < .001$, partial $\eta^2 = .125$; adaptability, $F(2, 161) = 44.03$, $p < .001$, partial $\eta^2 = .354$; stress management, $F(2, 161) = 49.94$, $p < .001$, partial $\eta^2 = .383$; and general mood, $F(2, 161) = 56.49$, $p < .001$, partial $\eta^2 = .412$. Pairwise comparisons based on estimated marginal means showed that the BPD group and the Cluster C PD group scored significantly lower (all *p*s < .001) on all subscales when compared to nonpatients. The two patient groups (i.e., Cluster C PD patients and BPD patients) differed significantly from each other only on the stress management subscale ($p < .001$), with BPD patients scoring lower than Cluster C PD patients. The two patient groups did not differ from each other on the other EQ-i subscales.

Finally, the third analyses with the MSCEIT and the EQ-i total scores as dependent variables demonstrated significant effects of the covariates age, Wilks Λ = .96, $F(2, 158) = 4.58$, $p = .012$, multivariate partial $\eta^2 = .055$, and IQ, Wilks Λ = .94, $F(2, 158) = 4.72$, $p = .010$,

TABLE 2 Means and standard deviations for age and the dependent variables (MSCEIT subscales/total score and EQ-i subscales/total score) as well as the correlations between variables

Dependent variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. MSCEIT perceiving emotions	88.70	13.58	—	.310***	.303***	.210**	.704***	.075	.171*	.117	.091	.111	.119	−.256**
2. MSCEIT using emotions	95.15	13.35		—	.282***	.365***	.644***	.122	.166*	.140	.086	.086	.136	−.056
3. MSCEIT understanding emotions	85.81	10.98			—	.474***	.702***	.372***	.397***	.467***	.465***	.397***	.462***	−.247**
4. MSCEIT regulating emotions	82.48	11.77				—	.671***	.367***	.507***	.414***	.415***	.349***	.461***	.048
5. MSCEIT total	83.06	11.57					—	.306***	.443***	.394***	.350***	.311***	.396***	−.193**
6. EQ-i intrapersonal	72.66	23.29						—	.625***	.807***	.696***	.890***	.946***	.030
7. EQ-i interpersonal	82.89	17.67							—	.612***	.567***	.660***	.744***	−.101
8. EQ-i adaptability	72.44	20.21								—	.789***	.758***	.905***	−.057
9. EQ-i stress management	76.05	20.30									—	.705***	.822***	−.043
10. EQ-i general mood	71.94	22.26										—	.904***	−.071
11. EQ-i total	68.95	23.10											—	−.011
12. Age	34.91	10.70												—

Note. *N*s vary from 184 to 188. EQ-i = Emotional Quotient Inventory; MSCEIT = Mayer–Salovey–Caruso Emotional Intelligence Test.

*$p < .05$.

**$p < .01$.

***$p < .001$.

TABLE 3 Adjusted mean scores for the MSCEIT and EQ-i subscales for nonpatients, PD patients, and BPD patients

	Nonpatients (n = 53, n = 52)[a]	Patient groups	
		Cluster C PD (n = 37, n = 36)[a]	BPD (n = 79, n = 80)[a]
MSCEIT perceiving emotions	86.53 (2.17)	91.67 (2.26)	89.09 (1.63)
MSCEIT using emotions	91.90 (2.07)	97.62 (2.16)	94.81 (1.55)
MSCEIT understanding emotions	87.91 (1.51)[a]	87.49 (1.57)[a]	82.28 (1.13)[b]
MSCEIT regulating Emotions	82.99 (1.71)	85.08 (1.78)	80.01 (1.28)
MSCEIT total	82.50 (1.70)[a,b]	86.65 (1.78)[a]	80.78 (1.27)[b]
EQ-i intrapersonal	94.27 (2.55)[a]	58.58 (2.66)[b]	61.22 (1.87)[b]
EQ-i interpersonal	93.27 (2.54)[a]	78.65 (2.65)[b]	77.28 (1.87)[b]
EQ-i adaptability	90.09 (2.32)[a]	66.06 (2.42)[b]	60.95 (1.71)[b]
EQ-i stress management	93.99 (2.31)[a]	74.04 (2.41)[b]	62.93 (1.69)[c]
EQ-i general mood	92.71 (2.37)[a]	60.26 (2.47)[b]	60.76 (1.74)[b]
EQ-i total	91.22 (2.34)[a]	58.50 (2.44)[b]	55.85 (1.74)[b]

Note. Standard errors are between brackets. Adjusted means based on MANOVA with IQ, sex, and level of education as covariates. BPD = borderline personality disorder; Cluster C PD = Cluster C personality disorder; EQ-i = Emotional Quotient Inventory; MANOVA = multivariate analysis of variance; MSCEIT = Mayer–Salovey–Caruso Emotional Intelligence Test.

[a]*N*s for the analyses with the MSCEIT and the EQ-i, respectively. Group means with different lowercase letters (i.e., a, b, or c) are significantly different from each other ($p < .05$). For example, the means for EQ-i total differ between nonpatients and Cluster C PD patients (these groups have different lowercase letters), but not between Cluster C PD patients and BPD patients (these groups have the same lowercase letter). There were no significant differences between groups for subscales if no lowercase letters were used behind the group means for those subscales (e.g., for MSCEIT using emotions).

multivariate partial η^2 = .056. Again, we found a significant effect of participant group, Wilks Λ = .49, $F(4, 316)$ = 33.45, $p < .001$, multivariate partial η^2 = .297. Follow-up univariate tests indicated that the three participant groups differed significantly on the total scores of both the MSCEIT, $F(2, 159)$ = 3.82, p = .024, partial η^2 = .046, and the EQ-i, $F(2, 159)$ = 66.41, $p < .001$, partial η^2 = .455. Follow-up pairwise comparisons based on estimated marginal means showed that on the MSCEIT total score, the BPD group scored lower than did the

Cluster C PD group (p = .007), but that both patient groups did not differ significantly from the nonpatients. For the EQ-i total score, significant differences were found between nonpatients and the two patients groups (ps < .001). BPD patients and Cluster C PD patients did not differ significantly from each other on the EQ-i total score.

Next, we repeated all group comparisons on EQ measures with a reduced nonpatient group (n = 23 instead of the original 54 nonpatients for whom IQ data were available) that did not differ significantly from the patient groups in IQ, $F(2, 140) = 2.67$, p = .073. The first of these MANCOVAs showed that the significant difference between nonpatients and BPD patients on the MSCEIT subscale understanding emotions remained significant. In addition, differences between Cluster C PD patients and nonpatients became significant on the subscale using emotions, with Cluster C PD patients scoring higher. Finally, a significant difference between Cluster C PD and BPD patients appeared on the MSCEIT regulating emotions scale, with Cluster C PD patients scoring higher than did BPD patients. For the MANCOVA with the EQ-i subscales and the MANCOVA with the total scores of the MSCEIT and the EQ-i, none of the conclusions changed. To summarize, BPD patients showed deficits in understanding emotions compared to Cluster C PD patients and nonpatients, according to the MSCEIT. On the EQ-i, they mainly differed from nonpatients. Cluster C PD patients were not statistically different from nonpatients on the MSCEIT but did have much lower scores than nonpatients on the EQ-i.

To evaluate the relationship with IQ, we collapsed the data across the three groups and calculated bivariate Pearson correlations between the scores of the MSCEIT and EQ-i subscales with general, verbal, and performance IQ. These correlations are presented in Table 4 and suggest that all EI measures are associated with IQ, except for the MSCEIT perceiving emotions scale.

Within the BPD group, we obtained bivariate correlations and partial correlations (with IQ partialled out) between all the EI scales and the BPD severity index. The resulting correlations are also presented in Table 4. The correlations with and without IQ partialled out were virtually identical (the largest difference was .005). All correlations that were significant when IQ was not partialled out were still significant when IQ was partialled out. The severity of BPD was negatively correlated with the regulating emotions subscale and total score of the MSCEIT. All EQ-i subscales and the total score were negatively correlated with the severity of BPD. BPD severity was not associated with IQ.

Finally, we compared MSCEIT scores and EQ-i scores of BPD patients with secondary diagnoses (n = 48; in all cases a Cluster C PD) to BPD patients without a secondary diagnosis (ns = 31 and 32, for the analyses on the MSCEIT and EQ-i, respectively). For this purpose, we conducted two MANCOVAs with age, sex, level of education, and IQ score as covariates. The independent variable in both analyses was a variable indicating whether or not a secondary diagnosis was available. In the first MANCOVA, the dependent variables were the MSCEIT subscales and total score. In the second MANCOVA, the dependent variables were the EQ-i subscales and total score. The multivariate effect of secondary diagnosis in the first MANCOVA was not significant, Wilks Λ = .95, $F(5, 69) = .78$, p = .570, multivariate partial η^2 = .053. This suggests that there were no significant differences on the MSCEIT total scores and subscales between BPD patients with or without a secondary Cluster C PD diagnosis. The multivariate effect in the second MANCOVA (on the EQ-i) was significant, Wilks Λ = .79, $F(6, 69) = 3.01$, p = .011, multivariate partial η^2 = .208. Follow-up univariate tests revealed significant differences between BPD patients with and without a secondary Cluster C PD diagnosis on intrapersonal, $F(1, 74) = 8.51$, p = .005, partial η^2 = .103; *adaptability*, $F(1, 74) = 6.43$, p = .013, partial η^2 = .080; and the EQ-I total score, $F(1, 74) = 5.65$, p = .020, partial η^2 = .071. In all these three cases, the BPD patients with no secondary diagnosis had higher scores than the BPD patients with a secondary Cluster C PD diagnosis.

TABLE 4 Correlations and part correlations across samples between EI, IQ, VIQ, PIQ, and BPD severity

	Total severity index score BPD	Total severity BPD: total IQ partialled out	IQ	VIQ	PIQ
MSCEIT perceiving emotions	−.121	−.120	.120	.088	.105
MSCEIT using emotions	−.166	−.162	.246**	.241**	.207**
MSCEIT understanding emotions	−.218	−.215	.371***	.374***	.292***
MSCEIT regulating emotions	−.341**	−.340**	.361***	.401***	.221**
MSCEIT total	−.292*	−.291*	.349***	.342***	.272**
EQ-i intrapersonal	−.305*	−.309**	.486***	.504***	.322***
EQ-i interpersonal	−.432***	−.429***	.353***	.366***	.246**
EQ-i adaptability	−.448***	−.453***	.466***	.481***	.330***
EQ-i stress management	−.470***	−.472***	.471***	.503***	.353***
EQ-i general mood	−.357**	−.354**	.500***	.512***	.365***
EQ-i total	−.565***	−.565***	.523***	.533***	.367***
IQ	−.02				

Note. N = 169 for correlations between IQ and MSCEIT scales, N = 168 for correlations between IQ and EQ-i. n = 70 for the correlations of the total severity index score BPD with the MSCEIT scales and n = 71 for the correlation of the total severity index score BPD with the EQ-i scales. BPD = borderline personality disorder; EI = emotional intelligence; EQ-i = Emotional Quotient Inventory; MSCEIT = Mayer–Salovey–Caruso Emotional Intelligence Test; PIQ = performance IQ; VIQ = verbal IQ.

*p < .05.

**p < .01.

***p < .001.

4 | DISCUSSION

In this study, we investigated the relationship between BPD and EI in a clinical population (Beblo et al., 2010; Hertel et al., 2009; Peter et al., 2013). EI in this study was measured with an ability test, the MSCEIT (Mayer et al., 2002), and with a mixed model of EI, the EQ-i (Bar-On, 1997). We compared these two different measures of EI in BPD patients with patients with Cluster C PDs and nonpatients. To the best of our knowledge, this is the first study in which such comparisons have been made.

The results showed that, using the MSCEIT, only the ability to understand emotional information was impaired in patients with BPD compared to the comparison groups. We did not find evidence for an impaired ability to regulate emotions in BPD patients, compared to the comparison groups. The results of the mixed-model EI test (EQ-i) revealed that the BPD group differed from the Cluster C PD group only in stress management, whereas they differed from the nonpatients on all of the scales. Deficits in stress management can be seen as deficits in emotional management and regulation. Interestingly, with the two EI tests we used, we found conflicting results in emotion regulation. The MSCEIT did not point to any impairments, whereas the EQ-i did uncover deficits in emotion regulation in BPD patients. Moreover, our findings seem to support the idea that different tests of EI measure different aspects/levels of EI. More specifically, the current pattern of findings suggests that BPD patients have the ability to regulate emotions effectively, but they subjectively experience deficits in emotion regulation and therefore may not use this ability when they may need to.

These results are in line with previous findings of Peter et al. (2013), suggesting that patients with BPD have only specific difficulties with understanding how emotions combine and progress through relationship transitions. Consistent with the findings of Hertel et al. (2009) and Peter et al., no differences between patients with BPD and nonpatients were found for the ability to perceive and use emotions.

Our findings seem to contradict those obtained by Beblo et al. (2010) who failed to find significant differences in EI between BPD patients and nonpatients. However, their sample size of 20 patients was small, and the BPD patients showed only moderate BPD severity. Like the sample of Hertel et al. (2009), our BPD patients demonstrated a considerably higher BPD severity. BPD patients thus only seem to differ from nonpatients on EI if they suffer from more severe forms of BPD. This point is further illustrated by the positive associations we found between BPD severity and aspects of EI. These findings will be discussed in more detail later on.

Interestingly, differences were found within the BPD group on the EQ-i. BPD patients with co-morbidity on Cluster C PD diagnosis had lower scores than did the BPD patients with no secondary Cluster C PD diagnosis on the subscales intrapersonal, adaptability, and total score of the EQ-i. These findings are in line with the findings of Skodol et al. (2002) that individuals with co-morbidity in PDs showed more impairments on the EQ-i, but no more impairments on the MSCEIT. Thus, when using a mixed model of EI, we detected more impairments than when we used an ability model of EI. Our explanation is that EQ-i is more associated with personality traits and mood, which are very much affected in BPD patients. As a result, the EQ-i revealed more differences between BPD patients and the other groups (i.e., nonpatients and Cluster C PD patients) than the MSCEIT did.

As hypothesized, EI was negatively related to BPD severity. A higher BPD severity score was associated with a lower MSCEIT EI, even when IQ was partialled out. The associations were even stronger when EI was measured with EQ-i.

We also found positive associations between EI and IQ. These associations were even stronger for the EQ-i.

Contrary to our expectations, we did not find differences in the scale interpersonal functioning, measured with the EQ-i, between patients with BPD and Cluster C PD patients. It should be stressed that the MSCEIT and EQ-i do not measure actual interpersonal functioning directly; they rather reflect abilities and self-evaluations of abilities that the test constructors felt relevant for interpersonal functioning (such as the EQ-i scales empathy, social responsibility, and interpersonal relationship). Our findings suggest that BPD patients are not more impaired on these interpersonal abilities than Cluster C PD patients are, but that does not necessarily mean that their interpersonal functioning is not impaired. However, previous studies (Brackett et al., 2006; Salovey, Stroud, Woolery, & Epel, 2002) found that aspects of perceived EI were also related to interpersonal functioning. In addition, research has shown that emotional abilities, including the ability to perceive, use, understand, and manage emotion, contribute to optimal social functioning (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Nowicki & Duke, 1994). On the contrary, we know that BPD is associated with interpersonal dysfunction, which might be related to other factors such as biased interpretations, dichotomous thinking, and rejection sensitivity. Our findings are in line with those of Stepp, Pilkonis, Yaggi, Morse, and Feske (2009), who also found no significant differences in interpersonal problems between BPD patients and patients with other PDs.

Compared to nonpatients, BPD and Cluster C PD patients did show deficits on every scale of the mixed-model EI. These findings suggest that deficits in intrapersonal and interpersonal functioning are characteristic of Cluster B and Cluster C PDs. Hengartner, Müller, Rodgers, Rössler, and Ajdacic-Gross (2014) also reported that all PD dimensions were significantly associated with various indicators of interpersonal functioning deficits. These deficits included experiencing distress and conflicts in friendships and partnership, feeling lonely, having few close friends, and experiencing reduced social support.

Given our findings, we would suggest the following improvements in future studies. We did not include patients with Cluster A PDs. Hence, we could not differentiate between Cluster A, Cluster B, and Cluster C PDs to make more precise comparisons. Future studies should include Cluster A PDs, and also Cluster B PDs other than BPD to examine how specific the EI deficits we found are to BPD. Other limitations of the present study include the lack of control for the possible influence of medication and the lack of assessment of possible influence of state variables such as state anxiety and dissociation on the EI scores. The small number of men in the BPD group precluded the possibility to assess whether there were Sex-by-Group interactions.

A limitation is that we did not test the nonpatient control group for mental disorders. On the other hand, they were not patients and,

in that sense, an adequate representation of the nonpatient sample. For instance, even if participants of this sample would have had elevated psychopathology symptoms, they were not decompensated to a degree that they sought treatment for these symptoms, as then they would have been patients. Note that some level of symptoms is common in the general population, including among those that are not patients. Also, in future studies, nonpatients should be objectively tested on the existence of psychiatric disorders.

The sample size of this study, although not objectively small, is also not particularly large for the sorts of analyses we made. This raises the question of whether the absence of MSCEIT differences is due to a true lack of differences between the groups or instead a Type II error due to lack of power to detect these differences. Therefore, future studies should try to recruit larger patient samples.

Apart from age, gender, education level, and IQ, we did not include other potentially important factors such as occupation, marital status, and sickness benefit. Hence, we could not take these variables into account as covariates. Future studies are needed to assess the degree to which the findings remain after controlling for additional potentially relevant covariates. Furthermore, BPDSI data were collected only in the BPD sample. To further study the relationship between BPD severity and EI, future studies should take a measure of BPD severity in the whole patient sample.

The present findings thus suggest that there might be a specific deficit in BPD in understanding emotions and in stress management. Interestingly, currently all of the major psychotherapeutic approaches used for BPD patients offer help with this specific problem (Peter et al., 2013). Dialectical behaviour therapy (Linehan, 1993) focuses on understanding emotions better and on learning skills to cope better with the emotion dysregulation. Transference-focused psychotherapy (Levy et al., 2006) emphasizes reflective functioning, through in-session clarification, confrontation, and interpretation of the patient's relational affects and identify diffusion, which may result in a better understanding of the underlying factors that lead to affective experiences in the patient. The mentalization model of mentalization-based psychotherapy for patients with BPD (Fonagy & Bateman, 2008) also helps patient to understand their moment-to-moment state of mind and affect better. Finally, the main goals of schema therapy (Young, Klosko, & Weishaar, 2003) include identifying early maladaptive schemas that are maintaining the presenting problem behaviours and seeing how these schemas are played out in everyday situations. With schema therapy, patients with BPD learn to understand and regulate their emotions better. Future research should investigate if these therapies additionally result in an increase in the ability to understand emotions, as a mechanism of change.

5 | CONCLUSION

In conclusion, our hypotheses were partly confirmed. Our findings with the MSCEIT pointed out that the ability of understanding emotions is impaired in BPD. The mixed-model EI test showed additionally that impairments in stress management are characteristic for BPD. In addition, EI was lower in patients with higher BPD severity. We also found evidence supporting a relationship between general intelligence and EI for both types of models, but mostly in a mixed-model test of EI. We did not find support for BPD patients showing deficits in the ability to regulate emotions and interpersonal functioning. The strength of our study is that we used different tests of EI. Different tests measure different aspects of EI. Doing this, we draw more precise conclusions of EI in BPD patients. Last, we compared BPD patients with patients with Cluster C PDs (in the same continuum range of PDs) and nonpatients.

For therapists working with BPD patients, it is important to focus their interventions to understanding emotions. More specifically, BPD patients need to learn how emotions combine and progress through relationship transitions. Also, therapists should teach BPD patients to gain confidence in their emotion regulation strategies and to use those when they are necessary.

CONFLICTS OF INTEREST

None declared.

ORCID

Mathell Peter http://orcid.org/0000-0002-6563-5176

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