INTERPERSONAL PROBLEMS IN BORDERLINE PERSONALITY DISORDER: ASSOCIATIONS WITH MENTALIZING, EMOTION REGULATION, AND IMPULSIVENESS

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Interpersonal problems are a core symptom of borderline personality disorder (BPD). This study investigated the relationship between emotion dysregulation, impulsiveness, and impaired mentalizing in the context of predicting interpersonal problems in BPD. A total of 210 patients with BPD completed the Difficulties in Emotion Regulation Scale (DERS), Barratt Impulsiveness Scale (BIS-11), Reflective Functioning Questionnaire (RFQ), and Inventory of Interpersonal Problems (IIP-32). The authors conducted three path models, with either mentalizing, emotion regulation, or impulsiveness as the exogenous variable. Emotion dysregulation and attentional impulsiveness predicted interpersonal problems directly, whereas hypomentalizing predicted interpersonal problems only indirectly throughout emotion dysregulation and attentional impulsiveness. The results suggest that these domains contribute significantly to interpersonal problems in BPD. Moreover, hypomentalizing might affect on interpersonal problems via its effect on impulsiveness and emotion regulation. The authors argue that focusing on emotion regulation and mentalizing in BPD treatments might have interlinked beneficial effects on interpersonal problems.

Keywords: borderline personality disorder, interpersonal problems, mentalizing, reflective function, impulsiveness, emotion regulation

Borderline personality disorder (BPD) is a well-established and valid psychiatric diagnosis with biological and developmental roots (Chanen & Kaess, 2012) and a lifetime prevalence of 2%–6% (Grant et al., 2008). Research has demonstrated favorable treatment response and improved symptomatic outcome (Cristea et al., 2017; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2012). Despite this, patients with BPD often experience severe and persisting long-term interpersonal impairments (Choi-Kain, Zanarini, Frankenburg, Fitzmaurice, & Reich, 2010; Liebke et al., 2017; Skodol et al., 2005).

Interpersonal problems in BPD are defined by unstable and intense relationships with an alternation between idealization and devaluation, as well as high interpersonal sensitivity and efforts to avoid abandonment (American Psychiatric Association [APA], 2013; Domes, Schulze, & Herpertz, 2009). Interpersonal problems have been suggested as the most characteristic and discriminative feature of the disorder (Fossati et al., 1999; Gunderson, 2007; Johansen, Karterud, Pedersen, Gude, & Falkum, 2004). Moreover, other cardinal symptoms of BPD, such as anger, affective instability, suicidal behavior, and impulsiveness, mainly manifest within interpersonal contexts (Sharp, 2016). Evidence has shown that interpersonal problems underlie subjective burden and behavioral deviations (e.g., self-harm and violence), and that they are related to neurobiological alterations (King-Casas et al., 2008; Lis & Bohus, 2013; Stepp, Smith, Morse, Hallquist, & Pilkonis, 2012). Consequently, improvement of interpersonal relations is a core aim of effective therapies for BPD (Cristea et al., 2017).

One core domain of BPD that contributes to interpersonal problems is emotion dysregulation (Linehan, Davison, Lynch, & Sanderson, 2006). Emotion dysregulation in BPD comprises a lack of awareness and tolerance, inappropriate management and regulation of emotions, and disturbed behavior under distress (for review, see Carpenter & Trull, 2013). It is widely accepted as a major component of the biosocial model, as well as being a central clinical feature of the disorder (Glenn & Klonsky, 2009; Putnam & Silk, 2005; Siever, Torgersen, Gunderson, Livesley, & Kendler, 2002). Compared to other domains of BPD, affective instability and anger showed the lowest remission rates after 2 years, and affective problems (e.g., chronic anger) displayed higher recurrence rates in the long term (McGlashan et al., 2005; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2016).

The influence of emotion dysregulation on interpersonal problems has been assessed empirically. Affective instability was the only significant predictor of BPD negative relationship scores 2 years later (Tragesser, Solhan, Schwartz-Mette, & Trull, 2007) and was related to social maladjustment (Bagge et al., 2004). Emotion dysregulation upheld negative relationships over a 12-month period (Stepp et al., 2014). Interestingly, the association between overall BPD symptomatology and interpersonal problems has been shown to be fully mediated by emotion regulation (Herr, Rosenthal, Geiger, & Erikson, 2013). Finally, improvement in emotion regulation was associated with better treatment outcome, such as improved interpersonal functioning (McMain, Guimond, Streiner, Cardish, & Links, 2012). In line with these

findings, interpersonal problems improved during dialectical behavior therapy (DBT; Linehan, 1993a, 1993b), which explicitly focuses on the training of emotion regulation skills (McMain et al., 2013).

Emotion dysregulation is also closely related to impulsiveness, another core domain of BPD (Cackowski et al., 2014; Gratz et al., 2009; van Zutphen, Siep, Jacob, Goebel, & Arntz, 2015). For instance, self-destructive behavior is seen as an impulsive attempt to regulate emotional distress (Linehan, 1993a; Terzi et al., 2017; Tragesser et al., 2007). This indicates the presence of a phenomenological overlap between emotion dysregulation and impulsiveness. Nonetheless, both domains also contribute to the clinical manifestation of BPD as individual factors (Fossati, Gratz, Maffei, & Borroni, 2013, 2014; Tragesser & Robinson, 2009). Impulsiveness is defined as a predisposition to react rapidly and in an unplanned way to internal or external stimuli without considering the negative consequences (Stanford et al., 2009). Impulsiveness underlies self-harm and suicidal behavior (Paris, 2005; Tragesser & Robinson, 2009) and has been highlighted as a core domain of BPD with a critical long-term impact (Crowell, Beauchaine, & Linehan, 2009; Links, Heslegrave, & van Reekum, 1999; McGlashan et al., 2005; Siever et al., 2002). Impulsiveness is also related to interpersonal problems (Fossati et al., 1999; Koenigsberg et al., 2001) in terms of negative relationships (Tragesser & Robinson, 2009) and a higher number of stressful interpersonal life events (Powers, Gleason, & Oltmanns, 2013).

In addition to emotion dysregulation and impulsiveness, an impairment in mentalizing—that is, the capacity to comprehend one's own and others' behavior in terms of intentional mental states—has been suggested as a further core domain of BPD (Fonagy, Luyten, & Allison, 2015). Mentalizing is explicitly defined as a self–other-related construct. Impairments in mentalizing thus appear important for understanding deficits in interpersonal functioning in patients with BPD (Choi-Kain & Gunderson, 2008). For instance, the elevated sensitivity to interpersonal rejection found in patients with BPD is considered a failure of adequately mentalizing others' intentions (Euler et al., 2018; Herpertz & Bertsch, 2014). In line with this view, empirical evidence suggests that a low mentalizing capacity is associated with interpersonal problems (Berenson et al., 2018; De Meulemeester, Lowyck, Vermote, Verhaest, & Luyten, 2017). Furthermore, the focus on mentalizing in mentalization-based treatment (MBT; Bateman & Fonagy, 2004) has been shown to significantly improve interpersonal problems (Bateman & Fonagy, 2009).

In sum, emotion dysregulation, impulsiveness, and impaired mentalizing are suggested as core domains of BPD, each with strong links to interpersonal problems. Given the unique but also overlapping contributions of these domains, the aim of this cross-sectional study was to determine how emotion regulation, impulsiveness, and mentalizing relate to interpersonal problems in BPD when they are considered simultaneously rather than individually. By using three path analytic models, we aimed to identify direct effects and reciprocal indirect effects of emotion dysregulation, impulsiveness, and impaired mentalizing on interpersonal problems.

METHODS

PARTICIPANTS AND PROCEDURE

A group of 210 adult patients who met the *DSM-IV* criteria for BPD were selected from a larger study investigating social exchanges in BPD and antisocial personality disorder (ASPD, 80% female; M_{age} = 32, SD_{age} = 10; "Probing Social Exchanges—A Computational Neuroscience Approach to the Understanding of Borderline and Antisocial Personality Disorder, approved by the Research Ethics Committee for Wales," 12/WA/0283). Patients with a preexisting clinical diagnosis of BPD or ASPD were referred by psychiatrists, care coordinators, and trainee clinical psychologists within personality disorder services of seven London NHS Mental Health Trusts across five London boroughs. Patients were interviewed by experienced and trained clinical psychologists using the Structured Clinical Interview for *DSM-IV* Axis II Diagnoses (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). To ensure the reliability of the ratings, consensus conferences were regularly held and supervised by senior researchers. The SCID-II has shown adequate interrater and internal consistency reliability for the diagnosis of BPD in several studies (e.g., Lobbestael, Leurgans, & Arntz, 2011; Maffei et al., 1997).

A BPD diagnosis and English-language fluency were the inclusion criteria. Individuals with recent psychotic episodes, severe learning disabilities, or current or past neurological disorders or traumas were excluded. Sixty-three (30%) of the 210 BPD patients included in the current analysis met the *DSM-IV* criteria for ASPD, which is similar to other clinical samples (Widiger & Trull, 1993; Zanarini et al., 1998). Table 1 presents the sample's demographics. SCID-II interviews and self-report measures were completed within two to three assessments.

MEASURES

Inventory of Interpersonal Problems-32 (IIP-32). Interpersonal problems were measured using the IIP-32 (Horowitz, Alden, Wiggins, & Pincus, 2000). The IIP-32 consists of 32 items rated on a 5-point Likert scale (0 = *not at all* to 4 = *extremely*), with higher scores reflecting greater interpersonal problems. Items span a range of social behaviors that people find too hard to engage in (e.g., hard to make friends) or use too much (e.g., argue with other people too much). Similar to past studies with BPD samples, we used total scores (α = .75) to measure the overall amount of interpersonal dysfunction (Bateman & Fonagy, 2009; Bohus et al., 2004).

Difficulties in Emotion Regulation Scale (DERS). The DERS is a 36-item questionnaire assessing problems in multiple domains of emotion regulation, including emotional awareness, emotional acceptance, engagement in goal-directed behavior, disengagement from emotionally charged impulsive behavior, and access to effective emotion regulation strategies (Gratz & Roemer, 2004). Items are rated on a 5-point Likert scale (1 = *Almost Never* to 5 = *Almost Always*), with higher scores reflecting greater emotion regulation difficulties. Clinical samples, including patients with BPD, show problems across a range

TABLE 1. Sample Demographics and Univariate Scale Descriptives

Demographic	Mean or *n*	*SD* or %	Range
Age (years)	32	10	18–58
Sex (female)	167	80%	
Ethnicity			
White[a]	156	75%	
Black/Black British[b]	17	8%	
Asian/British Asian[c]	17	8%	
Mixed	19	9%	
Employment Status			
Employed[d]	55	26%	
Unemployed	124	60%	
Student/Apprenticeship	24	12%	
Retired/Carer	4	2%	
Household Income (per annum)			
< £10k	103	51%	
£10–35k	72	36%	
> £35k	25	13%	
Medication Status (on medication)	133	63%	
Years in Education	14	4	4–26
BPD Symptom Count (SCID-II)	6.8	1.0	5–9
Scale			
IIP-32	68.1	20.4	17–162
DERS	138.0	22.9	14–178
BIS AI	22.4	4.3	2–32
BIS MI	28.2	5.4	17–42
BIS NP	30.9	5.4	16–43
RFQu	29.8	13.9	0–73
RFQc	12.8	10.8	0–57

Note. SD = standard deviation. SCID-II = Structured Clinical Interview for *DSM-IV* Axis II Disorders; BPD = Borderline Personality Disorder; IIP-32 = Inventory of Interpersonal Problems-32; DERS = Difficulties in Emotion Regulation Scale; BIS = Barratt Impulsiveness Scale; AI = Attentional Impulsiveness; MI = Motor Impulsiveness; NP = Nonplanning Impulsiveness; RFQc = Reflective Functioning Questionnaire Certainty Subscale; RFQu = Reflective Functioning Questionnaire Uncertainty Subscale. [a]White = British, Irish, or Other; [b]Black = Caribbean, African, or Other; [c]Asian = Indian, Pakistani, Bangladeshi, Chinese, or Other; [d]Employed = full-time, part-time, self-employed, or casual work.

of emotion-regulation domains, so we used total scores (α = .99) to measure the extent of general problems in emotion regulation (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Tull, Barrett, McMillan, & Roemer, 2007).

Barratt Impulsiveness Scale-11 (BIS-11). The BIS-11 is a 30-item measure of impulsiveness across attentional (e.g., "I [do not] concentrate easily"), motor (e.g., "I act on the spur of the moment"), and future-oriented (e.g., "I [do not] plan for the future") domains (Patton, Stanford, & Barratt, 1995). Items are rated on a 4-point Likert scale (1 = *Rarely/Never* to 4 = *Almost Always/ Always*). The BIS-11 was designed to be multidimensional (Stanford et al.,

2009). Because impulse control difficulties are also quantified in the DERS total score, BIS subscales were used in the current analysis with the intention to reduce the potential overlap between both measures. Past research in BPD samples supports the use of its subscales (Berlin, Rolls, & Iversen, 2005; Clarkin, Levy, Lenzenweger, & Kernberg, 2013; Fossati et al., 2004). We used the attention (α = .66), motor (α = .67), and nonplanning subscales (α = .69), with higher scores reflecting greater impulsiveness.

Reflective Functioning Questionnaire (RFQ). The RFQ is a 54-item measure of reflective functioning, the operationalized form of mentalizing (Fonagy et al., 2016). The RFQ assesses a subject's mentalizing capacity based on response patterns to questions concerning mental processes with respect to oneself and others. All items are scored on a 7-point Likert-type scale (1 = *completely disagree* to 7 = *completely agree*). Two validated subscales capture biases in mental-state reflection. These reflect a two-dimensional model of the process of mentalizing. The first subscale is *certainty about mental states* (RFQc), which positively scores for agreement with improbable (i.e., excessive) mental-state knowledge (e.g., "I know exactly what my close friends are thinking") and disagreement with probable mental-state knowledge (e.g., "I don't always know why I do what I do"). Items are subsequently rescored so that high scores on this scale reflect excessive reflective functioning, that is, *hyper*mentalizing. The second subscale refers to *uncertainty about mental states* (RFQu) and positively scores for agreement with deficient mental state reflection (e.g., "People's thoughts are a mystery to me") and disagreement with probable mental-state reflection (e.g., "Understanding what's on someone else's mind is never difficult for me"). Items are subsequently rescored so that high scores on this scale reflect a lack of knowledge about mental states, that is, *hypo*mentalizing. Both subscales showed excellent reliability (α RFQc = .87, α RFQu = .87).

STATISTICAL ANALYSIS

We used path analytic models to explore how emotion dysregulation, impulsiveness, and reflective functioning interact in their relationship with interpersonal problems. The statistical aim of a path analysis is to identify relationships among variables (Loehlin, 1998). Here the path analytic models allowed the identification of indirect effects of emotion dysregulation, impulsiveness, and reflective functioning via each other in relation to interpersonal problems, rather than the unique contribution of each variable.

We performed three saturated path models with either DERS, BIS (CI, MI, and NP), or RFQ (RFQc and RFQu) as exogenous variables, and the remaining scales as endogenous variables (see Figures 1–3). Interpersonal problems were always treated as the criterion variable. In a saturated model, all paths (i.e., unidirectional relationships) are specified.

Before estimating the path models, the DERS, RFQc, and RFQu were square-root transformed due to skewness and the robust maximum likelihood estimator was used in all analyses. Missing data were infrequent (30% of cases accounted for 3% of missing item-level observations) and missing completely
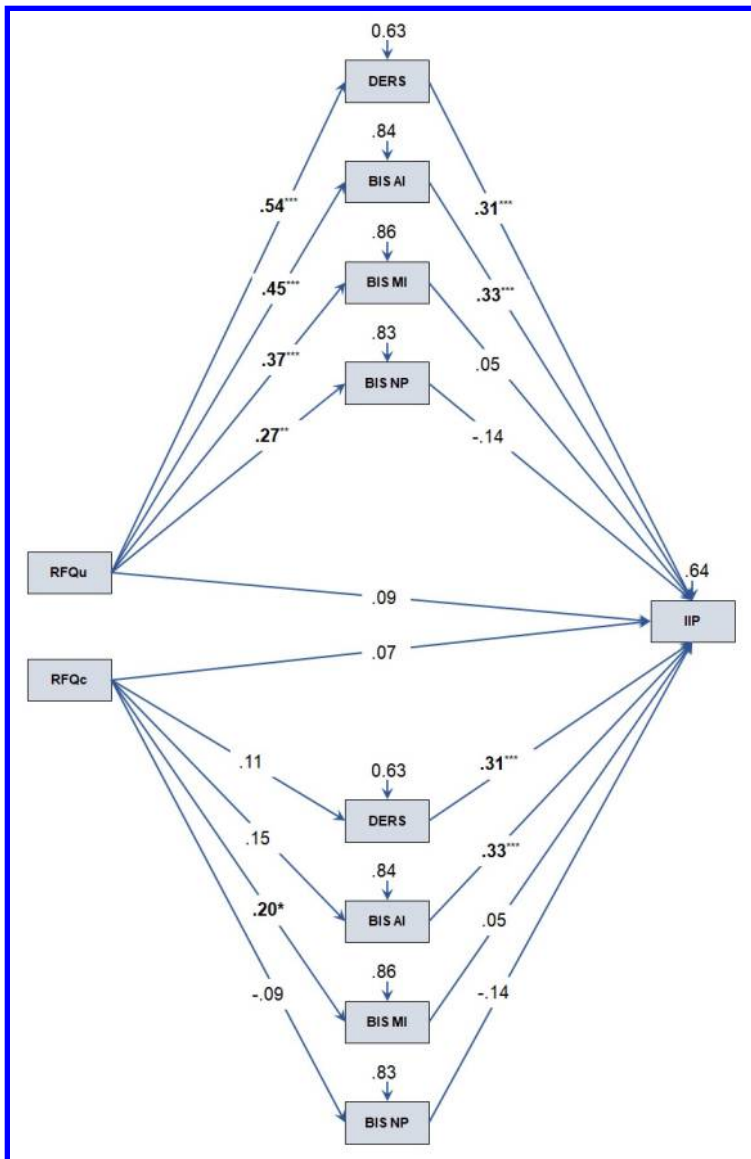
FIGURE 1. Path diagram of a model directly predicting interpersonal problems (IIP) from uncertainty (RFQu) and certainty (RFQc) in mental-state understanding, and indirectly via emotion regulation (DERS), attentional (BIS AI), motor (BIS MI), and non-planning (BIS NP) impulsiveness. Standardized coefficients are shown; significant coefficients are in bold. $*p < .05.$ $**p < .01.$ $***p < .001.$

at random (MCAR) according to Little's MCAR test, $\chi^2(7, 075) = 7, 177$, $p > .05$. Missing data were thus handled with multiple imputation in order to minimize bias associated with traditional deletion techniques (Enders, 2017; Graham, 2009). Thirty data sets were imputed at the item level and aggregated using Rubin's rules.
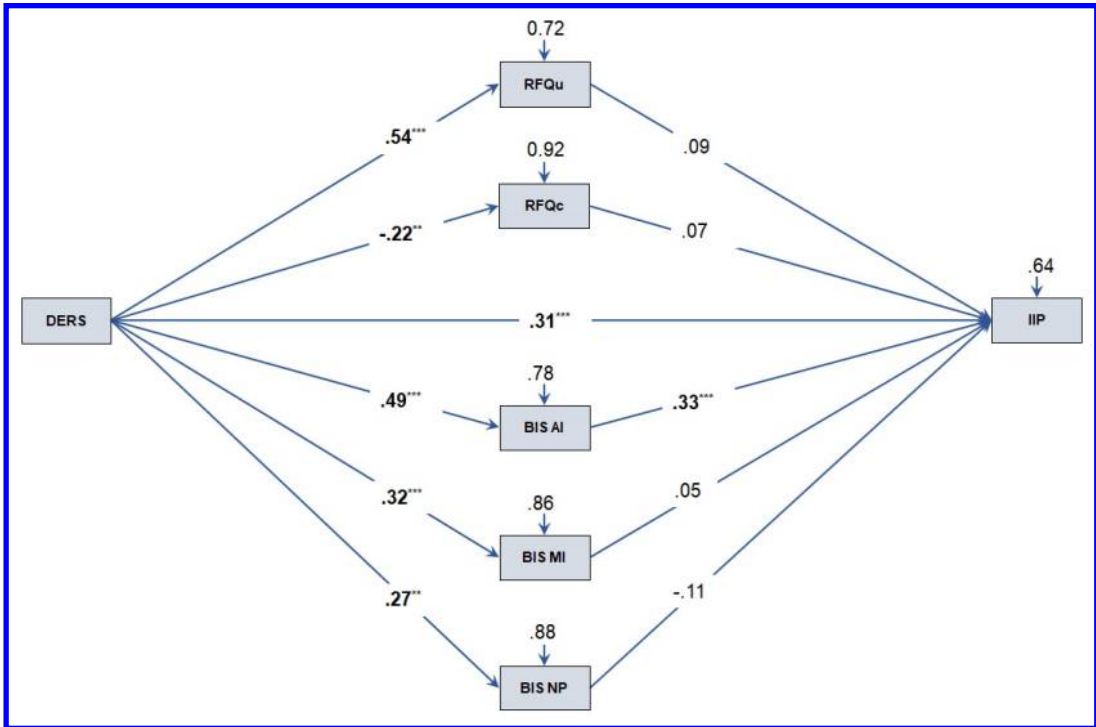
FIGURE 2. Path diagram of a model directly predicting interpersonal problems (IIP) from difficulties in emotion regulation (DERS), and indirectly via certainty (RFQc) and uncertainty (RFQu) in mental-state understanding, attentional (BIS AI), motor (BIS MI), and non-planning (BIS NP) impulsiveness. Standardized coefficients are shown; significant coefficients are in bold. *$p < .05$. **$p < .01$. ***$p < .001$.

RESULTS

All path models accounted for 36% of the variance in interpersonal problems and were adjusted for covariates, including age, sex, years in education, and medication status (see Table 2 for coefficients). Moreover, the endogenous variables that directly predicted interpersonal problems were allowed to correlate with each other.

Figure 1 shows the standardized estimates for a path model in which uncertainty and certainty in mental-state understanding were exogenous variables. Uncertainty in mental-state understanding ($\beta = .09$, $p > .05$, 95% CI [−.09, .27]) and certainty in mental-state understanding ($\beta = .07$, $p > .05$, 95% CI [−.07, .20]) did not directly predict interpersonal problems. Instead, greater uncertainty in mental-state understanding directly predicted more emotion-regulation difficulties ($\beta = .54$, $p < .001$, 95% CI [.40, .67]), higher attentional impulsiveness ($\beta = .45$, $p < .001$, 95% CI [.28, .61]), higher motor impulsiveness ($\beta = .37$, $p < .001$, 95% CI [.22, .53]), and higher nonplanning ($\beta = .27$, $p < .01$, 95% CI [.11, .44]), while greater certainty in mental-state understanding directly predicted only higher motor impulsiveness ($\beta = .20$, $p < .05$, 95%
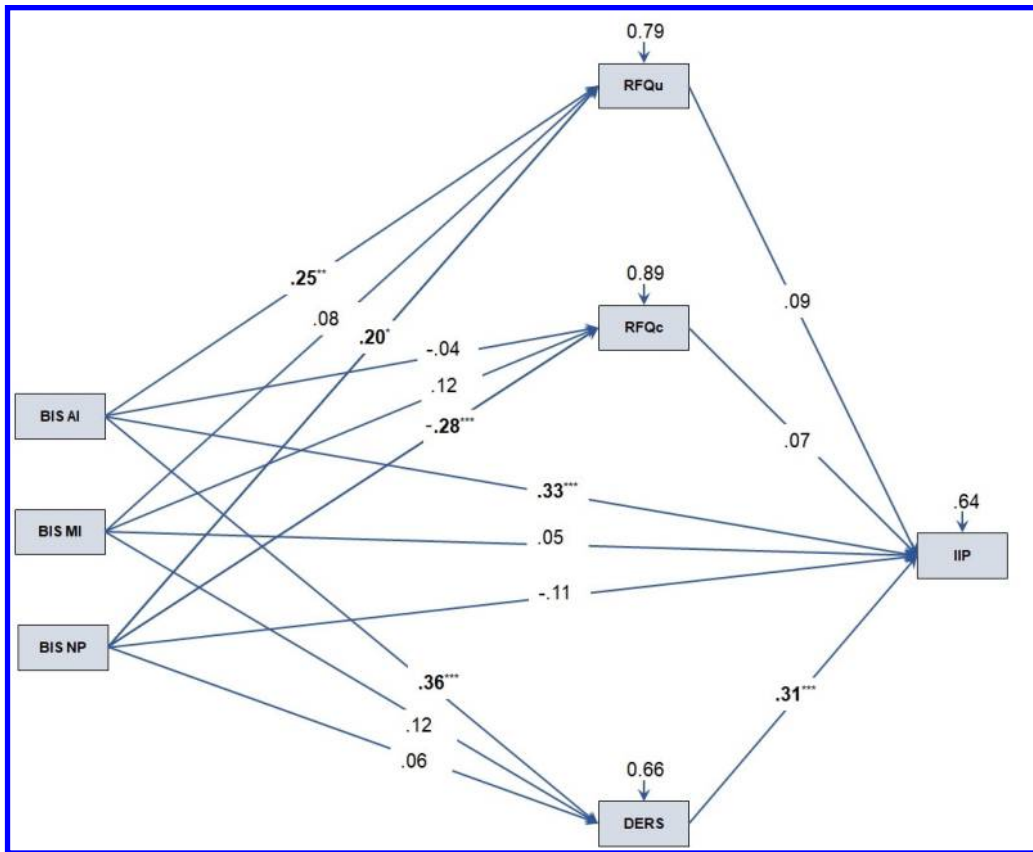
FIGURE 3. Path diagram of a model directly predicting interpersonal problems (IIP) from attentional (BIS AI), motor (BIS MI), and non-planning (BIS NP) impulsiveness, and indirectly via certainty (RFQc) and uncertainty (RFQu) in mental-state understanding and difficulties in emotion regulation (DERS). Standardized coefficients are shown; significant coefficients are in bold. $*p < .05$. $**p < .01$. $***p < .001$.

TABLE 2. Standardized Regression Coefficients for the Covariates Predicting Each Scale

Predictor	IIP-32	DERS	BIS AI	BIS MI	BIS NP	RFQu	RFQc
Age	−.03	**−.13***	−.06	−.01	.07	−.05	.12*
Sex	−.08	**−.23****	−.07	.11	.03	**.12***	−.10
Education	−.03	−.06	−.01	−.02	**−.19****	−.04	.08
Medication	.02	**.12***	.01	**.18***	.07	.02	.02

Note. IIP = Inventory of Interpersonal Problems-32; DERS = Difficulties in Emotion Regulation Scale; BIS = Barratt Impulsiveness Scale; AI = Attentional Impulsivity; MI = Motor Impulsivity; NP = Nonplanning Subscale. Significant coefficients are in bold. $*p < .05$. $**p < .01$.

CI [.04, .36]). In turn, more emotion-regulation problems ($\beta = .31$, $p < .001$, 95% CI [.16, .46]) and higher attentional impulsiveness ($\beta = .33$, $p < .001$, 95% CI [.18, .47]) directly predicted greater interpersonal problems in this model.

Therefore, significant indirect effects were found between uncertainty in mental-state understanding and interpersonal problems via emotion regulation problems ($\beta = .17$, $p < .001$, 95% CI [.07, .26]) and attentional impulsiveness ($\beta = .15$, $p < .001$, 95% CI [.06, .23]). In other words, the association between uncertainty in mental-state understanding and interpersonal problems was partially explained by problems in emotion regulation and attentional impulsiveness. There were no significant indirect effects between certainty in mental-state understanding and interpersonal problems.

We also estimated the model with the DERS (see Figure 2) or BIS subscales (see Figure 3) as exogenous variables. As an exogenous variable, the DERS strongly and significantly directly predicted interpersonal problems ($\beta = .31$, $p < .001$, 95% CI [.16, .46]). It also directly predicted uncertainty in mental-state understanding ($\beta = .54$, $p < .001$, 95% CI [.42, .65]), certainty in mental-state understanding ($\beta = -.22$, $p < .01$, 95% CI [−.36, −.07]), attentional impulsiveness ($\beta = .49$, $p < .001$, 95% CI [.36, .61]), motor impulsiveness ($\beta = .32$, $p < .01$, 95% CI [.19, .45]), and nonplanning ($\beta = .27$, $p < .001$, 95% CI [.12, .42]). The only significant indirect effect was found via attentional impulsiveness ($\beta = .16$, $p < .001$, 95% CI [.08, .24]); therefore, the association between emotion regulation and interpersonal problems was mainly direct.

In the model using BIS subscales as exogenous variables (see Figure 3), the attentional impulsiveness subscale positively and significantly directly predicted interpersonal problems ($\beta = .33$, $p < .001$, 95% CI [.18, .47]), uncertainty in mental-state understanding ($\beta = .25$, $p < .01$, 95% CI [.09, .40]), and emotion-regulation problems ($\beta = .36$, $p < .001$, 95% CI [.24, .49]). The motor impulsiveness subscale did not significantly predict any variable. The nonplanning subscale did not directly predict interpersonal problems ($\beta = -.11$, $p > .05$, 95% CI [−.27, .04]); however, it did directly predict greater uncertainty in mental state understanding ($\beta = .20$, $p < .05$, 95% CI [.04, .36]) and lower certainty in mental state understanding ($\beta = -.28$, $p < .001$, 95% CI [−.42, −.13]). The only significant indirect effects were found between attentional impulsiveness and interpersonal problems via emotion-regulation problems (в = .11, $p < .01$, 95% CI [.04, .17]).

DISCUSSION

The current study aimed to investigate how emotion regulation, impulsiveness, and mentalizing relate to interpersonal problems in BPD when they are considered simultaneously rather than as unique contributors. Path analyses supported the notion that hypomentalizing, emotion dysregulation, and attentional impulsiveness were associated with interpersonal problems. When emotion dysregulation and attentional impulsiveness were placed as exogenous variables, they each directly predicted interpersonal problems. They also indirectly predicted interpersonal problems via each other, respectively. When acting as the exogenous variable, hypomentalizing revealed no direct effect

on interpersonal problems but indirectly predicted interpersonal problems via emotion dysregulation and attentional impulsiveness.

Our findings support the idea that emotion regulation and impulsiveness have important, yet unique roles in predicting interpersonal problems in BPD (e.g. Herr et al., 2013; Koenigsberg et al., 2001; Tragesser & Robinson, 2009). Nonetheless, the reciprocal indirect effects of emotion dysregulation and attentional impulsiveness in their influence on interpersonal problems support the suggestion of a fundamental interplay of the two traits (Turner, Sebastian, & Tüscher, 2017). It seems important that particularly attentional impulsiveness, reflecting attentional problems (i.e., problems "focusing on the task at hand") and cognitive instability (i.e., "thought insertions and racing thoughts"), interacts with emotion dysregulation in its significance toward the manifestation of interpersonal problems. This finding extends previous knowledge about the particular role that attentional impulsiveness plays in emotion dysregulation in BPD (Cackowski et al., 2014; Putnam & Silk, 2005). It further fits well with the biosocial model of the disorder, which postulates that the reciprocal interaction between emotion dysregulation and impulsiveness is the primary cause of interpersonal problems in BPD (Crowell et al., 2009; Schmahl et al., 2014).

Overall, attentional impulsiveness, emotion dysregulation, and hypomentalizing were interrelated in their association with interpersonal problems in BPD. This is in line with the theory that hyperarousal in patients with BPD reduces inhibitory control (i.e., attentional/cognitive), which in turn is associated with inducing premature automatic processes of mentalizing (i.e., "nonmentalistic modes") and impaired emotion regulation (Luyten & Fonagy, 2015; Nolte et al., 2013; Nolte, Campbell, & Fonagy, 2018; Putnam & Silk, 2005). Consequently, interpersonal relationships are further compromised (Fonagy, Luyten, & Bateman, 2015).

Although these findings do not permit a causal attribution, the unique indirect association between hypomentalizing and interpersonal problems suggests that interpersonal problems induced by hypomentalizing might manifest through emotion dysregulation and attentional impulsiveness. This finding empirically substantiates the idea that "the defining characteristics of BPD—emotion dysregulation, impulsivity, interpersonal dysfunction"—are "rooted in an instability of the reflective, regulatory capacities that mentalizing affords" (Fonagy, Luyten, & Bateman, 2015, p. 381). Our study extends this perspective empirically by showing that problems in mentalizing might manifest as interpersonal problems via difficulties in emotion processing. This finding therefore further strengthens the idea of mentalizing as a translational mechanism of change in treatment of BPD (Kramer, 2018; Sharp & Kalpakci, 2015).

Hypermentalizing, that is the cognitive overattribution of mental states, did not predict interpersonal problems. This is in line with previous evidence which showed *hypo*mentalizing as the major problem in adult patients with BPD (Badoud et al., 2018; Brüne, Walden, Edel, & Dimaggio, 2016; De Meulemeester, Vansteelandt, Luyten, & Lowyck, 2018; Lowyck et al., 2016; Perroud et al., 2017). Interestingly however, in adolescents with borderline traits, hypermentalizing rather than hypomentalizing appeared to be the

significant clinical issue (Sharp et al., 2013). Further research is thus needed to explore these partly contradictory results. This also applies to the validity of the RFQc subscale because it seems insufficiently clear whether it measures adaptive or maladaptive aspects of mentalizing (De Meulemeester et al., 2018). The question of RFQc validity is further underlined by our results. These results revealed a negative relationship between hypermentalizing and emotion dysregulation. Inconsistencies with previous studies concerning its association with impulsiveness further question this subscale validity: Hypermentalizing predicted only motor impulsiveness in our study, contradicting the findings of Perroud et al. (2017). These findings yielded a correlation of hypermentalizing as measured by the RFQc with all subscales of the BIS. Therefore, the importance of verifying the RFQc subscale as suitable for assessing mentalizing problems is evident.

Our findings are consistent with previous research and theories on the clinical phenomenology of BPD. They support the inclusion of both emotional lability and impulsiveness as diagnostic signatures in the hybrid model of the *DSM-5*, including the alternative model in Section III (Criterion B; APA, 2013). Simultaneously, the dimensional approach (Criterion A) is also supported because the assessment of functional impairments in self and interpersonal domains significantly overlaps with problems in mentalizing (Jeung & Herpertz, 2014). The indirect effects of emotion regulation, (attentional) impulsiveness, and hypomentalizing on interpersonal problems further suggest that focusing on these domains in psychotherapy of BPD might be promising to induce beneficial effects on interpersonal problems.

LIMITATIONS

In the current study, interpersonal problems were classified as symptoms, whereas emotion dysregulation, impulsiveness, and mentalizing were conceptualized as potential underlying domains. We need to consider that suggestions to categorize personality disorder features as impairments, traits, and symptoms remain provisional (Herpertz et al., 2017). Critically stated, impulsiveness in terms of impulsive behavior may alternatively be described as a symptom of BPD, whereas it is also seen as a component of emotion dysregulation (e.g., within the DERS). However, in our study, we focus on impulsiveness as a biosocially based psychological domain (APA, 2013; Crowell et al., 2009; Stanford et al., 2009). To minimize the shared variance between both domains, we utilized the BIS subscales instead of the total score.

Only a third of the variance in interpersonal problems was explained by our measures. Emotion dysregulation, impulsiveness, and reflective functioning are closely related constructs, and although the path analysis was useful in uncovering indirect effects on interpersonal problems, it is likely that this truncated some of our findings. This has to be taken into account when interpreting our results. In this regard, other domains linked to interpersonal problems in BPD (e.g., identity diffusion; De Meulemeester et al., 2017) should be included in further investigations to explain more variance.

We have to acknowledge the comorbidity of ASPD in 30% of the patients in our sample. This ratio is similar to past studies reflecting clinical reality as

previously shown (e.g., 30% reported by Widiger & Trull, 1993, and 22.7% by Zarini et al., 1998). However, we recommend a comparison of BPD patients with other PD samples (e.g., ASPD) in future studies to confirm the specificity of our results for BPD.

Our conclusions have to be drawn tentatively because the study relies on self-reports, which are susceptible to biases (Kramer, 2017). The IIP, the DERS, and the BIS are, however, widely accepted and have been applied in many studies with BPD (Gratz, Moore, & Tull, 2016; McFarquhar, Luyten, & Fonagy, 2018; Rufino, Ellis, Clapp, Pearte, & Fowler, 2017; Sebastian, Jacob, Lieb, & Tüscher, 2013). The RFQ has been developed more recently and has been used with adolescents (RFQ-Youth; Ha, Sharp, Ensink, Fonagy, & Cirino, 2013; Sharp et al., 2013) and in some adult populations (Badoud et al., 2018; De Meulemeester et al., 2018; Perroud et al., 2017). However, its construct validity is challenged, especially with respect to the RFQc scale. Further investigations are thus needed to confirm if the RFQ is suitable for assessing problems in mentalizing.

In general, a combination of self-report and behavioral tasks, such as the Movie for the Assessment of Social Cognition (Dziobek et al., 2006), the emotional Paced Auditory Serial Addition Task (Gratz et al., 2006) for emotion regulation, and the Balloon Analogue Risk Task (Lejuez et al., 2002) for impulse control might provide a more comprehensive assessment of the psychological domains used in this study.

CONCLUSION

The current study confirms that emotion dysregulation, attentional impulsiveness, and hypomentalizing are interlinked intrinsic components of interpersonal problems in BPD. As such, it provides empirical evidence for the interplay of these domains, which are well captured in recent diagnostic approaches and highlighted within current effective psychotherapies for BPD. By extending previous research on the implication of impaired mentalizing for patients with BPD, the results suggest that interpersonal problems induced by hypomentalizing might manifest throughout emotion dysregulation and attentional impulsiveness.

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