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# Metacognition and insight dynamics exploration in borderline personality disorder: Exploring the underlying dynamics

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## ABSTRACT

Metacognition and Insight are related to hard-to-treat disorders and among them is Borderline Personality Disorder (BPD). We recruited 190 BPD patients and measured Insight, Metacognition, Impulsivity, and BPD traits. Results showed BPD's significant links with Insight and Metacognition. Metacognition significantly correlated with two Impulsivity dimensions, whereas Insight significantly correlated with most of them. Regressions analysis revealed a significant relationship between Insight and Metacognition on Impulsivity and Borderline traits. Mediation analysis proved the indirect effect of Metacognition/Insight on Borderline traits through Impulsivity at a significant level. Both seem relevant for research and therapeutic application in BPD following different dynamics even if the limitation of our study stands in its gender ratio and possible comorbidity issues. Urgency appears as a critical factor to assess, notably with Positive emotion-based impulsivity.

## 1. Introduction

One of the renowned concepts used in the Borderline Personality Disorder (BPD) psychotherapy field regarding consciousness of internal states and self-reflectiveness is Mentalization, one of the most renowned BPD treatments being Mentalization Based Therapy (MBT), a psychodynamic-inspired therapy program developed by [Bateman and Fonagy \(1999, 2004\)](#). The different aspects of mentalization are worked on and reinforced by working in support groups, which are less directive than Cognitive Behavioral Therapy (CBT) groups. These results interrogate the use of consciousness skills to improve BPD symptomatology in other treatment settings. For example, [Dimaggio et al., 2020](#) developed interventions based on metacognition interpersonal therapy from the conceptualization of personality disorders issues being created by (1) impoverished narratives/intellectualizing (2) pathogenic interpersonal schemas, in the form of both conscious beliefs and implicit procedures (3) poor or fluctuating sense of Agency (4) recurrent mental states (5) Impaired metacognition (6) dysfunctional coping, including poor affect regulation (7) Dysfunctional interpersonal cycles (p10). Based on this elements the metacognitive dysfunctions are designed to impair people's skills in perceiving mental states, in how they may think reflect and reason about their own (self-reflectivity) and other's mental

states, and finally on the use of these knowledge to inform decision making. This reflects the connection to a more "traditional" conception of metacognition existing in the literature focusing on this last element (mastery) ([Carcione et al., 2010](#)) (p34). We will then intend to explore the level of this metacognition that recent therapies leverage (at least partially) to set up a baseline understanding of BPD's metacognition level and its relation to therapy as it is the one in charge of the use of metacognitive knowledge to make decisions, solve problem and master subjective suffering ([Semerari et al., 2003](#)) which is the core interest of clinical psychology work (p40).

Cailhol et al., in 2010, in a report on the feasibility of psychotherapies for borderline personality disorder, drew up a rather worrying report, particularly because of the mortality rate higher than those found in studies on depression, with only MBT and Dialectical Behavioral Therapy (DBT) having lowest attrition rates. A recent meta-analysis from [Storebø et al., 2020](#) compared MBT and DBT effectiveness and revealed that both therapies are the most represented in the research with the highest numbers of primary trials, with DBT as the subject of one-third of all included trials, followed by MBT with seven RCTs. When they compared both treatments, they found that DBT was more effective in symptom severity diminution, self-harm, and improving psychosocial functioning. On the other hand, MBT was also effective in reducing

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self-harm, suicidality reduction, and on depression improvement. Specific treatment targeting more self-perception, self-understanding, and self-consciousness could complement or offer new options compared to the DBT gold standard.

*1.1. In the CBT field, the mentalization conceptualization doesn't exist per se (Lüdemann et al., 2021) but it matches other conceptualizations of self-awareness: insight and metacognition*

To be more specific, they have been both names as different processes to be at stake in the Metacognition and Insight Therapy (MIT), in Metacognitive Interpersonal Therapy (MITbis) but the actual research exploring their effectiveness do not recall baseline state measure of metacognition as it is mostly understood and use in clinical and cognitive psychopathology (mastery dimensions of Carcione's definition).

#### **Insight into BPD:**

In 2004 Beck et al. posited a refined definition of Insight's cognitive side: the patients' ability to step back from strange experiences, reflect on them, and respond to them in an adapted way. This concept developed in Depression, BD, and Sz (Mass et al., 2012; Engh et al., 2007) and predicted the better outcome of remediation and cognitive therapies (Benoit et al., 2016).

Insight is essential for recovery. Patients need to have complex consciousness about their ideas and feelings to implement change and maintain therapy adherence (Grant, 2003; Zimmerman and Moylan, 2009). Insight level could be one of the reasons why BPD is still considered a hard-to-treat disorder (Cailhol et al., 2010; Sheehan et al., 2016). Throughout the years, BPD therapy's effectiveness is still low to moderate (Goldman et al., 2018; Links et al., 2017; McLaughlin et al., 2019).

Insight is a multidimensional concept involved in treatment adherence (Amador et al., 1994; Beck et al., 2011; Sendt et al., 2015). It relates specifically to the ability to admit one's disease, understand treatment adherence importance, right symptoms' attribution (Beck et al., 2004; David, 1990), and the capacity to criticize mistaken beliefs about oneself (Beck et al., 2004). Insight evaluation in Schizophrenia (Sz) and Bipolar Disorder (BD) is quite common (for a review, see Van Camp et al., 2017). However, Insight's position within the metacognitive processes and assessment of its relation to symptomatology in a broader range of disorders need to be implemented.

#### *1.2. Metacognition*

In its basic definition, Metacognition refers to mental experience's awareness: one's feelings, thoughts, consciousness, and other's thoughts. Here we consider Carcione et al.'s definition (2019): the ability to (1) identify mental states and describe them; (2) reflect and reason on mental states; (3) use mental state information for decision-making, problem-solving or conflicts resolution. This capability is particularly relevant in the BPDs field (Bateman and Fonagy, 2009; Dimaggio et al., 2007; Semerari et al., 2014, 2015). Specialized researchers (Carcione et al., 2010) assumed that poor Metacognition is a central element in the general PD pathology, but to our knowledge, very few researchers have assessed its level in BPD. Nevertheless, Maillard et al. (2017) describe Metacognition's relation to BPD symptoms. They found a low Metacognition level questioning the interest in CBT and psychoeducation impact. They observed that the session's outcome was better when the in-session worked on Metacognition.

Maillard et al., in 2017, start to assess describing metacognition related to symptoms in a small BPD sample. They found a low level of metacognition questioning the interest in CBT and psychoeducation impact. As they started to implement therapeutical sessions, they observed that the outcome of the session was better when session work was on metacognition and the understanding of others' state of mind. The same year, McCarthy and Taylor (2017) worked on the hypothesis that self and other representation capabilities can stand as a

transtheoretical factor of change in BPD therapy. Johansen et al. (2018), working on the same topic, posit the positive relationship between reflective functioning and affect-mentalization consciousness may not be generalized to all types of psychopathologies. There was a clear link between this type of consciousness and reflective abilities for antisocial PD but not for BPD. Investigating the real of metacognition or insight impact could help BPD therapy to be more effective.

In 2011, Baer and Sauer worked on the specificity of ruminative thinking in response to the negative feelings in BPD, and above all anger responses. They found an important impact of this rumination on BPD symptoms severity. This goes with Kalpakci et al.'s (2018) study questioning the reflective functioning impact on BPD. Research has suggested that there are two types of BPD, one "internalizing" and one "externalizing". They examine adolescent BPD with "externalizing" issues to observe their potential executive functioning deficits. They found that the more the externalizing issues increased, the more the executive functions were impaired and among them, metacognition. So, assessing metacognitive issues in BPD also has an interest in behavioral issues in this disorder.

On the other end of the metacognition spectrum, regarding the consciousness of others' state of mind and emotions, BPD may have some impairments. In its definition, BPD is characterized by a constellation of symptoms related to self-consciousness, cognitive functioning (self-image issue, dissociative symptoms, impulsivity), and relation to others (abandonment and rejection sensitivity, relationships issue) (American Psychiatric Association, 2015). BPD also shares many symptoms, such as severe variability of mood and executive dysfunctions, with BD (for review: Mak and Lam, 2013; Gvirtz et al., 2012) where metacognition is also impaired compared to healthy controls (Popolo et al., 2017). BPD also presents psychotic symptoms such as SZD (Hassiotis et al., 2017) who have metacognitive impairments too. Judd 2005 questioned the little attention to the cognitive dimension in BPD despite the possible importance of neurocognitive dysfunctions in BPD cognitive processes, attachment issues, and dissociation encouraging us to investigate this issue. In 2017 Górska and Soroko questioned the impact of internal self-representation issues in BPD and showed problems with emotional regulation coming from intrapsychic representation and emotional dysfunctions. Among the representative dysfunction, we chose to assess the metacognitive and insight functions. So, metacognition starts to stand as an important factor in BPD functioning.

In the recent years, RCT's addressed the effectiveness of DBT combined with metacognition intervention showed a significant reduction in symptoms severity and clinical correlates (impulsivity, aggression, BPD, interpersonal problem) but unfortunately didn't measure directly effects on metacognition (Prunetti et al., 2022). In 2020, a group only intervention (Metacognitive Interpersonal Therapy Group for Personality Disorders) showed preliminary results on depression, metacognition, impulsiveness and interpersonal problems measures on a small sample of 10 patients, with non-significant results, representing still a great hope for treatment procedures improvement (Inchausti et al., 2020).

The present study aims to assess the Metacognition and Insight level in BPD and explore the possible dynamics existing (between metacognition and insight dimension and/or clinical BPD-related measures such as BPD traits and impulsivity).

## **2. Methods**

### *2.1. Participants*

We recruited 190 borderline patients (10 male/180 female, Mean age = 35.95 years, Meantime since first diagnosed = 39 months). We recruited all participants according to DSM-5 (SCID II criteria). According to the current treating psychiatrist, patients were in the stable phase of the illness regarding any Axis 1 nor Axis 2 comorbidity at the time of the study. They had no hospitalizations, treatment, or housing changes the month before entering the study. We recruited individuals

with BPD from a University Hospital and a Private Clinic daycare unit. Exclusion criteria were: (a) known neurological disease, (b) developmental disability, (c) current substance use disorder (d) psychosis. All participants were proficient in French, had a normal or corrected-to-normal vision, and were naïve about the study's purpose. Participants gave written consent following Helsinki's Ethics recommendations. We established the patients' capacity to provide informed consent through a structured interview with the clinical psychologist running the study and treating psychiatrists. Participants were diagnosed through SCID II assessment interview with a clinical psychologist and filled up the subsequent questionnaires for approximately 30 min. They were asked for several general information (name, age, time since the first diagnosis, daily medications, past toxics consumption) and could ask for an explanation of any item if they were unsure of its meaning.

## 2.2. Measures

### 2.2.1. Borderline Personality Questionnaire (BPQ) (Poreh et al., 2006)

For all subjects, we assessed the severity of symptoms using the Borderline Personality Questionnaire (BPQ) French Version with Cronbach's  $\alpha$  at  $\alpha = 0,84$  (Larivière et al., 2021). The BPQ is an 80-item true/false self-report measure that evaluates borderline personality traits. This structure offers nine subscales' scores (impulsivity, affective instability, abandonment, relationships, self-image, suicide/self-mutilation, emptiness, intense anger, and quasi-psychotic states).

### 2.2.2. MetaCognitive questionnaire MCQ30

The questionnaire comprises five correlated but conceptually distinct factors that assess three domains of positive and negative metacognitive beliefs, metacognitive monitoring, and judgments of cognitive confidence. The five subscales are (1) positive beliefs about worry (Positive Beliefs), (2) negative beliefs about thoughts concerning uncontrollability and danger (Negative Beliefs), (3) cognitive confidence (assessing confidence in attention and memory), (4) negative beliefs concerning the consequences of not controlling thoughts (Need to Control), and (5) cognitive self-consciousness (the tendency to focus attention on thought processes). We used the 30-item version of the MCQ from Wells and Cartwright-Hatton (2004) in its French translation. Subscale scores range from 6 to 24, and total scores range from 30 to 120, with higher scores indicating higher levels of unhelpful metacognitions. Alpha's Cronbach's for the five subscales range from 0.72 to 0.89.

### 2.2.3. Urgency premeditation perseverance sensation seeking UPPS

UPPS Impulsive Behavior Scale - Short version (UPPS-S) (Whiteside and Lynam, 2001) assesses impulsivity. We used the French translation from Billieux et al. (2012). This scale is a 20-item self-report scale assessing four factors of impulsivity: (a) urgency (negative and positive), (b) lack of premeditation, (c) lack of perseverance, and (d) sensation seeking. Positive Urgency assesses the impulsivity level caused by positive emotion, and Negative Urgency evaluates impulsivity due to negative emotions. The respective Cronbach's alphas proved an excellent consistency (Negative Urgency's  $\alpha = .78$ , Positive Urgency's  $\alpha = .70$ , Lack of premeditation's  $\alpha = .79$ , lack of perseverance  $\alpha = .84$ , sensation seeking's  $\alpha = .83$ ).

### 2.2.4. Beck Cognitive Insight scale (BCIS; Beck et al., 2004)

BCIS assesses two dimensions, Self-reflectiveness (SR) and Self-Certainty (SC), which respectively assess the Metacognition and self-consciousness level (SR) and the certainty that the patient can have about his judgments and beliefs (SC). The respective alphas for SR and SC are 0.73 and 0.62 in the French validation that we used (Favrod et al., 2008). A Global score result from the SR score minus the SC score.

## 2.3. Statistics

Our sample is normally distributed. We used Parametric tests computed with Statistical Package for Social Sciences (SPSS) 20.0. The level of significance is set to  $p < .05$ . We explored the relationships between scale scores using Pearson parametric correlations. We ran a multiple linear regression for the BPQ score and UPPS prediction. Meditation analyses were performed with Jamovi.

## 3. Results

### 3.1. Descriptive analysis

On demographic data, the time since the first diagnosis was 39.05 months (SD 61.70), the age mean was 35.95 (SD 12.66), the "number of medication per day" means was 2.78 (SD1.85), the sex ratio was 9/1 (female/male). Describing the social-economical background: 43% of the sample were single, 54.8% were working, 73.7% of them had fewer than two children, 70% had from none to 3 medications at the time of the study, 30% had more than three prescriptions, and 1.4% had nine prescribed treatment. Among them, 79% had a Substance Use Disorder (SUD) history with up to two substances (alcohol, drugs, unprescribed medication, marijuana, cigarettes, coffee) (61.1% with no SUD ever).

The mean BCIS score was 6.96 (SD 5.097), describing a reduced insight level. On the UPPS score, the mean was 50.82 (SD = 10.50), and the MCQ30 mean was 75.96 (SD = 14.34). The BPQ mean was 48.23 (SD = 12.72).

### 3.2. Correlations

MCQ 30 global score positively correlate with age ( $r = 0.264$ ,  $p = .02$ ), UPPS (UPPS total score:  $r = 0.218$ ,  $p = .007$ ; Negative Urgency:  $r = 0.266$ ,  $p = .001$ ; Sensation seeking:  $r = 0.218$ ,  $p = .001$ ). Metacognition score also positively correlated to BPQ dimensions except for Relationships and Self-mutilation and Suicide dimensions (see Table 1).

BCIS correlated to UPPS (Positive Urgency:  $r = 0.148$   $p < .05$ ; Lack of premeditation:  $r = .241$   $p < .005$ ; Lack of Perseverance:  $r = 0.177$   $p < .05$ ; UPPS:  $r = 0.289$   $p < .005$ ). BCIS also positively correlate with BPQ dimensions (Impulsivity:  $r = 0.232$   $p < .005$ ; Affect instability:  $r = 0.200$   $p < .05$ ; Self Image:  $r = 0.273$   $p < .005$ ; Emptiness:  $r = 0.200$   $p < .005$ ; Anger:  $r = 0.216$   $p < .005$ ; BPQ Total:  $r = 0.283$   $p < .005$ ).

### 3.3. Regression

We ran a regression analysis to see the possible prediction of Impulsivity level (UPPS) from Metacognition and Insight dimensions (Table 2). We found an impact of both Insight and Metacognition scores as predictors of general UPPS scores. When predicting the BPQ score from Insight and Metacognition, we found an impact of both BCIS and MCQ30 dimensions (see Table 3).

**Table 1**  
MCQ30 correlations.

	MCQ30
Impulsivity	.171*
Affect	.209**
Abandon	.293**
Relationships	NS
Self-Image	.345**
Suicide and Self-Mutilation	NS
Emptiness	.374**
Anger	.263**
Psychotic	.241**

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ , NS: non significant.

**Table 2**  
Predicting UPPS score from MCQ30 and insight dimensions.

	Non-standardized coefficients		Standardized coefficients
	b	SE	Bêta
(Constant)	37,348	4454	
Positive Beliefs	,079	,159	,038
Negative Beliefs	,349	,181	,166
Cognitive confidence	,051	,122	,031
Need to control	,498	,171	,246**
Cognitive consciousness	-,712	,167	-,329***
Self Reflectivity(BCIS)	,748	,177	,303***
Self Certainty (BCIS)	.032	,215	,011
Adjusted R <sup>2</sup>		.285	
F		9.592	

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

**Table 3**  
Predicting BPQ from MCQ30 and BCIS dimensions.

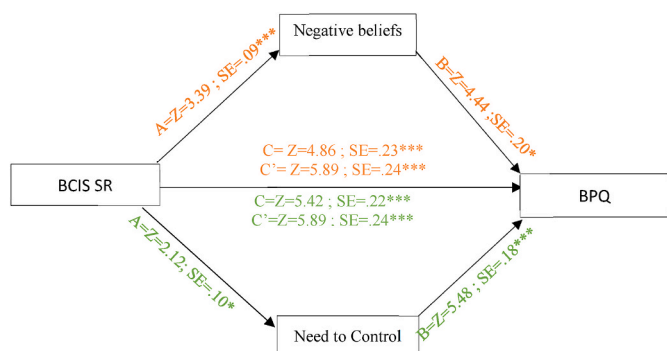
	Non-standardized coefficients		Standardized coefficients
	b	SE	Bêta
(Constant)	14,154	5389	
Positive Thinking	,545	,191	,200**
Negative Thinking	,476	,217	,172*
Cognitive Confidence	,155	,148	,070
Cognitive Self Consciousness	,768	,207	-,250***
Need to Control	-,718	,202	,286***
Self Reflectiveness	1101	,215	,337***
Self certainty	-,010	,259	-,002
Adjusted R <sup>2</sup>		.401	
F		15.508	

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

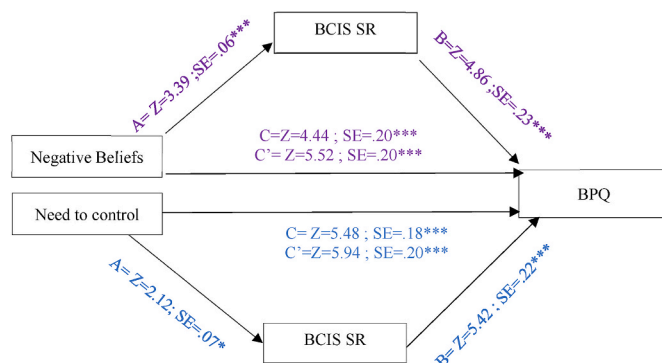
3.4. Mediation analysis

We tested all possible mediation relations but reported only the significant ones (p < .05) which were all significantly relevant based on the Sobel test (see Figs. 1–3). There was a significant indirect effect of BCIS SR on BPQ through different dimensions of MCQ30: Negative beliefs, ab = 3.39, and Need to Control ab = 2.12. The mediator could account for respectively 19.4% and 14.6% of the Total effect. Testing other possible arrays of relation explaining BPQ, we discover that there were significant indirect effects of MCQ30 dimensions on BPQ through BCIS SR: one being the Need for control ab = 2.12 where the mediator could account for 22.5% of the total effect and the second being Negative beliefs ab = 3.39 where the mediator could account for 14.3% of the total effect.

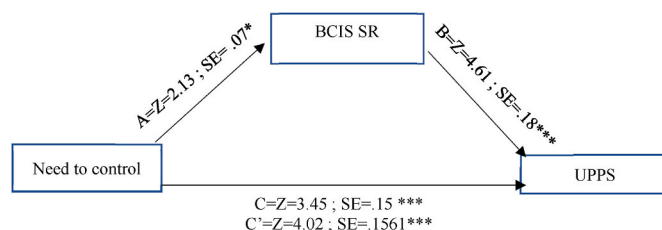
There was a significant indirect effect of MCQ30's Need to control above UPPS through BCIS SR with ab = 2.13. The mediator could



**Fig. 1.** Mediation analysis for MCQ30 dimensions mediating role for BCIS SR impact on BPQ.



**Fig. 2.** Mediation analysis for BCIS SR dimension mediating role for MCQ30 dimensions impact on BPQ.



**Fig. 3.** Mediation analysis for the mediating role of BCIS SR for the MCQ30 dimension impact on UPPS.

account for 18.5% of the total effect.

4. Discussion

Observing the descriptive data, we found a high score of MCQ30 compared to previous literature. Our sample mean was 75.96 (SD = 14.34), already more than the original study: 48.41 (SD = 13.31) (Wells and Cartwright-Hatton, 2004). These means are superior to the SZ, BD, and Healthy Control (HC) (respectively: 66.38, SD 16.86/66, SD16.60, /57, SD = 13.99; Popolo et al., 2017). BPD reveals to have functional metacognitive abilities. Our Metacognition measured level was higher than the reported HC score (mean = 52.64, SD 11.96) and clinical participants' s (mean = 65.89, SD 17.17), revealing the metacognitive upper scores in BPD (Martín et al., 2014).

Regarding the BCIS level, our mean is consistent with previously measured levels in BPD (Martin et al., 2021; Martin et al., 2019) (BCIS: 7.87, SD = 5598; 8.04 SD = 5.61) testimony an insight level equivalent to other disorders like Bipolar Disorder (7.3 SD = 0.33; Engh et al., 2007), heightened compared to SZ (5.0, SD = 5.6; Villa et al., 2018).

Our sample results did confirm the impulsivity issues. The symptomatology level mean was 48.23 (SD = 12.72). Higher than the original BPQ standard measures on the non-clinical sample (Mean HC = 20.45, SD = 12.28, (Billieux et al., 2012). It corresponded to a UPPS-P standard score of risky behavior samples (see Coskunpinar et al., 2013; Cyders and Smith, 2008; Cyders et al., 2007).

Our analysis of BCIS and MCQ30 highlights BPD's metacognitive and insight abilities encourage more specific metacognition intervention and insight therapy developments. Our analysis on correlation may be interpreted as an argument for a separate conceptualization Cognitive Insight and Metacognition. In the literature, Metacognition dimensions and insight dimension could have been appearing overlapping (Semerari et al., 2003) but further research may be developed to differentiate the self-reflectivity potential for change in psychotherapy and separately, the sole metacognition (in its more cognitive classical definition) as another leverage. Recent research looked as self-reflexivity dimension (more related to insight) as a specific factor differentiating BPD from



other disorder like bipolar disorder (Wright et al., 2022), opening a lead for more precise insight research in BPD field. Indeed, BPD's insight can be more related to interpersonal path (Van Schie et al., 2020) but already implemented therapies already proved effectiveness on this matter like DBT that can help self-concept clarity (Roepke et al., 2011) but this can be more specifically related to Mindfulness skill training. Mindfulness skill development has been related to improvement of insight (Nakajima et al., 2019; Ostafin et al., 2012) and does so at different levels: recognition of stages of insight (Grabovac, 2015), fostering the basis for prosocial qualities improvement together with triggering a sense of meaning and purpose (Dahl et al., 2019) that can be efficient on BPD symptomatology. Recent models like the PROMISE one (Eberth et al., 2019) even state that mindfulness meditation has effect Insight and equanimity. Clinician and researcher willing to investigate the potential to leverage insight or metacognition may use mindfulness in specific forms, for example the metacognitive awareness and decentering techniques (Shapiro et al., 2006; Brown et al., 2007; Schooler et al., 2011) or “changes in self-concept and self-perception” techniques (Hayes et al., 2006; Vago et al., 2012).

Correlation analysis showed the correlation between Metacognition and impulsivity, Negative Urgency, and Sensation Seeking, making incongruent relation between Metacognition and impulsivity, often going in the opposite direction. In a wide range of impulsivity-related disorders such as OCD and SZ, Metacognition therapy reduces symptoms (Fisher and Wells, 2005; Lysaker et al., 2015) and reduces negative emotion in anxiety disorders (Wells and King, 2006; Wells and Carter, 2001). We can hypothesize that BPD's high level of MCQ30 and Insight should show decreased symptoms level as their level increased. Another conclusion could be that the higher the symptomatology, the more BPD patient can experience Insight and metacognitive functioning impairments like Depressive Disorder.

We observe that insight and metacognitive work may go through different pathways to be effective, focusing on one or another dimension regarding the targeted dimension. Studies comparing the metacognition impact in several disorders started to question the specificity of metacognitive impairments in SZ (Tas et al., 2014). They compared BD and SZ and found an impairment in Metacognition for SZ only, questioning the generalization of metacognitive Therapy these last years to all kinds of disorders. Moreover, Metacognition correlated to the BPQ dimension except for relationships. There is a need to specify the effect of Metacognition on relational symptoms of BPD. Moritz et al., 2011 proved, even in SZ -where social life and social functioning are heavily impaired- metacognitive work has a good effect (Lysaker et al., 2011), so it could work for BPD relational issues.

Promoting both insight and metacognition may be key factors in improving the effectiveness of psychotherapies for BPD (see Dimaggio and Lysaker, 2015; Carcione et al., 2019). If clinicians become more able to tailor treatment to the metacognitive problems patients present with, there is the hope to reduce alliance breakdowns and dropout which are still present in the most empirically validated treatments for BPD (Fonagy et al., 2011; Chiesa and Fonagy, 2014). The idea is that it may be useful to help patients a) becoming progressively aware of their inner states, b) understand that their problems come from their evaluations of the situations more than from reality itself and c) finding ways to solve interpersonal problems thanks to a richer understanding of mental states, both of themselves and of others, may increase therapy adherence and improve outcomes (Semerari et al., 2003). Moreover, once patients are more aware of the psychological mechanisms underlying their suffering, they could be more likely to use CBT skills to face social challenges, engage themselves in behavioral homework's and adopt emotion regulation skills such as the one proposed by DBT. Our mediation analysis revealed a different array of relations on both Insight and metacognitive dimensions on UPPS or BPQ scores. These analyses mostly heightened the role of the Need to Control and Negative beliefs of MCQ30 dimensions. More than Metacognition or Insight, specific

metacognitive processes may have different impacts on impulsivity or symptomatology of BPD. This is consistent with the growing body of literature questioning the cognitive control issues in BPD (Sato et al., 2018) that is influencing (together with intolerance of ambiguity) rejection and BPD features. Titus et al., 2020, looked at the impact of control strategies on BPD features and suicidal risk and concluded that it should be of interest to examine thought control strategies as possible predictors of BPD symptoms and suicide to inform intervention offering to work on cognitive strategies. Cognitive control strategies may be impactful for affect regulation (Schulze et al., 2018) but further research is needed to understand its dynamic with all dimensions of BPD.

The present study contains several limitations. First, the gender ratio was not representative, as recent studies found a 1:1 gender ratio in BPD samples (Lenzenweger et al., 2008). Another limitation is that we did not use a control depression scale as our patients were all stabilized from their Axis 1 comorbid disorder. Another limitation is that we didn't use the MAS scale (Semerari et al., 2003) but we would encourage further research to test out several metacognition measures to further investigate the potential for Cognitive Insight and Metacognition – to be overlapping concepts and measures.

## 5. Conclusion

Insight and metacognition issues seem to be essential factors for BPD. The latest research direction started to implement solely metacognitive work as a critical factor in mood disorders and other disorders (Wells, 2011; Normann et al., 2014) but also for PD (Carcione et al., 2011; Dimaggio and Lysaker, 2015; Dimaggio et al., 2007; Semerari et al., 2015), questioning BPD initial level of Metacognition.

Implementing these factors in our assessment could help us orient our patients to the right Therapy as they do not all work directly on the same processes. In 2018, a trial by Buck et al. investigated the MERIT for a BPD patient on a long-term application. This therapy proposed incredibly detailed work on the patient's metacognitive abilities. This therapy aims to stimulate reflexive actions about oneself and others and the use of knowledge about oneself and others to respond to psychological problems. In its flexible approach to MERIT therapies for chronic populations (De Jong et al., 2019), Lysaker has achieved good results, suggesting that the future of BPD therapies can be insight and metacognition work, but no iatrogenic effect existed. These results need to be generalized to stand the comparison to other BPD therapy working in individual sessions like Transference Focused Therapy (Yeomans et al., 2013) one of the BPD recommended treatments (Choi-Kain et al., 2016). There are already treatments for personality disorders which target poor metacognition, such as MIT (Dimaggio and Lysaker, 2015; 2020; Inchausti et al., 2020; Popolo et al., 2021) and Merit (Buck et al., 2018) and hold the promise to be effective in this population. As an alternative, targeting metacognition may be an unuseful element when included in different treatments for BPD with the hope they help preventing alliance rupture and increase therapist empathy and responsiveness (Kramer et al., 2020). Moreover, further research needs to consider Metacognition and Insight issues as separate dynamics to address.

## Authors contribution

SM, made substantial contributions to the conception and design of the work; the acquisition, analysis, interpretation of data; drafted the work, revised it critically for important intellectual content; approved the version to be published; and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

JDM made substantial contributions to the conception of the work revised it critically for important intellectual content; approved the version to be published; and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of

any part of the work are appropriately investigated and resolved.

### Ethical statement

Ethical approval is deemed unnecessary according to domestic regulations (Loi Jardé, RIPH3 in 2012, amendment No. 2022-582 du 20 Avril, 2022- art2). Authors followed Helsinki's and Madrid's recommendation regarding research involving human participants. All participants signed informed consent to participate in the research and data usage for research and p.

### Data sharing

Data will be available under reasonable demand to the corresponding author.

### Funding

The authors didn't received any funding for this research.

### Research integrity

According to national regulation (RIPH3, Loi Jardé) ethics approval is deemed unnecessary.

### Conflicts of interest

The Authors declare having no conflict of interest.

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