Borderline Personality Disorder and Emotion Dysregulation

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Mentalization as a mediator of the effects of early life stress on borderline personality disorder in a South Korean clinical sample

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Abstract

Background Borderline Personality Disorder (BPD) is a severe mental condition characterized by instability in self-image, emotions, and interpersonal relationships. Within mentalization models of BPD, the interaction between genetic vulnerabilities and early attachment-related adversity is understood to hinder the development of mentalization, contributing to core BPD symptoms. This study investigated early life stress (ELS) and mentalization difficulties in a Korean BPD sample and tested whether mentalization difficulties mediated their associations with BPD diagnosis and symptom severity.

Methods We conducted a cross-sectional study with 90 individuals with BPD and 47 healthy controls using self-report measures of ELS, mentalization difficulties, and BPD symptoms. Group differences were examined, and a mediation model was tested using the PROCESS Macro.

Results The BPD group showed higher levels of ELS across all domains and higher levels of most mentalization difficulties, with the exception of hasty mentalizing. Emotional abuse and bullying were associated with BPD diagnosis. Psychic equivalence and lack of emotional expression were associated with diagnosis, while psychic equivalence and lack of emotional awareness were associated with symptom severity. Mentalization difficulties partially mediated the links between ELS and both BPD diagnosis and symptom severity.

Conclusions Preventive efforts targeting emotional abuse and bullying, along with interventions to address mentalization difficulties, may help inform preventive strategies and improve treatment outcomes. Results support the need for mentalization-based interventions for individuals with BPD in Asian populations.

Keywords Borderline personality disorder, Early life stress, Mentalization, Emotional abuse, Bullying

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Background

Borderline personality disorder (BPD) is a severe psychiatric condition marked by pronounced instability in affect, self-identity, and interpersonal functioning, alongside impulsive behaviors such as aggression, self-harm, and suicide attempts [1–4]. These clinical features contribute to substantial functional impairment and make treatment particularly challenging.

Over the past decades, Western researchers have developed several manualized, evidence-based interventions, grounded in empirical work on the psychological mechanisms and developmental risk factors underpinning BPD [5–8]. However, most of this empirical foundation originates from Western samples, leaving a substantial gap in knowledge regarding the clinical profiles and underlying processes associated with BPD in East Asian populations including South Korea. Given reports of rising BPD prevalence in East Asian clinical settings [9, 10], there is a clear need to establish empirical evidence within these populations to guide appropriate prevention and treatment efforts. Such evidence is also essential for providing a foundation to inform the culturally sensitive application of evidence-based interventions originally developed in Western contexts.

The etiology of BPD is not definitively established, yet extensive theoretical and empirical work indicates that it arises from an interaction between genetic vulnerability and adversity within early attachment relationships [11–13]. Early life stress (ELS), a transdiagnostic risk factor that encompasses physical, emotional, and sexual abuse, neglect, domestic violence, and bullying, has consistently been identified as a major environmental contributor to BPD. For example, a recent meta-analysis revealed that individuals with BPD are approximately 13.91 times more likely than non-clinical populations to have experienced childhood adversities such as abuse and neglect [14]. Moreover, experiences of childhood bullying are not only linked to the emergence of BPD symptoms but also identified as significant predictors of suicidal behaviour in individuals with BPD [15–17]. Exposure to interparental violence showed a significant association with adolescents' borderline features, as well as with changes in these features over a 5-year period, even after controlling for parent–child relationship factors and sociodemographic confounds [18].

Although ELS is considered a potentially important environmental factor in the development of BPD, it may be neither necessary nor sufficient condition. Not everyone exposed to ELS appears to develop BPD, and some individuals diagnosed with BPD do not report significant early adversity. Furthermore, symptom severity may vary considerably even among those with similar ELS backgrounds. This suggests that additional factors influence the relationships among ELS and BPD. Identifying these underlying psychological mechanisms is crucial for improving prognostic accuracy and guiding the development of targeted therapeutic interventions for BPD.

Mentalization is an important psychological factor associated with BPD, which helps explain how ELS can lead to the development of the disorder [19, 20]. Mentalization refers to the capacity to reflectively understand one's own and others' internal mental states—such as desires, needs, emotions, beliefs, and reasons—within the context of interpersonal interactions [12]. As a form of social cognition, mentalization overlaps with theory of mind [21], but it is broader in scope: whereas theory of mind is primarily cognitive and oriented toward understanding others, mentalization also encompasses self-related and affective processes and operates as a dynamic capacity that shifts in response to stress, arousal, and attachment contexts [22].

From a developmental perspective, Fonagy et al. [19], who developed the mentalization model, propose that secure attachment to caregivers—specifically those who can sensitively recognize a child's emotional distress and respond in an attuned and regulated (marked) manner—serves as a critical foundation for the emergence of mentalization. If children come to experience their internal emotional states as recognized and modulated through the caregiver, and if this occurs alongside the caregiver's role as a secure base that encourages exploration, this combination supports the development of self-regulation and fosters the formation of epistemic trust—confidence in the authenticity and personal relevance of information [19, 23]. Such a foundation may in turn enable children to explore and imagine their own and others' minds with curiosity, thereby supporting the development of mentalization abilities.

Since mentalization depends on these early attachment experiences, adversity within early attachment relationships can impede its development [24]. Supporting this view, a growing body of research has linked ELS to mentalization deficits. For example, maltreatment and peer bullying before age 18 have been associated with significantly lower levels of mentalization [25]. Similarly, abuse and neglect were linked to reduced mentalization in adults with childhood trauma, with mentalization and attachment insecurity mediating the relationship between childhood trauma and PTSD symptoms [26]. A recent meta-analysis also confirmed a moderate negative association between the severity of childhood maltreatment and mentalizing capacity [27].

Alongside this developmental theory, Bateman and Fonagy [24] articulated that mentalization impairments in BPD reflect imbalances across key dimensions of mentalization and the presence of low mentalizing modes. Specifically, individuals with BPD may demonstrate imbalances and rigidity across four dimensions

of mentalization—automatic/control, cognitive/affective, internal/external, and self/other—often exhibiting a pronounced bias toward one extreme. In emotionally charged interpersonal situations, mentalization abilities are particularly prone to disruption, which can lead to a state of low mentalization, where maladaptive thinking modes dominate the understanding of self and others. These low mentalizing modes include the following: (1) Psychic equivalence: Equating internal subjective experiences with external reality without adequate consideration of external factors; (2) Pretend mode: Appearing to engage in mentalization outwardly while lacking genuine connection with internal states and reality; and (3) Teleological thinking: Focusing on material and physical aspects rather than mental states and assuming that only objective, goal-directed actions impact mental states [28]. Such deficits in understanding one's own and others' minds within relational contexts constitute a core underlying mechanism of BPD symptoms, including difficulties in regulating emotions that arise in interpersonal situations, as well as the resulting impulsivity and interpersonal dysfunction [26, 29]. A growing body of empirical research has consistently shown that difficulties in mentalization are closely associated with BPD. Németh et al. [30]. reported that individuals with BPD show deficits in emotional self-awareness and in inferring others' mental states (Theory of Mind, ToM) compared to healthy controls. Similarly, Petersen et al. [31]. found that BPD patients demonstrated impairments in both cognitive and emotional mentalization when considering others' perspectives in complex social scenarios. Preißler et al. [32]. showed that BPD patients performed significantly worse on the Movie for the Assessment of Social Cognition (MASC), a task that involves understanding characters' emotions, thoughts, and intentions, with trauma-related factors predicting lower social-cognitive abilities. Jurist et al. [33]. also used the MASC and found that overmentalization was associated with BPD traits. Interestingly, Miano et al. [34]. assessed empathic accuracy in the context of relationship threats—a domain known to be sensitive for individuals with BPD—and found that, unlike healthy controls, women with BPD showed increased empathic accuracy, which may reflect heightened sensitivity to relational threats and maladaptive social-cognitive processing.

Although these studies provide meaningful evidence for mentalization impairments in BPD, most have assessed only limited aspects of the construct—such as mentalizing about others or certainty versus uncertainty regarding mental states—rather than its full scope. Theoretically, mentalization is understood as a complex, multidimensional capacity that includes processes supporting flexible interpretation and self-regulation [24]. Thus, more comprehensive assessment is needed. Moreover, most studies examining the mediating role of mentalization between early adversity and BPD have relied on community samples [35–37], leaving clinical evidence scarce. Finally, the predominance of Western samples limits generalizability. Although mentalization is considered a universal construct, its development and expression may vary across cultures [38], underscoring the need for culturally informed research.

To address these gaps, the present study examined whether ELS and mentalization difficulties are associated with BPD diagnosis and symptom severity in a Korean clinical sample. We also tested whether mentalization difficulties mediated the association between ELS and both BPD diagnosis and symptom severity. Mentalization difficulties were assessed more comprehensively. We evaluated mentalization of one's own emotions (emotional awareness and emotional expression), difficulties in mentalizing others, and patterns of impaired mentalizing reflected in hasty conclusions drawn without reflection in relational contexts (hasty mentalizing). We also assessed the psychic equivalence mode, a non-mentalizing state that reflects a collapse of mentalizing often observed in individuals with BPD [24]. Based on these aims, we proposed the following hypotheses:

Hypothesis 1 Individuals with BPD would report higher levels of ELS and mentalization difficulties compared to HCs.

Hypothesis 2 Mentalization difficulties would mediate the relationship between early life stress and both BPD diagnosis (Hypothesis 2a) and symptom severity (Hypothesis 2b).

We expect that the findings of this study will provide valuable insights into the psychological mechanisms underlying BPD, which can guide the design of more targeted and effective therapeutic interventions. As the first study to examine mentalization performance and its mediating role in a Korean clinical BPD population, it also contributes to validating existing findings from Western contexts and supports the cultural applicability of mentalization-based interventions in Eastern contexts, particularly in South Korea.

Methods

Participant selection and procedure

The data for this study were collected from June 2021 to August 2024. The BPD patient group comprised individuals who visited the Yonsei University Gangnam Severance Hospital and Yeungnam University Hospital. All participants in this group were between 20 and 49 years of age and were either drug-naïve or had used medications to manage coexisting psychiatric symptoms such as depression, anxiety, and insomnia. The Structured

Clinical Interview for DSM-IV-TR Axis II personality disorders (SCID-II) was utilised to diagnose BPD, and those who met the criteria were allocated to the BPD group. The exclusion criteria were prior diagnoses of psychotic, bipolar I, or other organic mental disorders. Ninety patients were included in the BPD group (see Table 1). For the healthy control (HC) group, 47 individuals aged 20–48 years were recruited through advertisements on websites. The HC participants had no history of serious medical or neurological disorders that may be associated with mental or personality dysfunction. The study was approved by the Institutional Review Board (IRB) of the Yonsei University Gangnam Severance Hospital (IRB approval number: 3-2021-0095), and written informed consent was obtained from all participants prior to the commencement of the study.

Measures

ELS

ELS was assessed using the Adverse Childhood Experience subscale of the Protective and Vulnerable Factors Battery Test (PROVE-ACE), a measure developed and validated by Lee et al. [39]. The PROVE is a comprehensive self-report instrument designed to assess depressive symptoms and both protective and vulnerability factors for mental health in Korean populations. It consists of five subscales: (1) depressive symptomatology, (2) suicide risk, (3) adult attachment type, (4) adverse childhood experience, and (5) mentalization difficulties. PROVE-ACE consists of 52 items divided into six subscales: (1) emotional abuse, (2) physical abuse, (3) sexual abuse, (4) neglect, (5) exposure to domestic violence, and (6) bullying, with a focus on experiences during childhood and adolescence. Responses are rated on a scale from 0 to 4, with higher scores indicating a greater frequency and severity of adverse experiences during the developmental years. The Cronbach's α was 0.95 for ELS total and by subscale, 0.82 for emotional abuse, 0.90 for physical abuse, 0.88 for neglect, 0.93 for sexual abuse, 0.92 for exposure to domestic violence, and 0.88 for bullying.

Table 1 Clinical characteristics of the participants

Characteristics	BPD ($n=90$) (Mean ± SD)	HC ($n=47$) (Mean ± SD)	F/ χ2	*p*-value
Male/Female	15/75	9/38	0.13	0.717
Age (years)	27.86 ± 7.10	31.94 ± 8.74	6.70	0.007
Education years	14.36 ± 2.12	15.53 ± 2.04	1.09	0.002
PAI-BOR[1]	46.16 ± 1.09	15.27 ± 1.54	19.88	< 0.001

BPD, borderline personality disorder; HC, health controls; PAI-BOR, Personality Assessment Inventory-Borderline Features Scale

[1]The statistical significance of the PAI-BOR difference within the patient group was tested via one-way analysis of covariance (ANCOVA), controlling for age and years of education

Mentalization difficulties

We assessed impairments in mentalizing using the Mentalization Competency section of PROVE (PROVE-MC) [39], which consists of 16 items divided into five subscales: (1) lack of emotional awareness, (2) lack of emotional expression and interaction, (3) hasty incomplete mentalizing, (4) lack of mentalizing others, and (5) psychic equivalence mode. The participants rated each item on a 5-point Likert scale ranging from 0 (not at all true) to 4 (very true). Higher scores indicate greater failure in the mentalization process, indicating mentalization difficulties. The Cronbach's α was 0.82 for PROVE-MC total and by subscale, 0.84 for lack of emotional awareness, 0.80 for lack of emotional expression and interaction, 0.77 for hasty incomplete mentalizing, 0.52 for lack of mentalizing others, and 0.69 for psychic equivalence mode.

Severity of borderline personality symptoms

The Korean version of the Personality Assessment Inventory-Borderline Features Scale (PAI-BOR) [40], developed by Morey [41], was used. PAI-BOR was designed to measure core elements of BPD, including emotional instability, identity disturbance, negative interpersonal relationships, and self-harm. It consists of 23 items, each rated on a scale from 0 to 3. Higher scores reflect a greater degree of borderline personality traits. The Cronbach's α was 0.96 for PAI-BOR total and by subscale, 0.84 for emotional instability, 0.91 for identity disturbance, 0.87 for negative interpersonal relationships, and 0.82 for self-harm.

Data analysis

We first compared the BPD and HC groups on overall levels of ELS and mentalization difficulties and identified which subcomponents were most strongly associated with BPD diagnosis and symptom severity. We then tested two mediation models to examine whether mentalization difficulties mediated the association between ELS and BPD symptom severity within the BPD group, and between ELS and BPD diagnosis in the full sample.

The data were analysed using the SPSS software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). Statistical power for all study variables was estimated using the PASS software (NCSS, LLC. Released 2017. PASS for Windows, Version 15.0. Kaysville, UT: NCSS, LLC), based on the group sizes (BPD = 90; HC = 47). The results indicated that most analyses yielded high statistical power, with values around 90%.

Age and years of education were compared using independent t-tests, and differences by sex between the groups (BPD vs. HC) were compared using a chi-square test. Age ($F = 6.70$, $p < 0.01$) and years of education

(F = 1.09, $p < 0.01$) were different between the two groups (Table 1). Therefore, the scores of the subfactors related to ELS and mentalization difficulties for the two groups were compared using one-way analysis of covariance, controlling for age and years of education.

A multivariate logistic regression model was used to determine whether ELS and mentalization difficulties increased the likelihood of BPD diagnosis. The dependent variable was groups (0 = HC, 1 = BPD), and the independent variables were the subscale scores of ELS and mentalization difficulties. First, univariate logistic regression analyses were performed to select the candidate variables for the multivariate logistic regression model. We applied a forward selection multivariate logistic regression analysis based on the variables with a p-value < 0.20 in the univariate logistic regression analyses. The criteria for entry and removal were based on the likelihood ratio test, by entering and removing limits set at $p = 0.05$ and $p = 0.10$, respectively.

To identify factors associated with BPD symptom severity, multivariate linear regression analyses were conducted using BPD symptom severity scores as dependent variable. The independent variables were again the subscale scores of ELS and mentalization difficulties. First, univariate linear regression analyses were performed to select candidate variables. We then applied stepwise multivariate linear regression analyses for variables with a p-value < 0.20 in the univariate linear regression.

To examine the mediating effect of mentalization difficulties on the relationship between ELS and BPD symptom severity, a simple mediation analysis was then performed using Model 4 of the PROCESS macro [35]. The significance of the indirect effect was tested via bootstrapping with 5,000 resamples, using a 95% confidence interval (CI); the effect was considered statistically significant if the CI did not include zero. This method does not assume normality of the sampling distribution of the indirect effect [30]. This analysis was conducted within the BPD group ($n = 90$), and the sample size was deemed sufficient, as Monte Carlo simulations by Sim et al. [36]. suggest that approximately 80 participants are adequate to detect medium-sized mediation effects in simple models using the bootstrap method employed in this study. In addition, to test whether mentalization difficulties mediated the relationship between ELS and BPD diagnosis, a logistic mediation analysis was conducted using the same model (Model 4 in PROCESS), with BPD diagnosis (1 = BPD, 0 = HC) as the dependent variable.

Results

Severity of borderline personality features

There were no significant group differences in gender distribution. The comparison in the PAI-BOR scores, adjusted for age and years of education, is described in Table 1. The severity of BPD symptoms, as measured by PAI-BOR, differed significantly between the groups (F1,131 = 19.88, $p < 0.001$). Compared to the HC group, the BPD group exhibited a significantly higher PAI-BOR score.

Group differences in ELS and mentalization difficulties

The scores for each ELS domain differed significantly between the two groups (Fig. 1; total score: F (1,132) = 57.65, $p < 0.001$, partial η^2 = 0.30 ; emotional abuse: F (1,132) = 55.19, $p < 0.001$, partial η^2 = 0.30; physical abuse: F (1,132) = 30.05, $p < 0.001$, partial η^2 = 0.19; sexual abuse: F (1,132) = 10.65, $p = 0.001$, partial η^2 = 0.08; neglect: F (1,132) = 20.77, $p < 0.001$, partial η^2 = 0.14; domestic violence: F (1,132) = 16.24, $p < 0.001$, partial η^2 = 0.11; and bullying: F (1,132) = 25.65, $p < 0.001$, partial η^2 = 0.16). The BPD group scored significantly higher than the HC group in all ELS domains.

The scores for domains related to mentalization difficulties also differed significantly between the groups, with the exception of hasty incomplete mentalizing (Fig. 2; total score: F (1,132) = 67.54, $p < 0.001$, partial η^2 = 0.34; lack of emotional awareness: F (1,132) = 47.21, $p < 0.001$, partial η^2 = 0.26; lack of emotional expression: F (1,132) = 12.35, $p = 0.001$, partial η^2 = 0.86; psychic equivalence mode: F (1,132) = 85.57, $p < 0.001$, partial η^2 = 0.39; lack of mentalizing others: F (1,132) = 11.13, $p = 0.001$, partial η^2 = 0.78; and hasty incomplete mentalizing: F (1,132) = 2.21, $p = 0.14$, partial η^2 = 0.16). The scores in the domains of lack of emotional awareness and expression, psychic equivalence mode, and lack of mentalizing others were significantly higher in the BPD than in the HC group.

Subcomponents of ELS and mentalization difficulties associated with BPD diagnosis

To identify potential factors related to the diagnosis of BPD, we conducted logistic regression analyses (Table 2). Significant variables in the final model included the emotional abuse and bullying domains in ELS, and lack of emotional expression and psychic equivalence mode domains in mentalization difficulties. Frequent emotional abuse (odds ratio: 1.34, $p = 0.001$), bullying (odds ratio: 1.15, $p = 0.046$), lack of emotional expression (odds ratio: 1.34, $p = 0.003$), and the psychic equivalence mode (odds ratio: 2.34, $p < 0.001$) were strong predictors of BPD diagnosis. The Nagelkerke R-squared statistic for the model was 0.76, and the model correctly classified 89.7% of the study population.

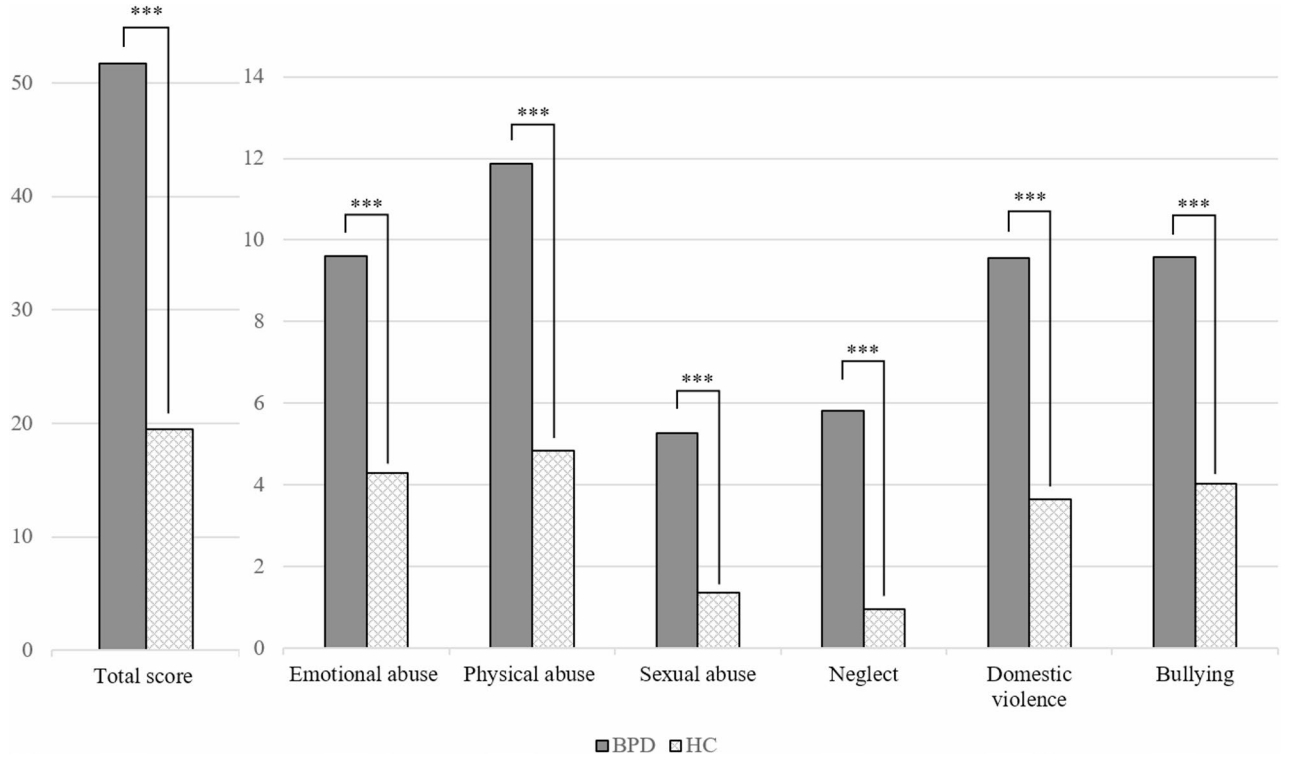

Fig. 1 Comparison of early life stress profile scores between the two groups. The data are expressed as means. One-way analysis of covariance was used to compare the variables in the groups, controlling for age and years of education. *** $p < 0.001$

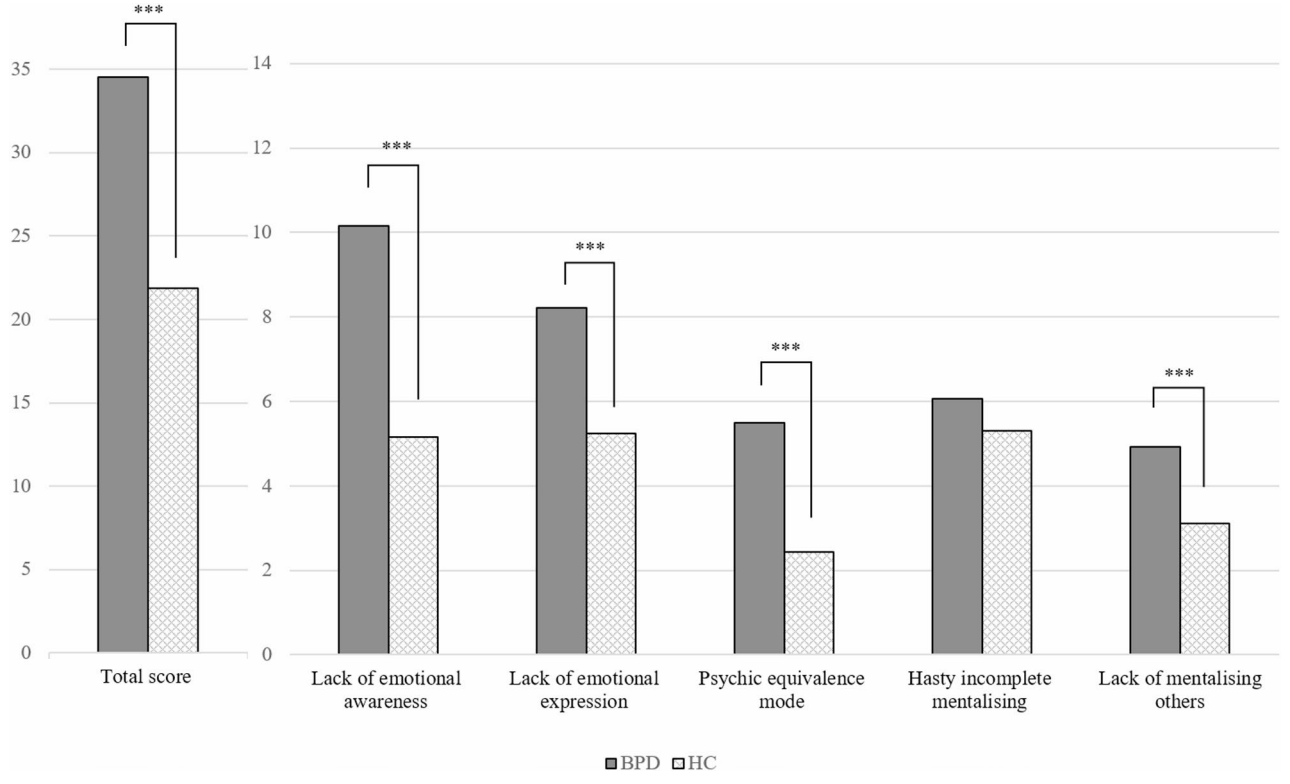

Fig. 2 Comparison of the mentalization difficulties profile scores between the two groups. The data are expressed as means. One-way analysis of covariance was used compare the various scores in the groups, controlling for age and years of education. *** $p < 0.001$

Table 2 Results of univariate and multivariate logistic regression analyses predicting group membership (BPD vs. HC) based on early life stress and mentalization difficulties ($n = 137$)

Variables	Univariate logistic regression			Multivariate logistic regression		
	Odds ratio	95% CI	*p*-value	Odds ratio	95% CI	*p*-value
Sex	0.84	0.34–2.11	0.717			
Age	0.94	0.90–0.98	0.005			
Years of education	0.76	0.63–0.92	0.004			
Emotional abuse	1.39	1.24–1.55	< 0.001	1.34	1.13–1.60	0.001
Physical abuse	1.21	1.12–1.30	< 0.001			
Sexual abuse	1.22	1.08–1.39	0.002			
Neglect	1.34	1.14–1.58	0.001			
Domestic violence	1.14	1.06–1.22	< 0.001			
Bullying	1.22	1.13–1.32	< 0.001	1.15	1.002–1.31	0.046
Lack of emotional awareness	1.44	1.27–1.64	< 0.001			
Lack of emotional expression	1.25	1.12–1.40	< 0.001	1.34	1.11–1.62	0.003
Psychic equivalence mode	2.22	1.69–2.90	< 0.001	2.34	1.65–3.33	< 0.001
Hasty incomplete mentalising	1.10	0.97–1.25	0.133			
Lack of mentalising others	0.52	1.17–1.65	0.086			

A significant threshold **p*-value was set to less than 0.2, and the selected variables were applied to a forward selection multivariate logistic analysis

CI, confidence interval

Table 3 Results of univariate and multivariate linear regression analyses predicting BPD symptom severity based on early life stress and mentalization difficulties ($n = 90$)

Variables	Univariate linear regression		Multivariate linear regression	
	Standardised ß coefficient	*p*-value	Standardised ß coefficient	*p*-value
Sex	0.11	0.295		
Age	−0.12	0.255		
Years of education	−0.19	0.078		
Emotional abuse	0.11	0.312		
Physical abuse	0.16	0.143		
Sexual abuse	0.17	0.113		
Neglect	0.18	0.092		
Domestic violence	0.27	0.010		
Bullying	0.22	0.040		
Lack of emotional awareness	0.45	< 0.001	0.37	< 0.001
Lack of emotional expression	0.16	0.136		
Psychic equivalence mode	0.35	0.001	0.22	0.027
Hasty incomplete mentalising	0.02	0.872		
Lack of mentalising others	0.29	0.007		

A significant threshold *p-value was set to less than 0.2, and the selected variables were applied to a forward selection multivariate linear analysis

Subcomponents of ELS and Mentalization Difficulties Associated with BPD Symptom Severity among Individuals with BPD

To identify factors related to the severity of BPD symptoms, we conducted a multivariate linear regression analysis using the PAI-BOR score as the dependent variable for the BPD patient group (Table 3). The results indicated that lack of emotional awareness (standardised *ß* coefficient: 0.37, $p < 0.001$) and psychic equivalence mode (standardised *ß* coefficient: 0.22, $p = 0.027$) in the assessment of mentalization difficulties were significantly associated with the PAI-BOR scores. The explanatory power of this model was 24.5%.

Mediating effect of mentalization difficulties on the relationship between ELS and BPD symptom severity

A simple mediation analysis was conducted to examine whether mentalization difficulties mediated the relationship between ELS and BPD symptom severity (Fig. 3). The results indicated that ELS was significantly associated with mentalization difficulties (B = 0.09, $p = 0.01$), and mentalization difficulties were significantly associated with BPD symptom severity (B = 0.56, $p < 0.001$). The total effect of ELS on BPD symptom severity was significant (B = 0.14, $p = 0.005$, 95% *CI* [0.046, 0.232]). After accounting for the mediator, the direct effect of ELS on BPD symptom severity remained significant (B = 0.09, $p = 0.024$, 95% *CI* [0.004, 0.180]), indicating partial

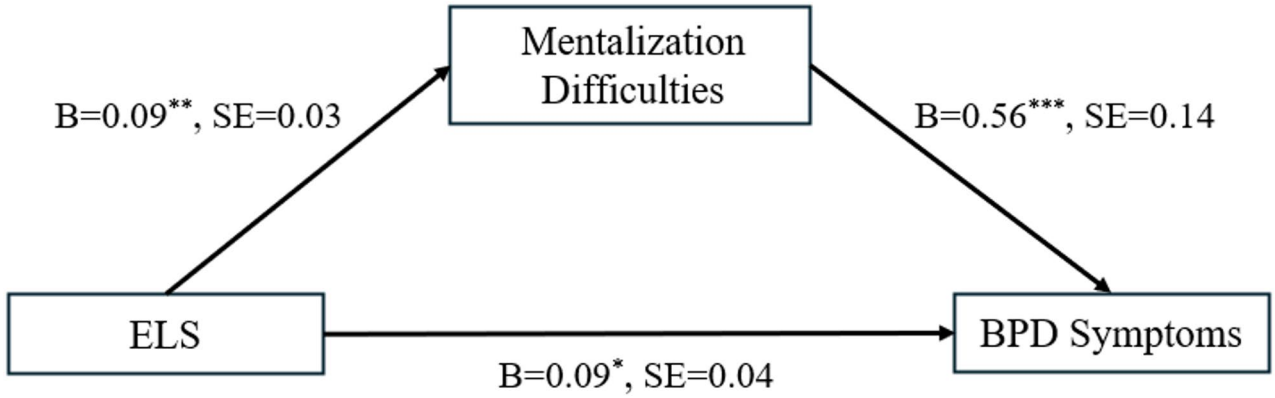

Fig. 3 Mediating effect of mentalization difficulties on the relationship between early life stress and symptom severity of borderline personality disorder ($n = 90$). ELS, early life stress; BPD, borderline personality disorder; B, unstandardised coefficient; SE, standard error. *** p < 0.001, ** p < 0.01, * p < 0.05

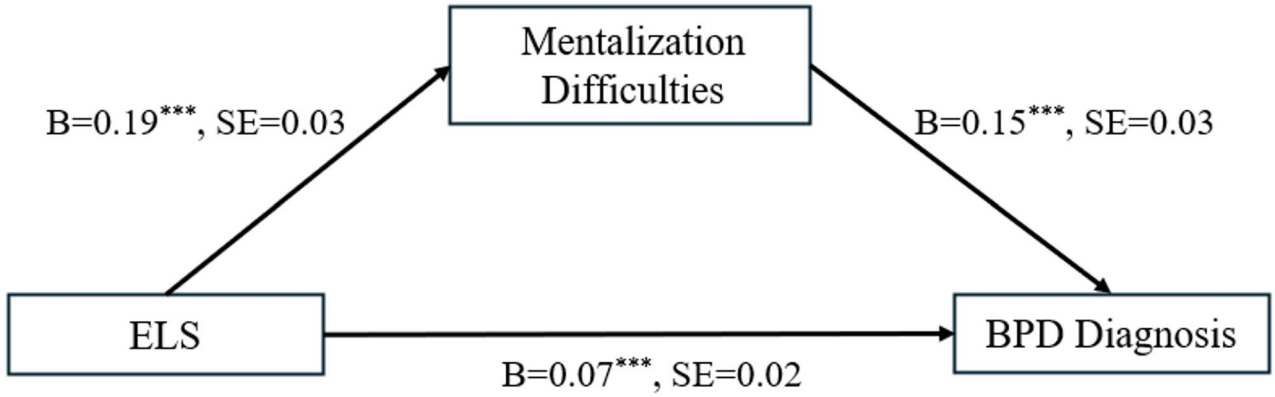

Fig. 4 Mediating effect of mentalization difficulties on the relationship between early life stress and diagnosis of borderline personality disorder ($n = 137$). ELS, early life stress; BPD, borderline personality disorder; B, unstandardised coefficient; SE, standard error. *** p < 0.001

mediation. The indirect effect of ELS on BPD symptom severity through mentalization difficulties was significant (B = 0.05, $p = 0.012$, 95% *CI* [0.012, 0.093]) which did not include zero, confirming the mediation effect.

Mediating effect of mentalization difficulties on the relationship between ELS and BPD diagnosis

A logistic mediation analysis was conducted to examine whether mentalization difficulties mediated the relationship between early life stress (ELS) and BPD diagnosis (Fig. 4). The results indicated that ELS was significantly associated with mentalization difficulties ($B = 0.19$, $p < 0.001$), and mentalization difficulties were significantly associated with BPD diagnosis ($B = 0.15$, $p < 0.001$). The indirect effect of ELS on BPD diagnosis through mentalization difficulties was significant ($B = 0.03$, $p = 0.002$, 95% *CI* [0.016, 0.050]), as the confidence interval did not include zero, indicating a significant mediation effect. The direct effect of ELS on BPD diagnosis remained significant ($B = 0.07$, $p < 0.001$, 95% *CI* [0.037, 0.112]), suggesting partial mediation.

Discussion

The present cross-sectional study examined the relationships of ELS and mentalization difficulties with BPD in a Korean clinical sample using self-report measures and tested whether mentalization difficulties mediated the relationship between ELS and BPD symptom severity and diagnosis.

Consistent with our first hypothesis, individuals with BPD reported significantly higher levels of ELS and mentalization difficulties than HCs. These findings replicate and extend previous evidence linking ELS [14–18] and mentalization difficulties [30–34] to BPD by demonstrating these associations in an East Asian clinical population.

Regression analyses further revealed that, among the ELS factors, emotional abuse and bullying were most strongly associated with BPD diagnosis. These findings align with Western studies that have highlighted the distinct impact of emotional abuse compared to other forms of early adversity. For example, Briere and Elliott [42] reported that emotional—but not physical or sexual—abuse significantly predicted BPD diagnosis

among male participants, and Bornovalova et al. [43]. found similar patterns in a clinical sample of substance users. Extending these findings to a Korean context, our results underscore the impact of emotional abuse on BPD diagnosis. Emotional abuse—such as rejection or threats from caregivers—can severely damage a child's sense of self, leading to persistent feelings of worthlessness and unlovability [44]. This form of abuse has been shown to have particularly long-lasting effects on emotional and interpersonal functioning [45, 46], contributing to the development of self-pathology associated with BPD.

Bullying also emerged as a significant factor associated with BPD, consistent with prior findings linking childhood bullying to adult BPD symptoms [15] and borderline features in female outpatients, mediated by mentalization [47]. As peers become key attachment figures during adolescence [48], peer victimization may contribute to BPD development independently of early caregiving experiences. Moreover, early relational adversity may impair social functioning, increasing vulnerability to later peer victimization [44] and reinforcing maladaptive patterns.

These findings address ELS as a key factor associated with BPD and emphasise the importance of preventive interventions. While our cross-sectional design does not allow for causal conclusions, the observed associations suggest that early experiences such as emotional abuse and bullying may play an important role in the development of BPD. Emotional abuse often goes unnoticed due to its subtle nature, posing challenges to external interventions. This observation highlights the need for early monitoring and targeted interventions to address emotional abuse and prevent BPD diagnosis. Additionally, preventive and therapeutic efforts to minimise the impact of emotional abuse or bullying can be pivotal in reducing severe and long-term psychological aftereffects, such as those observed in BPD.

In relation to mentalization, most dimensions of mentalization difficulties were significantly elevated in the BPD group compared to HCs. Interestingly, however, no significant group difference was found in hasty and incomplete mentalizing. One possible explanation may lie in cultural factors. In South Korea, rapid industrialization has contributed to intense academic and social competition, within which quick decision-making and efficiency have become culturally emphasized values [49]. As a result, a tendency toward rapid judgments—even in interpersonal contexts—may reflect a broader normative cultural pattern rather than a BPD-specific impairment. Nevertheless, given that hasty mentalizing may still exacerbate interpersonal difficulties and symptom severity in individuals with BPD, it remains important to evaluate and intervene carefully, taking the cultural context into account.

In the regression models, the psychic equivalence mode showed the strongest association with both BPD diagnosis and symptom severity. Also, reduced emotional expression was associated with BPD diagnosis, and reduced emotional awareness was linked to symptom severity. It is well established in studies examining the association between BPD and alexithymia that individuals with BPD experience difficulties identifying and describing their own emotions and show a tendency toward externally oriented thinking [50, 51]. In line with this literature, our findings suggest that BPD may involve deficits in self-mentalizing, reflecting an imbalance toward the "other" pole within the self–other dimension of mentalization.

Situationally informed research also offers useful insight into these mentalizing difficulties. While many studies report that individuals with BPD have difficulty inferring others' emotions and intentions [30–32], interpersonal threat produces a different pattern: women with BPD showed heightened empathic accuracy under threat [34], indicating a stronger orientation toward others' mental states in emotionally charged contexts. Taken together, individuals with BPD tend to direct excessive attention toward others' thoughts and feelings—particularly in situations where they anticipate rejection or abandonment—at the expense of self-mentalizing.

Moreover, the strong association between the psychic equivalence mode and BPD observed in this study suggests that, when affect is activated in attachment-relevant contexts, their internal emotional experiences may be felt as immediate and unquestionable, reducing the capacity to consider alternative perspectives and leading to a breakdown in mentalizing. Thus, the psychic equivalence mode—where internal states are experienced as equivalent to external reality [52]—may be more readily activated in these contexts.

Supporting our second hypothesis, overall mentalization difficulties partially mediated the relationship between ELS and both BPD symptom severity and BPD diagnosis. Thus, early adversities within primary attachment relationships increased both the likelihood of BPD diagnosis and the severity of symptoms not only directly but also indirectly through their detrimental impact on mentalizing ability.

These findings highlight the potential role of mentalization difficulties in explaining how early relational adversity is linked to both symptom severity and the likelihood of receiving a BPD diagnosis. Consistent with theoretical models [12, 19, 20, 24] suggesting that disruptions in early caregiving relationships may hinder the development of mentalization, our findings indicate that difficulties in understanding and interpreting mental states may serve as a key psychological mechanism connecting early adversity to the emotional and interpersonal difficulties

observed in BPD. This is in line with prior research showing that BPD patients with trauma histories or PTSD often demonstrate impairments in social cognition, including mentalization-related deficits [32, 53]. Extending this line of research, the present study provides empirical support for the mediating role of mentalization difficulties in the link between early adversity and BPD symptom severity and diagnosis, using data from a Korean clinical sample. While most previous studies have been conducted in Western contexts [12], our findings suggest that mentalization-based interventions may also be necessary and beneficial for individuals with BPD who have experienced ELS in non-Western populations such as South Korea. These results support the potential cross-cultural applicability of mentalization-based interventions and highlight the need for their implementation in diverse cultural contexts, including East Asia.

This study has several limitations. First, the sample included a higher proportion of female participants, and the BPD group was significantly younger and had fewer years of education than the HC group. These differences may have influenced the regression results. However, given that BPD is more prevalent among women [54, 55], tends to remit with age [56], and is associated with educational and occupational impairments [57, 58], such differences likely reflect the disorder itself and are difficult to avoid. Second, ELS was assessed using retrospective self-reports, which may be subject to recall bias. Although prior studies have suggested that retrospective measures can reliably capture the relationship between ELS and psychopathology [59, 60], the potential for recall bias cannot be ruled out. Third, as this study was based on cross-sectional data, the mediation results should be interpreted with caution. Cross-sectional mediation models cannot verify the temporal ordering assumed in the causal pathway and may yield biased estimates when developmental processes unfold over time [61]. While such analyses can still provide valuable information about associations among variables, longitudinal studies will be necessary to determine whether mentalization difficulties prospectively mediate the impact of early adversity on BPD. Finally, this study assessed mentalization difficulties using self-report questionnaires, which may not adequately reflect impairments that emerge in specific contexts. Individuals with BPD are known to experience marked difficulties in mentalization, particularly during emotionally charged interactions with attachment figures [24] patterns that are difficult to detect through self-report tools alone. Future studies should incorporate performance-based or observational measures that can capture these context-dependent characteristics.

Conclusions

Given the notable lack of research on BPD within Asian populations, this study provides a valuable clinical profile of individuals with BPD that may offer important implications for future research and treatment efforts. By examining detailed domains of ELS and mentalization in a relatively large sample of 90 individuals with BPD, the study highlights the importance of interventions for prevention of ELS—particularly emotional abuse and bullying—as a strategy to prevent BPD diagnosis. Additionally, it highlights that specific aspects of mentalization difficulties, including lack of emotional awareness and expression, and the psychic equivalence mode, are closely associated with BPD diagnosis and symptom severity. Moreover, the study illustrates how impaired mentalization may help explain the pathway through which early relational adversity contributes to both heightened symptom severity and an increased likelihood of receiving a BPD diagnosis, offering insight into a core psychological process implicated in the disorder.

Abbreviations

BPD	Borderline personality disorder
HC	Healthy controls
ELS	Early life stress
MBT	Mentalization-based treatment
PAI-BOR	Personality Assessment Inventory-Borderline Features Scale
ToM	Theory of mind
SCID	Structural Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders
IRB	Institutional Review Board
PROVE	Protective and Vulnerable Factors Battery Test
B	Unstandardised Coefficient
SE	Standard Error
CI	Confidence Interval

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Author contributions

JHS, BHK, and HKS conceived the project and main ideas, and prepared proof of the outline. HKS, SWC, SHY, UJO, and BC examined the participants, and acquired and organised the data. YSC and HKS drafted the manuscript and prepared Figs. 1 and 2. YSC and HKS performed the statistical analyses and designed the figures. YSC, JHS, and BHK contributed to the interpretation of the results and worked on the manuscript. All authors discussed the results and reviewed the manuscript. JHS supervised the project.

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Data availability

Data is not publicly available due to privacy concerns of the participants.

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board (IRB) of the Yonsei University Gangnam Severance Hospital (IRB approval number: 3-2021-0095). Informed consent was obtained from all participants.

Consent for publication
The participants provided consent to have their data published.

Competing interests
The authors declare no competing interests.

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