

## Original Article

# Comparison of Cognitive Emotional Regulation and Problem-Solving Strategies Between Patients with Borderline Personality and Normal Individuals

Saeideh Tavanaye Nanekaran<sup>1\*</sup>

1. M.A, Department of Psychology, School of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran.

### Abstract

This study aimed to compare cognitive-emotional regulation and problem-solving strategies in patients with borderline personality disorder and normal individuals. The study was descriptive and causal-comparative. The study population included all patients with borderline personality disorder who were referred to two psychiatric clinics in Ardabil. Among this population, 20 patients with borderline personality disorder were matched with 20 healthy individuals from the general population of the city who had no history of mental illness, based on demographic variables such as age, sex, educational level, and marital status. They were selected by a random sampling technique and had completed the questionnaires on The Borderline Personality Questionnaire (BPI), the Cognitive Emotion Regulation Questionnaire (CERQ), and the Cassidy and Long Problem-Solving Styles Scale (PSS). To analyze the data, the multivariate analysis of variance (MANOVA) was performed with SPSS version 20. Results showed that there is a significant difference between the two groups in preservation error and total error components, as well as the positive and negative components of cognitive Emotional regulation and mental reaction, and also problem-solving strategies ( $P < 0.01$ ). The results of the present study point to the fact that; People with BPD disorder are different from ordinary people in cognitive-emotional regulation and problem-solving strategies. Thus, emotional disturbances and maladaptive problem-solving strategies are expected in individuals with BPD.

### Keywords

Cognitive emotional regulation  
Problem-solving strategies  
Borderline personality disorder

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### Introduction

Borderline personality disorder (BPD) is a complex disorder characterized by instability across a wide range of life domains, including interpersonal relationships, behavior, and emotions (Frederiksen et al., 2021) impulsivity and self injury behaviors (Leichsenring et al., 2023). In clinical settings, BPD is more common and mortality rate associated with this disorder is 3 to 8 times higher than normal population (Kjær et al., 2020). The biosocial model of BPD (Borderline personality disorder) emphasizes the interaction between adverse childhood experiences and environmental conditions (e.g., invalidating environments and inappropriate parenting) in the development of ED (Emotion dysregulation) and BPD (Chapman, 2019). Several influential theories on the etiology and maintenance of borderline personality disorder (BPD) focus on emotional dysregulation as a hallmark symptom (Daros et al., 2018).

The ability to process and modulate affective experiences

is known as emotion regulation. The ability to regulate emotions is frequently impaired in people with borderline personality disorder (BPD); moreover, this mental disorder is generally associated with a dysfunctional emotional regulation system (Daros & Williams, 2019). A core characteristic and contributing factor of BPD is dysregulation of emotions (ED), which consists of deficits in regulating emotions, preventing the individual from pursuing important goals or behaving effectively in various contexts (Frederiksen et al., 2021). Based on a review by Chapman (2019), individuals with BPD often have difficulties identifying and describing emotions, emotional clarity, awareness, and emotional disclosure. Additionally, there was a tendency to represent all negative emotions as the same, resulting in less specific differentiation of them. Research indicates that BPD is indeed correlated with restricted access to effective emotional regulation strategies, favoring short-term and ineffective strategies (Chapman, 2019; Daros & Williams, 2019). Daros & Williams (2019) found that,

**Corresponding author:** M.A, Department of Psychology, School of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran. E-mail: [Sa.tavana866@gmail.com](mailto:Sa.tavana866@gmail.com)



compared to other mental disorders such as social anxiety and bipolar disorder, BPD is associated with more frequent use of ineffective emotion regulation strategies, such as rumination and avoidance, and lower use of more adaptive strategies, such as problem-solving and acceptance.

In fact disturbance in the executive functions of the brain causes symptoms of borderline personality disorder (Dusi et al., 2021), one of which is problem-solving (Cancer et al., 2023). In this regard, it has been proven that efforts to improve cognitive detachment and metacognitive awareness increase the levels of problem-solving abilities in people with borderline personality disorder (Soleimani & Dastbaz, 2023). It has also been proven that self-injury (non-suicidal) people, compared to normal people, get a lower score in problem-solving and flexibility (Mozafari et al., 2022) while as we know, suicidal and self-injury behaviors are common among people with a borderline personality disorder. And it is one of their characteristics (Dreybe et al., 2020). Moreover, although previous studies (Basharpoor et al., 2014; Daros et al., 2018; Chapman, 2019; Daros & Williams, 2019) have shown that negative emotion in people with borderline personality disorder initiates the cycle of negative emotion regulation strategies, including rumination—a repetitive thought process that intensifies self-blame and other-blame—ultimately leads to the manifestation of borderline personality symptoms (Homaenejad et al., 2019). In general, considering the emotional instability and the inability to solve problems logically in BPD people, and on the other hand, by identifying the effective factors and reviewing the findings of new researches in this regard, conducting research on such a topic can expand the available perspectives in the field of mental health, particularly in comparison to patients with BPD. Also, according to the studies, it can be claimed that previous studies were rarely compared with non-clinical participants. So, with such a background, the aim of the present study is to answer the question of whether cognitive-emotional regulation and problem-solving strategies are different in two groups of normal individuals and Patients with Borderline Personality?

## Method

### *Participants*

This causal-comparative study was conducted on patients with borderline personality disorder and normal individuals in Ardabil, Iran, in the 2019. The study population included all patients with borderline personality disorder who were referred to psychiatric clinics in Ardabil. Finally, 40 subjects (17 males and 23 females) were selected through purposive sampling method and entered the research process. The inclusion criteria for the study required participants to be diagnosed with borderline personality disorder based on the Borderline Personality Inventory (BPI). The exclusion criteria included having comorbidity disorders such as major depressive disorder, schizophrenia, obsession-compulsion, or bipolar disorder, use of the substance, and antipsychotic medication. These items

were asked in an interview conducted by a trained clinical psychologist.

## Instrument

### *Borderline Personality Inventory (BPI):*

The present questionnaire was created by Leishnering (1999) because measure borderline personality traits in clinical and non-clinical samples. The way to answer it is yes or no. This questionnaire originally consisted of 53 items, based on Kernberg (1967), concept of borderline personality organization, as well as DSM-IV diagnostic criteria. The Borderline Personality Questionnaire (BPI) includes factors for measuring identity turmoil, primary defense mechanisms, damaged reality, and fear of intimacy. The last two questions of this questionnaire are not included in any of the operating classes or other classes of this questionnaire and their score is not calculated in the final score of the individual and therefore deleted in the Iranian version. In this questionnaire, twenty questions have the most value in determining one's personality status (Cutting Questions: 50, 49, 47, 46, 43, 40, 36, 28, 27, 25, 20, 19, 14, 14, 10, 9, 8, 5, 4, 3). The questionnaire is used for screening and evaluating the severity of BPD symptoms in adolescents and adults. Coinciding with a coefficient of 0.70 and correlations of the scales with the total scales and together with 0.71 to 0.80 coefficients and three types of internal recreation, internal and internal homogeneity in the Iranian society with 0.80 coefficients, respectively 0.83, 0.85, 0.85 with Cronbach's alpha coefficient of 0.88 (Mohammadzadeh & Rezaei, 2011).

### *Cassidy and Long's Problem-Solving Scale (PSS):*

This questionnaire was created by Cassidy & Long (1996) in two stages and consists of 24 questions divided into six factors, each containing four test items. Responses are recorded on a three-point scale: Yes (2), No (0), and Somewhat (1). Factors include helplessness, problem-solving control (by controlling internal and external dimensions in the problem situation), creative problem-solving styles (reflecting planning and considering alternative solutions in problem-solving processes), and confidence in problem-solving (reflects the belief in one's ability to solve problems), avoidance style and approach style (reflects a positive attitude toward problems and willingness to deal with them). Questions 1-4 measure helplessness in problem-solving, 5-8 assess control, 9-12 evaluate creative problem-solving styles, 13-16 reflect self-confidence, 17-20 assess avoidance style, and 21-24 measure approach orientation. Question 14 is scored in reverse. In his latest study, Cassidy (2009) reported the validity of this questionnaire in the following order: helplessness styles 0.80, inhibition 0.71, creativity 0.75, trust 0.78, tendency 0.73 and avoidance 0.71 and its validity

coefficient was obtained as 0.91 (quoted by Soleymani et al., 2022).

### **Cognitive Emotion Regulation Questionnaire:**

A questionnaire with 10 items arranged by Gross & John (2003) represents the use of people's willingness to adjust emotions in two ways, cognitive reappraisal, and expressive suppression. Responses are scored on a 7-point Likert scale, ranging from 0 (strongly disagree) to 7 (strongly agree). The cognitive reappraisal subscale includes items 10, 8, 7, 5, 3, and 1, while the expressive suppression subscale includes items 9, 6, 4, and 2. The results of the study have reported appropriate reliability for this test (Cronbach's alpha is 0.79 cognitive reappraisal and expressive suppression indicates 0.73). Also, the validity of the test -test during three months for both components of this questionnaire is 0.69 (Gross & John, 2003). The Persian version of the Cognitive Emotion Regulation Questionnaire (CERQ-P) has strong internal consistency (Cronbach's alpha ranges between 0.76 and 0.92) (Hasani, 2010).

### **Procedure**

The method of data collection in this study was such that after obtaining permission from the university and referring to the two mental health treatment and care centers (Isar Psychiatric Hospital or Psychiatric Clinic of Fatemeh Hospital) made available lists of patients diagnosed with borderline personality disorder.

A total of 25 healthy individuals (both male and female) were chosen using a convenience sampling method. In the second phase of the research, 25 subjects were selected with the Borderline personality inventory (BPI) purposive sampling method. The sample size was calculated by G\*Power software in causal-comparative studies. Six subjects were excluded from the study due to a lack of cooperation, and four subjects were excluded due to incomplete questionnaires. Finally, 40 participants entered the next phase of the research. The study participants comprised 20 male and female patients with BPD and 20 controlled male and female normal individuals matched for age, education, and marital status. The clinical sample included 10 outpatients and 10 inpatients. Healthy participants, mostly hospital staff, were selected based on the convenience sampling method and screened based on inclusion and exclusion criteria. The assessment procedure took 30-45 minutes. To analyze the data, a multivariate analysis of variance (MANOVA) was performed using SPSS version 21. Box and Leven s tests were used before using the multiple variance analysis.

### **Results**

The number of subjects in each group—patients with borderline personality disorder and normal individuals—was 20. The demographic information is reported in Table 1.

**Table 1.** Demographic variables

Variables	Groups	Borderline Personality		Healthy	
		Frequency	Percentage	Frequency	Percentage
Gender	Male	9	45.0	8	40.0
	Female	11	55.0	12	60.0
Marital state	Single	7	35.0	10	50.0
	Married	13	65.0	10	50.0
Educational level	Under Diploma	4	20.0	2	10.0
	Diploma	6	30.0	9	45.0
	Bachelor of Art	8	40.0	9	45.0
	MA and higher	2	10.0	0	0.0
Age	20-25	4	20.0	3	15.0
	26-30	3	15.0	4	20.0
	31- 35	3	15.0	6	30.0
	36-40	6	30.0	5	25.0
	41 and higher	4	20.0	2	10.0

**Table 2.** Mean and standard deviation of variables among both groups

Variables	Borderline Personality	Healthy
	Mean±SD	Mean±SD
Cognitive Emotion Regulation	32.15±4.86	36.70±5.55
Problem-Solving Strategies	15.02±2.56	12.82±2.97

According to Table 2, the mean and standard deviation results of the borderline personality disorder scores for the cognitive emotion regulation variable were 32.15±4.86 and in the healthy group 36.70±5.55, respectively. For the borderline personality disorder group, the problem-solving strategies scores were 15.02±2.56 and 12.82±2.97 for the healthy group.

Before performing the multivariate analysis of variance (MANOVA) test, Box's test was performed to check the condition of homogeneity of the variance and covariance matrices, which due to its lack of significance in this research for borderline personality disorder and dimensions of cognitive-emotional regulation ( $F=0.54$ ,  $P < 0.649$ , Box's  $M=1.74$ ), it can be

said that this condition has been met. Also, according to the P values in Levin's test, to check compliance with the assumption of the equality of variance, the dimensions of cognitive-emotional regulation in both groups determined that none of the variables were significant based on the results. So the condition of

homogeneity of the variances matrices for both dimensions of reappraisal ( $P < 0.288$ ,  $F = 0.15$ ) and expressive suppression ( $P < 0.468$ ,  $F = 0.53$ ) of the cognitive-emotional regulation variable has been correctly met.

**Table 3.** Results of variance analysis of group effects on dimensions of cognitive-emotional regulation in both groups

Sources	Variables	SS	DF	MS	F	P
Group	Cognitive reappraisal	1102.50	1.00	1102.50	67.68	0.000
	Expressive suppression	354.02	1.00	354.02	21.49	0.000
Error	Cognitive reappraisal	619.00	38.00	16.28		
	Expressive suppression	625.75	38.00	16.46		

As shown in Table 3, there are significant differences in both aspects of cognition-emotional regulation between the two groups ( $P < 0.01$ ). The average scores showed that normal people scored higher on the cognitive reappraisal component, and borderline personality disorder people scored higher on the expressive suppression component.

Before performing the multivariate analysis of variance (MANOVA) test, Box's test was performed to check the condition of homogeneity of the variance and covariance matrices, which due to its lack of significance in this research for borderline personality disorder and dimensions of problem-solving strategies

( $F = 0.54$ ,  $P < 0.952$ , Box's  $M = 13.85$ ), it can be said that this condition has been met. Also, the results of Levene's test to check the homogeneity of variance for the dimensions of problem-solving strategies show that all six dimensions related to this variable—helplessness in problem-solving, inhibition of problem-solving, creative style, confidence in problem-solving, avoidance style, and tendency style—did not show a significance level below 0.01 in either the borderline personality disorder or normal group. Therefore, it is concluded that the variances are the same in both groups and did not violate this assumption ( $P < 0.01$ ).

**Table 4.** Multivariate variance analysis indicators dimensions of problem- solving strategies in both groups

Sources	Values	F	DF	DF2	P
Wilks' lambda	0.37	9.13	6.00	33.00	0.000

A multivariate analysis of variance in Table 4 revealed that people with borderline personality disorder differ

significantly from normal people in at least one dimension of problem-solving strategies ( $p < 0.01$ ).

**Table 5.** Results of variance analysis on dimensions of problem-solving Strategies in both groups

Sources	Variables	SS	DF	MS	F	P
Group	Problem orientation	17.55	1.00	17.55	17.26	0.000
	Problem-solving control	4.55	1.00	4.55	4.75	0.035
	Creative problem-solving styles	1.60	1.00	1.60	1.24	0.271
	Problem-solving confidence	16.25	1.00	16.25	11.83	0.001
	Avoidance style	13.22	1.00	13.22	12.03	0.001
	Approach style	2.25	1.00	2.25	1.92	0.174
Error	Problem orientation	38.63	38.00	1.01		
	Problem-solving control	36.38	38.00	0.95		
	Creative problem-solving styles	48.68	38.00	1.28		
	Problem-solving confidence	52.18	38.00	1.37		
	Avoidance style	41.77	38.00	1.09		
	Approach style	44.58	38.00	1.17		

As shown in Table 5, Two groups differ significantly in problem orientation, problem-solving control, problem-solving confidence, and avoidance style ( $p < 0.01$ ). Also, given the average, normal people in the problem-solving control and individuals with borderline personality disorder in problem orientation, problem-solving confidence and avoidance style have gained a higher score than each other.

## Discussion

The present study aims to compare cognitive-emotional

regulation and problem-solving strategies in patients with borderline personality disorders and normal individuals. Results have shown that there are significant differences in both aspects of cognitive-emotional regulation between the two groups. Average scores showed that normal people scored higher on the cognitive reappraisal component, and borderline personality disorder people scored higher on the expressive suppression component. These results support previous findings amongst community samples (McLachlan et al., 2021; Kneeland et al., 2016; Salgó et

al., 2021). The finding is also in agreement with the results of a meta-analysis by Daros & Williams (2019). In this study, results based on 93 unique studies indicate that symptoms of BPD were associated with less frequent use of adaptive emotion regulation strategies (i.e., problem-solving and cognitive reappraisal) and more frequent use of strategies that are less effective in reducing negative affect (i.e., suppression, rumination, and avoidance). Salgó et al (2021) demonstrated that in comparison to a healthy control group, BPD patients show deficits in the following areas: mindfulness, self-compassion, and adaptive emotion-regulation strategies. Individuals with BPD may already be using many strategies, but those putatively adaptive strategies may be more difficult to implement in real life, and may actually lead to greater awareness of distress, at least initially (Dixon-Gordon et al., 2017). Several recent empirical studies have confirmed these clinically based observations. It has been demonstrated that, under both daily life and experimental conditions, BPD patients experience significantly more intense aversive emotions, higher tension, and more volatility of mood than do healthy controls (Schmahl et al., 2014). To explain this finding, it is suggested that BPD results from the complex interaction of the child's biologically based emotional vulnerabilities and an environment that invalidates, minimizes, or trivializes the child's negative affect. This leads to pervasive emotion dysregulation in individuals with BPD. In this perspective, many of the problems associated with BPD, such as impulsivity and poor social functioning, can be attributed to intense emotional reactivity or an effort to escape stress (Linehan, 1993). Moreover, this study shows that people with BPD provided fewer relevant problem orientation, problem-solving control, problem-solving confidence, and avoidance style than those in the control group. Also, on average, normal individuals scored higher in problem-solving control, while individuals with borderline personality disorder scored higher in problem orientation, problem-solving confidence, and avoidance style. These findings are in line with the results of other studies Akbari Dehaghi et al., (2017) proposed that problems with the encoding, storage, and retrieval of specific memories result in a limited knowledge base to draw upon to solve current social dilemmas. This association has important implications for the development of problem-solving interventions, as it implies that teaching people ways to improve the encoding and retrieval of their autobiographical memories may increase the effectiveness of their problem-solving attempts. Linehan(1993), postulated that people with BPD either do not have the necessary skills to adequately solve problems or are unable to use these skills due to their heightened emotional state. That is why problem-solving skills training is therefore one of the major components of DBT, along with mindfulness training and strategies aimed at enhancing affective regulation. Effective social problem-solving can increase situational coping and behavioral competence, which in

turn, may prevent or reduce emotional distress. So that by improving the level of cognitive awareness, the ability to problem-solving also improves (Soleimani & Dastbaz, 2023).

Regarding the limitations of our study, all the disturbing variables in the research were uncontrollable, and the sample was relatively small, thereby limiting our power to detect differences with small to moderate effect sizes, but the groups were matched by various characteristics. Difficulty finding and cooperating with borderline patients in the research process because of impulsivity, fluctuating mood, and restrictions in the interpretation of results due to adequate data gathering tools (questionnaires). Moreover, non-control of social and cultural differences, and restriction of the present study to normal and borderline people in Ardabil city, are caused to limit generalization of the results to other regions, provinces, and cultures. Lack of access to outpatient patients in clinical centers, and so on. This study suggests that other distinct-related variables related to borderline personality disorder should be investigated in subsequent studies.

## Conclusion

As a result, in explaining the findings obtained from the present research, it can be said that there is a significant difference between the two groups of people with borderline personality disorder and normal people in the two variables of cognitive-emotional regulation and problem-solving strategies and probably the characteristics clinical people with a borderline personality disorder such as emotional instability, mood swings, a sense of identity fragmentation, and making sudden decisions without prior consideration, can be related to these emotional disturbances and helplessness in the effective application of problem-solving strategies in different situations.

Any research is likely to have limitations that prevent the generalization of the results to similar conditions and statistical communities. Therefore, we should be cautious in generalizing the results of this study to other populations and groups.

Among the limitations of the current study and clinical research with participants with borderline personality disorder, the following should be noted: difficulty in collecting data (due to patients' mood swings), limitations in interpreting the results (due to the use of only one tool/questionnaire), lack of control of disturbing variables and socio-cultural differences, collecting data from only one geographical area, volume Not so many samples, possible bias of some subjects in answering questionnaire questions and...

In the end, it is suggested to improve the research limitations; In future research, a larger sample size and more psychological measurement tools (such as a clinical interview) should be used in addition to the questionnaire. Other differentiating variables related to borderline personality disorder in different cultures and ethnicities should be investigated in the following research. In sum, our findings in the study can be used

as a facilitator in conducting other subsequent research that differentiates the characteristics of ordinary people and Patients with Borderline Personality. However, in this regard, psychopathology researchers are emphasized to conduct extensive studies in the field of this type of disorder and reveal other differences between the two groups.

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### ORCID

Saeideh Tavanaye Nanekaran:  
<https://orcid.org/0000-0002-0108-5400>

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