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Cognitive Flexibility and Social Adaptability in Individuals with Borderline Personality Disorder

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ABSTRACT

The present study investigated the inter relationship between cognitive flexibility and social adaptability in persons with Borderline Personality Disorder (BPD). The Cognitive Flexibility Inventory (CFI), Social Functioning Questionnaire (SFQ), and Borderline Symptom List (BSL-23) were administered to 70 participants between the ages of 18–45 years. There was no correlation between cognitive flexibility and social adaptability. Despite this, a large positive correlation between social adaptability and severity of BPD symptoms was established, indicating that individuals with more severe symptoms can exhibit increased social responsiveness as a mechanism of coping. Gender differences were also noted: females displayed markedly higher social adaptability than males, whereas no significant difference in cognitive flexibility was established between genders. These results underscore the contradictory and multifaceted nature of social functioning among BPD patients, emphasizing the need for accounting for symptom severity and gender in designing interventions. There is a need for future studies to explore these dynamics longitudinally and across more heterogeneous samples.

Introduction

Borderline Personality Disorder (BPD) is a complex and enduring psychiatric illness that is marked by persistent patterns of emotional instability, impulsive behavior, unstable relationships, and a changing self-image (American Psychiatric Association APA, 2022). As described in the DSM-5-TR, BPD is diagnosed when a person presents with at least five out of nine criteria, which include intense efforts to prevent abandonment, identity confusion, impulsivity, emptiness,

unstable relationships, emotional dysregulation, anger, and episodes of paranoia or dissociation (APA, 2022). These characteristics usually emerge during young adulthood and create significant disruption in social, occupational, and emotional areas. In addition to the emotional and behavioral difficulties long considered indicative of BPD, recent studies highlight the importance of neurocognitive deficits, particularly cognitive flexibility and social adaptability, as factors contributing to its symptoms and functional impairments (Berens et al., 2023; Cattarinussi et al., 2022). Cognitive flexibility is defined as the capacity to change mental strategies, accommodate shifting rules or environments, and change perspectives based on new information.

In individuals with BPD, impaired cognitive flexibility is characterized by rigid thinking, failure to adapt to fluctuating emotional or social situations, and inadequate adaptability in decision-making processes (Vandierendonck, 2021; Schmitz & Krämer, 2023). The limitations are typically accompanied by impulsivity and emotional over-sensitivity, potentially exacerbating interpersonal disputes and maladaptive behavior (Preißler et al., 2024; Aslan et al., 2023). Social adaptability, or the ability to efficiently deal with and adapt to various social environments and requirements, is another essential area of functioning deficit among individuals with BPD.

This skill involves social cue interpretation, emotion regulation of responses, and maintenance of effective relationships (Sebastian et al., 2023; de Mello, 2022). Patients with BPD tend to have misinterpretation of social interaction, hypersensitivity to rejection, and unstable relational patterns that interfere with their social functioning (Crowell & Carpenter, 2022; Fonagy & Luyten, 2023).

Prevalence statistics corroborates the gravity of these problems. In the general population, worldwide, BPD impacts approximately 1.4% to 1.6% but increases up to 15–20% in inpatient psychiatric units (Lopez et al., 2024). In people with BPD, 60% to 75% experience compromised cognitive flexibility that makes them respond ineffectively to demands that change (Preißler et al., 2024; Vandierendonck, 2021). Likewise, over 70% of individuals with BPD have issues with social adaptability, as opposed to 10% to 18% for the general population (Sebastian et al., 2023; Crowell & Carpenter, 2022).

Literature Review

Current studies have invariably shown that those with Borderline Personality Disorder (BPD) do have substantial impairments regarding cognitive flexibility, which subsequently influence their emotional regulation and social performance. Miller et al. (2022) revealed that impairment in executive functions specifically set-shifting is closely linked with impulsivity as well as relational problems in BPD. Likewise, Lopez et al. (2024) indicated that inflexible cognitive strategies remained in place under emotionally intense decision-making across a 12-week study, contributing to inadequate self-regulation. Yang and Brown (2023) highlighted emotional cognitive inflexibility by demonstrating that BPD patients were unable to disengage from aversive emotional cues, exacerbating interpersonal problems. White et al. (2023) and Kim et al. (2023), employing fMRI, reported under activation within the prefrontal cortex across tasks of cognitive switching and posited a neurobiological substrate for inflexible behavior. Sciolla et al. (2024) supported this in a meta-analysis, finding cognitive rigidity to be a robust and central feature of BPD regardless of psychiatric comorbidities.

Crowell and Carpenter (2022) contributed ecological validity by demonstrating, through daily measurements, that BPD individuals struggle with adaptation in the course of actual life social interactions. Additionally, Roberts et al. (2024) and Jones and Hernandez (2022) noted relational instability and ineffective conflict resolution, based on rigid thinking and emotional over

reactivity. Theory of Mind impairment (Smith et al., 2020) and breakdowns in mentalization during stress (Turner & Scharf, 2022) additionally account for why BPD individuals tend to misread social signals. Aslan et al. (2023) reported a vicious circle, wherein rigid thinking exacerbates negative social feedback, which in turn supports rigidity. Duda et al. (2024) established resistance to changing beliefs despite being presented with inconsistent social evidence, and Graumann et al. (2023) demonstrated impaired empathy processing as a result of compromised brain connectivity. While emotional empathy was frequently elevated, Salgado et al. (2020) reported that cognitive empathy fell off under stress, provoking maladaptive reactions. Lastly, Chan et al. (2024) showed how specific interventions such as mindfulness and cognitive remediation could drastically enhance both social adaptability and cognitive flexibility in BPD, highlighting the possibility of therapeutic change.

Rationale: The symptoms of Borderline Personality Disorder (BPD) include behavioral dysregulation, erratic relationships, and strong emotional reactivity. Borderline Personality Disorder sufferers frequently struggle to adapt to new social settings, which has been linked to a lack of cognitive flexibility, the capacity to consider a problem from several angles and change one's perspective. Poor comprehension of social norms and difficulties collaborating or participating in group settings could result from this. Although Borderline Personality Disorder is associated with both social and cognitive difficulties, little is known about how these two are related. Analyzing their connections may help us understand how social adaptability and cognitive flexibility are related. This could lead to more targeted and efficient treatment programs that take into account the unique social and cognitive needs of people with Borderline Personality Disorder.

Objectives

1. To find the link between cognitive flexibility and social adaptability in clients clinically diagnosed with Borderline Personality Disorder.
2. To detect the gender difference in cognitive flexibility and social adaptability among the client with Borderline Personality Disorder.

Hypothesis

H1: It is hypothesized that there will be a significant correlation between Cognitive Flexibility and social adaptability in individuals with borderline personality disorder.

H2: It is hypothesized that there will be gender difference between cognitive flexibility and social adaptability in individuals with borderline personality disorder

Methodology

Research Design: A quantitative correlational design was the research design employed in the current study to explore the relationship between cognitive flexibility and social adaptability in individuals clinically diagnosed with Borderline Personality Disorder (BPD). Employing the quantitative design was suitable since it provided the opportunity for objective measurement of psychological traits through standardized psychometric tools.

Population and Sample: The research focused on individuals from the age group 18-45 years who were clinically diagnosed with BPD as per DSM-5-TR. Participants were enrolled from outpatient departments of psychiatry, mental health clinics, and online psychological support groups throughout Pakistan.

Sampling Approach: Purposive sampling method was utilized for the selection of persons fulfilling certain inclusion criteria. This non-randomized approach is often applied in clinical psychology research when participants are asked to satisfy a specific diagnostic or behavioral criterion.

Participants and Sampling: A total of 70 participants were recruited through purposive sampling. Eligible individuals ranged from 18 to 45 years and exhibited signs consistent with Borderline Personality Disorder, confirmed using a validated screening checklist. Participants were drawn from hospitals, mental health clinics, university psychological centers, and online therapy platforms.

Inclusion criteria: Volunteers aged 18 to 45 years. Borderline Personality Disorder diagnosis as per DSM-5-TR, as established by a trained psychiatrist or psychologist. Currently receiving services through OPD units, psychiatric institutions, or clinics. Able to read and respond to self-report questionnaires.

Exclusion Criteria: Patients with other serious psychiatric diagnoses like schizophrenia, bipolar disorder, or active substance use. Patients with acute psychological episodes needing emergent inpatient care. Patients with neurological or intellectual deficits preventing them from participating. Participants who withdrew or refused consent at any point during the study.

Instruments

Cognitive Flexibility Inventory: Dennis & Vander Wal (2010) developed the Cognitive Flexibility Inventory as a 20-item self-report measure that assesses a person's tendency to employ flexible strategies of thinking, particularly under stressful situations. It assesses adaptive cognitive reactions and is crucial in the process of stopping negative thought patterns.

Social Functioning Questionnaire: Tyrer et al. (2005) developed the Social Functioning Questionnaire, which has 8 items on a 4-point scale and is utilized to measure an individual's subjective perception of their social functioning. It is a short questionnaire stemming from the longer Social Functioning Schedule (SFS).

Borderline Symptom List: BSL-23 is a 23-item measure specifically designed to evaluate borderline personality symptoms in adults. It measures DSM-5-TR diagnostic characteristics (e.g., emotional instability, self-damaging behavior, dissociation) as well as other features such as self-criticism, shame, difficulties with trust, and sensitivity to emotions (Kleindienst et al., 2020).

Data Collection Procedure: University Institutional Review Board (IRB) approval was granted. Permissions were also granted by the respective clinical sites. Participants were approached either face-to-face or via online platforms and were briefed about the study’s purpose before obtaining informed consent. They completed the CFI, SFQ, BSL-23, and a demographic form within 15–20 minutes. Data was collected through paper-pencil forms or secure online surveys, ensuring confidentiality by using participant ID codes and secure storage. Data Analysis: Descriptive statistics were computed for psychological tests and demographics. Reliability was measured using Cronbach's alpha for internal consistency. Pearson correlation was employed to examine the associations between cognitive flexibility, social adaptability, and severity of BPD symptoms. Independent sample t-tests were employed to investigate gender differences.

Ethical Issues: Full disclosure regarding research aims and process was made to participants and written or internet consent was obtained. All participant data was coded and stored in password

protected files. Participants could withdraw at any time without negative repercussions. Support contacts were given in case of any psychological discomfort during and/or following participation.

Procedure: With ethical clearance from the university, appropriate permission was obtained from identified hospitals and private clinics for data gathering. Individuals clinically diagnosed with Borderline Personality Disorder (BPD) were approached through professional referral. Every participant was informed regarding the purpose of the study and method, and informed consent was signed prior to proceeding. Three standardized tools the Cognitive Flexibility Inventory, Social Functioning Questionnaire, and Borderline Symptom List were administered to collect data. Written questionnaires were handed over, and the subjects were assisted whenever required to make sure that they had a proper understanding. Questionnaire completion took about 15 to 20 minutes. All the ethical standards were followed, such as the right of participants to withdraw at any time and keeping their responses confidential. The responses were then transferred to SPSS for statistical analysis in order to investigate the correlation between cognitive flexibility, social adaptability, and symptoms of BPD.

Results

Table 1: Demographic characteristics of Study Sample (N=70)

Characteristics	***f (%)***	***M***	***SD***
Age		*28.54*	*6.55*
Gender			
Male	*25(35.7)*		
Female	*45(64.3)*		
Education Level			
Under matric	*10(14.3)*		
Matric	*20(28.6)*		
Inter	*20(28.6)*		
Bachelors	*17(24.3)*		
Masters	*3(4.3)*		
Marital Status			
Single	*40(57.1)*		
Married	*26(37.1)*		
Divorced	*2(2.9)*		
Widowed	*2(2.9)*		
History of Present Illness			
Yes	*53(75.7)*		
No	*17(24.3)*		
Currently taking medication for mental health			
Yes	*36(51.4)*		
No	*34(48.6)*		
Current support system			
Family	*70(100.0)*		
Friends	*0(0.0)*		
Support Group	*0(0.0)*		

Note, f=Frequency, %=Percentage, M=mean, SD= Standard Deviation

Descriptive Statistics and Participant Demographics

The study included 70 participants (N = 70) with a mean age of 28.54 years (SD = 6.55). Females made up 64.3% of the sample, and males 35.7%. Educational background showed 28.6% with matric/intermediate, 24.3% with bachelors, and 4.3% with master's degrees. Most participants were single (57.1%), followed by married (37.1%), divorced (2.9%), and widowed (2.9%). Around 51.4% reported a history of illness. All participants cited family as their emotional support.

Table 2: Psychometric Properties of the Cognitive Flexibility and social adaptability in individuals with borderline personality disorder (N=70).

			Range		
Scales	***M***	***SD***	***Potential***	***Actual***	***Cronbach's α***
Cognitive Flexibility Inventory	101.01	9.11	20-140	59-123	.84
Social Functioning Questionnaire	13.81	4.09	0-24	3-20	.73
Borderline Symptom List	47.92	11.99	0-92	7-73	.81

Note. (N=70). M=Mean, SD= Standard Deviation, Cronbach's α= Reliability,

Psychometric Properties of Study Measures

Descriptive and reliability statistics showed the following:

Cognitive Flexibility: M = 101.01, SD = 9.11, α = .84

Social Adaptability: M = 13.81, SD = 4.09, α = .73

Borderline Symptoms: M = 47.92, SD = 11.99, α = .81

All scales demonstrated acceptable reliability.

Table 3: showing difference in the mean scores on the Cognitive Flexibility and social adaptability between Male and Female with borderline personality disorder (N=70)

Variables	***Male 25***		***Female 45***		***T***	***p***	***Cohen's d***
	M	***SD***	***M***	***SD***			
CFI	102.88	8.36	99.93	9.54	1.28	.96	0.3
SFQ	12.20	4.76	14.63	3.41	-2.46	.06	0.5
BSL-23	45.52	13.23	49.15	11.28	-1.18	.240	0.3

Gender Differences in Study Variables

An independent samples t-test showed:

Cognitive Flexibility: No significant gender difference, t (68) = 1.28, p = .96

Social Adaptability: Females scored higher than males, t (68) = -2.46, p = .06

Borderline Symptoms: No significant gender difference, t (68) = -1.18, p = .240

Table 4: Table showing Inter correlation among demographic variables, Cognitive Flexibility and social adaptability in individuals with borderline personality disorder (N=70).

Variables	*M*	*SD*	*2*	*3*	*4*	*5*	*6*
1. Age	28.54	6.57	.067	.09	.345**	.21	-.234
2. Gender	1.64	.48	_	-.051	.296*	-.154	.144
3. Currently taking medication	1.48	.50		_	-.075	.188	-.347**
4. Social Adaptability	13.81	4.09			_	-.012	.431**
5. Cognitive Flexibility	101.01	9.11				_	-.095
6. Borderline Symptoms	47.93	11.99					_

Note, *p<.05 &**p<.01, *Gender (1=male, 2=female),*

Correlational Analysis

Pearson correlation results indicated:

Age and Social Adaptability: r = .345, p < .01

Medication Status and Borderline Symptoms: r = -.347, p < .01

Social Adaptability and Borderline Symptoms: r = .431, p < .01

Discussion

The purpose of this research was to investigate the relationship between cognitive flexibility and social adaptability in subjects with Borderline Personality Disorder (BPD), with a focus on gender differences. The results supply important understandings of BPD's cognitive and interpersonal complexity but challenge some hitherto accepted theoretical assumptions. The results showed no substantial connection between social adaptability and cognitive flexibility in BPD participants. This result challenges current hypotheses that propose flexible cognitive processing is necessary to manage changing social milieus effectively, especially in emotional dysregulation disorders. Previous studies underscored that cognitive flexibility aids adaptive interpersonal behavior (Zhao et al., 2021) and that its impairments are related to social impairment (Zimmermann et al., 2021). Still, the lack of statistically significant correlation in this research could imply that BPD's thinking styles are situation specific. This is consistent with findings by Andreou and Vlachos (2023), who posited that BPD individuals tend to display cognitive inflexibility which only appears in the context of emotionally arousing social interactions. Self-report measures might not be sensitive enough to capture these situation-specific impairments, which might explain the null association in our sample.

In spite of a lack of statistical significance, the low general mean score for cognitive flexibility (M = 100.87) indicates a skew towards unyielding cognitive styles, as found by previous research (Ren et al., 2020). This inflexibility could be part of the neuropsychological profile of BPD, which is characterized by deficits in executive functioning, attention shifting, and social cognition. While this did not appear as an overt predictor of social adaptability in the present study, it remains an important characteristic in the study of BPD's clinical profile.

The other hypothesis had partial empirical support. Cognitive flexibility and severity of BPD were not significantly different between males and females, but a significant difference was established in social adaptability. Females had higher scores (M = 14.63) than males (M = 12.20), and while

the p-value ($t = -2.46$, $p = .06$) was near significance, the finding indicates a possibly significant gender trend. This discrepancy can be influenced by expectations based on culture. In collectivist cultures such as Pakistan, women are taught to prioritize interpersonal harmony and emotional expressiveness (Rashid & Umer, 2022), potentially resulting in greater ratings on adaptability even when there is psychological distress. These results are supported by Kim et al. (2021), who found that women tend to identify more closely with norms of prosocial behavior, potentially overestimating social adaptability scores regardless of true functioning.

Moreover, females also had slightly higher BPD symptom scores ($M = 49.15$) than did males ($M = 45.52$), although not statistically significant. This confirms earlier studies that women with BPD generally report more intense emotional variability and interpersonal sensitivity because of biological as well as social factors (Zanarini et al., 2021). The positive correlation between BPD symptoms and social adaptability is counterintuitive, as adaptability is typically considered a virtue. Yet in BPD individuals, greater scores may indicate overextended social engagement or an exaggerated need for contact frequently premised on abandonment anxiety that does not necessarily represent effective interpersonal skills (Calati et al., 2021). Therefore, individuals may participate in frequent but unsteady or manipulative relationships, which could inflate measures of adaptability. The other finding was a small positive relationship between age and social accommodation. Older respondents showed more favorable interpersonal adjustment, consistent with longitudinal research indicating that certain BPD symptoms, especially those involving social functioning, can decrease with age and experience (Zanarini et al., 2021). These gains could be attributed to treatment, coping mechanisms, or changes in life roles with time.

Finally, the research discovered that patients on medication had lower ratings of BPD symptomatology. This is consistent with earlier meta analyses showing that pharmacotherapy, particularly when augmented with psychotherapy, can control mood instability, impulsivity, and other associated symptoms (Cristea et al., 2020). Enhanced emotional regulation by medication can have an indirect impact on cognitive and social processes.

Limitations

The cross sectional nature of this study precludes causal inferences. The small region specific sample size ($N = 70$) limits generalizability. Self-report measures can introduce bias, especially in emotionally unstable individuals. Gender skew and unmeasured variables such as history of trauma or comorbidities can influence outcomes.

Clinical Implications

Social adaptability and cognitive flexibility must be addressed distinctly in treatment. Gender-sensitive and culture-sensitive therapy is essential, particularly in collectivist cultures. The beneficial effects of medication on the symptoms of BPD justify integrated treatment. Family involvement may improve the outcome when emotional boundaries are included.

Future Suggestions

Future research should utilize longitudinal designs, extend to diverse populations, and employ mixed methods of assessment. Investigation of mediating variables like trauma and emotion regulation is advisable. Culturally modified, family-based interventions must be developed for better care.

Conclusion

No significant connection between social adaptability and cognitive flexibility in BPD was found in this study. Women were more socially adaptable, presumably influenced by cultural norms within the community. Better outcomes were associated with older age and medication use. Results highlight the requirement for gender-sensitive, culturally specific, and integrative approaches in treating BPD

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