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EVALUATING THE EFFECTIVENESS OF COGNITIVE BEHAVIORAL THERAPY (CBT) ON EMOTIONAL REGULATION, IMPULSIVITY, AND INTERPERSONAL FUNCTIONING IN ADOLESCENTS WITH BORDERLINE PERSONALITY TRAITS

Zill E Huma[*1], Farkhanda Anjum[*2], Awais Khalid[3], Sadia Fazal[4], Roonam Shahzadi[5]

[*1]*MS Clinical Psychology, Riphah International University, Clinical Psychologist at Lahore Psychiatric Hospital Lahore, Pakistan*
[*2]*Assistant Professor, Department of Rural Sociology, University of Agriculture, Faisalabad, Pakistan.*
[3]*Visiting Lecturer, Department of Allied Psychology, University of Narowal, Pakistan*
[4]*Visiting Lecturer, Rawalpindi Women University, Pakistan*
[5]*Visiting Lecturer, Department of Allied Psychology, University of Narowal, Pakistan*

[*1]z.huma710@gmail.com, [*2]farkhandasabeel@gmail.com

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Corresponding Author: * Zill E Huma

Abstract

This randomized controlled trial evaluated the effectiveness of Cognitive Behavioral Therapy (CBT) in improving emotion regulation, impulsivity, and interpersonal functioning in 60 Pakistani adolescents (ages 13-18) with borderline personality traits based on DSM-5 diagnosis. Participants were randomly assigned into either a CBT intervention group (n=30) which received 12 weekly CBT sessions or a control group (n=30) that received supportive counseling. All participants were assessed pre- and post-intervention on the Difficulties in Emotion Regulation Scale (DERS), Barratt Impulsiveness Scale (BIS-11), and Inventory of Interpersonal Problems (IIP-32). Results showed that the intervention group demonstrated significant reductions in DERS scores (Mean Change = -23.4, $t=7.85$, $p < .001$), BIS-11 scores (Mean Change = -12.8, $t=6.93$, $p < .001$) and IIP-32 scores (Mean Change = -18.8, $t=8.01$, $p < .001$), while the control group showed no significant change on these measures. The findings support the idea that CBT is an effective treatment in improving emotional, behavioral, and interpersonal outcomes for Pakistani adolescents with borderline personality traits. This research demonstrates the need for early and culturally relevant psychological intervention for this population.

INTRODUCTION

Borderline Personality Disorder (BPD) is defined as a serious mental health disorder that includes inadequate affect regulation, impulse control, and interpersonal relationships (American Psychiatric Association, 2022). Although the full diagnosis of BPD is reserved for adulthood, borderline personality traits often emerge during the adolescent years and are associated with significant psychosocial impairment (Chanen & McCutcheon, 2013; Kaess et al., 2014). Adolescents who demonstrate borderline personality traits often exhibit difficulties related to dysregulated emotion, impulsivity, and problems forming and maintaining healthy interpersonal relationships (Zanarini, 2023). These negative

symptoms significantly impact academic achievement, social connectedness, and overall wellness, thus, prompting the need to develop effective treatments to address this population.

Cognitive Behavioral Therapy (CBT) is a well-established treatment for several psychological disorders in adolescents, including depression, anxiety, and conduct disorders (David et al., 2018; Reardon et al., 2021). Most recently, there has been burgeoning interest in CBT for adolescents with borderline personality traits, due to its structured format, and skill development in emotion regulation, impulse control, and social functioning (Cohen et al., 2021; Kehoe et al., 2022). CBT seeks to alter dysfunctional patterns of thinking and behavior by teaching applied coping strategies, while also promoting self-reflection which has been shown to influence individuals with BPD traits (Linehan, 2014). Studies have shown that CBT can assist adolescents in emotional regulation, impulsivity reduction and improving interpersonal effectiveness (Kothgassner et al., 2021; Storebøet al., 2020).

Multiple empirical studies have examined the influence of CBT on adolescents' emotion regulation. A meta-analysis by Kothgassner et al. (2021) assessed the overall effect of using CBT-based interventions and found that they were successful in improving emotion regulation skillsets and decreasing affective symptoms in adolescents with emotional and behavioral issues. Similarly, researchers found that CBT interventions have also decreased impulsivity, which is a core feature of BPD, as they increase mindfulness, problem-solving, and delay of gratification strategies (Storebø et al., 2020; Yen et al., 2021). Beyond individual functioning, the focus in CBT on communication skills, assertiveness, and perspective taking has been associated with better peer relationships and family interactions in adolescents (Cohen et al., 2021).

Despite the growing international literature, there is a considerable lack of research on the effectiveness of CBT for adolescents with borderline personality traits in non-Western contexts, especially in Pakistan. In addition to the increasing empirical literature on CBT for adolescents, the cultural context may play an important role in the way that borderline traits manifest as well as the ways in which adolescents respond to psychotherapy measures (Haque et al., 2021). Pakistani adolescents live in a unique sociocultural context that has specific pressures (e.g., stigma associated with mental health phenomenology, issues of access to psychological services, and corresponding family dynamics), which may impact the outcomes of such treatment (Mirza & Jenkins, 2020; Khan et al., 2023). Although preliminary evidence suggests that culturally adapted CBT was likely effective when assessing in South Asian contexts, we still do not have adequate empirical research to systematically measure the effectiveness on important moderating factors related to emotional regulation, impulsivity, and interpersonal functioning for Pakistani adolescents experiencing borderline personality traits (Haque et al., 2021). Therefore, the current study attempts to address the gap and aim to explore the effectiveness of CBT among Pakistani adolescent sample, and to increase global understanding of mental health interventions through explorations in culturally relevant ways.

Objectives of the Study

- To evaluate the effectiveness of Cognitive Behavioral Therapy (CBT) in improving emotional regulation among Pakistani adolescents exhibiting borderline personality traits.
- To examine the impact of CBT on reducing impulsivity in adolescents with borderline personality traits.
- To assess the effectiveness of CBT in enhancing interpersonal functioning among adolescents with borderline personality traits.
- To explore the cultural relevance and acceptability of CBT interventions for adolescents with borderline personality traits within the Pakistani context.

Research Methodology

1. Research Design

We used a randomized controlled trial (RCT) design to assess Cognitive Behavioral Therapy (CBT) for improving emotional regulation, impulsivity, and interpersonal functioning for adolescents exhibiting borderline personality traits. Participants were randomized to either the CBT intervention or the control group (supportive counseling).

2. Sample Size

The sample included 60 adolescents between the ages of 13 and 18 who were recruited from mental health clinics and school counseling centers across Pakistan. All participants were assessed and diagnosed with borderline personality traits by professional clinical psychologists trained in the DSM-5 diagnostic criteria. The participants were randomly assigned to two groups after screening, including the CBT intervention group (n = 30) and the control group (n = 30).

3. Instruments

1. **Difficulties in Emotional Regulation (DERS):**

Gratz and Roemer (2004) created a 36- item self-report measure called the Difficulties in Emotion Regulation Scale (DERS), which measures multiple dimensions of difficulties in emotion regulatory difficulties. The DERS includes six subscales: (1) Nonacceptance of emotional responses, (2) Difficulties with goal-directed behavior, (3) Impulse control difficulties, (4) Lack of emotional awareness, (5) Limited access to emotion regulation strategies, (6) Lack of emotional clarity. Participants respond to each item on a 5-point Likert scale ranging from 1 ("almost never/0-10%") to 5 ("almost always/91-100%"); higher scores indicate greater difficulties in emotion regulation. The DERS has good internal consistency (Cronbach's alpha = .93), as well as adequate test-retest reliability and construct validity in both adolescent and adult samples (Gratz & Roemer, 2004).

2. **Barratt Impulsive Scale:**

3. The Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995) is a 30-item self-report measure widely used to measure the personality/behavioral construct of impulsivity. The BIS provides a total impulsivity score as well as three second-order factors: (1) Attentional Impulsiveness, (2) Motor Impulsiveness, and (3) Non-planning Impulsiveness. Items are rated on a 4-point Likert scale from 1 ("rarely/never") to 4 ("almost always/always"). Thus, higher scores indicate greater levels of impulsivity. The BIS-11 has previously been well-validated, demonstrating adequate internal reliability (Cronbach's alpha = .83), and factorial validity within adolescent samples (Stanford et al., 2009).

4. **Inventory of Interpersonal Problems-32:**

The Inventory of Interpersonal Problems-32 (IIP-32; Horowitz et al., 2000), is a shorter version of the IIP that has 32 items that focus on how problems in interpersonal functioning. The IIP-32 has eight subscales: (1) Domineering/Controlling; (2) Vindictive/Self-Centered; (3) Cold/Distant; (4) Socially Inhibited; (5) Nonassertive; (6) Overly Accommodating; (7) Self-Sacrificing; and (8) Intrusive/Needy. Each of the 32 items has a 5-point Likert-type response option that ranges from 0 ("not at all") to 4 ("extremely"). Higher scores indicate more interpersonal problems. The IIP-32 has good psychometric properties, including demonstrated internal consistency (Cronbach's alpha > .85) and established construct and convergent validity (Horowitz et al., 2000).

All of the measures were administered in Urdu (means of standard procedures for translation and back-translated to meet linguistic/cultural relevance of the questionnaires for use with a population of Pakistani adolescents).

6. Data Collection Procedure

Data collection was conducted in two stages: pre-intervention (baseline) and post-intervention (immediately upon completion of the 12-week intervention period). The CBT group intervention consisted of 12 weekly, individual CBT sessions (60 minutes each) designed to promote skill- building in emotional regulation, impulse control, and interpersonal effectiveness. The control group intervention consisted of 12 weekly sessions with informal counseling that provided general emotional support but offered no therapeutic structure or content. All sessions were conducted by trained clinical psychologists who also administered the assessment instruments at both time points.

7. Statistical Analysis

Data analysis was conducted with IBM SPSS Statistics (Version 26). Descriptive statistics were computed for demographic and baseline clinical characteristics. Paired sample t-tests and independent sample t-tests were completed to compare changes in outcome measures from pre- to post-intervention in the within-

groups and between-groups, respectively. Cohen's d was computed as an estimate of the effect size. Statistical significance was set at $p < .05$.

8. Ethical Consideration

Ethical approval was obtained from the Institutional Review Board for the present study. The written informed consent was obtained from all participants and their legal guardians prior to participation. The study-maintained confidentiality and anonymity, and each participant was informed of their right to withdraw from the study at any time and without penalty. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Result

Table 1 Demographic Information of Participants (N=60)

Variable	CBT Group (n = 30)	Control Group (n = 30)	Total (N = 60)
Age (Mean ±SD)	15.6 ±1.7	15.4 ±1.8	15.5 ±1.7
Gender			
Male	15 (50%)	14 (47%)	29 (48%)
Female	15 (50%)	16 (53%)	31 (52%)
Education Level			
Middle School	12 (40%)	13 (43%)	25 (42%)
High School	18 (60%)	17 (57%)	35 (58%)
Urban/Rural			
Urban	20 (67%)	19 (63%)	39 (65%)
Rural	10 (33%)	11 (37%)	21 (35%)

A total of 60 adolescents participated in the study, with 30 in both the CBT group and the control group. The mean age of participants was 15.5 years (SD = 1.7); the mean age was 15.6 years (SD = 1.7) in the CBT group and 15.4 years (SD = 1.8) in the control group. There were equal proportions of males and females in each group; the CBT group had 15 males (50%) and 15 females (50%) and the control group had 14 males (47%) and 16 females (53%). This resulted in a total sample of 29 males (48%) and 31 females (52%). In terms of education level, 42% of participants were in middle school and 58% were in high school. The same proportions were found in both groups. In terms of geography, most of the participants were from urban areas (65%), with 67% in the CBT group and 63% in the control group, while 35% of the overall sample lived in rural areas (33% in the CBT group, 37% in the control group). Overall, the demographic characteristics were very similar between CBT and the control groups.

Table 2 Effect of CBT on Emotional Regulation

Group	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Change	t	p-value
CBT	112.8 (16.2)	89.4 (14.5)	-23.4	7.85	< .001
Control	110.7 (15.8)	108.2 (16.0)	-2.5	1.12	.272

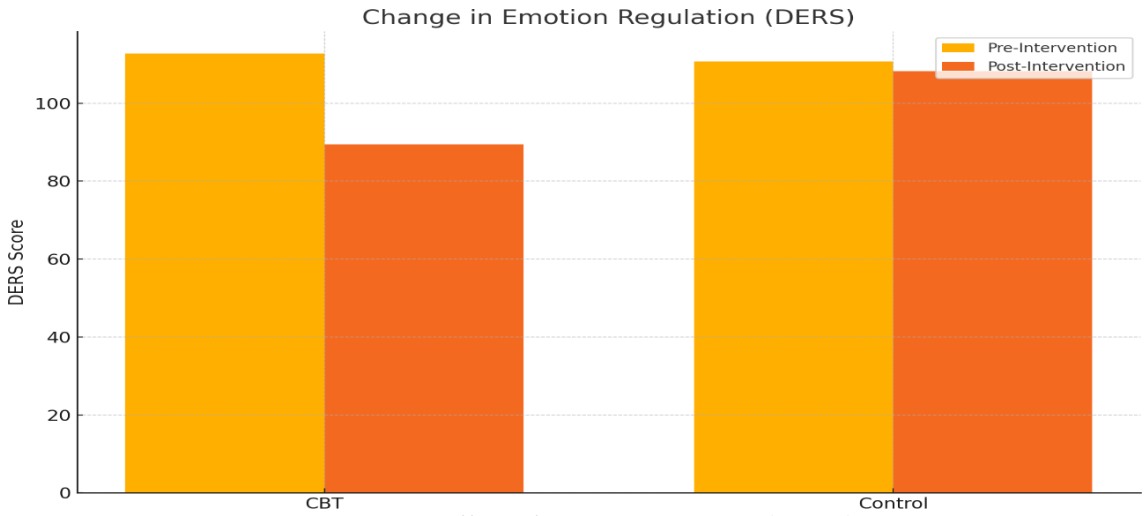

Figure 1 Effect of CBT on Emotional Regulation

ange in their emotional regulation difficulties, as indicated by their DERS score reduced from 112.8 to 89.4 ($t = 7.85$, $p < .001$). On the other hand, the control group's scores had no significant change (110.7 to 108.2; $t = 1.12$, $p = .272$). This indicates that CBT was successful in improving emotional regulation for participants in the CBT group.

Table 3 Effect of CBT on Impulsivity

Group	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Change	t	p-value
CBT	74.6 (9.5)	61.8 (8.7)	-12.8	6.93	< .001
Control	75.2 (8.9)	73.1 (8.6)	-2.1	1.15	.256

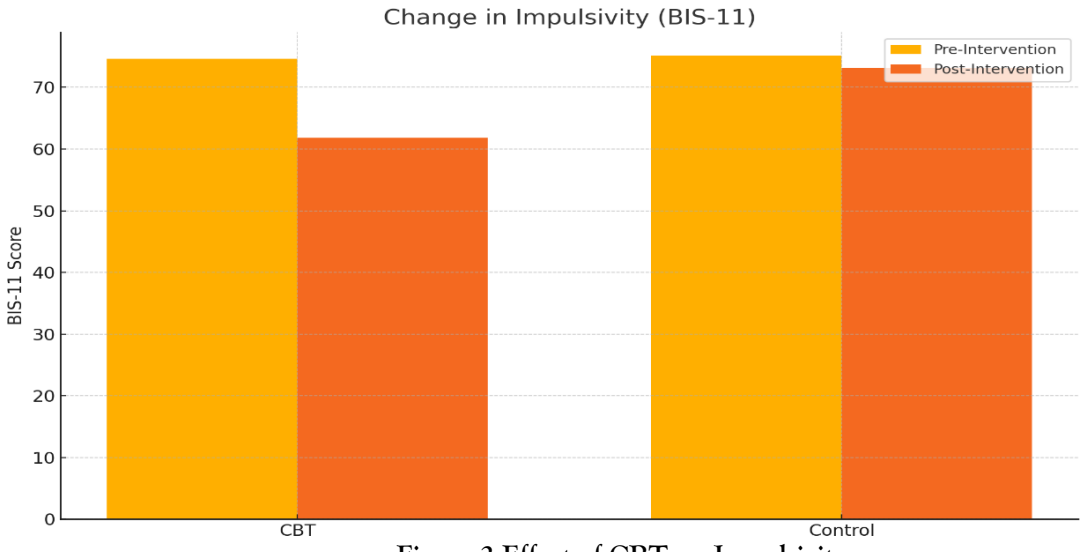

Figure 2 Effect of CBT on Impulsivity

The CBT group showed a marked decrease in impulsivity from baseline to posttest. The degree of impulsivity was assessed using the Barratt Impulsiveness Scale (BIS-11), which showed a meaningful change from pretest to

posttest with a significant difference in scores, 74.6 to 61.8 (t = 6.93, p < .001) the pretest and posttest means are in the table 3. The control group did not demonstrate meaningful changes to impulsivity, to the contrary the control group increased a score of 75.2 to 73.1 (t = 1.15, p = .256). Figure 2 depicts the differences again. To summarize (tie together), it appears that through CBT adolescents with borderline personality traits demonstrate decreased impulsivity.

Table 4 Effect of CBT on Interpersonal Functioning

Group	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Change	t	p-value
CBT	78.5 (10.3)	59.7 (9.2)	-18.8	8.01	< .001
Control	79.1 (9.8)	77.2 (9.5)	-1.9	1.08	.284

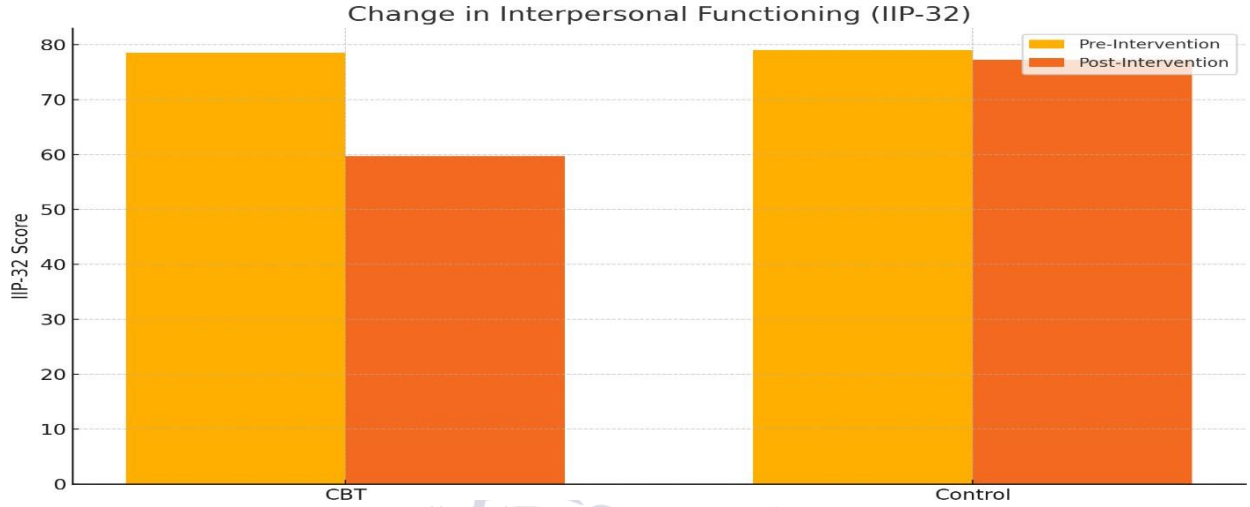

Figure 3 Effect of CBT on Interpersonal Functioning

As illustrated in table 4, IIP-32 scores dropped from 78.5 to 59.7 (t = 8.01, p < .001) for adolescents in the CBT group, demonstrating a significant improvement in interpersonal functioning when compared to the control group, which did not significantly change (from 79.1 to 77.2 t= 1.08, p = .284). As depicted in Figure 3, the results indicate that adolescents with borderline personality traits who participated in CBT improved interpersonal functioning.

Discussion

The present study examined the effects of Cognitive Behavioral Therapy (CBT) on improving emotional regulation, decreasing impulsivity, and improving social functioning among Pakistani adolescents with borderline personality features. A total of three underlying hypotheses formed the basis for this study. Along with applying the hypotheses, the findings showed that CBT facilitated statistically meaningful improvement across all outcomes, with large mean reductions to the Difficulties in Emotion Regulation Scale (DERS), Barratt Impulsiveness Scale (BIS-11), and Inventory of Interpersonal Problems (IIP-32). Alternatively, the control group, who received supportive counseling, showed no improvements, further distinguishing the specific effect of CBT with youth in Pakistan.

The findings presented in this manuscript reflect an increasing body of international literature that supports the effectiveness of CBT for the purpose of emotional and behavioral regulation in adolescents with borderline features. Prior meta-analyses and systematic reviews of the literature have established that CBT can improve not only emotion regulation, but also can improve impulse control, by targeting cognitive distortions and maladaptive behaviors (Kothgassner et al, 2021; Storebøet al., 2020). The considerable effect found in current study through DERS ratings of the CBT group is similar to previously found effects when assessing the ability of

structured skill-based interventions, including CBT, to address the identification, understanding, and management of overwhelming emotions in adolescents (Cohen et al, 2021; Linehan, 2014).

Moreover, the notable reduction in impulsivity (as measured with the BIS-11) for participants receiving CBT provides additional support for the utility and potential effectiveness of CBT techniques (e.g., cognitive restructuring and problem solving) for at least as predictors for reducing impulsivity and eliciting self-control (Yen et al., 2021; Patton et al., 1995). This is particularly valuable since impulsivity is a critical area of difficulty with borderline personality traits, where impulsivity often leads to functional impairment and risk behaviors.

The improvements in interpersonal functioning, measured -from the IIP-32 scores, also support the possibility of marginally reduced interpersonal problems and consequently improved social relations in adolescents after half a year, compared to the control group. Potentially, these improvements are due to the CBT treatment focusing on fostering communication skills, provision of assertiveness training, and overall perspective-taking abilities which enables majority of children to make long-term psychosocial adjustments (Horowitz et al., 2000; Cohen et al., 2021).

A tangible strength of this study is that the research utilized a rigorous randomized controlled design and outcome measures were taken using well validated and multidimensional instruments. Furthermore, a unique advantage of this study is that all measures were administered in Urdu, after careful translated and back translated, which facilitated the cultural and linguistic appropriateness of the assessments and relevance to the Pakistani setting.

Limitations of Study

Although these findings are encouraging, we must acknowledge some limitations. The sample size is small and, because they only recruited participants from one site, generalizability may be limited as well. As the follow-up was limited to the immediate post-intervention period, we cannot speak to the longer-term sustainability of the treatment effects. Finally, while supportive counseling provided us with an active control, it might be worthwhile for future studies to compare CBT to other structured therapies (e.g., Dialectical Behavior Therapy (DBT)) to continue to inform best practices in this population.

Implications

The research establishes that, in fact, CBT was effective in improving emotional regulation, decreasing impulsivity, and enhancing interpersonal functioning in Pakistani adolescents exhibiting borderline personality traits. The current findings suggest the need to incorporate CBT into adolescent mental health services in Pakistan and provide training for clinicians and school counselors in the delivery of CBT. We also found that culturally adapted psychological assessment and intervention modalities are both feasible and effective in adaptation in Pakistani contexts. In conclusion, these results support the need for early intervention and expanding evidence-based mental health care for youth populations in Pakistan.

Conclusion

This research provides evidence that Cognitive Behavioral Therapy (CBT) is an effective treatment for improving emotional regulation, reducing impulsivity, and improving interpersonal functioning in Pakistani adolescents with borderline personality traits. CBT was more effective than supportive counseling in addressing amelioration of the core difficulties associated with borderline personality traits. Our findings illustrate the importance of providing Cognitive Behavioral Therapy (CBT) to adolescents with borderline personality traits as part of adolescent mental health services in Pakistan. Culturally informed early interventions for youth at-risk are

also crucial. Further research is needed using larger samples and longer follow-up periods for confirmation and generation of findings.

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