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The Effectiveness of a Third-Wave Behavioral Therapy-Based Intervention Package on Emotion Regulation, Emotional Adjustment, Mood and Anxiety Symptoms, and Borderline Personality Disorder in Patients with Borderline Personality Disorder Experiencing Emotional Breakup

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A B S T R A C T

The present study aimed to investigate the effectiveness of a third-wave behavioral therapy-based intervention package on emotion regulation, emotional adjustment, mood and anxiety symptoms, and borderline personality disorder in patients with borderline personality disorder experiencing emotional breakup. In this randomized controlled trial, 32 individuals with borderline personality disorder who had experienced an emotional breakup were selected from among clients of psychology clinics in Tehran and were assigned to experimental and control groups. The experimental group received the designed intervention in eight two-hour sessions, while the control group received the intervention after the completion of the study. Participants completed the research questionnaires, including the Cognitive Emotion Regulation Questionnaire (2001), Emotional Adjustment (2007), Mood and Anxiety Symptoms Questionnaire (2009), and Borderline Personality Disorder Symptom Questionnaire (2001) at three stages: pre-test, post-test, and one-month follow-up. Data were analyzed using within-group and between-group comparisons. The results of within-group and between-group comparisons indicated a significant difference ($p < 0.05$) between the experimental and control groups in variables of cognitive emotion regulation, emotional adjustment, mood and anxiety symptoms, and borderline personality disorder. The findings of this study suggest the efficacy of combined interventions based on third-wave behavioral therapies concerning emotional breakup in individuals with borderline personality disorder, and it is recommended that they be used in treatment plans for this group.

Keywords: *Emotion Regulation, Third-Wave Behavioral Therapies, Emotional Adjustment, Borderline Personality Disorder, Emotional Breakup.*

1. Introduction

Borderline personality disorder (BPD) is one of the most common personality disorders, characterized by a pervasive pattern of instability in interpersonal relationships, self-image, emotion regulation, and impulse control, with symptoms becoming evident in early adulthood. Diagnostic features of this disorder include irrational efforts to avoid abandonment, feelings of emptiness and worthlessness, unstable and intense emotional relationships, self-harming behaviors, and issues with impulse control and anger. Although the prevalence of BPD in the general population is estimated at 1.4%, it may reach up to 5.9%. The prevalence rates are higher in populations such as clients at outpatient mental health clinics and psychiatric inpatients, at 10% and 20%, respectively (APA, 2022).

Individuals with BPD exhibit symptoms of mood instability. Their social relationships fluctuate between extreme sociability and social withdrawal. Emotionally, they may become intensely attached to certain people but can display aggressive and threatening behaviors when they feel their needs are unmet. These patients often have significant shifts in their perceptions of individuals they are emotionally involved with, viewing them as ideal when their needs are met and as worthless when they feel disappointed or neglected (Zanjanchi Niko & Farahani, 2024). Interpersonal relationship problems are severe and profound because these individuals have difficulty recognizing others' emotions and needs, and they fear rejection or even perceive rejection unrealistically, leading to provocative and threatening behaviors to avoid abandonment (Abbasian Hadadan, 2024; Gunderson et al., 2018; Yang et al., 2024).

Another core feature of BPD is a deficiency in emotion regulation, manifested in prolonged and intense emotional responses and maladaptive, inappropriate behaviors that seem irrational given the situation. Emotion regulation abilities help individuals engage in goal-oriented behavior in various contexts, and deficiencies in these abilities hinder such behavior. Establishing interpersonal and emotional relationships is a natural human goal. Given that people with BPD struggle with understanding and interpreting the mental states and behaviors of others, emotion regulation deficits prevent appropriate reactions to emotions involved in interpersonal relationships, creating problems in these relationships (Chapman, 2019; Lazarus et al., 2014). Multiple interpersonal conflicts and problems expose BPD patients to a significantly higher risk of emotional relationship failures.

Studies have shown that the end of an emotional relationship can lead to grief and even increase the risk of a depressive episode (Verhallen et al., 2019). Emotional breakups can cause not only psychological symptoms like feelings of rejection but also physical symptoms such as chest pain and impaired immune system functioning (Field, 2017). For individuals with BPD, such stressful events may exacerbate their symptoms, making it important to consider and address these events through effective interventions that might alleviate symptoms.

Third-wave behavioral therapy approaches have been found effective for BPD. Unlike earlier cognitive-behavioral approaches that focused on the content of emotions and thoughts, third-wave approaches emphasize individuals' relationships with their thoughts and emotions, often focusing on mindfulness, emotions, acceptance, relationships, values, goals, and metacognition (Hayes & Hofmann, 2017). Third-wave behavioral approaches include acceptance and commitment therapy (Hayes & Hofmann, 2017), functional analytic psychotherapy (Reyes-Ortega et al., 2020), dialectical behavior therapy (Linehan et al., 2006), behavioral activation (Ruggiero et al., 2005), integrative behavioral couple therapy (Jacobson et al., 2000), mindfulness-based approaches (Hofmann & Gómez, 2017; Shapero et al., 2018), and metacognitive therapy (Normann & Morina, 2018; Schilling et al., 2018).

Acceptance and commitment therapy (ACT) is one approach that has been widely utilized. This approach considers BPD symptoms to stem from difficulties in emotion regulation, emotional maladjustment, and avoidance of confronting emotions. The emphasis is on the notion that negative emotions and feelings alone do not cause symptoms but rather the avoidance of experiencing these emotions, combined with negative thoughts and irrational behavioral choices that contradict personal values, lead to problems. ACT appears to have positive effects on BPD patients (Arango et al., 2019; Reyes-Ortega et al., 2020).

Research indicates that individuals with BPD often exhibit maladaptive cognitive biases (Kaiser et al., 2016; Winter et al., 2015), which are not typically addressed in many therapeutic approaches that focus on emotional and affective symptoms. Metacognitive therapy addresses these biases (Schilling et al., 2018). Overall, metacognitive therapy emphasizes that ineffective coping strategies for managing distressing thoughts and emotions contribute to

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the persistence of negative emotions and thoughts, which, although inherently temporary, are prolonged by maladaptive strategies (Normann & Morina, 2018). This therapy focuses on enhancing executive functions and using techniques to improve attention and delay behaviors such as rumination (Schilling et al., 2018).

Another third-wave behavioral therapy, mindfulness, aims to teach mindfulness practices and integrate them into daily routines to improve quality of life. The main goal is to cultivate a specific form of non-judgmental, present-moment awareness. In summary, mindfulness interventions help individuals develop a different relationship with their thoughts and feelings, detaching from initial negative thoughts, achieving metacognitive awareness, and employing more adaptive strategies to cope with negative emotions and thoughts (Hofmann & Gómez, 2017; Shapero et al., 2018). Mindfulness techniques are also integral to approaches like dialectical behavior therapy (DBT).

Dialectical behavior therapy (DBT) is a structured, outpatient method rooted in cognitive-behavioral therapy, developed in the early 1990s by Linehan (1993) for treating women with BPD. The goal is to replace maladaptive behaviors with healthy coping skills, such as mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. Although DBT was initially developed for BPD, it has also proven effective for mood disorders, post-traumatic stress disorder, eating disorders, and depression (May et al., 2016). The intervention framework includes a wide range of strategies for problem-solving, analysis, and skills training that promote emotion regulation and interpersonal effectiveness. DBT is widely considered the most effective treatment for BPD (Levy et al., 2018).

Based on these points, the primary research question is whether the intervention package developed based on third-wave behavioral therapies has positive effects on emotion regulation, emotional adjustment, mood and anxiety symptoms, and borderline personality symptoms in individuals with BPD who have experienced an emotional breakup.

2. Methods and Materials

2.1. Study Design and Participants

The present study utilized a mixed-methods design consisting of both qualitative and quantitative components. In the qualitative section, a purposive review of relevant domestic and international scientific sources was conducted. The final analysis included 72 articles, treatment manuals, and other scientific texts related to third-wave behavioral therapy interventions focusing on the variables under study. The intervention protocol developed based on the research background was evaluated by 10 experts in the field and, after approval and revisions, was implemented in the quantitative phase of the study. The quantitative section employed a quasi-experimental pretest-posttest design with follow-up and a control group.

The statistical population included all individuals with borderline personality disorder (BPD) who had experienced emotional breakup and sought help at psychological centers in Tehran during the first half of 2022. From this population, 32 individuals meeting the inclusion criteria were purposively selected through notifications sent to these centers. Participants were then randomly assigned to experimental and control groups (n = 16 each). The experimental group received the designed intervention over eight 120-minute sessions, while the control group received the intervention intensively over two weeks after the study's completion. Inclusion criteria were a diagnosis of BPD confirmed by a psychologist or psychiatrist and experiencing emotional breakup within the past six months. Exclusion criteria included severe physical or psychological disorders, missing more than one-fourth of the intervention sessions, and refusal to continue participation at any stage.

The intervention package developed in the qualitative phase was sent to experts for content validity evaluation, and after approval by the supervisor and a group of specialists, preparations for the training sessions were completed. In February 2023, study details were sent to 10 psychotherapy centers in Tehran, and arrangements were made for participant recruitment through clinic administrators.

The final sample included 32 BPD individuals randomly assigned to control and experimental groups. The experimental group (16 participants) attended sessions at Mana Health Horizon Clinic. Both groups completed pretest measures before the intervention. Initial analysis revealed no statistically significant differences between groups, so group composition remained unchanged. The intervention consisted of eight 120-minute sessions conducted by a trained therapist. Both groups completed posttest measures, and one month later, follow-up assessments were conducted. The control group received the intervention in a condensed format over two weeks after the experimental sessions. Data were analyzed anonymously, and personal information was destroyed post-analysis to ensure confidentiality and minimize social desirability bias.

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2.2. Measures

2.2.1. Mood and Anxiety Symptoms

This scale is a shortened version of the 90-item Transdiagnostic Mood and Anxiety Symptoms Scale, converted into a 30-item form by Wardenaar et al. (2009). It evaluates three main factors: General Distress (common to both depression and anxiety), Anhedonia (specific to mood disorders), and Anxious Arousal (specific to anxiety), rated on a 5-point Likert scale. Each factor consists of 10 items. Wardenaar et al. (2009) reported a Cronbach's alpha of 0.90, and construct validity was confirmed through confirmatory factor analysis. In Iran, Dehnavi et al. (2015) estimated the reliability of the three factors using Cronbach's alpha as 0.99, 0.98, and 0.98, respectively, and confirmed convergent and divergent validity (Heydari et al., 2018).

2.2.2. Cognitive Emotion Regulation

The CERQ developed by Garnefski et al. (2001) measures cognitive emotion regulation strategies in response to threatening and stressful life events on a five-point Likert scale, ranging from "never" to "always," across nine subscales: Positive Reappraisal, Self-Blame, Other-Blame, Rumination, Catastrophizing, Positive Refocusing, Acceptance, and Planning. The minimum and maximum scores per scale are 2 and 10, respectively, with higher scores indicating greater use of that strategy. Strategies are categorized into adaptive (e.g., Positive Reappraisal, Positive Refocusing, Acceptance, and Planning) and maladaptive (e.g., Self-Blame, Other-Blame, Rumination, and Catastrophizing) groups. The reliability of the CERQ using split-half, Cronbach's alpha, and Guttman methods was reported as 0.87, 0.89, and 0.90, respectively. Validity was examined through convergent validity (Omidi et al., 2024).

2.2.3. Emotional Adjustment

The Emotional Adjustment Scale by Rabio et al. (2007) was used to measure emotional adjustment. This 28-item questionnaire is scored on a six-point Likert scale (from "strongly agree" = 1 to "strongly disagree" = 6) and assesses individuals' ability to achieve emotional balance, regulation, and stability when faced with emotional instability. Rabio et al. (2007) reported correlations of 0.86 and 0.77 with the Eysenck Personality Inventory and the emotional adjustment subscale of the Big Five Personality Inventory, respectively, confirming its validity. They also reported a Cronbach's alpha of 0.87. In Iran, Shokri et al. (2016) examined the psychometric properties among students, reporting internal consistency coefficients ranging from 0.84 to 0.91 (Salemi Khameneh et al., 2018; Zarean et al., 2023).

2.2.4. Borderline Personality

Developed by Claridge and Broks (1984) based on the criteria for BPD in the third edition of the Diagnostic and Statistical Manual of Mental Disorders, this 18-item scale was revised in 2001. It uses a yes/no format, scoring 1 for "yes" and 0 for "no." Claridge et al. (1998) reported a test-retest reliability coefficient of 0.61. Additionally, Rawlings et al. (2001) reported a Cronbach's alpha of 0.80 and identified two factors through factor analysis: Hopelessness, associated with feelings of hopelessness, aimlessness, and self-destructive emotions, and Impulsivity, associated with intense, antisocial impulses. Convergent validity with neuroticism and psychoticism scales was reported as 0.64 and 0.44, respectively. In Iran, Mohammadzadeh et al. (2005) validated this scale among university students, reporting a Cronbach's alpha of 0.84 for the entire scale (Khandaghi Khameneh et al., 2023; Zanjanchi Niko & Farahani, 2024).

2.3. Intervention

2.3.1. Third-Wave Behavioral Approaches Program

The intervention protocol consists of eight structured sessions, each lasting 120 minutes. The sessions are designed to help individuals with borderline personality disorder (BPD) who have experienced emotional breakups improve their emotional regulation, emotional adjustment, and mood and anxiety symptoms, and to address interpersonal relationship difficulties. The approach integrates third-wave behavioral strategies, emphasizing mindfulness, emotion acceptance, and values-based actions.

Session 1:

The session begins with the administration of pretest measures, followed by an introduction to the intervention's goals and guidelines (e.g., confidentiality, respect, punctuality, and cell phone policies). Participants introduce themselves using a round-robin technique, sharing details about their personality, family background, current status, and emotional breakup experience. Definitions of BPD and its associated difficulties are provided, particularly in terms of emotion regulation, emotional adjustment, sensitivity to rejection, and relationship challenges. Participants learn

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about the nature and function of emotions, how to identify and label emotions in daily life, and the relationship between emotions and behaviors. A model describing emotions is introduced, highlighting barriers to emotional control. Homework is assigned: identifying and describing various emotions experienced daily and their impact on overall functioning.

Session 2:

The session starts with a review of previous concepts and homework. Participants are taught how to mindfully experience and accept emotions without judgment. Misconceptions and dysfunctional beliefs about emotions are discussed and challenged. Participants practice acting against maladaptive emotional responses and learn problem-solving skills to effectively handle emotional situations. Homework: describe an experienced emotion, identify associated beliefs, use the acting-against-emotion technique, and apply problem-solving strategies.

Session 3:

This session reviews previous concepts and homework. Participants identify maladaptive emotion regulation strategies, such as worry and rumination, and understand their ineffectiveness. Metacognitive beliefs are explored and challenged using real or hypothetical scenarios from participants' lives. Mindful detachment from negative metacognitions is taught, along with setting limited time for worrying and rumination. Participants practice positive metacognition by evaluating the inefficacy of worry and rumination and adopting effective strategies. Homework: describe an emotional situation, document metacognitive beliefs, and evaluate the effectiveness of these beliefs and coping strategies.

Session 4:

This session introduces distress tolerance skills. Participants learn crisis survival strategies, such as reducing impulsive behaviors during emotional crises (e.g., emotional breakups). The pros and cons of crisis coping strategies are discussed. Techniques for physical relaxation, distraction from crisis triggers, and cultivating wise mind in crisis situations are taught. Reality acceptance skills are introduced, including radical acceptance and mindfulness techniques for observing thoughts as thoughts, not facts. Homework: practice crisis survival and reality acceptance skills.

Session 5:

Participants review previous concepts and homework, then learn to accept anxiety and mood fluctuations. The concept of active acceptance (versus passive surrender) is introduced. Cognitive defusion techniques help participants separate thoughts and feelings from self, reducing distress and encouraging adaptive behaviors. Mindfulness skills are practiced to foster flexible attention to present events, enhancing awareness of the here and now rather than reliving the past or fearing the future. Homework: practice cognitive defusion and mindfulness.

Session 6:

The focus is on self-awareness and self-compassion. Participants learn to view themselves as the context of their experiences, observing their life narrative with less entanglement. Compassionate self-observation is practiced, reflecting on past experiences from a present-moment perspective. Participants identify personal values and goals to enhance motivation and guide behavior, then define and commit to value-driven actions. Homework: identify personal values and outline value-consistent actions.

Session 7:

This session addresses relational goals, teaching skills for achieving goals while maintaining relationships and self-respect. Participants learn to create and sustain meaningful relationships and end harmful ones. Homework: review past relationships using the acquired skills, identify strengths and weaknesses, and plan improvements for future relationships.

Session 8:

The final session reflects on changes participants have experienced throughout the intervention. Participants prepare for the program's conclusion, are introduced to resources for continued skill development, and are given contact information for the therapist to seek guidance as needed. Follow-up arrangements are discussed for final intervention effectiveness evaluation. The session concludes with the administration of posttest measures.

2.4. Data analysis

The data analysis was conducted using SPSS software (version 26). Descriptive statistics, including means, standard deviations, and frequency distributions, were calculated to summarize participants' demographic characteristics and baseline measures. Inferential analyses included paired t-tests for within-group comparisons of pretest, posttest, and follow-up scores, and independent t-tests for between-group comparisons at each time point. For non-normally distributed data, the Wilcoxon Signed Rank Test and the Mann-Whitney U Test were used as non-parametric alternatives. Additionally, Analysis of Covariance (ANCOVA) was employed to control for

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baseline scores and potential confounding variables. Effect sizes (Cohen's d) were calculated for significant results to assess the practical significance, with a p-value of less than 0.05 considered statistically significant. Cronbach's alpha was used to determine the internal consistency of the measurement scales.

3. Findings and Results

Descriptive results indicated that the mean age of participants in the experimental group was 26.75 years with a standard deviation of 5.06, while the mean age in the control group was 27.12 years with a standard deviation of 6.34. In both groups, 3 out of 16 participants were male (18.8%), and 13 were female (81.2%). In the experimental group, 4 participants (25%) had a high school diploma, 9 (56.3%) held a bachelor's degree, and 3 (18.8%) had a master's degree. Similarly, in the control group, 4 participants (25%) had a high school diploma, 8 (50%) held a bachelor's degree, and 4 (25%) had a master's degree. In terms of marital status, 3 participants (18.8%) in the experimental group and 4 (25%) in the control group were married. In the experimental group, 3 participants (18.8%) had been diagnosed with borderline personality disorder (BPD) by a psychiatrist, 6 (37.5%) by a psychologist, and 7 (43.8%) by both. In the control group, 10 participants (62.5%) had been diagnosed by a psychiatrist, 4 (25%) by a psychologist, and 2 (12.5%) by both. According to Table 1, the mean values of the variables under study showed improvement in the experimental group compared to the control group.

Table 1

Descriptive Indices of Research Variables in Experimental and Control Groups

Group	Variable	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)
Experimental	Adaptive Strategies	53.94 (8.17)	56.81 (8.73)	56.25 (7.92)
	Maladaptive Strategies	55.06 (11.68)	47.75 (9.06)	49.75 (9.20)
Control	Adaptive Strategies	50.69 (7.90)	47.75 (4.47)	47.06 (5.27)
	Maladaptive Strategies	51.56 (11.50)	48.06 (6.71)	49.12 (7.34)
Experimental	Dysregulation	35.06 (10.25)	39.12 (9.51)	37.01 (9.81)
	Hopeless Thinking	27.31 (7.80)	32.94 (7.14)	31.37 (7.44)
	Total Score	62.37 (13.51)	72.06 (12.47)	68.37 (12.91)
Control	Dysregulation	37.01 (11.86)	36.62 (11.07)	37.87 (11.39)
	Hopeless Thinking	31.31 (10.36)	29.93 (9.86)	31.93 (8.88)
	Total Score	68.31 (12.93)	66.56 (13.75)	67.31 (10.07)
Experimental	Hopelessness	4.62 (1.86)	3.68 (1.45)	4.01 (1.75)
	Impulsivity	4.37 (1.66)	3.44 (1.26)	3.06 (1.48)
	Total Score	9.01 (2.65)	7.12 (2.09)	7.06 (2.51)
Control	Hopelessness	4.06 (1.48)	4.56 (1.93)	4.25 (2.38)
	Impulsivity	4.31 (1.74)	4.01 (2.36)	4.81 (1.87)
	Total Score	8.37 (2.06)	8.56 (2.87)	9.06 (2.37)
Experimental	General Distress	45.01 (3.05)	38.50 (2.71)	39.62 (2.45)
	Anhedonia	38.87 (5.51)	34.50 (5.06)	35.87 (4.26)
	Anxious Arousal	31.06 (5.44)	26.81 (6.53)	25.25 (4.61)
	Total Score	114.94 (9.39)	99.81 (8.69)	100.75 (7.61)
Control	General Distress	44.05 (3.05)	44.19 (2.86)	44.06 (4.46)
	Anhedonia	37.25 (3.89)	37.44 (4.71)	36.81 (5.62)
	Anxious Arousal	30.68 (6.16)	30.62 (7.58)	31.25 (7.57)
	Total Score	112.43 (8.61)	112.25 (10.04)	112.12 (11.39)

Within-group and between-group comparisons were conducted using independent and paired t-tests (or non-parametric equivalents). According to Table 2, the mood and anxiety symptoms and BPD symptoms in the experimental group significantly decreased from pretest to posttest, and these effects persisted at follow-up. Maladaptive strategies and all emotional adjustment indices regressed to pretest levels at follow-up, indicating reduced long-term effectiveness. Nevertheless, comparing pretest and follow-up scores, significant improvement in emotion regulation and emotional adjustment remained in the experimental group. No significant within-group differences were found in the control group.

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Table 2

Within-Group Comparisons of Variables in Experimental and Control Groups

Group	Variable	Pretest-Posttest (Statistic/Significance)	Posttest-Follow-up (Statistic/Significance)	Pretest-Follow-up (Statistic/Significance)
Experimental	Adaptive Strategies (CERQ)	-5.258 / 0.001	0.872 / 0.397	-2.689 / 0.017
	Maladaptive Strategies	6.204 / 0.001	-8.944 / 0.001	4.507 / 0.001
Control	Adaptive Strategies	a34.576 / 0.145	a39.50 / 0.132	a26.26 / 0.052
	Maladaptive Strategies	1.763 / 0.098	-2.075 / 0.056	1.267 / 0.224
Experimental	Dysregulation (EAM)	-10.966 / 0.001	11.825 / 0.001	-4.581 / 0.001
	Hopeless Thinking	-20.68 / 0.001	9.934 / 0.001	-12.603 / 0.001
	Total Score	21.345 / 0.001	16.892 / 0.001	-12.205 / 0.001
Control	Dysregulation	0.576 / 0.573	1.126 / 0.278	1.051 / 0.310
	Hopeless Thinking	1.202 / 0.248	1.068 / 0.303	-0.590 / 0.564
	Total Score	-1.414 / 0.178	-0.452 / 0.658	0.608 / 0.553
Experimental	Hopelessness (STB)	a106.50 / 0.011	a70.165 / 0.225	a26.50 / 0.175
	Impulsivity	3.033 / 0.008	a26.12 / 0.294	a12.10 / 0.010
	Total Score	5.001 / 0.001	0.151 / 0.882	4.050 / 0.001
Control	Hopelessness	a85.001 / 0.001	a40.40 / 0.405	a16.16 / 0.734
	Impulsivity	-1.001 / 0.333	a68.50 / 0.077	a24.50 / 0.356
	Total Score	-0.296 / 0.771	-0.664 / 0.517	-1.126 / 0.278
Experimental	General Distress (MASQ-D30)	11.55 / 0.001	-1.72 / 0.105	7.54 / 0.001
	Anhedonia	9.42 / 0.001	-1.67 / 0.115	3.503 / 0.003
	Anxious Arousal	8.72 / 0.001	1.11 / 0.282	5.015 / 0.001
	Total Score	16.41 / 0.001	-0.48 / 0.634	8.353 / 0.001
Control	General Distress	0.518 / 0.612	0.202 / 0.843	0.470 / 0.645
	Anhedonia	-0.279 / 0.784	a44.01 / 0.264	a46.46 / 0.680
	Anxious Arousal	0.085 / 0.933	-1.098 / 0.289	-0.681 / 0.506
	Total Score	0.172 / 0.866	0.123 / 0.904	0.198 / 0.845

Between-group analysis (Table 3) showed no significant differences in any variables at pretest, indicating initial group equivalence. At posttest, significant differences appeared in General Distress, the total score of the Mood and Anxiety Symptoms Scale, and adaptive emotion regulation strategies, indicating a positive intervention effect in the experimental group. Differences remained at follow-up, with additional significant differences in Anxious Arousal, Impulsivity, and the total score of BPD symptoms, reflecting maintained or increased symptom differences between groups.

Table 3

Between-Group Comparisons of Variables in Experimental and Control Groups

Group Comparison	Variable	Pretest (Statistic/Significance)	Posttest (Statistic/Significance)	Follow-up (Statistic/Significance)
Experimental-Control	Adaptive Strategies (CERQ)	1.144 / 0.262	3.693 / 0.001	3.860 / 0.001
	Maladaptive Strategies	0.854 / 0.400	-0.111 / 0.912	0.212 / 0.833
	Dysregulation (EAM)	-0.494 / 0.625	0.685 / 0.499	0.495 / 0.624
	Hopeless Thinking	-1.233 / 0.227	0.986 / 0.332	-0.194 / 0.847
	Total Score	-1.269 / 0.214	1.185 / 0.245	0.259 / 0.797
	Hopelessness (STB)	a106.50 / 0.423	a165.70 / 0.160	a136.50 / 0.780
	Impulsivity	0.104 / 0.918	-0.839 / 0.408	a191.50 / *0.015*
	Total Score	0.743 / 0.463	-1.617 / 0.116	-2.310 / *0.028*
	General Distress (MASQ-D30)	0.463 / 0.647	-5.779 / 0.001	-3.487 / 0.002
	Anhedonia	0.963 / 0.343	-1.708 / 0.098	a134.01 / 0.838
	Anxious Arousal	0.182 / 0.856	-1.524 / 0.138	-2.708 / *0.011*
	Total Score	0.784 / 0.439	-3.746 / 0.002	-3.320 / 0.002

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The results confirm that the intervention led to significant improvements in emotion regulation and reductions in mood and anxiety symptoms, sustained one month post-intervention. The experimental group showed consistent benefits compared to the control group across multiple indices.

4. Discussion and Conclusion

Statistical analysis results indicated that the intervention package developed in this study, based on third-wave therapeutic approaches, was effective in improving cognitive emotion regulation, emotional adjustment, mood and anxiety symptoms, and borderline personality disorder (BPD) symptoms in individuals with BPD who had experienced emotional breakup. These findings align with prior research (Coto-Lesmes et al., 2020; Dixon-Gordon et al., 2015; Gibson et al., 2014; Goodman et al., 2014; Neacsiu et al., 2014).

To explain the improvement in cognitive emotion regulation and emotional adjustment observed in this study, it is worth noting that the intervention was designed using dialectical behavior therapy (DBT) and metacognitive therapy. DBT addresses emotion dysregulation by integrating a comprehensive approach that emphasizes validating the individual's experience of self, others, and the world using Zen principles and acceptance-focused techniques. Simultaneously, DBT aims to reduce problematic behaviors and enhance adaptive responses to emotional states using cognitive-behavioral strategies that emphasize problem-solving (Robins & Chapman, 2004). The present findings on emotion regulation and emotional adjustment align with prior studies (Dixon-Gordon et al., 2015; Gibson et al., 2014; Goodman et al., 2014; Neacsiu et al., 2014).

Gibson et al. (2014) found that DBT skill training significantly enhances individuals' ability to engage in goal-directed behavior and increases access to adaptive emotion regulation strategies (Gibson et al., 2014). Similarly, Neacsiu et al. (2014) demonstrated that DBT skills training improves access to a range of emotion regulation strategies and leads to greater emotional awareness and clarity among participants compared to a control group (Neacsiu et al., 2014).

To explain the improvement in mood and anxiety symptoms, the intervention utilized acceptance and commitment therapy (ACT) and mindfulness. ACT focuses on the contextual nature of psychological problems and frames their onset and persistence within interpersonal relationships and self-concept. While psychological issues cause distress and problems, how individuals respond to life circumstances plays a significant role. Thus, ACT seeks to clarify and emphasize the function of psychological problems in an individual's daily life. The goal of ACT is to increase psychological flexibility, defined as the capacity to remain in contact with private experiences (bodily sensations, thoughts, emotions, and behavioral predispositions) without avoiding or escaping them, and to behave in a manner consistent with personal values (Coto-Lesmes et al., 2020).

Mindfulness, unlike direct anxiety disorder treatments, addresses stress transdiagnostically by focusing on observation and behavior regulation. Mindfulness enhances the ability to focus on the present and make adaptive behavioral changes, allowing individuals to avoid impulsive reactions, assess stressful situations mindfully, and respond in ways that foster well-being. By targeting cognitive processes and negative thoughts, mindfulness can also improve mood symptoms (Merwin et al., 2019). The present findings on mood and anxiety symptoms align with previous findings (Avdagic et al., 2014; Glover et al., 2016; Heydari et al., 2018; Livheim et al., 2015). Although ACT has not specifically been used to reduce mood and anxiety symptoms in individuals with BPD, these studies have shown its effectiveness in other clinical populations.

The improvement in BPD symptoms can be attributed to the documented effectiveness of third-wave behavioral approaches in reducing the severity of BPD symptoms. The present results are consistent with prior research (Barnicot et al., 2016; Flynn et al., 2017; Reyes-Ortega et al., 2020). Reyes-Ortega et al. (2019) found that combining DBT and ACT reduces experiential avoidance and enhances mindfulness and emotion regulation skills, resulting in decreased BPD symptom severity, especially emotion dysregulation and interpersonal difficulties (Reyes-Ortega et al., 2020). This study uniquely aimed to combine third-wave behavioral approaches to improve symptoms in individuals with BPD who have experienced emotional breakup. Future research should address the limitations of this study, refining and expanding these interventions for various clinical groups.

The study limitations include conducting the research in Tehran and selecting participants from local psychological clinics, limiting generalizability to other populations. Additionally, it was challenging to control for extraneous variables such as socioeconomic status and interpersonal

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relationships, which can significantly impact individuals' functioning. Self-report tools and questionnaires were used to evaluate intervention effectiveness, though research suggests that the long-term effects of DBT, for example, can also be observed through neuroimaging (Goodman et al., 2014). Future studies should consider using more precise tools for assessing intervention effects. Lastly, the intervention was implemented intensively and included only a one-month follow-up. To better assess effectiveness, interventions should be conducted over longer periods with regular follow-up assessments.

Authors' Contributions

This article is derived from the first author's doctoral dissertation in clinical psychology, defended on September 4, 2023. All authors contributed to the project's design and development. The first author collected and analyzed the data, while the first and corresponding author drafted the manuscript. The second and third authors supervised the study and approved the tools. All authors participated in editing and revising the article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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