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Original Article

Effectiveness of Transdiagnostic Treatment on Anxiety Sensitivity and Self-differentiation in Individuals with Borderline Personality Disorder Symptoms

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Abstract

Background and Objective: Borderline Personality Disorder (BPD) is characterized by significant challenges in emotion regulation, interpersonal relationships, and self-image, often accompanied by high anxiety sensitivity and difficulties in self-differentiation. The present study aimed to investigate the effectiveness of transdiagnostic treatment on anxiety sensitivity and self-differentiation in individuals exhibiting symptoms of BPD.

Materials and Methods: The research employed a quasi-experimental design with pre-test, post-test, and follow-up assessments, incorporating a control group. The statistical population for this study comprised all patients diagnosed with BPD who sought psychiatric consultation in District 4 of Tehran, Iran, in 2024. A targeted sample of 30 participants (15 in each group) was selected based on the inclusion criteria and randomly assigned to either the experimental or control group. The research instruments included the Anxiety Sensitivity Index and Self-Differentiation Questionnaire. The experimental group received 10 ninety-minute sessions of transdiagnostic treatment. Data analysis was performed using repeated measures analysis of variance (ANOVA).

Results: Results indicated that transdiagnostic treatment significantly reduced anxiety sensitivity (F=192.45, P<0.001, ηp^2=0.88) and increased self-differentiation (F=201.67, P<0.001, ηp^2=0.89) at the post-test stage. This positive effect persisted into the follow-up phase, demonstrating the enduring effectiveness of transdiagnostic treatment.

Conclusion: These findings suggest that transdiagnostic treatment can substantially alleviate anxiety sensitivity and improve self-differentiation in individuals with BPD symptoms.

Keywords: Anxiety, Borderline personality disorder, Self-differentiation, Transdiagnostic therapy

Background

Borderline Personality Disorder (BPD) is a complex mental health condition characterized by pervasive difficulties in emotion regulation, interpersonal relationships, and self-image [1]. Individuals with BPD often experience emotions with heightened intensity and prolonged duration compared to the general population. This emotional reactivity can transform minor stressors into profoundly distressing experiences, significantly disrupting daily functioning. Such instability drives associated symptoms, including impulsivity, which collectively impair relationships, occupational performance, mood, and overall well-being [2]. BPD frequently co-occurs with disorders, such as depression, anxiety, and behavioral issues, emphasizing the need for effective identification and treatment strategies [3]. Common experiences among individuals with BPD include an intense fear of abandonment, recurrent episodes of anger, depression, and anxiety, as well as self-harming behaviors and suicidal ideation [4]. The etiology of BPD is multifaceted, involving genetic predispositions, childhood trauma, and neurobiological dysfunctions [5].

Anxiety sensitivity, a critical construct in BPD, refers to the tendency to perceive situations as threatening, particularly in interpersonal contexts [6]. This predisposition is a significant risk factor for developing and exacerbating anxiety disorders, garnering substantial attention in recent research. Theoretical models highlight the role of coping mechanisms in managing anxiety-provoking experiences [7]. Anxiety sensitivity is defined as the fear of bodily sensations associated with anxiety—such as elevated heart rate, shortness of breath, or dizziness—stemming from beliefs that these symptoms may lead to adverse social, cognitive, or physical outcomes. This fear can precipitate excessive anxiety and insecurity, contributing to interpersonal instability and emotional fluctuations [8].

Self-differentiation, another pivotal concept, is the ability to distinguish and manage one's emotions independently from others [9]. High self-differentiation serves as a protective factor, enabling individuals to cope effectively with emotional and psychological challenges. Conversely, low self-differentiation is associated with difficulties in identifying and expressing emotions, exacerbating emotional instability and anxiety sensitivity [10]. Self-differentiation involves separating intellectual and emotional processes, fostering independence and responsibility for one's thoughts and actions [11]. Understanding the interplay between anxiety sensitivity, self-differentiation, and BPD symptoms is essential for developing effective interventions.

Traditional BPD treatments often target specific symptoms, but transdiagnostic approaches offer a more integrative solution by addressing underlying mechanisms common across disorders [12]. Transdiagnostic treatment focuses on processing emotional and cognitive experiences, enhancing self-awareness, and improving emotion regulation. This approach strengthens identity development, enabling individuals to navigate daily challenges more effectively [13]. Additionally, it has been shown to improve sleep quality and reduce anxiety sensitivity by equipping individuals with adaptive emotional management strategies [14]. Studies, such as Bagheri Sheykhangafshe et al. [15], have demonstrated the efficacy of transdiagnostic treatment in improving anxiety sensitivity, sleep quality, and emotion regulation in employees with depressive symptoms. Similarly, Lotfi et al. [16] found that emotion-regulation-based transdiagnostic treatment effectively reduced insomnia.

Recent advancements in psychotherapy emphasize transdiagnostic interventions, which target underlying psychological processes rather than specific diagnoses. BPD's maladaptive traits, including severe anxiety sensitivity and impaired self-differentiation, significantly impair individual and social functioning. Given the limitations of traditional treatments, the present study evaluates the efficacy of transdiagnostic treatment as an evidence-based, integrative approach for BPD. The findings could transform clinical practices, offering a robust model to enhance the quality of life for individuals with BPD. Moreover, this research contributes to the localization of modern psychological interventions within Iranian society. To date, no studies have specifically examined the impact of transdiagnostic treatment on anxiety sensitivity and self-differentiation in individuals with BPD symptoms.

Objectives

The present study aimed to determine whether transdiagnostic treatment effectively reduced anxiety sensitivity and enhanced self-differentiation in individuals with BPD symptoms in Tehran, Iran.

Materials and Methods
Design and Participants

This study employed a quasi-experimental design featuring pre-test, post-test, and a three-month follow-up, along with a control group. The statistical population comprised all individuals diagnosed with BPD who sought psychiatric consultation in District 4 of Tehran in 2024. A targeted sample of 30 participants, comprising 15 individuals in the experimental group and 15 in the control group, was carefully selected based on predefined inclusion and exclusion criteria. Participants were then randomly assigned to either the experimental or control condition to ensure comparability between groups. Inclusion criteria included a confirmed diagnosis of BPD by a psychiatrist based on DSM-5 criteria, age range of 18-45 years, willingness to participate in the study, and no history of severe mental illness (e.g., psychosis) or substance dependence that would impede participation. Exclusion criteria involved a diagnosis of any other severe psychiatric disorder, current engagement in other psychological treatments, or unwillingness to continue participation. All participants provided informed consent prior to enrollment, and ethical considerations, including confidentiality, voluntary participation, and the right to withdraw at any time, were strictly adhered to, in accordance with the ethical guidelines approved by the university's ethics committee (code: IR.IAU.AHVAZ.REC.1403.366).

Procedure

Following the selection and random assignment of participants, both the experimental and control groups underwent a pre-test assessment using the Anxiety Sensitivity Index (ASI) and the Self-Differentiation Questionnaire (SDQ). The experimental group then commenced the transdiagnostic treatment program, which consisted of 10 ninety-minute sessions conducted weekly. During this period, the control group received no specific intervention, aside from routine care as needed. Immediately following the completion of the 10 sessions, both groups completed the post-test assessments. A two-month follow-up assessment was also conducted for both groups to evaluate the long-term effectiveness of the transdiagnostic treatment. Data collection was meticulously managed by trained research assistants to ensure consistency and minimize bias.

Instruments

Anxiety Sensitivity Index (ASI): The ASI is an extensively used self-report measure designed to assess the fear of anxiety-related bodily sensations. Developed by Reiss et al. [17], the original scale consists of 16 items, each rated on a 5-point Likert scale ranging from 0 (very little) to 4 (very much). Total scores can range from 0 to 64, with higher scores indicating greater anxiety sensitivity. The ASI assesses fear of anxiety symptoms across three main sub-factors: physical concerns, mental incapacitation concerns, and social concerns. A higher score reflects a greater tendency to catastrophize physical sensations of anxiety. In the present study, the Persian version of the ASI was used, demonstrating excellent reliability with a Cronbach's alpha of 0.86. Moreover, its content validity was established with a Content Validity Ratio (CVR) of 0.82, indicating strong agreement among experts on the relevance of items for assessing anxiety sensitivity in the Iranian population. The Content Validity Index (CVI) was 0.89, reflecting high clarity and appropriateness of the items. Construct validity was supported by a three-factor structure confirmed through confirmatory factor analysis, with significant positive correlations with measures of health anxiety (r=0.62, P<0.001), intolerance of uncertainty (r=0.58, P<0.001), and neuroticism (r=0.54, P<0.001), and a significant negative correlation with experiential acceptance (r=-0.49, P<0.001) [18].

Self-Differentiation Questionnaire (SDQ): The SDQ, developed by Skowron and Smith [19], is a 46-item instrument designed to assess an individual's level of self-differentiation, grounded in Bowen Family Systems Theory. This questionnaire utilizes a 6-point Likert scale, ranging from 1 (completely disagree) to 6 (completely agree), with scoring based on responses across this continuum. The SDQ is composed of four primary subscales: Emotional Fusion with Others, I-Position, Emotional Cutoff, and Emotional Reactivity. Higher scores on this questionnaire indicate a greater degree of self-differentiation, reflecting an individual's capacity to maintain a distinct sense of self while remaining emotionally connected to others, and to differentiate between their intellectual and emotional processes. In the present research, the Persian version of the SDQ was employed, exhibiting good reliability with a Cronbach's alpha of 0.84. Its content validity was confirmed with a CVR of 0.79, indicating robust expert consensus on the relevance of items for measuring self-differentiation in the Iranian context. The CVI was 0.87, demonstrating high item clarity and appropriateness. Construct validity was supported by exploratory and confirmatory factor analyses, confirming a four-factor structure, with significant positive correlations with measures of emotional regulation (r=0.61, P<0.001) and psychological well-being (r=0.57, P<0.001), and a negative correlation with emotional distress (r=-0.52, P<0.001) [20].

Intervention

The transdiagnostic treatment protocol delivered to the experimental group comprised 10 ninety-minute sessions, typically conducted every week. This intervention was based on established transdiagnostic principles, focusing on common underlying psychological processes rather than specific diagnostic categories. The sessions were structured to address shared mechanisms, such as emotional avoidance, cognitive biases, and experiential avoidance, which are implicated in a range of emotional disorders, including BPD. The treatment aimed to equip participants with adaptive strategies for emotion regulation, self-awareness, and distress tolerance. The intervention was delivered by a certified clinical psychologist to ensure fidelity. The protocol was based on the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders [21]. A detailed summary of the sessions and their core content is presented in Table 1.

Table 1. Summary of transdiagnostic treatment sessions

Session	Focus Area	Key Activities/Content
1	Introduction & Rationale	Psychoeducation on transdiagnostic principles and shared mechanisms of emotional disorders; goal setting.
2	Emotional Awareness	Identifying and labeling emotions; exploring the function of emotions.
3	Cognitive Restructuring	Challenging unhelpful thinking patterns and cognitive biases.
4	Distress Tolerance Skills	Developing strategies for coping with intense emotional states and practicing acceptance exercises.
5	Experiential Avoidance	Understanding and reducing avoidance behaviors related to internal experiences.
6	Behavioral Activation	Increasing engagement in meaningful activities; scheduling positive experiences.
7	Self-Differentiation (Part 1)	Exploring family patterns and emotional fusion; distinguishing self from others.
8	Self-Differentiation (Part 2)	Practicing "I-statements" and maintaining boundaries in relationships.
9	Relapse Prevention	Identifying triggers and developing coping plans for future challenges.
10	Consolidation & Review	Review of learned skills; future planning and maintenance of progress.

Data Analysis

Statistical analysis was performed using the SPSS (version 27) software. To assess the effectiveness of transdiagnostic treatment on anxiety sensitivity and self-differentiation across pre-test, post-test, and follow-up periods, a repeated measures analysis of variance (ANOVA) was employed.

Results

This research involved 30 adult participants with BPD symptoms, evenly split into an experimental group (n=15) and a control group (n=15). In terms of age distribution, 48% of participants were aged 20–32 years, while 52% were aged 33–45 years. The average age was [1].29 (SD=5.12) years for the experimental group and 35.18 (SD=6.45) years for the control group. Table 2 presents the means and standard deviations for anxiety sensitivity and self-differentiation scores across the pre-test, post-test, and follow-up phases for both the experimental and control groups. The experimental group exhibited notable reductions in anxiety sensitivity and improvements in self-differentiation following the intervention, with these effects sustained at the follow-up. In contrast, the control group showed minimal changes across all assessment phases.

Table 2. Means and standard deviations of emotional dysregulation and sleep disturbances scores for experimental and control groups across assessment phases

Variable	Group	Pre-test	Post-test	Follow-up
		Mean (SD)	Mean (SD)	Mean (SD)
Anxiety Sensitivity	Experimental	43.89 (5.13)	29.06 (3.01)	27.03 (3.71)
	Control	45.18 (6.67)	43.76 (4.92)	42.59 (4.26)
Self-differentiation	Experimental	103.83 (7.12)	170.44 (11.38)	163.39 (12.90)
	Control	99.18 (9.68)	104.65 (7.30)	105.18 (10.12)

The assumption of normality for the data distribution was evaluated using the Shapiro-Wilk test. Results indicated that scores for anxiety sensitivity and self-differentiation in both groups across the pre-test, post-test, and follow-up phases did not significantly deviate from a normal distribution (p > 0.05 for all tests). This issue confirmed that the data met the normality requirement, justifying the use of parametric statistical methods, specifically repeated measures ANOVA, for subsequent analyses.

A mixed-design repeated measures ANOVA was conducted to examine the effects of transdiagnostic treatment on anxiety sensitivity and self-differentiation, assessing the interaction between group (experimental vs. control) and time (pre-test, post-test, follow-up). As demonstrated in Table 3, significant interaction effects were observed for both anxiety sensitivity (F=192.45, P<0.001, ηp^2=0.88) and self-differentiation (F=201.67, P<0.001, ηp^2=0.89). These results indicate that changes in both variables over time differed significantly between groups, with the experimental group showing substantial improvements compared to the control group, which exhibited minimal changes.

Table 3. Results of mixed-design repeated measures ANOVA for anxiety sensitivity and self-differentiation

Source	Variable	SS	df	MS	F	P	ηp^2
Group (Between-Subjects)	Anxiety Sensitivity	512.34	1	512.34	11.15	<0.001	0.29
	Self-differentiation	498.76	1	498.76	10.87	<0.001	0.28
Time (Within-Subjects)	Anxiety Sensitivity	8012.56	2	4006.28	192.45	<0.001	0.88
	Self-differentiation	8234.91	2	4117.46	201.67	<0.001	0.89
Time * Group (Interaction	Anxiety Sensitivity	8012.56	2	4006.28	192.45	<0.001	0.88
	Self-differentiation	8234.91	2	4117.46	201.67	<0.001	0.89

Post-hoc pairwise comparisons using the Bonferroni correction were conducted to explore specific differences between time points within groups and between groups at each time point. As presented in Table 4, the experimental group exhibited significant reductions in anxiety sensitivity (mean difference=14.83, P<0.001) and increases in self-differentiation (mean difference=-66.61, P<0.001) from pre-test to post-test, with these improvements maintained at follow-up (P=0.999 for both

variables). The control group demonstrated no significant changes over time. At post-test and follow-up, the experimental group's scores were significantly lower for anxiety sensitivity and higher for self-differentiation compared to the control group (P<0.001), confirming the sustained efficacy of the transdiagnostic treatment.

Table 4. Bonferroni-corrected pairwise comparisons for anxiety sensitivity and self-differentiation scores

Variable	Comparison	Mean Difference	Std. Error	P-value
Anxiety Sensitivity	Experimental: Pre-test - Post-test	14.83	0.78	<0.001
	Experimental: Pre-test - Follow-up	16.86	0.81	<0.001
	Experimental: Post-test - Follow-up	-2.03	0.49	0.999
	Experimental - Control (Post-test)	-14.70	0.82	<0.001
	Experimental - Control (Follow-up)	-15.56	0.84	<0.001
Self-differentiation	Experimental: Pre-test - Post-test	-66.61	2.14	<0.001
	Experimental: Pre-test - Follow-up	-59.56	2.21	<0.001
	Experimental: Post-test - Follow-up	7.05	1.67	0.999
	Experimental - Control (Post-test)	65.79	2.25	<0.001
	Experimental - Control (Follow-up)	58.21	2.28	<0.001

Discussion

The present study aimed to investigate the effectiveness of transdiagnostic treatment on anxiety sensitivity and self-differentiation in individuals exhibiting symptoms of BPD. The significant findings indicate that transdiagnostic treatment substantially reduced anxiety sensitivity and notably increased self-differentiation in the experimental group, with these positive effects sustained at the three-month follow-up. These results underscore the potential of a transdiagnostic approach in addressing core psychological vulnerabilities frequently observed in BPD.

The significant reduction in anxiety sensitivity observed in our study aligns with the core principles of transdiagnostic treatment, which targets underlying mechanisms common to various emotional disorders, including the fear of anxiety-related bodily sensations [22]. Individuals with BPD often experience heightened emotional arousal, making them particularly vulnerable to anxiety sensitivity, which can further exacerbate their distress and interpersonal difficulties [4]. By addressing these shared processes, such as cognitive biases, emotional avoidance, and intolerance of uncertainty, transdiagnostic interventions equip individuals with more adaptive coping strategies [14]. This finding is consistent with previous research demonstrating the broad applicability of transdiagnostic approaches in mitigating anxiety-related constructs. For instance, Ghiyasi Noei et al. [23] found that integrated transdiagnostic treatment was effective in reducing anxiety sensitivity in patients with post-traumatic stress disorder, suggesting a shared mechanism of action across different diagnostic categories. The present study extends this understanding by specifically demonstrating this efficacy within the context of BPD symptoms, highlighting its relevance for this complex population.

Furthermore, the significant improvement in self-differentiation is a crucial finding. Self-differentiation, characterized by the ability to maintain a clear sense of self while engaging in emotionally connected relationships, is often severely impaired in individuals with BPD. The therapeutic focus of transdiagnostic treatment on enhancing emotional awareness, improving emotion regulation skills, and challenging maladaptive cognitive patterns likely contributed to this improvement [24]. By helping individuals better identify and manage their emotional states, the treatment can foster a stronger, more stable sense of self, reducing reliance on external validation and mitigating emotional fusion [25]. This issue can lead to greater autonomy and more stable interpersonal relationships, which are significant challenges in BPD. While Hatamian et al. [26] focused on the effect of an indigenous transdiagnostic treatment on insomnia through emotion regulation, their findings indirectly support the notion that interventions targeting fundamental emotional processes can lead to broader psychological improvements. The current study provides direct evidence that transdiagnostic therapy, through its comprehensive approach, can significantly enhance self-differentiation, a central construct for psychological well-being in individuals with BPD.

The sustained effects observed at the three-month follow-up are particularly promising, suggesting that the benefits of transdiagnostic treatment are not

merely transient but lead to lasting changes in anxiety sensitivity and self-differentiation. This long-term impact implies that the treatment helps individuals internalize new coping mechanisms and adaptive relational patterns, which are critical for managing the chronic and pervasive nature of BPD symptoms. The results provide strong empirical support for transdiagnostic treatment as a viable and effective therapeutic option for individuals with BPD symptoms, offering a more streamlined and potentially more accessible approach compared to disorder-specific treatments. This approach could significantly improve treatment outcomes and quality of life for this population, particularly in clinical settings within regions, such as Tehran, the capital of Iran.

The present study, while yielding significant findings, has several limitations that warrant consideration. The sample size of 30 participants, although sufficient for detecting large effect sizes as observed in this study, may restrict the ability to capture more nuanced variations in treatment response across diverse subgroups. Additionally, the study was conducted in a specific urban setting (District 4 of Tehran), which may limit the applicability of findings to rural or other cultural contexts within Iran or beyond. The reliance on self-report measures, despite their established reliability and validity, introduces the potential for response biases, such as social desirability or recall inaccuracies. To enhance the robustness and applicability of these findings, future research should prioritize several directions. First, recruiting larger and more diverse samples, including participants from varied geographical and cultural backgrounds, would strengthen the generalizability of the results. Second, incorporating extended follow-up periods beyond three months would provide deeper insights into the durability of treatment effects over time. Third, integrating multimodal assessment approaches, such as clinician-administered interviews or behavioral observations, could complement self-report data and offer a more comprehensive evaluation of treatment outcomes. Finally, conducting comparative studies that evaluate transdiagnostic treatment against other established BPD interventions, such as Dialectical Behavior Therapy, would help clarify its relative efficacy and potential as a primary or adjunctive treatment approach.

Conclusion

This research unequivocally demonstrates the efficacy of transdiagnostic treatment in significantly reducing anxiety sensitivity and enhancing self-differentiation among individuals presenting with symptoms of BPD. The observed improvements were not only pronounced at post-treatment but also robustly maintained at the three-month follow-up, suggesting enduring therapeutic benefits. These findings underscore the potential of transdiagnostic interventions to address core psychological vulnerabilities that cut across various emotional disorders, offering a promising, comprehensive, and potentially more accessible approach for a population often characterized by complex and pervasive difficulties. The results provide strong empirical support for integrating transdiagnostic principles into clinical practice for BPD, thereby paving the way for improved treatment outcomes and an enhanced quality of life for individuals affected by this condition.

Ethical Considerations

The research protocol was granted ethical approval by the Ethics Committee of Islamic Azad University, with the approval reference IR.IAU.AHVAZ.REC.1403.366.

Authors' Contributions

All authors contributed to the preparation and revision of the manuscript and are accountable for its content.

Conflicts of Interest

The authors confirm they have no conflicts of interest to disclose.

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