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Treatment of Automatic Negative Thoughts and Non-Suicidal Self-Injury (NSSI) Behavior in Borderline Personality Disorder Adolescents: Dialectical Behavior Therapy

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Abstract

Background: *About 17 to 80% of borderline personality disorder (BPD) patients suffer repeated NSSI (most frequently, cutting/burning self-injury), while 46 to 92% of BPD patients attempt suicide. This study aimed to investigate the effectiveness of the condensed dialectic behavior in reducing automatic negative thoughts and its positive effects on non-suicidal self-injury (NSSI) behavior in borderline personality disorder (BPD).*

Methods: *A semi-experimental study with pre-and post-tests is going on with both an experimental group and a control group. In 2019, twenty-two BPD adolescents who attended the treatment clinic) Masire Sabz), district 8, Tehran, were divided into two groups. Two questionnaires of automatic negative thoughts and non-suicidal suicide self-injury were administered before and after the intervention. This study employed SPSS 23 with Levene's test, as well as ANOVA to analyze the data. During the intervention group, twelve 90-minute sessions took place with participants in the intervention group, which followed a protocol adapted from a standard DBT protocol for BD participants in the control group waited for a treatment appointment.*

Results: *The results showed that the scores of the intervention group significantly decreased in the Automatic negative thoughts and non-suicidal self-injury after 2 months of the intervention (Pvalue<0.001).*

Conclusions: *It can be concluded that dialectical behavior therapy was effective on automatic negative thoughts and non-suicidal self-injury (NSSI) behavior among borderline personality disorder adolescents.*

Keywords: Automatic negative thoughts, Non-suicidal self-injury (NSSI) behavior, Borderline personality disorder.
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Introduction

Diagnosing borderline personality disorder (BPD) requires observing numerous complex interactions between social, cognitive, emotional, and behavioral abnormalities. An individual who suffers from this condition will show signs and symptoms such as mood swings, impulsivity, difficulty in forming interpersonal relationships, and self-harming behavior. Borderline personality has its root in childhood and adolescence. The causal factors for BPD have been related to developmental pathways that begin in childhood.[1] A few different problems with thinking are associated with borderline personality disorder (BPD). In addition to cognitive impairment, other symptoms often accompany them, such as emotional instability, relationship problems, and impulsive behaviors. In some BPD treatments, thinking difficulties are discussed.[2] Researchers conclude chronic efforts to suppress unpleasant thoughts may underlie the correlation between severely negative emotions and BPD.[3]

To qualify as a borderline personality disorder (BPD), a person must experience a pattern of insecurity and impulsivity. Inability to control emotions has been identified as the core feature of BPD and is responsible for a wide range of BPD behaviors (such as non-suicidal self-injury).[4] Some therapies reach this goal indirectly by assisting with relationships, as in transference-focused psychotherapy, while others target deep-seated thinking patterns. For example, in dialectical behavior therapy (DBT), clients are taught grounding skills, which can help them end dissociative episodes when they occur.[5]

The effectiveness of DBT for people with BPD was immediately apparent.[6] Currently, it is a standard course of treatment for patients with such disorders. The use of DBT on other mental health disorders has also proven to be beneficial,[7,8] including education on task tolerance,[9] stress tolerance,[10] positive and negative affections, aggressive behaviors and self-harm behavior,[11] and reducing depression and suicide attempts in borderline personality disorder.[12] One clinical study found that more than 75% of people with BPD no longer met the diagnostic criteria for the psychological condition after a year of treatment.[13] According to another study, interventions that included skills training as an essential component of treatment were more effective than DBT without skills training.[14]

In DBT, BPD as a disorder of the emotion regulation system characterized by BPD symptoms (such as self-injury, suicidality, dissociation, and substance abuse) viewed as dysfunctional coping mechanisms for dealing with emotional distress. Since DBT is primarily concerned with teaching patients better ways of controlling their stress and integrating them into their everyday lives, it focuses on teaching patients to regulate their distress more effectively.[14] DBT treatment increases specific behavioral skills used to deal with suicidal

behavior, depression, and anger. Neacsiu et al.[15] report that skill usage mediates change in suicidal behavior, depression, and anger control. A 20-week group of DBT-skills practitioners compared to an active control group in Zeifman et al.[16]. DBT skills training and post-treatment general psychopathology are related to an improvement in mindfulness and DTS, respectively. Moreover, DBT skills were described as helpful by patients with BPD who experienced emotions and reduced problem behavior such as self-harm and suicidality.[17]

While quantitative studies are essential for establishing DBT's general effectiveness and specific techniques, qualitative research can also assist in identifying mechanisms that support or hinder recovery within the DBT treatment process. Among the factors hindering patients from using skills, Barnicot et al.[18] examined ways to help patients overcome these barriers. Additionally, this type of research is crucial to practicing therapists, as it identifies factors that hinder or facilitate using skills.

This study examines the efficacy of dialectical behavior in reducing automatic negative thoughts and non-suicidal self-injury (NSSI) behaviors among adolescents with borderline personality disorder (BPD).

Materials and Methods

The semi-experiment includes pre-and post-tests and also controls and experimental groups. Twenty-four adolescents with borderline personality disorder residing in Tehran between 2019 and 2020 were studied. Through the Millon test and interpretation of the test and the DSM-V structured clinical interview, a psychologist in the treatment clinic (Masire sabz), district,[8] Tehran, identified them as borderline personality disorder clients. The experimental group consisted of 12 cases per group, and the control group consisted of 24 adolescents with borderline personality disorder. Then, we asked them to complete the research questionnaires at the pretest and post-test stages. Participant eligibility criteria include: 1) accuracy in reading and writing, 2) acceptance into an Iranian comprehensive health center, 3) residence in Tehran, and 4) physical ability to attend sessions. Another procedure excluded patients with an immediate need for treatment, who had consumed psychiatric medications previously, and those who refused to remain in the study did not participate in the research. Each participant received written information about the study's goals and procedures, as well as their right to leave the study at any time. This study ensured anonymity and confidentiality for all of its participants. We randomly divided the specimens into two groups of 12 people, one group for DBT and one for control. The subjects have provided consent for all analyses (control experiment) using the diagnostic tools outlined above. The DBT group sessions of one hour each and two sessions per week with full cooperation in meetings ended with the 12 sessions of one hour each. There were few changes to the DBT treatment protocol for borderline personality disorder when applied by the relevant faculty researcher on the project. Plasticizers in DBT therapy help reduce life-threatening behavior, reduce disruptive behavior, improve behavioral skills, and increase self-esteem. Providing a calm environment was considered essential to ensure correct responses, control the conditions, and prevent similar responses (The negative automatic thoughts' Questionnaire (ATQ), Inventory of Statements of Self-Injury).

A negative automatic thought questionnaire (ATQ): The automatic thoughts questionnaire (ATQ, Hollon and Kendall;[19]) is typically administered to adults with depression to assess the likelihood of negative automatic thoughts. This questionnaire was created for children in this study. Using 250 child patients in psychiatric inpatient settings (ages 6 to 13), the ATQ was evaluated for internal consistency and validity. It is a self-report measurement in which a set of 30 items is rated on a 5-point Likert scale. The respondent needs to indicate how often each thought has occurred in the past week (never=1 to always=5). It involves statements demonstrating different aspects of depression, such as demoralization, self-criticism, brooding rage, and interpersonal dissatisfaction, primarily based on traditional negative cognitions.[20] At the time of writing, the Persian version of ATQ held a high internal consistency rate (0.96).[21] We obtained a Cronbach's alpha coefficient of 0.85 for the scale in the present study.

The inventory of statements of self-injury: Klonsky and colleagues developed ISAS in 2008 and evaluated it on 235 college youth who had engaged in at least one instance of non-suicidal self-injury.[22,23] In the first part of the questionnaire, respondents will have the chance to rate deliberate behaviors without suicidal intent. These include cutting, biting, burning, pinching, hair plucking, intense scratching, hitting oneself against a surface (such as striking one's fist or head against the wall), preventing wound healing (such as scaling the scalp), rubbing the skin on a rough surface, needling the body, swallowing harmful objects, etc. Researchers asked participants to estimate the frequency of each behavior. Other questions in the descriptive section included the individual's age when the behavior began, whether pain occurred while performing self-injurious behavior, whether the behavior was performed frequently with others present, and whether the individual intended to stop the behavior. The second part assesses 13 self-injurious behaviors: affect regulation, interpersonal boundaries, self-punishment, self-care, anti-dissociation/feeling-generation, anti-suicide, sensation-seeking, peer-bonding, interpersonal influence, toughness, marking distress, revenge, and autonomy.[22,23] The relevancy of each function was classified into the following three categories: 0-not relevant (2 points), 1-somewhat relevant (4 points), and 2-very relevant (6 points). Consequently, the self-harming behavior score for each of the 13 could range from two to six.[22,23] Among the other countries that have received localized versions of the questionnaire are Turkey, Sweden, and Australia.[24,25]

Dialectical behavior therapy is a structured cognitive-behavioral treatment initially designed to treat chronically suicidal patients suffering from BPD. The approach relies on a theory of emotion dysregulation derived from biosocial research. According to BPD, emotional dysregulation is the result of biological vulnerability coupled with invalidating environments during childhood. "Dialectical" is the theory of reality defining the nature of logic, interaction, and relationships. Dialectical behavior therapy relies on dialectics, from conceptualizing emotional dysregulation to applying core DBT strategies. DBT, for instance, emphasizes the importance of balancing acceptance and change. The difference between

change-oriented strategies like psychology and contingency management and acceptance-oriented strategies like mindfulness in interventions is that change-oriented strategies will influence behavioral change. Borderline personality disorder adolescents can both accept the world the way it is and changing patterns of behavior that require changing by developing these skills.[14]

Evaluation of the data was performed using SPSS 23.0. It expressed qualitative data as percent and quantitative data as mean (standard deviation). The variables in the analysis were tested via one-way ANOVA. There was a statistically significant difference at Pvalue<0.05. Using one-way analysis of variance, it can be determined that Before examining the correlation coefficients from One-way analysis of variance, Levine's test was tested.

Results

In total, twenty-four borderline personality disordered adolescents took part in the qualitative analysis. It is calculated that the average age is (M=17.50 * SD=6.71).

In the as can be seen in table 2, the mean scores of automatic negative thoughts and non-suicidal self-injury in the experimental group in the post-test stage are higher than the pre-test scores.

As table 3, before performing one-way ANOVA, the presumption of homogeneous variation between the groups was tested using Levene's test on automatic negative thoughts (Pvalue=0.42) and non-suicidal self-injury (Pvalue=0.33). Results of Levene's test indicated that the presumption of equal variances held. As a consequence, the one-way ANOVA assumptions are true and can be used.

According to the findings table 4, the score of automatic negative thoughts and non-suicidal self-injury in the intervention group increased after the intervention training (Pvalue<0.001).

Table 1. Titles of sessions of dialectical behavior therapy

Session	Activities
Session 1	Introducing group members to each other and detailing how to work and plan for future meetings and assignments of each group member
Session 2	Mindfulness skills training and the first skill of this group to be trained is a rational mind
Session 3	Mindfulness skills training and the second skill of this group being trained is the emotional mind
Session 4	Mindfulness skills training and the third skill of this group that is being trained is wise mind
Session 5	Teaching first-class skills of mindfulness that includes the "what" skills class that involves observing, describing, and participating
Session 6	Teaching Second-class skills of mindfulness , which includes the "how" skill class, which includes being non-judgmental- mindfulness itself and working effectively
Session 7	Effective interpersonal skills training that includes strengthening the skills of saying no - the ability to maintain relationships and maintain self-respect
Session 8	Training for distress tolerance skills (aggression and self-harm) that involves both activity and participation skills
Session 9	Training for distress tolerance skills which include two skills of comparison and emotion
Session 10	Training for distress tolerance skills which include three subsidence skills-thoughts-senses
Session 11	Training emotion regulation skills, reducing emotional distress and improving positive emotions
Session 12	Summary of group discussions and answers to group questions

Table 2. Frequency, mean, standard deviation, minimum and maximum scores obtained in pre-test and post-test

Variables	Sub-groups	Groups	Mean±SD	Min	Max
Automatic negative thoughts	Experimental	Pre-test	20.4±3.45	17	34
		Post-test	24±5.8	18	21
	Control	Pre-test	20.65±3.30	13	28
		Post-test	21.7±3.52	15	30
Non-suicidal self-injury (NSSI)	Experimental	Pre-test	19.6±3.45	17	35
		Post-test	24±5.8	18	21
	Control	Pre-test	20.65±4.30	13	32
		Post-test	21.7±3.52	15	40

Table 3. Levene's test to ensure homogeneity of mental health variances

Variables	F	DF1	DF2	Pvalue
Automatic negative thoughts	1.45	5	131220.00	0.42
Non-suicidal self-injury (NSSI)	1.45	5	121320.00	0.33

Table 4. Results of ANOVA test in experimental and control groups with control of pre-test effect

Variables	Source of change	Sum of square	Degree of freedom	Mean Square	F	Pvalue
Automatic negative thoughts	Pre-test	565.100	1	565.100	331.1	0.001
	Group	366.176	1	366.176	282.5	0.001
	Error	81.00	34	81.00		
Non-suicidal self-injury (NSSI)	Pre-test	765.100	1	765.100	431. 4	0.001
	Group	466.176	1	466.176	352. 6	0.001
	Error	76.00	34	76.00		

Discussion

In this study, we examined the effectiveness of the condensed dialectical behavior technique in reducing automatic negative thoughts and non-suicidal self-injury (NSSI) behaviors among people with borderline personality disorder (BPD). According to the present study, the interventions effectively improved automatic negative thoughts or non-suicidal self-injury behaviors (NSSI).

Although non-suicidal self-injury (NSSI), in general, is common among adolescents with borderline personality disorder (BPD), no study attempted to account for the combined effect of automatic negative thoughts and NSSI. In some studies, self-injury that did not involve suicide showed an association with automatic negative thoughts. For instance, an overview of all published RCTs aimed at reducing suicidal thoughts showed that DBT was effective for the treatment of self-harm but not for the treatment of suicidal ideation.[26] As well as thinking in extremes, BPD patients tend to make irrational decisions. It can lead to "splitting," a state of inability to maintain one's identity and self-concept. The excessive thinking patterns exhibited by borderline personalities make them prone to automatically thinking negative thoughts.[10]

To describe the therapeutic effects of dialectical behavior therapy, one can say it consists of four primary treatment stages. In stage 2, the focus is on improving emotional regulation and self-management. The effects of mindfulness training have also been observed in cognitive flexibility, planning, and problem-solving. [27]Study results showed that DBT decreased automatic negative thoughts in adolescents with BPD by improving executive functions, emotion regulation, and mindfulness.[28] Furthermore, it has been reported that patients with BPD are more likely to favor negative information. Beck[29,30] claims that such cognitive biases contribute to emotional disorders and interfere with treatment outcomes. As biased thinking is assumed to be central to BPD, it is vitally important to understand how cognitive biases might change as treatment progresses and how these changes relate to BPD symptoms.[10]

The results of Kothgassner et al. (2021) agree with our findings, showing that DBT is effective in reducing both self-harm and suicidal ideation in adolescents.[10] Giovanni et al. (2021), in their study, applied 16 sessions of DBT to 28 patients with BPD who attended a mental health service. Measures of trouble regulating emotions and impulsivity were obtained with the difficulties in emotion regulation scale (DERS) and barratt impulsiveness scale (BIS-11). After completing DBT, 17 patients reported reduced levels of emotion dysregulation and impulsivity compared to baseline. Based on the findings of this preliminary pilot study, DBT may be feasible and effective for patients with BPD receiving adult mental health services in Italy.[7]

The study by Afshari et al. demonstrated that the CBT group significantly reduced symptoms of depression and anxiety during the study period, while the DBT group showed significant improvements in emotion regulation and mindfulness. The results from the study suggest that, even though CBT reduced symptoms of anxiety and depression more than DBT, the latter improved emotional regulation and mindfulness more than CBT. This study has significant implications for psychological treatment and future research into these treatments.[28]

In addition, results indicated that higher thought suppression mediated the relationship between negative affect, intensity/reactivity, and BPD symptoms. In summary, the relationship between intense negative emotions and BPD symptoms is likely a consequence of chronic efforts to suppress unpleasant thoughts.[27] A cognitive-behavioral therapy that focuses on enhancing mood regulation, distress tolerance, and building a life worth living, dialectical behavioral therapy targets engagement, self-harm reduction, and reduction of suicide attempts. Concerning its effectiveness as a therapy for adults, DBT has demonstrated promising results for helping suicidal youths.[31]

At present, DBT has considerable evidence for its use in treating adolescents with NSSI, compared with other psychotherapies (including family therapy), and somatic interventions (such as nutritional supplements and neuromodulation) are also under investigation. Comorbid psychiatric conditions are identified and treated, and psychosocial issues, including family dynamics, must be addressed. Children and adolescents can benefit drastically from healthy connections with strong supportive networks (parents, teachers, coaches, etc.). These connections are crucial to their health and safety. When caring for a child with NSSI, a clinician can also instill hope, model resilient behavior in the face of setbacks, and maintain the focus of complete remission and restoring healthy brain development.[32]

In addition, the many target groups, methods, strategies, and types of therapeutic interventions that are a part of this program directly impact the reduction of NSSI and suicide among BPD patients. While achieving similar efficacy, different therapeutic models have consistently sought to improve quality of life.[33] In this study, due to time constraints, there is no possibility of pairing two groups based on clinical characteristics (such as predominant symptoms, the disease duration, and related diseases) and demographic characteristics (such as gender, economic and marital status). For future studies to become more statistically valid, larger samples and follow-up testing are required to maximize statistics and generalize the results.

It can be concluded that dialectical behavior therapy was effective on automatic negative thoughts and non-suicidal self-injury (NSSI) behavior among borderline personality disorder adolescents.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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