



The Effectiveness of Dialectical Behavior Therapy on Emotional Processing Defects and Impulsivity of Soldiers Aged 18 to 20 Years with High-risk Behaviors

Zahra Sadat Shamsnajafi ¹, Ramazan Hassanzadeh ^{1,*} and Seyedeh Olia Emadian ¹

¹Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran

*Corresponding author: Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran. Email: rhassanzadehd@yahoo.com

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Abstract

Background: Faulty emotional strategies are one of the most crucial indicators of dangerous behavior.

Objectives: This study aimed to evaluate the effectiveness of dialectical behavior therapy (DBT) on emotional processing defects and impulsivity of soldiers aged 18 to 20 years with high-risk behaviors.

Methods: The method of the present study was quasi-experimental with a pre-test-post-test design. The statistical population of this study included all soldiers aged 18 to 20 years referred to Valiasr Medical Center in Tehran in 2020. The research sample included 30 soldiers with high-risk behaviors who were selected purposefully and randomly assigned to two groups (15 people in the experimental group and 15 people in the control group). To collect data, the high-risk behaviors Scale (IARS), Barrett's Impulsiveness scale, and the Toronto Alexithymia Scale (TAS-20) was used. The experimental group underwent ten sessions of DBT, and the control group did not receive any treatment. Data were analyzed using multivariate analysis of covariance and SPSS-23 software. The significance level of the tests was considered 0.05.

Results: The results of this study showed that the intervention and control groups had statistically significant differences in terms of emotional processing ($P < 0.01$) and impulsivity ($P < 0.05$) after the intervention of dialectical behavior therapy.

Conclusions: Based on the findings of the present study, it can be concluded that dialectical behavioral therapy can be used along with other treatments to reduce the problems of soldiers with high-risk behaviors.

Keywords: Dialectical Behavior Therapy, Emotional Processing Defects, High-risk Behaviors

1. Background

High-risk behaviors are behaviors that endanger the health and well-being of teenagers, young people, and other members of society. Risky behaviors are the most important factor in jeopardizing society's health. At the moment, the prevalence of risky behaviors, especially among teenagers and young people, has become one of the most important and widespread concerns of human societies, and despite the activities of the past three decades, risky behaviors have grown exponentially in the world (1). High-risk behaviors include drug use, smoking, alcohol consumption, dangerous driving, and high-risk sexual behaviors that are common among school-age children and adolescents (2).

Since high-risk behaviors are related to emotion, various studies on high-risk behaviors focus on emotion and its expression. Studies have shown that emotionally capable people recognize their feelings, understand their im-

plications, and express their emotional states more effectively to others (3, 4). Compared to people who cannot understand and express emotional states, these people are more successful in dealing with negative experiences and show more appropriate adaptation to the environment and others (5). There seems to be a significant relationship between defects in emotional processing and high-risk behaviors. Researchers have shown that the tendency to engage in risky behaviors can be a way to reduce unpleasant emotions (6, 7). When a person cannot use appropriate and problem-oriented strategies to deal with their annoying emotions or does not have a proper understanding of their emotions, they will inevitably resort to behaviors and actions with undesirable results to modify or change them (8). In fact, in such situations, high-risk behaviors become a kind of emotional regulation strategy that helps the person to escape from a difficult situation or to forget and adjust to an unpleasant inner state (9).

Among other factors directly related to high-risk behaviors is impulsivity (10). Impulsive behaviors are sometimes called risky behaviors, which include a wide range of actions on which there is little thought, in an immature form with the immediate occurrence, without the ability to focus on a specific task, in the absence of proper planning, they occur and have high-risk (11). A review of studies on impulsivity shows that impulsive behaviors are at the core of many mental disorders, such as hyperactivity/attention deficit disorder, conduct disorder, impulse control disorder, substance abuse, bulimia, suicidal behavior, personality disorders, and high-risk behaviors (10, 12).

Dialectical behavior therapy (DBT) is a treatment that can be effective in cognitive impairments, emotional processing deficits, and impulsivity in soldiers with high-risk behavior (13). The positive effects of DBT in the last decade have made researchers apply it to teenagers. Theoretical foundations suggest that this treatment is likely to be beneficial for adolescents. The DBT guide for adolescents provides the same basic structure as the standard, plus some positive changes for adolescents, including shortening the length of therapy and adapting it to the needs of the adolescent (14, 15). In fact, DBT is specifically designed to teach adaptive emotion regulation skills and to target behaviors that result from emotional dysregulation. As a result, considering that emotions are closely related to high-risk behaviors and DBT focuses on regulating emotions, this therapeutic approach seems effective in reducing high-risk behaviors (14). Studies have shown that DBT skills alone lead to the reduction of social damage, despair, and psychological distress in victims of family abuse (14-16). Babaei et al. showed that teaching emotion regulation skills based on DBT to the subjects significantly reduced temptation scores on the scale of tempting ideas. So the scores significantly decreased during the ten sessions of the educational intervention compared to the baseline scores (17).

2. Objectives

Considering the high prevalence of risky behaviors among teenagers, irreparable injuries from high-risk behaviors, and the financial costs of altering behavior, the aim of this study was to evaluate the effectiveness of DBT on emotional processing defects and impulsivity of soldiers aged 18 to 20 years with high-risk behaviors.

3. Methods

The method of the current research was semi-experimental with a pre-test-post-test design. The statistical population included all young soldiers aged 18 to

20 who were referred to Valiasr Medical Center in Tehran in 2020. The sample selection process in the present study comprised two stages: The first stage was performed by the purposeful sampling of the high-risk behavior scale to identify soldiers with risky behaviors who were referred to Valiasr Medical Center in Tehran. Among the people who scored higher than 60%, 30 people were selected based on the completion of the research participation consent form and the inclusion and exclusion criteria and were assigned to two groups (15 people in the experimental group and 15 people in the control group) by a simple random method. The specified sample size was selected based on G*Power statistical software with an effect size of 85%, a significance level of 0.05, and a test power of 0.8 (18). The inclusion criteria include (1) Soldier aged 18 to 20 referring to the Valiasr Medical Center in Tehran, (2) Willingness to participate in the study, (3) Obtaining a high score in the high-risk behavior scale of Iranian teenagers, and (4) Not suffering from acute mental disorders such as bipolar disorder and schizophrenia. The exclusion criteria consist of (1) absence in more than one intervention session; (2) participating simultaneously in other intervention programs; and (3) unwillingness to participate in the study.

The Following Tools Were Used to Collect Data:

3.1. Iranian Adolescents Risk Scale (IARS) (2011)

This scale was created by Zadeh-Mohammadi and Ahmadabadi in 2011. The 38-item scale measures adolescents' vulnerability to seven high-risk behaviors. The range of scores varies from 38 to 190, and the cut-off score of the scale is a score higher than 50%, i.e., higher than 76. In their research, Cronbach's alpha of the scale was 0.74, 0.90 for drugs, 0.78 for violence, 0.83 for friendship with the opposite sex behavior, 0.87 for sexual relationship, and 0.85 for the whole scale (19).

3.2. Toronto Alexithymia Scale 20 (TAS-20)

This scale is a revised version of the Toronto Aphasia, designed in 1994 by Bagby, Parker, and Taylor, and has 20 questions (20). Besharat also obtained Cronbach's alpha coefficient of 0.85 for the whole alexithymia scale (21). Mazaheri, in a sample of 80 students, found the reliability of this scale was 0.75 using Cronbach's alpha method (22). It should be noted that Cronbach's alpha coefficient for the mentioned scale in the present study was 0.81.

3.3. Barrett's Impulsiveness Scale

This impulsiveness scale was created by Barratt in 1994. Subjects answered these items in five grades (never = 1, sometimes = 2, often = 3, almost = 4, and always = 5) (22). A high score on this scale means more impulsivity. This scale

has four subscales, which are distraction, memory problems, inadvertent mistakes, and not remembering names. The reliability of the scale was obtained by Barratt using Cronbach's alpha of 0.83 for the whole test (23). In Iran, Ekhtiari et al. reported the reliability of this tool using alpha coefficient of 0.83 for the whole test (24). It should be noted that Cronbach's alpha coefficient was 0.85 for the mentioned scale in the present study.

Then the form of moral satisfaction (For example, we can refer to the optionality of the company in the research, the right to withdraw from the study, the harmlessness of the intervention, answering questions, and making the results available if desired) of participating in the research was presented to them for signing. The subjects in the experimental group were affected by independent variables (DBT) for ten sessions. A summary of the topics of the training sessions is presented in Table 1. These DBT sessions were compiled by the researcher using reliable sources (25, 26), and their validity was confirmed by experts in the field of DBT.

4. Results

The results of the analysis of demographic findings in 30 subjects indicate that the mean (and standard deviation) age of the subjects was 19.16 ± 9.97 and 18.31 ± 8.18 in the experimental and control groups, respectively. Because the military period is short, and some soldiers finished their service period after the treatment sessions, it was difficult to reach them; therefore, the follow-up period was not performed. The information on the socioeconomic status of individuals is listed in two groups (Table 2).

According to the results of the Kolmogorov-Smirnov test, the data of all variables are normal ($P > 0.05$). In order to check the homogeneity of the variance of the research variables, Levene's error parity test was used; the results showed that the condition of homogeneity of the variance was established. Also, Box's M was used to check the equality of the covariance matrix; the results showed that the condition was met ($P > 0.05$). The results of Wilks' Lambda test showed that the effectiveness of DBT is significant in at least the variables ($F = 12.128$, $P < 0.001$). The defects in emotional processing and impulsivity were different in the pre-test and post-test in the experimental group ($P < 0.05$) (Table 3).

According to the results of the multivariate analysis of covariance, considering the pre-test scores as confusion scores, the impairments of emotional processing and impulsivity were significantly different in the experimental and control groups ($P < 0.05$) (Table 4). Therefore, it can

be said that according to the effect size in each of the variables of emotional processing defects (0.679) and impulsivity (0.287), the changes are explained according to the DBT intervention.

5. Discussion

The aim of this study was to determine the effect of DBT on the emotional processing defects and impulsivity of soldiers aged 18 to 20 years with high-risk behaviors.

Based on the first finding of this study, it was found that DBT has significantly reduced emotional dysfunction, which is consistent with the results of Salemi Khameneh et al. (27) and Rezaei (28). In this regard, Baigan et al. (29) confirmed the effectiveness of this intervention on dysphonia mood by examining DBT. In another study, Rezaei Showed that DBT significantly affected patients' emotional strategies (28). Salemi Khameneh et al. showed that DBT training improved emotion regulation and positive emotion. Also, it reduced aggressive behavior and self-harm in 13 to 16 female students (27). On the other hand, DBT is presented as a supportive therapy, so it requires a strong joint relationship between the client and the therapist, and the therapist currently teaches and reinforces adaptive behaviors to the client. Therefore, this treatment can be effective in reducing your high-risk behaviors. It can be concluded that one cause of the tendency to high-risk behaviors, such as drug use, is faulty emotional strategies, and the use of drugs is a form of external guidance for emotional regulation. But after a period when substance use replaces the person's dysfunctional emotion regulation strategies, the brain structures of emotion regulation become inactive. As a result, their reactivation requires interventions, some of which can be realized in DBT. Also, because of the common areas and high overlap that exist in knowledge and emotional regulation, it can be expected that intervention in DBT can reduce emotional deficiencies through emotion regulation strategies. In a study, Neacsu et al. (30) found that teaching DBT skills improved emotional regulation. When a person cannot express his/her negative emotions verbally, the psychological components of emotion and anxiety systems, such as depression, anxiety, and anger, are activated. People learn to know their feelings and emotions, express their emotional states effectively, and face them effectively when facing adversity and life problems by DBT. Also, because of the common ground and high overlap in the theoretical foundations of DBT and emotional regulation, it can be expected that intervention in DBT can reduce emotional dysfunction through emotion regulation strategies (30).

Based on another finding of this study, it was found that DBT significantly reduced the impulsivity of soldiers.

Table 1. Content of DBT Sessions

Sessions	Content of Each Session
First session	Initial acquaintance, stating the purpose of the meetings, their duration, the number of meetings, and conducting the pre-test.
Second session	Overcoming barriers to healthy emotions and giving the skill hope.
Third session	Reducing physical vulnerability to disturbing emotions and how people's thoughts and behaviors can affect their emotions.
Fourth session	Reducing cognitive vulnerability and understanding how thoughts affect emotions.
Fifth session	Increasing positive emotions and overcoming negative emotions.
Sixth session	Conscious attention to emotions without judgment (learning to control conscious attention to emotions without judging them).
Seventh session	Conscious attention to non-judgmental emotions (learning to control conscious attention to emotions without judgment).
Eighth session	Acting against the intense desires of excitement and why we need to understand how we feel.
Ninth session	The problem-solving process begins with behavior analysis, and behavior analysis basically means following a series of events that lead to problem-solving emotions.
Tenth session	Reviewing and summarizing past material and performing post-test.

Table 2. Socioeconomic Status in The Experimental and Control Groups^a

Group	Upper Class	Upper Middle Class	Lower Middle Class	Upper Lower Class	Very Upper Lower Class	P-Value
Experiment control						0.68
	6.66 (1 person)	20 (3)	40 (6)	20 (3)	13.33 (2)	
	13.33 (2 person)	20 (3)	33.33 (5)	13.33 (2)	20 (3)	

^a Values are presented as No. (%)

Table 3. Mean and Standard Deviation of Pre-test and Post-test of Emotional Processing and Impulsivity in Two Groups

Variables	Mean ± SD		P-Value
	Experimental	Control	
Emotional processing defects			
Pre-test	84.000 ± 6.164	84.666 ± 6.873	0.970
Post-test	71.266 ± 4.651	85.533 ± 6.665	0.000
Impulsivity			
Pre-test	117.933 ± 3.936	107.933 ± 2.963	0.082
Post-test	109.266 ± 4.043	105.666 ± 4.730	0.010

Table 4. Summary of Results of Repeated Measures Analysis of Variance Test for Clinical Indicators

Variables	Sum of Squares	df	Mean Square	F	P-Value	Effect Size
Emotional processing defects	1546.660	2	733.330	28.581	< 0.001	0.679
Impulsivity	456.242	2	91.621	5.422	0.010	0.287

The study of research background shows that the present finding is in line with previous studies (31, 32). Also, researches on the effectiveness of DBT show that the findings are in line with the studies of van den Bosch et al. (32) and Harvey et al. (33). In the explanation of this finding, it can be said that there is a direct reduction of impulsivity in soldiers that is due to the training of emotion regulation strategies, which leads to less exposure to interpersonal conflicts and experiencing negative emotions. It

can also be done indirectly through increasing the psychological health of people. The DBT is the science of achieving behavioral stability and emotional processing. It also prevents the return of dependence by focusing on emotional regulation through the selection of coping strategies and emotional strategies. Change, motivation to continue treatment, and attention awareness are used in high-risk situations. Further, DBT focuses on a person's maladaptive behaviors as an action to regulate or eliminate un-

wanted emotions by helping the person achieve goals, better regulate emotions, deal with feelings, increase a sense of personal identity, and improve judgment. Moreover, it improves observation skills and reduces the feeling of crisis in life, and is effective with the skills of attention awareness, interpersonal efficiency, emotion regulation, and anxiety tolerance (34).

5.1. Conclusions

Based on the findings of the present study, it can be concluded that DBT can be used along with other treatments to reduce the problems of soldiers with high-risk behaviors. Thus, because of the effectiveness of dialectical therapies on emotional disorders and impulsivity of soldiers with high-risk behavior, it is suggested that military centers, especially those that intervene in the mental health of soldiers, use this treatment to increase the soldiers' mental health and reduce their risky behaviors.

5.2. Limitation

Among the limitations of the research, the tools used in collecting the research data included only the scale, so individuals may not reflect some facts about themselves properly for various reasons. Another limitation of this study was the conflict with the difficult conditions of the Corona and the need to observe social distance and observance of health guidelines, which made the research slow and difficult. Unfortunately, due to the special conditions of the soldiers and limited access due to discharge, transfer, and vacations, it was not possible to complete the follow-up course.

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Footnotes

Authors' Contribution: All authors have participated in the design, implementation, and writing of all sections of the present study.

Conflict of Interests: The authors declare that there is no conflict of interests.

Data Reproducibility: All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

Ethical Approval: The information of this research, with the ethics code number [IR.IAU.SARI.REC.1400.034](https://doi.org/10.13063/IR.IAU.SARI.REC.1400.034), is available in the system of the specialized Committee of Ethics in Biomedical Research.

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Informed Consent: It should be noted that the subjects were assured that participation in the study is completely voluntary, and they will be free to refuse to participate in the study, and their names will not be recorded in the questionnaire. Also, their information will remain confidential. In addition, written informed consent was signed by the participants before the study.

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