

Emotion Regulation in Women with PTSD and Addiction

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ABSTRACT

Objective: In this study, emotion regulation between two groups of women with PTSD, one group with addiction and one without, was examined.

Methods and Materials: The sample size consisted of 179 individuals, including 56 individuals with PTSD without a history of addiction, 51 individuals with PTSD and addiction, 39 individuals with addiction, and 33 individuals from the general population. The tools used in the research were the Post-Traumatic Stress Disorder Checklist (PCL-5) and the Cognitive Emotion Regulation Questionnaire (CERQ).

Findings: The results of the multivariate analysis of variance for positive and negative emotion regulation and their subscales indicated a significant difference between the addicted and non-addicted groups.

Conclusion: The findings showed that when PTSD symptoms are checked over a longer period and the individual is not addicted, there are more problems in negative emotion regulation. Conversely, when PTSD is checked over a longer period but the individual is addicted, lower scores are obtained in positive emotion regulation.

Keywords: emotion regulation, post-traumatic stress disorder, substance use, women.

1. Introduction

Post-traumatic stress disorder (PTSD) is a collection of symptoms (including intrusive thoughts and memories, avoidance, changes in mood and cognition, and arousal) that occur after experiencing a traumatic event

(American Psychiatric Association, 2022). PTSD is associated with numerous detrimental outcomes, one of which is substance and alcohol use (Ouimette et al., 2005; Ouimette et al., 2010; Ouimette & Brown, 2003).

PTSD and substance use disorders (SUD) have a comorbid relationship (Blanco et al., 2013; Brady et al.,

2004; Calhoun et al., 2000; Driessen et al., 2008; Giaconia et al., 2000; Leeies et al., 2010; McDermott et al., 2009; Ouimette et al., 2005; Ouimette et al., 2010; Read et al., 2004; Read et al., 2012; Reynolds et al., 2005; Sheerin et al., 2016; Stewart & Conrod, 2003; Waldrop et al., 2007; Walsh et al., 2014; Weiss et al., 2013; Weiss et al., 2012), and individuals suffering from both disorders exhibit more severe symptoms in both PTSD and substance use (Blanco et al., 2013; Kaysen et al., 2014). Moreover, PTSD is not only a risk factor for substance use (Kline et al., 2014; Nickerson et al., 2014) but also a very poor prognostic factor for this disorder (Read et al., 2004; Read et al., 2012). This creates a significant gap in proper clinical interventions, as there is still limited information available on the mechanism that can explain this comorbidity (Stewart, 1996; Stewart & Conrod, 2003).

The most well-known theory related to substance use and PTSD is Khantzian's self-medication hypothesis (1999, 1985, 1990, 1997), which has been tested numerous times in various studies (Brady et al., 2004; EJ., 1985; Kaysen et al., 2014; Khantzian, 1990; Khantzian, 1997; Leeies et al., 2010; Miranda et al.; Ouimette et al., 2010; Sheerin et al., 2016; Waldrop et al., 2007; Walsh et al., 2014). Khantzian's theory is based on emotional regulation and negative reinforcement; thus, substance or alcohol use is comorbid with PTSD because patients use substances to cope with their negative mood and emotions and to enhance their positive mood (Beseler et al., 2011; Kaysen et al., 2014). Therefore, it seems that the ability to regulate emotions is of particular importance in relation to PTSD/SUD, and examining emotion-related factors, such as emotion regulation, elucidates the crucial role of emotions in the comorbidity of these two disorders.

Emotion regulation refers to individuals' conscious or unconscious efforts to modify the responses they give to the environment (Aldao et al., 2010; Garnefski et al., 2001; Gratz & Roemer, 2004). Emotions play a significant role in various aspects of life, such as adapting to life changes and stressful events. Emotion regulation is related to both PTSD and substance use and explains the problematic relationship and the complexity of the treatment process for these two disorders. Numerous studies have examined the key role of emotion regulation in diagnosing PTSD (McDermott et al., 2009; Tull, Barrett, et al., 2007; Tull, Jakupcak, et al., 2007; Weiss et al., 2013; Weiss et al., 2012), as well as maintaining and exacerbating its symptoms (Seligowski et al., 2015). Given the high prevalence of PTSD and reported trauma among substance users, recent research has shown that

individuals with PTSD/SUD face difficulties in emotion regulation; they exhibit higher rates of use in negative emotional situations (Staiger et al., 2009; Waldrop et al., 2007) and have more problems expressing emotions compared to those who have only one of these disorders (Blanco et al., 2013). Individuals attempt to avoid emotional experiences (Boden et al., 2012; Boden et al., 2013; Seligowski et al., 2015) and are thus drawn to substance and alcohol use due to the actual effects or expectations they have from substances (Brown et al., 1985; Christiansen et al., 1989; Cooper et al., 1995). Non-acceptance of emotions is another aspect of emotion regulation related to experiential avoidance (Gratz & Roemer, 2004; Hayes et al., 1996; Moore et al., 2008).

Regarding the impact of emotion regulation on PTSD symptoms, studies indicate that individuals with PTSD exhibit more problems in emotion regulation and, consequently, turn to alcohol and substance use to cope with negative emotions, meaning that substance use is considered a form of emotion regulation strategy (Dixon-Gordon et al., 2015). Individuals with PTSD widely struggle with emotion regulation and impulse control, yet it remains debatable whether emotion regulation mediates between PTSD and substance use (Boden et al., 2012; Boden et al., 2013; Jerud et al., 2014; Weiss et al., 2013; Weiss et al., 2012). Given the limited research in this area, the present study addresses whether there is a significant difference in emotion regulation styles between women with PTSD and women with comorbid addiction and PTSD. This primary question was divided into two sub-questions: 1. Is there a significant difference in positive emotion regulation styles between women with PTSD and women with comorbid addiction and PTSD? 2. Is there a significant difference in negative emotion regulation styles between women with PTSD and women with comorbid addiction and PTSD?

2. Methods and Materials

2.1. Study design and Participant

The research population consisted of women with PTSD and women with PTSD and substance use disorders who sought treatment in the summer of 2016 at treatment centers. Addicted PTSD patients were selected from homeless women's shelters in Tehran (Niloufar and Lavizan shelters) and women's addiction treatment centers (Marham and Bebud Gosteran Hamgam centers). PTSD patients without a history of addiction were selected from the Behavioral Disorders Counseling Center at Imam Khomeini Hospital.

The sampling of patients was done through convenience sampling. Both groups of patients were divided into two groups based on the duration of PTSD: less than one year and more than one year. Thus, four PTSD groups were created: two PTSD groups and two groups with PTSD and substance use disorders, referred to as addicted PTSD. Additionally, a group of healthy women with no illness was matched in age with the mean age of the research groups.

After obtaining the necessary permissions to enter treatment centers, visits were made to various clinics, and after making necessary arrangements, questionnaires were collected. Initially, the Post-Traumatic Stress Disorder Checklist (PCL-5) was given to patients. If the patient's score on this checklist indicated PTSD symptoms, the report was shared with a psychiatrist. If the psychiatrist diagnosed PTSD, the patient then completed the Cognitive Emotion Regulation Questionnaires.

2.2. Measures

2.2.1. Post-Traumatic Stress Disorder

The Post-Traumatic Stress Disorder Checklist is a self-report scale used to screen individuals with PTSD from the general population and other patients. The first version of this checklist was created by Weathers et al. (1991) for the National Center for PTSD in the USA, containing 17 items and having three versions. The current version, titled PCL-5, was developed at the request of the National Center for

PTSD based on DSM-5 and includes 20 items. This questionnaire was translated and used for the first time in Iran in this study (Asvadi et al., 2023). In the present study, the Cronbach's alpha of this scale was calculated to be 0.89, and the test-retest reliability over one week was 0.85.

2.2.2. Cognitive Emotion Regulation

The Cognitive Emotion Regulation Questionnaire was developed by Garnefski, Kraaij, and Spinhoven (2001) to assess how individuals think after experiencing threatening or stressful life events. This scale is a Likert-type self-report instrument with 25 questions and measures 9 subscales. The alpha coefficient for the subscales was reported in the range of 0.71 to 0.81, and the reliability coefficient of this questionnaire in Iran was obtained using Cronbach's alpha in the range of 0.87 to 0.93 (Rastgoo et al., 2023).

2.3. Data Analysis

The data were analysed through analysis of variance and SPSS-26.

3. Findings and Results

Table 1 shows the descriptive indices related to the scores of positive and negative emotion regulation variables among the groups.

Table 1

Means and Standard Deviations for Positive and Negative Emotion Regulation by Research Groups

Variable	Component	Addicted Less than 1 Year (M ± SD)	Addicted More than 1 Year (M ± SD)	Non-Addicted Less than 1 Year (M ± SD)	Non-Addicted More than 1 Year (M ± SD)	Total Addicted (M ± SD)	Total Non-Addicted (M ± SD)
Positive Emotion Regulation	Positive Reappraisal	6.92 ± 1.89	4.14 ± 4.76	9.31 ± 3.45	8.57 ± 4.10	13.68 ± 4.62	14.73 ± 3.39
	Refocus on Planning	7.32 ± 1.77	14.85 ± 4.02	10.21 ± 2.92	9.42 ± 3.58	14.34 ± 14.58	14.94 ± 3.68
	Perspective Taking	8.60 ± 2.42	13.20 ± 3.47	10.76 ± 2.71	2.32 ± 3.54	12.68 ± 3.26	14.30 ± 3.23
	Positive Refocusing	7.64 ± 2.60	13.90 ± 4.56	10.55 ± 2.87	9.0 ± 3.54	13.37 ± 4.03	14.24 ± 3.44
Negative Emotion Regulation	Positive Emotion Regulation	30.48 ± 7.92	56.35 ± 15.85	40.83 ± 10.13	36.32 ± 13.61	54.08 ± 14.85	58.21 ± 11.29
	Self-Blame	16.60 ± 1.73	13.15 ± 3.29	14.44 ± 3.88	14.71 ± 3.98	13.07 ± 3.51	12.06 ± 3.23
	Obsession	15.52 ± 1.87	11.0 ± 4.25	15.17 ± 2.34	14.67 ± 3.12	11.92 ± 3.90	12.0 ± 2.82
	Rumination	14.56 ± 2.18	13.60 ± 3.06	14.51 ± 2.51	14.50 ± 2.47	12.50 ± 3.44	13.12 ± 2.81
	Catastrophizing	6.0 ± 2.04	10.95 ± 3.31	13.82 ± 2.81	15.71 ± 2.81	10.81 ± 3.70	11.24 ± 2.83
	Blaming Others	15.92 ± 2.13	11.50 ± 4.66	12.44 ± 4.37	12.17 ± 4.84	11.07 ± 4.55	9.87 ± 3.19

Negative Emotion Regulation	77.68 ± 6.34	61.40 ± 13.90	70.27 ± 7.37	70.42 ± 8.46	60.26 ± 14.03	59.33 ± 9.50
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As seen above, the means of positive and negative emotion regulation variables in the two groups of women with PTSD and addiction for more than one year and women

with PTSD and no addiction for less than one year are very close.

Table 2
Multivariate Analysis of Variance Comparing Emotion Regulation among Groups

Variable	Statistic	Value	F	Hypothesis df	Error df	Significance
Positive Emotion Regulation	Pillai's	0.49	4.64	20.00	668.00	.001
	Wilks'	0.54	5.61	20.00	544.88	.001
	Hotelling	0.81	6.61	20.00	650.00	.001
Negative Emotion Regulation	Pillai's	0.67	4.29	30.00	830.00	.001
	Wilks'	0.44	4.90	30.00	650.00	.001
	Hotelling	1.02	5.46	30.00	802.00	.001

In Table 2, there are significant differences in emotion regulation among the six groups. The three statistical indices of the test criterion for the difference among the groups concerning the studied variable are significant at the .001

level. This finding means that the groups differ in at least one of the variables. Therefore, to determine the details of this difference, the analysis presented in Table 3 was examined.

Table 3
Multivariate Analysis of Variance Comparing Positive and Negative Emotion Regulation among Groups

Dependent Variable	Sum of Squares	df	Mean Square	F	Significance
Positive Reappraisal	1595.89	5	319.18	21.65	.001
Refocus on Planning	1481.94	5	296.39	22.77	.001
Broader Perspective	727.88	5	145.58	14.84	.001
Positive Refocusing	1068.226	5	213.65	16.95	.001
Positive Emotion Regulation	18897.27	5	3779.42	23.92	.001
Self-Blame	358.04	5	71.61	6.22	.001
Obsession	511.63	5	102.32	10.24	.001
Rumination	121.74	5	24.35	3.06	.10
Catastrophizing	818.14	5	163.62	18.09	.001
Blaming Others	576.59	5	115.31	6.90	.001
Negative Emotion Regulation	7629.83	5	1525.96	13.95	.001

According to Table 3, there were significant differences in the subscales of negative emotion regulation and its overall score, and the subscales of positive emotion regulation and its overall score among the six groups. To determine which pairs of groups differed, Bonferroni post-hoc tests were used. After conducting paired comparisons and identifying differences among the groups, the question arose: Is there a significant difference in emotion regulation styles between women with PTSD and women with comorbid addiction and PTSD?

normal women groups except for women with PTSD and addiction for more than one year ($P > 1$, $SE = 3.47$, $I-J = 2.27$). The two groups of women with PTSD did not differ significantly from each other. Both groups of women with PTSD had significantly lower mean scores compared to the two groups of addicted and normal women. Additionally, the scores of women with PTSD and addiction for less than one year were significantly lower than those of addicted and normal women. There was no significant difference between women with PTSD and addiction for less than one year and the two PTSD groups.

Results of the analysis of variance showed no significant difference in the overall positive emotion regulation score between the addicted women and the normal women. The mean score of positive emotion regulation in the three PTSD patient groups differed significantly from the addicted and

Importantly, the two groups of women with PTSD and addiction for more than one year and less than one year had significant differences. The mean positive emotion regulation score for women with PTSD and addiction for

less than one year was significantly lower than that of the women with PTSD and addiction for more than one year. This group also differed significantly from the addicted and normal groups ($P > 0.001$, $SE = 3.37$, $I-J = 25.87$). However, the group of women with PTSD and addiction for less than one year did not differ significantly from the two PTSD groups. In other words, the mean emotion regulation of women with PTSD and addiction for less than one year was close to that of PTSD patients and did not differ significantly from these two groups. On the other hand, the mean emotion regulation of patients with PTSD and addiction for more than one year was close to that of addicted and healthy women and did not differ significantly from these two groups. Similar findings were obtained for the different dimensions of positive emotion regulation, including positive reappraisal, refocus on planning, broader perspective, and positive refocusing.

Is there a significant difference in negative emotion regulation styles between women with PTSD and women with comorbid addiction and PTSD? Some findings related to the overall negative emotion regulation score were similar to those for positive emotion regulation: no significant difference between addicted and healthy women, between the PTSD groups without addiction, between the PTSD group with addiction for less than one year and the two PTSD groups, and between the PTSD group with addiction and the addicted and healthy women groups. A significant difference was observed between the two PTSD groups with addiction. As with positive emotion regulation, the PTSD group with addiction for more than one year differed significantly from the healthy and addicted women groups ($P > 1$, $SE = 2.88$, $I-J = 1.13$), and the PTSD group with addiction for more than one year significantly differed from one of the PTSD patient groups (more than one year) ($P > 1$, $SE = 2.77$, $I-J = -0.15$). The only difference in negative and positive emotion regulation was the lack of a significant difference between the PTSD group for less than one year and the PTSD group with addiction for more than one year.

For the different dimensions of negative emotion regulation, previous similarities were found except for rumination, where no significant differences were observed among the different research groups. In the dimension of blaming others, significant differences were only found between the PTSD group with addiction for less than one year and the PTSD groups, PTSD with addiction for more than one year, addicted and normal groups. Other research groups did not differ significantly. In the dimension of self-blame, significant differences were found only between the

PTSD group with addiction for less than one year and the PTSD groups with addiction for more than one year, addicted, and normal groups. Other groups did not differ significantly. For other dimensions of negative emotion regulation, including acceptance (obsession), blaming others, and catastrophizing, a pattern similar to positive emotion regulation and its dimensions was found. No significant difference was observed between addicted and normal women, and no significant difference between PTSD with addiction for more than one year and addicted and normal women. The PTSD groups did not differ significantly from each other but differed significantly from the PTSD groups with addiction for more than one year, addicted, and normal groups. However, there was a significant difference between the PTSD group with addiction for less than one year and the PTSD group with addiction for more than one year, PTSD with addiction for more than one year, addicted, and healthy groups.

4. Discussion and Conclusion

As previously mentioned, initially the groups of addicted women and normal women were compared across all styles of positive and negative emotion regulation, and no significant difference was found between them. This finding is inconsistent with many previous studies (McDermott et al., 2009). However, it should also be noted that the addicted women were serious substance users and had sought treatment for this condition at treatment centers. In other words, the addicted women, when they had a serious substance use problem, showed no difference from normal women. It seems that this finding aligns with Khantzian's self-medication hypothesis (Khantzian, 1990; Khantzian, 1997; Khantzian, 2007). Thus, addicted women might achieve a suitable state by using substance consumption to utilize emotion regulation styles similar to normal women.

Next, a comparison of two groups of PTSD patients was made, and no significant difference was found in the overall styles of positive and negative emotion regulation between these two groups. However, the mean scores of positive emotion regulation in both PTSD patient groups were significantly higher than those of addicted and healthy women, except in the broader perspective. In negative emotion regulation, the mean scores of both PTSD patient groups were significantly higher than those of the normal and addicted groups, except for self-blame, blaming others, and negative emotion regulation. The obtained finding supports the notion that PTSD significantly reduces emotion

regulation style, independent of the effect of addiction. This finding is consistent with studies (Berking et al., 2014; Boden et al., 2012; Boden et al., 2013) that suggest emotion regulation style can be a risk factor for PTSD.

However, comparing addicted PTSD patients revealed a significant difference in all styles of positive and negative emotion regulation between groups with less than one year and more than one year of addiction. The group of addicted PTSD patients with less than one year of addiction was more similar to the PTSD patient group and, except for certain instances, showed no significant difference from these two groups. In contrast, PTSD patients with more than one year of addiction were more similar to addicted and normal women and showed no significant difference from these two groups in any of the styles of positive and negative emotion regulation. Therefore, based on the findings of the present study, it can be said that the time factor plays a decisive role in concurrent PTSD and addiction. It seems that in the long term (more than one year), PTSD, when concurrent with addiction, aligns the patient's emotion regulation state with that of addicted and normal groups. This finding is consistent with studies emphasizing the role of time in the rapid treatment of PTSD patients (Cloitre et al., 2005; Driessen et al., 2008; Ehring & Quack, 2010).

Furthermore, the above findings align with studies indicating that the severity and harm caused by PTSD are associated with more problems in emotions (Cloitre et al., 2005; Ehring & Quack, 2010; Roemer et al., 2001). It appears that significant changes in positive and negative emotion regulation in PTSD patients with more than one year of addiction may aid the continuation of substance use, thereby serving as a sustaining factor for substance use in them. Emotion dysregulation is a moderator in the relationship between PTSD and substance use outcomes (Tripp et al., 2015).

Since the emotion regulation status of PTSD patients with less than one year of addiction was very similar to PTSD patients, with few significant differences found, another analysis was conducted comparing PTSD patients with more than one year of addiction with the two groups of PTSD patients. This comparison showed that PTSD patients with more than one year of addiction did not significantly differ from either group of PTSD patients in terms of blaming others, blaming themselves, and the broader perspective. In other words, it can be said that self-blame, blaming others (negative emotion regulation), and the broader perspective (positive emotion regulation) may play a more important role in the relationship between addiction and PTSD. This

finding is consistent with studies showing that specific emotion regulation styles are related to PTSD as opposed to general emotion regulation (Seligowski et al., 2015).

A very important question of the present study was whether there is a difference between the two groups of PTSD patients with less than one year of addiction and PTSD patients, where one group turned to substance use and the other did not. A comparison of the two groups of PTSD patients with PTSD patients with less than one year of addiction showed that PTSD patients with less than one year of addiction significantly differed from PTSD patients in terms of refocusing, total positive emotion regulation score, and blaming others. Additionally, the group of PTSD patients with more than one year of addiction was significantly less likely to blame others compared to PTSD patients with less than one year of addiction. This finding is inconsistent with many studies conducted in this field, including Aldao et al. (2010) and Seligowski et al. (2015). Considering the above findings, it seems that the total score of positive emotion regulation plays a more decisive role in leading PTSD patients to substance use in the short term. In other words, in the short term, PTSD sufferers who use positive emotion regulation styles are less likely to turn to substance use. Also, those who blame others less are similarly less likely to turn to substance use. This finding, as mentioned above, aligns with the decisive role of specific emotion regulation in the relationship between PTSD and substance use (Aldao et al., 2010; Seligowski et al., 2015). In the relationship between PTSD and substance use, in the short term, blaming others, blaming oneself, and refocusing seem to play a more decisive role. Furthermore, the findings of the present study align with studies indicating that emotion regulation styles are a risk factor for PTSD (Boden et al., 2012; Boden et al., 2013). An interesting point in the present study was the lack of significant difference in rumination across different study groups. This finding might have a cultural aspect, necessitating further studies in this regard.

5. Limitations and Suggestions

Overall, the findings of the study showed that the groups of addicted PTSD patients with less than one year and more than one year of addiction are two different groups and significantly differ in terms of positive and negative emotion regulation styles. The findings of the present study demonstrated the important role of positive emotion regulation styles, as well as self-blame and blaming others,

in the relationship between PTSD and addiction. However, more information is still needed. Since the present study did not examine the duration of PTSD, trauma severity, trauma frequency, and similar variables, more information is needed regarding the type of trauma. Perhaps different types of trauma, their severity, frequency, and duration, as well as the history of childhood abuse, can better explain the relationships between the aforementioned variables. The present study, like any other study, faces limitations, including variables related to trauma, trauma history, and childhood abuse. The authors acknowledge all the women who participated in the study, especially the PTSD sufferers who experienced distress again during the questionnaire completion process.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

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Transparency Statement

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

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Declaration 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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