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THE RELATIONSHIP BETWEEN EMOTION REGULATION DIFFICULTY, ALEXITHYMIA AND TRAUMATIC EVENTS IN SOMATIZATION IN DELINQUENT ADOLESCENTS AGED IN 15 TO 18 YEARS IN CORRECTION AND REHABILITATION CENTER, TEHRAN

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ABSTRACT

Background: The aim of this study was to investigate the relationship between emotion regulation difficulties, alexithymia, traumatic events with somatization symptoms in adolescents of correction and rehabilitation center.
Method: The study population consisted of male adolescents of correction and rehabilitation center. 120 adolescents were selected by convenience sampling. To measure variables, Toronto Alexithymia Scale, Cognitive Emotion Regulation Questionnaire, Impact of Event Scale- Revised version and *somatization subscale* of the *Symptom Checklist -90*, Revised Version", measurements were used. Pearson correlation and multiple regression methods were used to analyze data.
Conclusion: The results of multiple regression showed that 15 percent of the *somatization* symptoms are predicted by emotion regulation difficulties, alexithymia, as well as traumatic events variables ($F = 7.980$, $p<0.01$). Also, the results of multiple regression showed that among these variables, traumatic events have a more meaningful predictive ability ($t= 4.031$, $p<0.05$). Based on the results of this study, traumatic events in childhood and their impact on individual are a strong predictor of the somatization symptoms in teenagers living in a correction and rehabilitation center.

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Introduction

Somatization disorders in the Diagnostic and Statistical Manual of Mental Disorders, *4th* edition, text revision (DSM-IV-TR) refer to as a set of disorders including somatization symptoms which cannot be fully explained by a general medical condition, the direct effects of a substance or other mental disorder. These symptoms can cause significant pain and discomfort in psychosocial functioning [1]. Despite the passage of more than 25 years of somatization disorder inclusion into DSM, somatization diagnosis is not well- accepted and substantially diagnostic conflicts have been created between the medical and psychological communities [2]. Further research is required to improve our understanding of the cause of these symptoms. A

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number of risk factors have been pointed out in the research: childhood illness or family [3], stress in the family [4] and a history of abuse [5]. In addition, a number of psychological processes associated with somatization are mentioned in the literature: neuroticism [6], alexithymia and difficulty in regulating emotions [7]. Gross considers emotion regulation as an individual's effort to influence the kind, time, manner of experience and expression. Thus, emotional regulation is a complex process that involves initiating, inhibiting, or modulating one's state or behavior in a given situation [8]. When faced with situations in which certain emotions are likely expected to experience, some individual aspects of emotional regulation allow an individual to maintain the window of tolerance. Emotions in "tolerance window", can be processed without disrupting the daily performance. Tolerance window is found where social optimal performance is feasible [9]. Inflexibility in emotion regulation strategies or their extreme use may probably result in experiencing emotions out of the window of tolerance and performance is disrupted by these emotions. If emotional under-regulation occurs, it will be probably experienced as intense frustration; however, it will be suppressed in case of over-regulation. Difficulty in compromising emotion regulation strategies in order to maintain ourselves in "tolerance window" is defined as emotion regulation difficulty. Difficulty in regulating emotions appears to disrupt a person's daily performance and illustrates itself in the form of several psychological disorders [10]. Impaired emotion regulation skills have been discussed in several psychological disorders. The relationship between difficulty in regulating emotions and depression [11], anxiety [12], post-traumatic stress disorder [13] and borderline personality disorder [14] in literature has been approved. Alexithymia is a personality construct characterized by an inability to understand and express emotions. There is a large overlap between emotion regulation difficulties and alexithymia constructs. However, these constructs represent the independent sphere of human behavior. For example, the ability to control impulsive behavior difficulty is peculiar for regulating emotions, whereas the emotional perception is particularly related to alexithymia and the difficulty in regulating emotions [15]. In research associated with somatization, alexithymia and emotion regulation difficulty constructs have been correlated with traumatic events and conceptualized as part of the *construct*.

Emotion regulation difficulty has been mentioned in a number of theoretical models including psychodynamic, cognitive and evolutionary mechanism or a cause for somatization [16]. Physical symptoms in psychoanalytic theories on the field of in somatization are considered as the result of a conscious emotion regulation difficulty. These emotions are the result of traumatic experiences [17]. Cognitive theories suggest that individuals with cognitive emotion regulation difficulty related to the stress level probably have stronger physiological responses to stressful situations [18]. More recently, Brown [19] in an integrated conceptual model expressed his existing theoretical approaches in a single explanatory framework. In this model, emotion regulation difficulty is considered as a predisposing factor in the development of somatization disorder. This theory demonstrates that people with emotion regulation difficulty likely display some physical symptoms in situations that are expected to experience emotions. These symptoms are construed as disease with respect to the difficulty in identifying and managing emotions [19]. According to the above, stressful events, perceptions of these events, emotion regulation difficulty and alexithymia play a key role in physical symptoms with a mental origin. On the other hand, according to research, antisocial and aggressive personality traits are noticeably observed in people with alexithymia and emotion regulation difficulty [20]; it is thus expected that in these individuals, somatization symptoms tend to occur in higher intensity. Due to the lack of coherent management in this area, the present study investigated the relation of these constructs in juvenile offenders. The study tries to answer the question: do emotion regulation difficulty, alexithymia and traumatic events able to predict unexplained medical physical symptoms in the delinquent adolescents?

Material and Method

This is a correlational study. Accordingly, 120 adolescents aged 15 to 18-years old from correction and rehabilitation center in Tehran were selected by convenience sampling. The minimum sample size was determined based on 50+ 8m formula in which **m** refers to the number of independent variables. In this study, there are three independent variables including alexithymia, emotion cognitive regulation, impact of events and somatization as dependent variable and the minimum sample size was estimated 74 adolescents. However, in order to improve results and also according to the similar study, the sample size was calculated 120 [21]. Exclusion criteria included: a person with psychotic disorders, and drug and age over 18 years. The study protocol was approved by the ethics committee in Azad University, North Tehran branch. The questionnaires used in this study include:

Toronto Alexithymia Scale (TAS-20):

Toronto Alexithymia Scale (22 and 23), consists of 20 questions and measures three subscales including the difficulty in identifying feelings, difficulty in describing feelings and objective thinking in Likert scale ranging from 1 to 5. A total score is calculated by adding the three subscales of LTC for general alexithymia. Toronto Alexithymia Scale psychometric properties have been confirmed in numerous studies [22, 23]. In Persian version of Toronto Alexithymia Scale-20, Cronbach's alpha coefficients for the total alexithymia and three subscales including difficulty in identifying feelings, difficulty in describing feelings and externally oriented thinking were calculated 0/850, 0/82.0, 0/75 and 0/72, respectively. Test-retest reliability for Toronto Alexithymia -20 in a sample of 67 adolescents for total alexithymia and different subscales was confirmed from %70 to %77 on two occasions with an interval of four weeks.

Toronto Alexithymia -20 concurrent validity was verified by the correlation between this test and subscales of emotional intelligence, psychological well-being and psychological distress [24].

Cognitive Emotion Regulation Questionnaire (CERQ):

it is a self-report questionnaire developed by Garnefski, Kraaij and Spinhoven [25]. The original questionnaire composes of 36-items in total and consists of nine subscales: self-blame, other-blame, rumination, putting into perspective, positive refocusing, positive reappraisal, catastrophizing, acceptance and planning. The questionnaire responses are collected in a continuum of 5 degree. The developers of this questionnaire reported its reliability as 91% and 86% through Cronbach's alpha for positive and negative strategies and the reliability for the entire questionnaire was calculated 93% [25]. Aminabadi (2010) examined the questionnaire by exploratory factor analysis with principal components analysis. As a result, 36 items were decreased to 26 items and 9 subscales to four subscales (self-blame and catastrophizing, acceptance, positive thinking and other- blame). Reliability for these subscales was calculated 77%, 70%, 76% and 64%, respectively and 70% for the entire questionnaire [26].

Impact of Event Scale- Revised (IES-R):

This scale was developed in 1997 by Weiss and Marmar (1997), according to DSM-IV criteria for a diagnosis of post-traumatic stress disorder. Impact of Event Scale- Revised (IES-R) is a self-report instrument consisting of 22 items that evaluate the three main aspects of the disorder including intrusive thoughts, hyper-arousal, and avoidance. In the study by Weiss and Marmar [27] conducted on four different population groups, the internal consistency for three subscales was high and alpha coefficients for the three subscales were obtained between 79% and 92%, respectively. In a study conducted by Panaghi, Hakim Shoshtari and Attari Moghaddam [28], it was found that the scale has good internal consistency with Cronbach's alpha between 67% to 87% and its test-retest reliability is good.

Somatization subscale of the Symptom Checklist -90, Revised Version (SCL-90):

The questionnaire includes 90 items with 9 syndrome: somatization (SOM), obsessive-compulsive (O-C), interpersonal sensitivity (I-S). Depression (DEP), anxiety (ANX), hostility (HOS), Phobic anxiety (PHOB), paranoid ideation (PAR), psychoticism (PSY). This test was introduced about 30 years ago and includes a list of psychiatric symptoms and reflects mental patterns of physical and emotional symptoms. Test items were scored in a 5-point Likert scale from zero to 4 [29]. To our knowledge, reliability and validity of the questionnaire were reported appropriate and good in our country and abroad (Homaie, 1379). At the same time, the sensitivity and specificity of this test were assessed high and have been reported 94%, 98% and 96%, respectively. Therefore, this test can be used successfully as a diagnostic screening tool in epidemiologic studies of mental disorders [30]. In this study, physical subscale of the questionnaire was used. In the procedure phase, an explanation was firstly given for the implementation of the research and its importance and the need for accuracy in responding to questions and how to respond to participants. Then, Toronto alexithymia, emotion cognitive regulation, the impact of events as well as Somatization subscale of the Symptom Checklist -90, Revised Version, questionnaires (SCL-90) were given to each subject. The test was carried out on an individual basis on the selected samples. It is noteworthy that it was not necessary for participants to write their name. Finally, data was collected with the help of software SPSS, and analyzed by descriptive statistics and regression methods.

Findings

The mean age of study participants was 16/51 (1/23). Descriptive indicators relating to data obtained from the questionnaires in emotion regulation, somatization, alexithymia and impact of event scale are presented in (Table 1).

Table 1. Descriptive indicators relating to data obtained from the questionnaires in emotion regulation, somatization, alexithymia and impact of event scale

Variable	Number	Mean	SD	Minimum	Maximum
Self-blame	120	12.641	4.082	4	20
Acceptance	120	13.175	3.851	5	20
Rumination	120	14.391	3.155	7	20
Positive refocusing	120	14.031	3.524	4	20
Refocus on planning	120	15.325	3.583	6	20
Positive reappraisal	120	14.875	3.724	5	20
putting into perspective	120	13.650	3.805	4	20
Catastrophizing	120	12.775	3.421`	5	20

Other-blame	120	13.141	4.375	4	20
Total score of Emotion Regulation Questionnaire	120	123.847	19.749	77	163
Somatization	120	1.852	0.685	0	3.60
Difficulty in identifying feelings	120	25.033	4.588	11	35
Difficulty in describing feelings	120	16.580	3.299	8	25
Externally oriented ideation	120	23.825	3.504	15	36
Total score of alexithymia	120	65.708	8.22	44	84
Avoidance	120	15.408	6.393	0	30
Unwanted ideation	120	16.700	6.328	0	28
Hyper-arousal	120	17.041	6.412	2	28
Total score of impact of event	120	49.150	16.299	10	86

The results of Kolmogorov–Smirnov test showed normality of the physical variables (P =0.200, df = 120, f=0.071). Simultaneous multiple regression results are shown in (Tables 2 and 3). The results of Table 2 showed that since the Durbin-Watson index is close to 2 and greater than one, there is no correlation between the errors. None of the tolerance index was lower than 0.2 and VIF indicators were not greater than 10, therefore; there is no risk of polyline error. The results of(Table 2) showed that 150% of somatization variance is explained by these three variables.

Table 2: Correlation coefficients of multiple regression analysis

Predictor variable	R	R-squared	R-squared adjusted	SD	Durbin-Watson
Alexithymia, emotional regulation difficulty and impact of the event	0.414	0.171	0.150	0.632	2.248

The dependent variable: somatization

According to the results of(Table 3), it can be said that the predictor variables of in emotion regulation difficulty, alexithymia, as well as the impact of the event were able to explain somatization (F=7.980, P<0.01). For a closer look at the interplay between these variables and somatization, standardized regression coefficients were used. Results are shown in (Table 4).

Table 3: results of multiple regression to predict somatization based on the emotion regulation difficulty, alexithymia and traumatic events

Source of variance	Sum of squares	df	Mean Squares	F	P
Predictor	9.567	3	3.189	7.980	0.001
Remnant	46.352	116	400%		
Total	55.920	119			

According to the standardized regression coefficients in Table 4, it can be said that among predictive variables, only physically traumatic events positively predict somatization in delinquent adolescents (t=4.31, P<0.05).

Table 4-21. Standardized regression coefficients

Predictor variable	B	SE	Beta	t	Significance level

Constant	0.574	0.596		0.963	0.338
Traumatic events	0.016	0.004	0.384	4.031	0.001
Cognitive emotion regulation	-0.001	0.003	-0.033	-0.358	0.721
Alexithymia	0.010	0.007	0.115	1.315	0.191

Discussion

This study was conducted to investigate the role of the traumatic events, emotional regulation and alexithymia in somatization symptoms. The results of this study revealed that traumatic events can be a significant predictor in explaining the symptoms of somatization. In line with the results of this research, Alkit and Christiansen [31] in a study entitled as To investigate the factors predicting somatization, came to the conclusion that feeling inadequacy and negative affect are associated with somatization and they predict health risk factors in victims of traumatic events. In line with this study, Andersky et al., [32] and North et al., [33] concluded that physical-like symptoms are consistently associated with traumatic events. In fact, somatization is an adaptation technique against long term traumatic events. Somatization symptoms in people who had experienced traumatic events in their childhood can be caused by neurobiological changes led to physical arousal and unhealthy behaviors after traumatic events and result in somatization [34]. Mayer model [35] shows that cortisol deficiency and increased feedback inhibition of the pituitary - adrenal axis HPA might be seen in people who have experienced a traumatic event. On the other hand, cortisol insufficiency mostly occurs in patients with a wide range of vague symptoms such as irritable bowel syndrome, fatigue and fibromyalgia. Therefore, it can be assumed that traumatic events can lead to a reduction in cortisol levels and consequently to physical symptoms. Also, traumatic events may result in high levels of negative affect and thereby increase the likelihood of somatization symptoms. Traumatic events in childhood can increase a person's response to daily stress in their adult life. This problem affects adult's psychological processes and individual experiences negative affect against many trivial stresses [36]. On the one hand, traumatic events are associated with physical anxiety through attachment styles and lead to insecure attachment styles. People with insecure attachment styles may experience many negative emotions and, thus exhibit their somatization symptoms [37]. It should be noted that this study utilized non-clinical samples and it is recommended that in another study, the researchers duplicate their research using clinical samples. In another study, it is likely that alexithymia and emotion regulation strategies have a different relationship with somatization. Furthermore, due to lack of a strong research support in Iran, strong statistical techniques such as path analysis were not used in this study. Also, the use of self-report questionnaire as a study tool which was influenced by the subject's judgment was another limitation of the present study. It is thus suggested that researchers conduct research on clinical samples in the future and use the stronger statistical methods like structural equation analysis or path analysis.

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