



# The Relationship Between Trauma History and Emotion Dysregulation: The Moderating Role of Locus of Control

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## Abstract

**Background:** Trauma profoundly affects psychological well-being and increases the risk of mental health disorders. Past research highlights its impact on emotion regulation (ER) and locus of control (LoC). Understanding the role of perceived control can guide effective interventions for trauma survivors.

**Objectives:** This study examined how LoC moderates the relationship between trauma history (TH) and emotion dysregulation, shedding light on factors influencing resilience and coping mechanisms.

**Materials and Methods:** This cross-sectional study involved 359 adults aged 18 - 57 ( $26.14 \pm 7.06$ ), recruited via accessible, non-random sampling through social media platforms such as Twitter, ResearchGate, WhatsApp, LinkedIn, Instagram, and Telegram between September 2024 and January 2025. Participants completed the Trauma History Questionnaire (THQ), Difficulties in Emotion Regulation Scale (DERS-16), Rotter's Locus of Control Scale, and Impact of Event Scale-Revised (IES-R). Data analysis was conducted using SPSS version 26, including descriptive statistics, correlation, and hierarchical regression analyses to assess the moderating role of LoC, using Hayes's PROCESS macro-model 1 with a 95% confidence level.

**Results:** Trauma-experienced adults ( $n = 359$ ), predominantly female (80.8%) and with  $\geq$  undergraduate degree (44.1%), showed that those with an external LoC scored higher on ER difficulties than individuals with an internal locus. An external LoC was also associated with greater trauma exposure. Additionally, TH explained 26% of the variance in ER, increasing to 30.6% when LoC was added, with the interaction term contributing 1.1%. The overall model accounted for 77% of the variance. Physical and sexual assault significantly predicted ER ( $\Delta R^2 = 0.026$ ), and LoC made an independent contribution ( $\Delta R^2 = 0.04$ ). Interaction effects confirmed that LoC moderates trauma's impact on emotional regulation, emphasizing the importance of perceived control in recovery.

**Conclusions:** This study underscores the crucial role of an internal LoC in facilitating ER following traumatic experiences. From a clinical perspective, enhancing a trauma survivor's sense of personal agency – through targeted interventions such as cognitive-behavioral techniques, empowerment practices, or mindfulness-based strategies – may lead to improved emotional outcomes. Limitations of the current research include its cross-sectional design and dependence on self-reported data. To build on these findings, future studies should employ longitudinal and multi-method approaches, examine diverse populations, consider varying trauma severities, and assess the efficacy of specific interventions aimed at strengthening internal LoC.

**Keywords:** Trauma, Emotion Regulation, Locus of Control

## 1. Background

Recent advances in psychological research underscore the importance of emotion regulation (ER)

and emotional dysregulation (ED) in understanding mental health outcomes, although their exact definitions continue to be discussed (1, 2). Emotion regulation encompasses various processes through

which individuals evaluate, modulate, and adapt their emotional responses to environmental demands, helping align their behavior with social norms and personal goals (3). Core components like emotional awareness, acceptance, and strategic regulation are vital for effective ER, with its success largely influenced by how individuals respond rather than the nature of their emotional experiences (4). In contrast, ED refers to difficulties in engaging with adaptive ER strategies, often resulting in responses that are disproportionate or poorly managed relative to the situation (5). People with ED may struggle to recognize their emotions, choose appropriate coping strategies, or control intense reactions that exceed social expectations (6). Theoretical models of ED include temporal approaches (focusing on different emotion generation stages), strategy-based models (distinguishing between adaptive and maladaptive strategies), and ability-based models (emphasizing skills needed for effective regulation) (7, 8).

Emerging evidence highlights the complex relationship between ED and trauma (1, 9). Trauma – defined as an event or series of events causing psychological or physiological harm – is linked to various adverse outcomes, including mood disturbances, anxiety, and post-traumatic stress disorder (PTSD). Symptoms like hyperarousal, avoidance, and emotional numbing often co-occur with ED, intensifying psychological distress (10). Additionally, trauma-related phenomena such as hypervigilance and dissociation reveal the interaction between trauma and ED (11, 12). Trauma is a significant stressor with wide-ranging impacts. According to the World Health Organization, about 70% of individuals will experience a traumatic event during their lifetime, though only some develop PTSD (13). Childhood trauma – marked by neglect, abuse, or exposure to violence – is a key risk factor for long-term emotional and psychological difficulties (14). Such early trauma often correlates with higher ED, impaired development of ER skills, and a tendency toward an external locus of control (LoC) (15). Studies indicate that early or complex trauma disrupts the development of effective ER strategies (16). Trauma types include intentional human-inflicted events, unintentional incidents, and natural disasters (ND), with the former generally posing greater challenges to recovery (17).

The LoC concept, introduced by Rotter, distinguishes individuals who believe they can influence their life outcomes through effort (internal locus) from those who see external factors – like fate, luck, or others – as controlling their destiny (external locus) (18). Research shows that individuals with an external locus tend to experience more psychological distress, including depression and PTSD symptoms, partly because they perceive less personal agency, which hampers their ER efforts (1, 19). Despite the strong link between trauma, ED, and LoC, there remains a gap in understanding how trauma characteristics – such as type, age at exposure, and timing – impact ER capabilities (2, 20). The interaction between trauma features and personality factors like LoC is crucial for understanding individual resilience and vulnerability. This study aimed to explore whether LoC moderates the relationship between trauma exposure – especially early or complex trauma – and ER capacities in adolescents and young adults. By investigating these interactions, the research seeks to clarify how trauma type and timing influence ER and whether LoC functions as a risk or protective factor. Such insights could inform targeted interventions for trauma survivors with PTSD, integrating ER training with strategies to modify LoC. Ultimately, this work aims to enrich our understanding of how trauma-related variables interplay with personality traits to shape emotional functioning, with important implications for clinical practice and theory development.

## 2. Objectives

This study aimed to examine whether LoC acts as a moderating factor in the relationship between trauma exposure and emotion dysregulation. By elucidating these interactions, the research intends to inform and improve therapeutic interventions for individuals dealing with PTSD, while also addressing existing gaps in the literature regarding the interplay between traumatic experiences and emotional regulation processes.

## 3. Materials and Methods

This cross-sectional study employed a correlational design to investigate adults aged 18 to 57 across Iran who had access to virtual networks between September 2024 and January 2025. A post-hoc power analysis using G\*Power confirmed that this sample size provides excellent statistical power ( $1-\beta > 0.999$ ) for detecting the

expected effects in our regression analyses. To ensure a diverse and representative sample, data were collected via an online questionnaire, consistent with previous research demonstrating that the validity and reliability of online data collection are comparable to traditional methods (21, 22). Participants were recruited using convenience sampling through multiple social media platforms, including Twitter, ResearchGate, WhatsApp, LinkedIn, Instagram, and Telegram. The questionnaire received a total of 1,676 visits, with 359 individuals completing the full survey. The demographic profile revealed a mean age of  $26.14 \pm 7.06$  years. The sample encompassed a range of socio-economic backgrounds, with the majority being females (80.8%) and varying educational attainment levels (with 44.1% holding 16 years of education). Inclusion criteria required participants to fall within the specified age range and have a history of traumatic experiences, as assessed by the Trauma History Questionnaire (THQ). Exclusion criteria included individuals with current psychiatric disorders, neurological impairment, or substance abuse issues, as well as those who were unable to provide informed consent or complete the assessments.

The THQ, Locus of Control Scale, Difficulties in Emotion Regulation Scale (DERS-16), and Impact of Event Scale-Revised (IES-R) were used to collect the data.

### 3.1. Trauma History Questionnaire

This is a self-report tool comprising 24 items that assess exposure to various traumatic events, including physical and sexual assaults, accidents (ACC), and ND. Respondents indicate whether they have experienced specific trauma types, enabling the calculation of overall and subscale scores (23). In non-Iranian populations, the THQ has shown good reliability and validity, with test-retest stability coefficients ranging from 0.51 to 0.91, indicating fair to excellent reliability across trauma types (24). In the Iranian population, the THQ demonstrated a Cronbach's alpha of 0.704 and excellent reliability for most trauma categories, though reliability for ND was lower ( $\kappa = 0.540$ ) (25).

### 3.2. Difficulties in Emotion Regulation Scale

The full DERS-36 both exhibit satisfactory factor structures, with moderate correlations observed between the two versions and the Emotion Regulation Questionnaire (ERQ) subscales (Reappraisal and Suppression). Overall, the DERS scores show stronger

associations with depression and anxiety than ERQ subscales do. The DERS (Gratz & Roemer, 2004) is a comprehensive, self-report measure of ER, consisting of 36 items rated on a 5-point Likert scale. Higher scores reflect greater difficulties in ER, with subscales measuring Nonacceptance, Goals, Impulse, Awareness, Strategies, and Clarity (26). Factor analyses have identified seven factors within the DERS-6, and six within a revised DERS-5, accounting for approximately 59% of the variance in a clinical sample, with good internal consistency and validity (27).

### 3.3. Rotter Locus of Control Scale

This scale assesses individuals' perceptions of control over life events through 29 items contrasting internal and external control beliefs. Higher scores indicate a tendency to perceive external factors as determinants of outcomes, suggesting an external LoC. In Iran, the scale has demonstrated robust psychometric properties, with a Cronbach's alpha of 0.83, and a two-week test-retest reliability coefficient of 0.83, supported by validation work by Aryanpour and Rezapour (28).

### 3.4. Impact of Event Scale-Revised

This is a 22-item self-report scale measuring PTSD symptoms according to DSM-IV criteria, with three subscales: Avoidance, intrusion, and hyperarousal. Participants rate distress over the past week on a 5-point scale from 0 (not at all) to 4 (extremely). The total score ranges from 0 to 88, with higher scores indicating greater symptom severity. The scale exhibits excellent internal consistency ( $\alpha = 0.78 - 0.82$ ) and test-retest reliability ( $r = 0.79 - 0.89$ ) (29). The Persian version was translated and culturally adapted following rigorous procedures, including backward translation and pilot testing, to ensure clarity and relevance within the Iranian population (30).

### 3.5. Study Procedure

Various questionnaires were developed and uploaded to an online platform using Porsline. Participants accessed the initial questionnaire page via a research link, which provided details about the study focused on traumatic experiences and emotional expression among individuals aged 18 to 57. A structured questionnaire was used to collect demographic information, which included gender, age, educational level, history of physical or mental illness, and marital

status. The other questionnaires were administered in the following order: THQ, DERS, RLOC, and IES-R. The link was disseminated through social media platforms such as Twitter, ResearchGate, WhatsApp, LinkedIn, Instagram, and Telegram, particularly in mental health-related channels. Access to online platforms was facilitated through strategically distributed hyperlinks across various social media channels to maximize participant recruitment and expand the reach of data collection. Data collection was conducted between September 2024 and January 2025. Responses were compiled and analyzed using SPSS 26.

### 3.6. Statistical Analysis

After collecting the responses, data analysis commenced with descriptive statistics to summarize the demographic and clinical characteristics of the sample. A correlation matrix was then constructed to explore initial relationships among key variables. Hierarchical regression analysis was subsequently performed to investigate the influence of LoC on the association between TH and ER difficulties. To ensure the robustness of the regression models, several assumptions were systematically evaluated. Multicollinearity was assessed by calculating variance inflation factors (VIFs), with values below 5 indicating acceptable independence among predictors. The normality of residuals was verified through the Shapiro-Wilk test and supported by visual inspection of Q-Q plots. Homoscedasticity, or the constant variance of residuals across predicted values, was examined by plotting residuals versus fitted values. Data quality was maintained through thorough cleaning procedures. Missing data were addressed using multiple imputation techniques when appropriate, and responses with incomplete or inconsistent answers were excluded to safeguard the integrity and accuracy of the analysis.

## 4. Results

This study included 359 community-dwelling adults aged 18 to 57, with an average age of  $26.14 \pm 7.06$  years. All participants had a history of trauma, and demographic details for those over 18 are summarized in [Table 1](#).

**Table 1.** Demographic Variables of Individuals Aged 18 - 57 Years Old with a History of Trauma

Demographic Variable and Level	Frequency (%)
<b>Gender</b>	
Male	68 (19.2)
Female	286 (80.8)
<b>Educational level (y)</b>	
8	10 (2.8)
12	97 (27.4)
14	12 (3.4)
16	156 (44.1)
18	59 (16.7)
22	20 (5.6)
<b>Mother's educational level (y)</b>	
8	108 (30.5)
12	134 (37.9)
14	18 (5.1)
16	62 (17.5)
18	24 (6.8)
22	8 (2.3)
<b>Father's educational level (y)</b>	
8	94 (26.6)
12	106 (29.9)
14	26 (7.3)
16	75 (21.2)
18	38 (10.7)
22	15 (4.2)
<b>Mother's employment status</b>	
Employee	52 (14.7)
Self-employed	36 (10.2)
Homemaker	266 (75.1)
<b>Father's employment status</b>	
Employee	91 (25.7)
Self-employed	150 (42.4)
Retired	113 (31.9)
<b>History of physical illness</b>	
Yes	129 (36.4)
No	225 (63.6)
<b>History of mental illness</b>	
Yes	106 (29.9)
No	248 (70.1)
<b>Marital status</b>	
Single	240 (67.8)
Married	55 (15.5)
In a relationship	49 (13.8)
Widowed	10 (2.8)
<b>History of trauma experience</b>	
Childhood experience	287 (81.1)
Adult experience	67 (18.9)

[Table 1](#) provides an overview: The majority were female (80.8%), most held at least a BA degree (44.1%), and many reported that their mothers were homemakers (75.1%). Nearly a third (36.4%) had physical illnesses, and 29.9% reported a history of mental health issues. Most participants were single (67.8%), and a large

**Table 2.** Descriptive Statistics of Mean and Standard Deviation for Emotion Regulation and Trauma History Base on Internal and External Locus of Control

Variables and Subscale	Mean $\pm$ SD	Mean $\pm$ SD	
		Internal LoC	External LoC
<b>ER</b>			
Non-acceptance	13.24 $\pm$ 6.36	10.86 $\pm$ 4.89	14.04 $\pm$ 6.60
Goals	15.14 $\pm$ 3.67	13.96 $\pm$ 3.34	15.53 $\pm$ 3.70
Impulses	15.11 $\pm$ 4.57	13.48 $\pm$ 3.52	15.66 $\pm$ 4.75
Awareness	19.11 $\pm$ 3.47	20.37 $\pm$ 3.08	18.69 $\pm$ 3.50
Strategies	20.29 $\pm$ 6.55	17.33 $\pm$ 4.42	21.29 $\pm$ 6.85
Clarity	12.80 $\pm$ 2.21	12.64 $\pm$ 1.74	12.86 $\pm$ 2.34
Total ER score	95.72 $\pm$ 19.51	88.66 $\pm$ 14.45	98.09 $\pm$ 20.42
<b>TH</b>			
ACC	1.72 $\pm$ 1.41	1.46 $\pm$ 1.15	1.81 $\pm$ 1.49
ND	6.03 $\pm$ 5.60	5.41 $\pm$ 3.38	6.24 $\pm$ 2.67
Phy. & Sex Ass	6.27 $\pm$ 1.59	5.61 $\pm$ 3.68	6.49 $\pm$ 3.82
Total trauma score	14.03 $\pm$ 10.30	12.49 $\pm$ 6.31	12.54 $\pm$ 6.55

Abbreviations: ER, emotion regulation; TH, trauma history; LoC, locus of control; ND, natural disaster; Phy. & Sex Ass., physical & sex assault; ACC, accidents.

proportion experienced trauma during childhood (81.1%).

**Table 2** compares ER and trauma exposure between individuals with an internal versus an external LoC. Those with an external locus scored higher in difficulties such as accepting their emotions ( $M = 14.04$ ) and goal pursuit ( $M = 15.53$ ) compared to those with an internal locus ( $M = 10.86$  and  $M = 13.96$ ). Notably, overall ER difficulties were greater in the external group ( $M = 98.09$ ) than in the internal group ( $M = 88.66$ ). Furthermore, individuals with an external locus reported greater trauma exposure, including crime-related events ( $M = 1.81$ ) and general trauma experiences ( $M = 6.24$ ), compared to those with an internal locus. These findings suggest that feeling in control may bolster emotional resilience, potentially reducing trauma exposure and improving emotional regulation.

The correlation matrix in **Table 3** highlights significant relationships among ER, TH, and LoC. For individuals with an internal LoC, strong positive correlations emerged between non-acceptance of emotions and overall ER difficulties ( $r = 0.74$ ), as well as with impulse management ( $r = 0.46$ ) and emotional clarity ( $r = 0.43$ ). Those with an external LoC also showed a strong connection between non-acceptance and ER issues ( $r = 0.81$ ). These findings underscore how perceived control can influence emotional responses and trauma outcomes, with all correlations being statistically significant ( $P < 0.05$ ).

A bivariate analysis revealed no significant relationship between age at trauma and ER difficulties ( $r = 0.008$ ,  $P = 0.882$ ), nor between TH and LoC (all  $P > 0.05$ ). However, a Chi-square test indicated a significant association between age at trauma and LoC ( $\chi^2 (1) = 5.008$ ,  $P = 0.025$ ). Specifically, individuals without a TH tended to be more likely to hold an external LoC.

Before conducting hierarchical regression, assumptions like normality were checked via skewness and kurtosis. The data appeared normally distributed, with skewness between -2 and +2 and kurtosis within -10 to +10. Multicollinearity was assessed through tolerance and VIF, and no issues were found. Homoscedasticity was confirmed as residual variance remained consistent across predictor values. These checks ensured that the data met the necessary criteria for regression analysis.

The hierarchical regression analysis examined whether LoC moderates the relationship between TH and ER. The model first included TH, explaining 26% of the variance in ER scores. When LoC was added, the explained variance increased by 4%. Including the interaction term of TH and LoC further contributed an additional 1.1%, bringing the total explained variance to 77%.

**Table 4** presents the findings of the hierarchical regression analysis used to explore whether LoC moderates the relationship between TH and emotional regulation. In the first step, TH explained 2.6% of the variance in emotional regulation ( $B = 0.161$ ,  $t = 3.06$ ,  $P <$

**Table 3.** Relationship Pattern between Emotion Regulation and Trauma History Across Locus of Control Levels

Variables	1	2	3	4	5	6	7	8	9	10	11
<b>Internal LoC</b>											
1. Non-acceptance	1										
2. Goals	0.31 <sup>a</sup>	1									
3. Impulses	0.46 <sup>a</sup>	0.61 <sup>a</sup>	1								
4. Awareness	-0.03	0.18	0.17	1							
5. Strategies	0.54 <sup>a</sup>	0.56 <sup>a</sup>	0.56 <sup>a</sup>	0.07	1						
6. Clarity	0.43 <sup>a</sup>	0.31 <sup>a</sup>	0.43 <sup>a</sup>	-0.04	0.44 <sup>a</sup>	1					
7. TER	0.74 <sup>a</sup>	0.74 <sup>a</sup>	0.79 <sup>a</sup>	0.30 <sup>a</sup>	0.83 <sup>a</sup>	0.57 <sup>a</sup>	1				
8. ACC	-0.06	-0.09	-0.11	-0.16	-0.06	0.30 <sup>a</sup>	-0.03	1			
9. ND	0.18	0.09	0.05	-0.10	-0.12	0.15	0.13	0.09	1		
10. Phy. & Sex Ass.	-0.03	-0.06	-0.06	-0.03	-0.10	-0.07	-0.06	0.20 <sup>b</sup>	0.21 <sup>b</sup>	1	
11. TTH	0.03	-0.03	-0.02	-0.02	-0.05	-0.15	-0.01	0.34 <sup>a</sup>	0.52 <sup>a</sup>	0.83 <sup>a</sup>	1
<b>External LoC</b>											
1. Non-acceptance	1										
2. Goals	0.53 <sup>a</sup>	1									
3. Impulses	0.59 <sup>a</sup>	0.71 <sup>a</sup>	1								
4. Awareness	-0.17	-0.10	0.03	1							
5. Strategies	0.70 <sup>a</sup>	0.67 <sup>a</sup>	0.75 <sup>a</sup>	0.05	1						
6. Clarity	0.41 <sup>a</sup>	0.27 <sup>a</sup>	0.38 <sup>a</sup>	0.06	0.39 <sup>a</sup>	1					
7. TER	0.81 <sup>a</sup>	0.79 <sup>a</sup>	0.85 <sup>a</sup>	0.17 <sup>a</sup>	0.91 <sup>a</sup>	0.53 <sup>a</sup>	1				
8. ACC	0.15	0.09	0.07	-0.04	0.12	0.04	0.12	1			
9. ND	-0.02	0.02	-0.03	0.08	-0.02	-0.03	-0.01	0.28 <sup>a</sup>	1		
10. Phys & Sex Ass.	0.15	0.21 <sup>a</sup>	0.20 <sup>a</sup>	0.01	0.23 <sup>a</sup>	0.15 <sup>b</sup>	0.23 <sup>a</sup>	0.12	0.12	1	
11. TTH	0.14	0.19 <sup>a</sup>	0.16 <sup>a</sup>	0.04	0.20 <sup>a</sup>	0.11	0.20 <sup>a</sup>	0.39 <sup>a</sup>	0.56 <sup>a</sup>	0.87 <sup>a</sup>	1

Abbreviations: LoC, locus of control; TER, total emotion regulation; Phy. & Sex Ass., physical & sex assault; TTH, total trauma history; ND, natural disaster; ACC, accidents.

<sup>a</sup>P < 0.001.

<sup>b</sup>P < 0.05.

0.001), indicating a significant effect. When LoC was added in the second step, the model's explanatory power increased to 6.6%, with LoC itself showing a significant positive association with emotional regulation ( $B = 0.201$ ,  $t = 3.88$ ,  $P < 0.001$ ). The most telling result came in the third step, where the interaction between TH and LoC was included. This adjusted the total explained variance to 7.7%, and the interaction term was also statistically significant ( $B = 0.210$ ,  $t = 2.06$ ,  $P < 0.05$ ). This means that LoC does indeed influence how TH relates to emotional regulation — acting as a moderator.

The analysis was also extended to specific trauma components — such as accidents, natural disasters, and physical or sexual assault — by including their interaction terms with LoC. The model predicted ER across these factors, with residuals remaining

independent (Durbin-Watson = 1.87), supporting the robustness of these results.

Based on **Table 5**, initially, trauma components explained about 3.3% of the variance in ER. When LoC was added in the second step, the model's predictive power increased by 4%, indicating that LoC independently contributes to understanding emotional regulation. In the final step, including the interaction terms between trauma components and LoC added another 2.6%, showing that these interactions significantly improve the model's accuracy. Overall, TH and its interactions with LoC accounted for roughly 10% of the variation in ER. Importantly, physical and sexual trauma experiences had a direct, significant impact on emotional regulation. Additionally, LoC independently predicted ER after accounting for TH. The significant interaction between physical/sexual trauma and LoC

**Table 4.** The Moderating Effect of Locus of Control on the Relationship Between Trauma History and Emotional Regulation in a Sample of Adults Aged 18 - 57 Years

Step and Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Standardized Coefficient (β)	Standard Error (SE)	95% CI	t-Value
<b>Step 1</b>						
TH	-0.026	-	0.161	0.072	0.07 to 0.19	3.06 <sup>a</sup>
<b>Step 2</b>						
TH	-	-	-	-	-	-
LoC	-0.66	0.04	0.201	0.032	0.14 to 0.38	3.88 <sup>a</sup>
<b>Step 3</b>						
TH	-	-	-	-	-	-
LoC	-	-	-	-	-	-
TH × LoC	0.077	0.011	0.210	0.050	0.11 to 0.31	2.06 <sup>b</sup>

Abbreviations: TH, trauma history; LoC, locus of control

<sup>a</sup> P < 0.001

<sup>b</sup> P < 0.05.

suggests that personal beliefs influence how trauma affects emotional regulation, functioning as a moderating factor. The progressive increases in explained variance with each step highlight the important roles that trauma elements, personal beliefs, and their interplay play in shaping emotional regulation processes.

## 5. Discussion

The study provides valuable insights into the complex relationships among trauma exposure, emotion dysregulation, and LoC, highlighting the moderating role of perceived control in trauma survivors' emotional processes. Although the cross-sectional design limits conclusions about causality, these findings suggest avenues for future longitudinal research to clarify the temporal and causal pathways involved. It is also crucial to consider confounding variables such as socioeconomic status, gender, and cultural background, which can influence trauma responses and beliefs about control, ultimately affecting ER outcomes (20). Expanding research with more diverse samples will help improve the generalizability of these findings and explore how these factors interact across different populations.

The results align with established psychological models of emotional dysregulation and attribution

styles. Trauma often impairs individuals' ability to recognize, accept, and manage their emotions, contributing to conditions like PTSD (31, 32). Importantly, we found that an external LoC was associated with greater difficulties in ER, especially following trauma. This supports the learned helplessness theory, which posits that attributing negative events to external, uncontrollable factors fosters feelings of helplessness and hampers effective coping (33). When individuals perceive trauma as unchangeable, their sense of personal agency diminishes, leading to increased emotional dysregulation.

Interestingly, although trauma timing did not significantly affect ER, individuals without trauma exposure tended to endorse external control beliefs more strongly. This suggests a nuanced relationship – personal control beliefs may develop independently of TH or be shaped by cultural norms and past experiences. Our findings also indicate that LoC moderates the relationship between trauma and ER difficulties. Consistent with prior research (34), TH explained a modest but significant portion of variance in emotional regulation problems. When perceived control was factored in, its influence became more pronounced, especially among those with an external locus, highlighting how perceptions of control can amplify trauma's emotional impact. Notably, trauma types like

**Table 5.** The Moderating Effect of Locus of Control on the Relationship Between Trauma History and Emotional Regulation in a Sample of Adults Aged 18 - 57 Years

Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Standardized Coefficient (β)	Standard Error (SE)	95% CI	t-Value
<b>Step 1</b>	0.033	-				
ACC	-	-	0.087	0.040	-0.16 to -0.28	1.59
ND	-	-	-0.012	0.190	-0.11 to 0.11	-0.21
PSA	-	-	0.151	0.090	0.23 to 0.07	2.84 <sup>a</sup>
<b>Step 2</b>	0.074	0.040	-	-	-	-
ACC						
ND						
PSA						
LoC	-	-	0.202	0.032	0.09 to 0.52	3.91 <sup>b</sup>
<b>Step 3</b>	0.100	0.026	-	-	-	-
ACC × LoC	-	-	0.128	0.160	-0.01 to 0.23	1.02
ND × LoC	-	-	-0.179	0.235	-0.48 to -0.26	-1.43
PSA × LoC	-	-	0.252	0.186	0.56 to 0.13	2.70 <sup>a</sup>

Abbreviations: ACC, accidents; ND, natural disasters; LoC, locus of control; TER, total emotion regulation; PSA, physical & sex assault.

<sup>a</sup> P < 0.05.

<sup>b</sup> P < 0.001.

physical and sexual abuse interacted with LoC, further influencing ER. These results reinforce the importance of control perceptions in trauma recovery, aligning with existing literature (35).

Clinically, these results suggest that interventions fostering an internal LoC could enhance ER and resilience in trauma survivors. Strategies like cognitive restructuring and attribution modification have proven effective in increasing perceived personal agency (20). Tailoring such approaches to target maladaptive control beliefs may reduce PTSD symptoms and support recovery.

Future research should delve into how an external locus impacts emotional dysregulation, exploring factors like attribution biases, learned helplessness, and cognitive appraisals. Investigating whether modifying these perceptions through targeted therapies can improve emotional regulation across different types of trauma and developmental stages will help customize treatments. Additionally, it is important to consider cultural, socioeconomic, and gender influences, as these can significantly affect how individuals perceive control and process emotions, ultimately shaping intervention outcomes across diverse populations.

While this study offers valuable insights, several limitations need acknowledgment. Its cross-sectional design prevents conclusions about causality between trauma, LoC, and ER; longitudinal studies are necessary for a clearer understanding. Relying on self-report

measures introduces potential biases, such as social desirability and recall errors, which could impact results. Incorporating behavioral, physiological, or observational assessments in future research would provide a more comprehensive view. Furthermore, the predominantly young adult sample limits generalizability, underscoring the importance of including broader age groups and clinical populations. The study also did not account for trauma severity or chronicity – factors that likely influence ER. Exploring these variables could offer more nuanced insights. Lastly, examining whether cognitive-behavioral approaches aimed at shifting perceptions of control can improve emotional regulation and reduce trauma symptoms warrants further experimental investigation, ideally through randomized controlled trials.

### 5.1. Conclusions

This research highlights the crucial role of LoC as a moderator between trauma exposure and emotional difficulties. Those who see themselves as externally controlled tend to be more vulnerable to emotional dysregulation after trauma, emphasizing the importance of fostering a sense of personal agency. Therapeutic approaches that shift external beliefs toward internal control – like cognitive-behavioral techniques – may bolster emotional resilience. Ultimately, understanding how trauma, perceived control, and emotional functioning interact can lead to

more personalized and effective interventions, promoting recovery and well-being in trauma survivors.

## Footnotes

**Authors' Contribution:** Conceptualization, methodology, validation, analysis: Sepideh Gerami and Masoume Pourmohamadreza-Tajrishi; Investigation: Sepideh Gerami; Writing-original draft: Sepideh Gerami, Masoume Pourmohamadreza-Tajrishi; References: Masoume Pourmohamadreza-Tajrishi; Writing-review & editing: Masoume Pourmohamadreza-Tajrishi; Supervision: Masoume Pourmohamadreza-Tajrishi; Supervisor, funding acquisition, investigation, introduction writer, formal analysis, methodology, resources, interpretation of data, discussion writer, writing original draft, writing-review and editing, validation, visualization (80%): Masoume Pourmohamadreza-Tajrishi; Main researcher, data collector, writing (20%): Sepideh Gerami.

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