

Article

Cryptocurrency Loss, Post-Traumatic Stress Symptoms, and Early Maladaptive Schemas in Physicians

İbrahim Karakaya ^{1,*} , İbrahim Gündoğmuş ² and Alişan Burak Yaşar ³¹ Department of Psychology, Istanbul Gelisim University, 34310 Istanbul, Türkiye² Department of Psychiatry, Ankara Etlik City Hospital, 06170 Ankara, Türkiye; dribrahim06@gmail.com³ Department of Psychiatry, Nisantasi University, 34398 Istanbul, Türkiye; alisanburak.yasar@nisantasi.edu.tr

* Correspondence: drikarakaya@gmail.com

Abstract

This study aimed to examine the relationship between post-traumatic stress symptoms following cryptocurrency loss and early maladaptive schemas in physicians. This cross-sectional study was conducted using a relational screening model and included 94 physicians across Türkiye who reported financial loss in cryptocurrency markets between 15 April and 15 July 2022. Data were collected online using a sociodemographic information form, the Young Schema Questionnaire–Short Form 3, and the Impact of Event Scale–Revised. Participants with an Impact of Event Scale–Revised total score of 33 or higher were classified as having elevated IES-R symptoms, reflecting elevated event-related distress according to a screening cutoff rather than a clinical diagnosis of PTSD. Eighteen participants (19.1%) were classified into this group. While no significant differences were found in age, marital status, employment status, or investment duration, the proportion of savings allocated to crypto was higher among participants with elevated IES-R symptoms. The elevated IES-R symptom group had higher scores in Failure, Pessimism, Dependence/Enmeshment, Punitiveness, Defectiveness, and Vulnerability to Harm, and additional correlation analyses showed that the IES-R total score was positively associated with Pessimism, Punitiveness, Dependence/Enmeshment, and Failure after false discovery rate correction. However, in the exploratory logistic regression analysis, none of these variables independently predicted elevated IES-R symptom status. These findings suggest that cryptocurrency loss may represent not only a financial stressor but also a significant experience associated with post-traumatic stress symptoms and maladaptive schema patterns in physicians.

Keywords: cryptocurrency loss; post-traumatic stress symptoms; early maladaptive schemas; physicians; psychological trauma



Academic Editor: Domenico De Berardis

Received: 15 April 2026

Revised: 4 June 2026

Accepted: 9 June 2026

Published: 15 June 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

Cryptocurrencies have rapidly evolved from a technological venture into a global ecosystem involving hundreds of millions of people and reaching market capitalization on the scale of trillions of U.S. dollars [1–3]. According to CoinGecko’s 2025 report, total market capitalization reached 3.5 trillion U.S. dollars by the end of the second quarter of 2025, while TripleA estimates that global ownership exceeded 560 million people as of 2024 [2,3]. This expansion is commonly associated in the literature with the erosion of trust in traditional financial structures following the 2008 Global Financial Crisis, and the market is expected to continue growing [4,5]. The main features that distinguish crypto markets from traditional

financial systems are their 24/7 uninterrupted trading cycle and high volatility [1,6]. This “always on” structure may keep investors in a constant state of alertness, making decision-making more impulsive; moreover, some aspects of cryptocurrency trading have been reported to resemble gambling behavior and to co-occur with symptoms of problem gambling [1,6–8]. According to Prospect Theory, people experience losses more intensely than gains; therefore, substantial financial losses in cryptocurrency trading may turn into a stress burden that disrupts investors’ sense of control and security [8,9]. Recent findings also suggest that the volatility and risks of the crypto market may be associated with psychological distress, anxiety, and depressive symptoms [8]. Nevertheless, the literature remains limited in systematically addressing the mental health effects of investing in cryptocurrencies, particularly the psychological consequences of financial losses [6,8].

The most striking aspect of these psychological effects is that some financial losses may evolve into a clinical picture in investors that evokes post-traumatic stress symptoms [10]. In DSM-5, trauma exposure is generally defined through events involving threats to physical integrity, such as actual or threatened death, serious injury, or sexual violence [11]. Nevertheless, there are studies indicating that sudden and dramatic personal financial loss may be associated with post-traumatic stress symptoms [10]. Freshman [10] reported that, although victims of the Madoff Ponzi scheme had no history of physical assault, 55.7% of participants exhibited symptoms at the level of “probable PTSD,” and interpreted such losses as a “financial disaster” [10]. Losses in cryptocurrency markets may similarly share characteristics with this “financial disaster” framework, as they too can occur suddenly and on a large scale [1,10]. The sudden disappearance of one’s life savings, together with the accompanying sense of loss of control, may give rise to a stress response that overlaps with the core symptom clusters of PTSD, such as re-experiencing, avoidance, and hyperarousal [10,11]. Although the psychological effects of crypto assets are generally discussed in the literature in terms of anxiety, depression, and gambling-like behaviors, studies that directly focus on post-traumatic stress symptoms related to crypto loss remain limited [6,8]. This makes it necessary to systematically examine the trauma-like effects that digital asset losses may produce, in order to fill this gap in the literature [6].

While the same loss may manifest as a limited stress response in some individuals, it may be more intense in others [10]. This difference has been linked to the possibility that schemas developed in childhood may become activated under stress and influence the way a person interprets the event [12]. Originally developed to explain clinical problems and enduring patterns, schema theory has in recent years also been discussed in relation to different areas of risky behavior [12]. A recent study in this field suggested that early maladaptive schemas may be associated with financial risk tolerance and risk perception [13]. After it was shown that crypto assets carry gambling-like risks and may lead to problematic trading habits, studies were also conducted to develop scales for measuring problematic cryptocurrency trading [7,14]. Nevertheless, in the existing literature, schemas have mostly been addressed in the context of addiction and uncontrolled buying–selling tendencies, whereas the question of how these schemas interact with post-traumatic stress symptoms that develop after crypto loss has remained more limited [13,15]. Understanding which schemas may trigger the psychological damage caused by financial loss is particularly important for clinical assessment and intervention processes, especially among physicians working under high professional responsibility and chronic stress [16]. Accordingly, in the present study, the relationship between post-traumatic stress symptoms observed after cryptocurrency loss and early maladaptive schemas in physicians was examined, with the aim of making an original contribution to the literature on this new-generation type of financial loss.

2. Materials and Methods

2.1. Study Design

This study employed a cross-sectional design based on a relational screening model to examine the relationship between post-traumatic stress symptoms following cryptocurrency loss and early maladaptive schemas in physicians.

2.2. Participants and Sampling

The study sample consisted of physicians working across Türkiye between 15 April and 15 July 2022 who self-reported having experienced financial loss in cryptocurrency markets. Participants were recruited through convenience sampling by distributing an online survey link via digital physician networks across Türkiye, including professional Telegram and WhatsApp groups with approximately 1200 members. Cryptocurrency loss was operationalized as self-reported realized financial loss in cryptocurrency investments. Due to the event-based nature of the Impact of Event Scale–Revised (IES-R), participants were asked to refer to the cryptocurrency loss event that affected them the most while completing the scale.

The inclusion criteria were as follows: (i) being aged 18 years or older, (ii) currently working as a physician in Türkiye, including residents, specialists, and general practitioners, (iii) self-reporting financial loss in cryptocurrency investments, and (iv) having sufficient internet access to complete the online survey. Based on self-report, the exclusion criteria were: (i) a known diagnosis of a psychotic disorder, (ii) a history or diagnosis of moderate to severe depression, and (iii) the presence of active suicidal ideation. These criteria were assessed using brief screening questions presented at the beginning of the online form, and participants meeting any exclusion criterion did not proceed to the research questionnaire. A total of 94 physicians fully completed the online survey and constituted the final study group. No cases were excluded due to missing data, as only fully completed questionnaires were included in the final analysis.

2.3. Data Collection Instruments

Data were collected using an online survey consisting of three sections, with an estimated completion time of approximately 15–20 min.

Sociodemographic Information Form: This form was developed by the researchers. In addition to age, marital status, and duration of professional experience, investment-related variables such as duration of cryptocurrency investment, the proportion of total savings allocated to crypto assets, perceived investment outcome, and perception of market trend change were obtained through self-report. No personally identifying information, such as name, telephone number, or e-mail address, was collected, and all data were anonymized.

Young Schema Questionnaire–Short Form 3 (YSQ-SF3): The YSQ-SF3 is a 90-item self-report instrument rated on a 6-point Likert scale and used to assess early maladaptive schemas. It theoretically measures 18 schema domains, with each subscale consisting of 5 items [12,17]. Subscale scores are calculated by summing the relevant five items, yielding scores ranging from 5 to 30, with higher scores indicating greater strength of the corresponding schema. In the present study, schema subscale scores were used as continuous variables in correlation analyses and as comparison variables in analyses according to IES-R cutoff status. In the multivariate model, only the schema subscales that showed significant differences in preliminary analyses were included, namely Failure, Pessimism, Dependence/Enmeshment, Punitiveness, Defectiveness/Shame, and Vulnerability to Harm or Illness. In this sample, Cronbach's alpha was 0.96 for the total YSQ-SF3, and alpha coefficients ranged from 0.78 to 0.88 for the selected subscales.

Impact of Event Scale–Revised (IES-R): The IES-R is a 22-item self-report scale assessing symptoms related to a specific traumatic or highly stressful event, with items rated on a 0–4 scale. It evaluates symptom severity experienced during the previous seven days and includes the subdimensions of re-experiencing, avoidance, and hyperarousal [18]. Total scores range from 0 to 88. In this study, the IES-R was completed with reference to the participant’s most distressing cryptocurrency loss. In line with Creamer et al. [19], participants with an IES-R total score of 33 or higher were classified as having elevated IES-R symptoms. This classification was used only to identify participants with elevated event-related distress according to a screening cutoff and should not be interpreted as indicating a clinical diagnosis of PTSD. In this sample, Cronbach’s alpha was 0.95 for the total IES-R, and alpha values ranged from 0.86 to 0.91 for the subscales.

2.4. Procedure and Ethical Considerations

The study was approved by the Ethics Committee of Istanbul Gelişim University on 16 March 2022 (Decision No. 2022-06-30). Participants were included after reading and approving the digital informed consent form presented on the survey entry page. It was clearly stated that participation was voluntary, that participants could discontinue the survey at any time, and that no penalty would result from withdrawal. Data were collected online and organized in a manner that did not include personally identifying information. Research data were stored in password-protected and encrypted environments accessible only to the researchers and were not shared with third parties. At the end of the survey, participants were provided with a brief note indicating psychological support resources that could be consulted if needed.

2.5. Statistical Analysis

Data obtained from the study were analyzed using IBM SPSS Statistics 26.0 software. Continuous variables were expressed as mean $\pm$ standard deviation, whereas categorical variables were presented as frequencies and percentages. For classification according to IES-R symptom severity, the total IES-R score was used. Participants with a total IES-R score of 33 or higher were classified as having elevated IES-R symptoms, whereas those scoring below 33 were classified as belonging to the below-cutoff group [19].

The distributional characteristics of continuous variables were examined to assess whether the assumptions for parametric tests were met. For comparisons of continuous variables between the two groups, the independent samples *t*-test was used for normally distributed variables, whereas the Mann–Whitney U test was applied for variables that did not show a normal distribution. Pearson’s chi-square test was used to examine the distribution of categorical variables according to IES-R cutoff status.

An exploratory binary logistic regression analysis was conducted to determine whether variables that showed significant differences between groups in the preliminary analyses independently predicted elevated IES-R symptom status. In the regression model, IES-R cutoff status was defined as the dependent variable, and age, together with the schema scores found to be significant in group comparisons—Failure, Pessimism, Dependence/Enmeshment, Punitiveness, Defectiveness/Shame, and Vulnerability to Harm or Illness—were included as independent variables. Regression results were reported with coefficients, standard errors, *z* values, *p*-values, odds ratios, and 95% confidence intervals. Overall model fit was evaluated using deviance, AIC, BIC, McFadden’s R^2 , Cox–Snell R^2 , and the overall model chi-square test. As an additional exploratory analysis, bivariate correlations between the IES-R total score and early maladaptive schema domains were examined using Spearman’s rho, given the non-normal distribution of the IES-R total score and some schema subscale scores. To reduce the risk of Type I error due to multiple

comparisons, unadjusted p -values were further evaluated using the Benjamini–Hochberg false discovery rate correction across the 14 early maladaptive schema domains. A p -value of <0.05 was considered statistically significant for all analyses.

3. Results

3.1. Sample Characteristics

In the first stage of the study, approximately 1200 individuals were reached online. A total of 94 participants who met the inclusion criteria and completed all study forms in full constituted the final sample. All participants in the final sample were male; therefore, sex was not included in the group comparison analyses. According to the classification based on the Impact of Event Scale–Revised (IES-R), 76 participants (80.9%) were classified in the below-cutoff group, and 18 participants (19.1%) were classified as having elevated IES-R symptoms. The sociodemographic and investment-related characteristics of the sample according to IES-R cutoff status are presented in Table 1.

Table 1. Comparisons of participants' sociodemographic and investment characteristics according to IES-R cutoff status.

Variable	Total	Below IES-R Cutoff	Elevated IES-R Symptoms	Statistic
Sex, n (%)				NA
Male	94 (100.0)	76 (80.9)	18 (19.1)	
Female	0 (0.0)	0	0	
Age	38.36 ± 7.44	38.67 ± 7.72	37.05 ± 6.15	$t = 0.826, p = 0.411$
Crypto literacy (years)	3.15 ± 4.17	3.32 ± 4.48	2.48 ± 2.49	$t = 0.759, p = 0.450$
Percentage of savings Gain (missing data *)	26.20 ± 26.14	23.06 ± 24.22	39.27 ± 30.35	$U = 458.500, p = 0.034$
Below 0%	6 (15.4%)	5 (83.3%)	1 (16.7%)	$\chi^2 = 0.595, p = 0.897$
50–100%	20 (51.3%)	17 (85.0%)	3 (15.0%)	
100–500%	11 (28.2%)	10 (90.9%)	1 (9.1%)	
500% and above	2 (5.1%)	2 (5.1%)	0	
Investment duration (month/year)				$\chi^2 = 8.902, p = 0.064$
0–4 months	69 (73.4)	58 (84.1)	11 (15.9)	
1 year	14 (14.9)	8 (57.1)	6 (42.9)	
2 years	6 (6.4)	6 (100)	0	
4 years	3 (3.2)	3 (100)	0	
5 years and above	2 (2.1)	1 (50.0)	1 (50.0)	
Marital status				$\chi^2 = 0.777, p = 0.678$
Married	78 (83.0)	63 (80.8)	15 (19.2)	
Single	7 (7.4)	5 (71.4)	2 (28.6)	
Divorced	9 (9.6)	8 (88.9)	1 (11.1)	
Employment				$\chi^2 = 0.534, p = 0.766$
Private	17 (18.1)	14 (82.4)	3 (17.6)	
Public	75 (79.8)	60 (80.0)	15 (20.0)	
Retired	2 (2.1)	2 (100)	0	
Trend				$\chi^2 = 1.091, p = 0.580$
Yes	54 (57.4)	43 (79.6)	11 (20.4)	
No	16 (17.0)	12 (75.0)	4 (25.0)	
Not sure	24 (25.5)	21 (87.5)	3 (12.5)	

Note: * The gain variable was reported based on $n = 39$ (missing data $n = 55$). NA: not applicable. Sex was not compared between groups because all participants in the final sample were male. Trend: "Is there a reversal/trend change in the market?".

3.2. Comparisons According to IES-R Cutoff Status

No significant between-group differences were found in age (total: 38.36 ± 7.44 years; $t = 0.826$, $p = 0.411$) or crypto literacy duration ($t = 0.759$, $p = 0.450$). However, the proportion of total savings allocated to cryptocurrency investments was significantly higher in the elevated IES-R symptom group than in the below-cutoff group (39.27 ± 30.35 vs. 23.06 ± 24.22 ; $U = 458.500$, $p = 0.034$). For the gain variable, substantial missing data were present, and no significant group difference was observed ($\chi^2 = 0.595$, $p = 0.897$). In addition, no statistically significant differences were found between the groups in terms of investment duration ($\chi^2 = 8.902$, $p = 0.064$), marital status ($\chi^2 = 0.777$, $p = 0.678$), employment status ($\chi^2 = 0.534$, $p = 0.766$), or perceived market trend change ($\chi^2 = 1.091$, $p = 0.580$) (Table 1).

As expected, participants in the elevated IES-R symptom group had higher re-experiencing, avoidance, hyperarousal, and total IES-R scores than those in the below-cutoff group. These differences are presented descriptively because the grouping variable was derived from the IES-R total score.

With regard to early maladaptive schemas, the elevated IES-R symptom group scored significantly higher on Failure (12.94 ± 5.46 vs. 10.09 ± 3.77 ; $U = 402.500$, $p = 0.043$), Pessimism (12.88 ± 4.53 vs. 9.77 ± 4.19 ; $t = -2.786$, $p = 0.006$), Dependence/Enmeshment (18.44 ± 8.83 vs. 13.68 ± 4.80 ; $U = 440.500$, $p = 0.019$), Punitiveness (22.27 ± 6.08 vs. 19.13 ± 5.25 ; $t = -2.216$, $p = 0.029$), Defectiveness (12.00 ± 6.61 vs. 9.00 ± 3.35 ; $U = 473.500$, $p = 0.040$), and Vulnerability to Harm (13.27 ± 4.98 vs. 10.92 ± 4.01 ; $t = -2.134$, $p = 0.036$). No significant between-group differences were found for Emotional Deprivation, Social Isolation, Emotional Inhibition, Approval-Seeking, Entitlement, Self-Sacrifice, Abandonment, or Unrelenting Standards (all $p > 0.05$) (Table 2).

Table 2. Comparison of IES-R and Young Schema Questionnaire scores according to IES-R cutoff status.

Variable	Total	Below IES-R Cutoff	Elevated IES-R Symptoms	Statistic
Impact of Event Scale				
Re-experiencing	6.86 ± 5.72	4.77 ± 3.03	15.66 ± 6.09	$U = 57.500$, $p < 0.001$
Avoidance	5.69 ± 5.32	3.64 ± 2.81	14.33 ± 4.70	$U = 5.500$, $p < 0.001$
Hyperarousal	4.29 ± 4.11	2.80 ± 2.42	10.61 ± 3.79	$t = -10.906$, $p < 0.001$
Total	16.85 ± 14.46	11.22 ± 7.32	40.61 ± 12.96	$t = -12.965$, $p < 0.001$
Young Schema Questionnaire				
Emotional Deprivation	8.92 ± 3.59	8.81 ± 3.39	9.38 ± 4.43	$t = -0.605$, $p = 0.546$
Failure	10.63 ± 4.26	10.09 ± 3.77	12.94 ± 5.46	$U = 402.500$, $p = 0.043$
Pessimism	10.37 ± 4.14	9.77 ± 4.19	12.88 ± 4.53	$t = -2.786$, $p = 0.006$
Social Isolation	16.96 ± 6.41	16.71 ± 6.15	18.05 ± 7.51	$t = -0.798$, $p = 0.427$
Emotional Inhibition	11.86 ± 5.11	11.57 ± 4.64	13.05 ± 6.81	$U = 617.000$, $p = 0.522$
Approval-Seeking	18.16 ± 6.12	17.93 ± 6.15	19.11 ± 6.04	$t = 0.731$, $p = 0.466$
Dependence/Enmeshment	14.59 ± 6.03	13.68 ± 4.80	18.44 ± 8.83	$U = 440.500$, $p = 0.019$
Entitlement	22.18 ± 6.59	21.93 ± 6.78	23.22 ± 5.80	$t = -0.743$, $p = 0.459$
Self-Sacrifice	14.78 ± 4.86	14.68 ± 4.72	15.22 ± 5.80	$t = -0.420$, $p = 0.676$
Abandonment	8.34 ± 3.39	8.02 ± 2.99	9.66 ± 4.61	$U = 563.000$, $p = 0.242$
Punitiveness	19.73 ± 5.52	19.13 ± 5.25	22.27 ± 6.08	$t = -2.216$, $p = 0.029$
Defectiveness	9.57 ± 4.29	9.00 ± 3.35	12.00 ± 6.61	$U = 473.500$, $p = 0.040$
Vulnerability to Harm	11.37 ± 4.29	10.92 ± 4.01	13.27 ± 4.98	$t = -2.134$, $p = 0.036$
Unrelenting Standards	8.93 ± 3.53	8.84 ± 3.45	9.33 ± 3.94	$t = -0.528$, $p = 0.599$

Note: IES-R subscale differences are presented descriptively because the grouping variable was derived from the IES-R total score.

3.3. Exploratory Binary Logistic Regression Analysis

An exploratory binary logistic regression analysis was conducted to determine whether the age and the schema variables that showed significant differences in the bivariate analyses independently predicted elevated IES-R symptom status. As presented in Table 3,

none of the variables emerged as a significant independent predictor of elevated IES-R symptom status. In addition, the overall regression model was not statistically significant ($\chi^2 = 11.346$, $df = 7$, $p = 0.124$), indicating that the included variables did not significantly explain IES-R cutoff status. The explanatory power of the model was limited (McFadden's $R^2 = 0.124$; Cox–Snell $R^2 = 0.114$).

Table 3. Exploratory logistic regression analysis predicting elevated IES-R symptom status.

Predictor	Estimate	SE	Z	p	Odds Ratio	95% Confidence Interval Lower	95% Confidence Interval Upper
Intercept	−4.419	2.253	−1.961	0.050	0.012	0.000	0.997
Age	−0.015	0.045	−0.327	0.744	0.985	0.901	1.077
Failure	0.041	0.091	0.454	0.650	1.042	0.872	1.245
Pessimism	0.052	0.090	0.586	0.558	1.054	0.884	1.256
Dependence/Enmeshment	0.059	0.067	0.878	0.380	1.060	0.930	1.209
Punitiveness	0.081	0.068	1.192	0.233	1.084	0.949	1.239
Defectiveness	0.029	0.115	0.251	0.802	1.029	0.822	1.289
Vulnerability to Harm	−0.033	0.101	−0.325	0.745	0.968	0.793	1.180

Note: Overall model fit statistics were as follows: Deviance = 80.468; AIC = 96.468; BIC = 116.815; McFadden's $R^2 = 0.124$; Cox–Snell $R^2 = 0.114$; $\chi^2 = 11.346$; $df = 7$; $p = 0.124$.

3.4. Correlation Analysis Between IES-R Total Score and Early Maladaptive Schemas

As an additional exploratory analysis, Spearman correlation analyses were conducted to examine the associations between IES-R total score and early maladaptive schema domains in the full sample. To reduce the risk of Type I errors due to multiple comparisons, unadjusted p -values were evaluated using the Benjamini–Hochberg false discovery rate correction across the 14 early maladaptive schema domains. As shown in Table 4, the IES-R total score was positively correlated with Pessimism ($\rho = 0.421$, FDR-adjusted $p = 0.014$), Punitiveness ($\rho = 0.305$, FDR-adjusted $p = 0.021$), Dependence/Enmeshment ($\rho = 0.279$, FDR-adjusted $p = 0.025$), and Failure ($\rho = 0.278$, FDR-adjusted $p = 0.025$).

Table 4. Bivariate correlations between IES-R total score and early maladaptive schema domains.

Event-Related Distress				
	Spearman's ρ	Unadjusted p -Value	FDR-Adjusted p -Value	Significant After FDR
Emotional Deprivation	0.120	0.249	0.268	No
Failure	0.278	0.007	0.025	Yes
Pessimism	0.421	<0.001	0.014	Yes
Social Isolation	0.161	0.121	0.176	No
Emotional Inhibition	0.153	0.141	0.179	No
Approval-Seeking	0.235	0.022	0.062	No
Dependence/Enmeshment	0.279	0.006	0.025	Yes
Entitlement	0.140	0.178	0.208	No
Self-Sacrifice	0.182	0.079	0.158	No
Abandonment	0.170	0.101	0.176	No
Punitiveness	0.305	0.003	0.021	Yes
Defectiveness	0.159	0.126	0.176	No
Vulnerability to Harm	0.210	0.042	0.098	No
Unrelenting Standards	0.082	0.432	0.432	No

Note: $N = 94$. IES-R = Impact of Event Scale–Revised. The Benjamini–Hochberg false discovery rate correction was applied across the 14 early maladaptive schema domains. FDR-adjusted p -values < 0.05 were considered statistically significant.

Approval-Seeking and Vulnerability to Harm showed nominally significant correlations in unadjusted analyses, but these associations did not remain significant after FDR correction. No significant correlations were observed between IES-R total score and Emotional Deprivation, Social Isolation, Emotional Inhibition, Entitlement, Self-Sacrifice, Abandonment, Defectiveness/Shame, or Unrelenting Standards.

4. Discussion

Studies examining the relationship between cryptocurrency trading and mental health have increased markedly in recent years; however, this literature has largely addressed cryptocurrency trading within the framework of problematic usage patterns, addiction-like features, and accompanying general psychological problems, particularly anxiety and depression [6,14]. The development of psychometric instruments to assess problematic cryptocurrency trading [14], as well as the examination of this behavior together with symptoms related to anxiety, depression, and gambling [20], indicates that the field has progressed largely in this direction. In contrast, more specific symptom clusters that may emerge after major loss appear to have remained relatively in the background [6,8].

The financial loss literature provides an important theoretical basis for interpreting the findings of our study. Negative wealth shocks have been shown to be associated with levels of depressive symptoms [21], and financial assets or changes in assets may also be associated with symptoms of depression and anxiety [22]. There are also findings indicating that individuals who experience catastrophic financial loss are at increased risk for major depression and generalized anxiety disorder [23]. This picture strengthens the possibility that crypto loss may be experienced by some individuals not merely as financial stress, but as a devastating life event. However, empirical studies that directly address post-traumatic symptoms in the context of cryptocurrency loss in terms of re-experiencing, avoidance, and hyperarousal appear to be relatively limited.

Nevertheless, when discussing the clinical picture that emerges after crypto loss, the conceptual boundaries need to be clearly drawn. In DSM-5, a diagnosis of post-traumatic stress disorder requires exposure to traumatic events such as death, serious injury, or sexual violence [11]. For this reason, stressors such as financial loss may not correspond one-to-one with PTSD at the diagnostic level [11]. By contrast, in the ICD-11-based definition, PTSD is defined by clusters of re-experiencing, avoidance, and a persistent sense of current threat following extremely threatening or horrific events [24]. Within this framework, the most appropriate approach in the context of crypto loss is to discuss the observed pattern not as a diagnostic claim, but as elevated event-related distress or post-traumatic stress symptoms measured by a self-report screening instrument. Indeed, while the assessment of post-traumatic stress symptoms through self-report screening instruments provides a clinically meaningful preliminary screening, a structured clinical interview is required for diagnosis. In this context, the fact that 19.1% of the participants scored above the IES-R screening cutoff suggests that crypto loss may be experienced by some individuals not merely as a temporary financial stressor, but as a psychologically devastating experience associated with high-intensity stress responses. This finding is also consistent with studies showing that cryptocurrency trading in physician samples may be associated with emotional and psychosocial vulnerabilities [16].

Cognitive models in the trauma literature are instructive for understanding how these symptoms are maintained. According to Ehlers and Clark [25], the persistence of PTSD is related to the individual's inability to interpret the event as an experience that is over compared to a continued sense of current threat; this perception may sustain hyperarousal symptoms while also feeding re-experiencing and avoidance. Findings show that changes in negative appraisals developed after trauma can predict reductions in symptom severity,

supporting the clinical importance of this focus on current threat [26]. From this perspective, the structure of cryptocurrency markets and trading applications, which can continuously expose the individual to loss-related cues, is particularly important. The fact that cryptocurrency markets operate 24/7 may prevent the loss from remaining a singular event in the past; the individual may be repeatedly exposed, through price screens and news feeds, to cues that remind them of the loss experience again and again. Experimental and regulatory findings regarding the design of financial applications also support this view. In an experiment conducted with more than 9000 participants, the FCA reported that digital engagement practices such as push notifications, flashing prices, leaderboards, and points/rewards could lead to changes in trading frequency and investment risk [27]. ESMA likewise emphasizes that gamification and “gambification” practices in investment applications may encourage users to monitor their portfolios continuously, become more sensitive to small price movements, and trade more frequently according to a short-term reward logic [28]. Although these platform-related factors were not directly measured in the present study, they may represent plausible mechanisms through which cryptocurrency-related distress is maintained and should be examined in future research [27,28].

One of the notable findings of our study was that the group showing post-traumatic stress symptoms had allocated a higher percentage of their savings to crypto (39.27%). One of the major methodological gaps in the crypto loss literature is the limited use of ratio-based indicators that quantitatively reflect how severe an exposure the loss represents for the individual. For this reason, in our study, the severity of exposure was addressed through the proportion of participants’ savings allocated to crypto. This approach is consistent with longitudinal evidence showing that negative wealth shocks may be associated with depressive symptoms over time [21]. However, a cross-sectional design is not suitable for defining a particular percentage as a definitive threshold. A more appropriate interpretation is that the percentage of savings allocated to crypto may serve as a practically and easily assessable risk indicator. This proportion may reflect, more realistically than the absolute amount of loss, the extent to which the loss has damaged the individual’s subjective sense of security.

The fact that demographic variables such as age, marital status, employment status, and years of crypto literacy did not show significant differences in terms of the presence of post-traumatic stress symptoms suggests that the emergence of these symptoms may be related less to demographic characteristics than to the severity of exposure and cognitive-emotional meaning-making processes. In the broader crypto literature, although an association between cryptocurrency trading and psychological symptoms has been reported, the strength of this relationship and the conditions under which it becomes pronounced may vary across studies [6,20]. At this point, the physician sample is of particular importance. Against a background of high workload and stress among physicians, the 24/7 structure of crypto markets and the pressure to recover losses may create an environment conducive to the development of problematic cryptocurrency trading patterns [16]. In addition, findings from systematic reviews and meta-analyses indicate that burnout and chronic workload are common among physicians, suggesting that this group may already have a vulnerable stress background [29]. Studies evaluating macro stressors such as economic crisis, together with physician burnout, also support the importance of this background [30].

Crypto loss does not always remain merely a financial loss; in some individuals, it may lead to a deeper disruption related to self-worth. At this point, early maladaptive schemas provide a useful framework for explaining how the loss is interpreted and why symptoms may run a more severe course in some individuals. In the trauma/PTSD literature, the fact that early maladaptive schemas are reported more frequently, particularly in the domains

of disconnection/rejection and impaired autonomy/performance, suggests the importance of schemas such as failure, defectiveness, and punitiveness after loss [31]. Indeed, in our study, the finding that schemas such as failure, defectiveness, and punitiveness were higher among participants with more severe post-traumatic stress symptoms indicates that crypto loss may be interpreted by some physicians through themes of error and inadequacy, which in turn may reinforce the cycle of re-experiencing, avoidance, and hyperarousal. This interpretation is also consistent with Janoff-Bulman's shattered assumptions framework. According to this approach, devastating life events may shake the individual's fundamental beliefs that the world is safe and predictable and that the self is worthy and competent [32]. Although perfectionism, professional identity, and performance expectations were not directly measured in the present study, they may be relevant factors to consider in future research on how physicians interpret financial loss through themes of failure and defectiveness. In addition, the literature examining the relationship between schemas and behavioral addictions shows that behaviors characterized by high uncertainty and reward orientation, such as gambling, are closely related to cognitive schemas, and that schemas in the domain of disconnection and rejection may play a particularly decisive role in this process [15,33,34]. These data establish a theoretical bridge between the gambling-like nature of cryptocurrency trading and the schema findings obtained in our study. Finally, studies reporting the effects of schemas on financial risk tolerance and risk perception support the view that risky investment preferences are not only financial decisions, but also psychological processes that need to be addressed at the level of cognitive schemas [13].

An additional point that requires consideration is the absence of significant between-group differences in schemas such as Emotional Deprivation and Social Isolation. Although these schemas are theoretically located within the disconnection/rejection domain, they may not be the most directly activated schema patterns in the context of cryptocurrency-related financial loss. Emotional Deprivation and Social Isolation primarily involve unmet relational needs, expectations of emotional support, and perceived social belonging. By contrast, the psychological impact of cryptocurrency loss in physicians may be more closely related to themes of failure, loss of control, self-blame, vulnerability, and threat to competence. This may explain why schemas such as Failure, Defectiveness/Shame, Punitiveness, and Vulnerability to Harm or Illness showed more pronounced differences between the groups. In addition, the relatively small number of participants classified as having elevated IES-R symptoms may have limited the statistical power to detect smaller differences in some schema domains. Therefore, the lack of statistically significant differences in Emotional Deprivation and Social Isolation should not necessarily be interpreted as evidence that relational schemas are irrelevant, but rather as suggesting that cryptocurrency-related post-traumatic stress symptoms may be more strongly associated with specific schema themes related to competence, self-evaluation, punishment, and perceived threat.

The fact that the schema variables became non-significant when entered into the model together with the regression analyses may not mean that these schemas are unimportant. In particular, the small number of participants in the elevated IES-R symptom group may have reduced the statistical power and stability of the exploratory multivariate model. Therefore, the effects of schemas should be tested in future studies with larger samples, preferably with longitudinal designs, and with models that directly measure mediating processes such as rumination, avoidance, and intensity of digital exposure. The literature systematically addressing the schema-trauma relationship also shows that this kind of mechanistic and methodological disentanglement is one of the main needs in the field [31].

The additional correlation analysis using the continuous IES-R total score provides complementary information to the group-based comparisons. The positive correlations between IES-R total score and Pessimism, Punitiveness, Dependence/Enmeshment, and

Failure remained significant after FDR correction, suggesting that these schema domains may be associated with the severity of event-related distress, even though the exploratory multivariate model was limited by the small number of participants included in the elevated IES-R symptom group.

In terms of clinical and practical implications, the need for support among physicians who experience crypto loss should not be limited only to debt/income planning or financial counseling. In individuals with a high symptom burden, trauma-informed psychological assessment, stress and sleep regulation, behavioral principles aimed at reducing avoidance, and cognitive reappraisal strategies may be useful. However, these recommendations should be based not on an assumption of diagnosis, but on symptom burden and level of functioning [24]. In addition, simple ratio-based questions, such as the percentage of savings allocated to crypto, may be considered a risk signal in the clinical interview; however, it should be clearly stated that these indicators alone are not sufficient for clinical decision-making and require longitudinal validation.

The fact that our study relied on online self-reports and had a cross-sectional design limits causal inference. In addition, the small number of participants in the elevated IES-R symptom group may have reduced the statistical power and stability of the exploratory multivariate model. Although the sample consisting only of physicians gives the findings specificity, studies on different occupational and income groups are necessary in terms of generalizability. Furthermore, because the final sample consisted entirely of male physicians, the findings may not be generalizable to female physicians or to more gender-balanced physician populations. Finally, the study did not collect detailed indicators of actual loss severity, such as the absolute amount lost, the percentage of the initial cryptocurrency investment lost, whether the loss resulted from panic selling, market crash, fraud/hack, or leveraged liquidation, and the time elapsed since the loss. Therefore, the proportion of savings allocated to cryptocurrency should be interpreted as a proxy indicator of exposure severity rather than a direct measure of actual loss severity. In addition, measuring characteristics of the loss, such as market crash, fraud/hack, and leveraged liquidation, together with the time elapsed since the loss and the intensity of digital exposure through variables such as notifications/screen monitoring, would allow a clearer test both of the mechanisms contributing to the persistence of post-traumatic stress symptoms and of the pathways through which schemas are activated [27,28].

In conclusion, this study suggests that cryptocurrency loss in physicians may not remain merely a source of financial stress in some cases, but may also be observed together with a symptom pattern consistent with post-traumatic stress symptoms. The findings also indicate that this picture may be associated with certain early maladaptive schemas. In this respect, the study highlights the necessity of addressing crypto loss not only as an economic event but also as an experience that may produce clinically meaningful psychological consequences in some individuals.

5. Conclusions

In conclusion, this study shows that cryptocurrency loss in physicians may not, in some cases, remain merely an economic loss or a temporary financial stressor, but may be associated with clinically meaningful event-related distress and post-traumatic stress symptoms. The findings also indicate that this impact may be associated with certain early maladaptive schemas. In this respect, the study reveals that the mental health dimension of crypto loss needs to be examined more closely; in particular, it suggests that the relationship between risky investment behaviors, post-traumatic stress symptoms, and patterns of cognitive vulnerability constitutes an important area for future research.

Author Contributions: Conceptualization, İ.K. and İ.G.; methodology, İ.K., İ.G. and A.B.Y.; data curation, İ.K.; formal analysis, İ.K.; investigation, İ.K.; validation, İ.G. and A.B.Y.; visualization, İ.K.; writing—original draft preparation, İ.K.; writing—review and editing, İ.G. and A.B.Y.; supervision, İ.G. and A.B.Y.; project administration, İ.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Istanbul Gelişim University (approval code: No. 2022-06-30, approval date: 16 March 2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on reasonable request from the corresponding author. The data presented in this study are not publicly available due to privacy and ethical restrictions.

Acknowledgments: The authors thank all physicians who participated in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

PTSD	Post-Traumatic Stress Disorder
IES-R	Impact of Event Scale–Revised
YSQ-SF3	Young Schema Questionnaire–Short Form 3
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
ICD-11	International Classification of Diseases, 11th Revision
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

References

1. Bank for International Settlements. Annual Economic Report 2023. 2023. Available online: <https://www.bis.org/publ/arpdf/ar2023e.htm> (accessed on 6 April 2026).
2. CoinGecko. 2025 Q2 Crypto Industry Report. 2025. Available online: <https://www.coingecko.com/research/publications/2025-q2-crypto-report> (accessed on 6 April 2026).
3. Triple-A. Cryptocurrency Ownership Data. 2024. Available online: <https://www.triple-a.io/cryptocurrency-ownership-data> (accessed on 6 April 2026).
4. United Nations Conference on Trade and Development. Crypto Assets and Central Bank Digital Currencies: Potential Implications for Developing Countries. 2023. Available online: <https://unctad.org/publication/crypto-assets-and-central-bank-digital-currencies-potential-implications-developing> (accessed on 6 April 2026).
5. Nakamoto, S. Bitcoin: A Peer-to-Peer Electronic Cash System. 2008. Available online: <https://bitcoin.org/bitcoin.pdf> (accessed on 6 April 2026).
6. Johnson, B.; Co, S.; Sun, T.; Lim, C.C.W.; Stjepanović, D.; Leung, J.; Saunders, J.B.; Chiu, V.; Chan, G.C.K. Cryptocurrency trading and its associations with gambling and mental health: A scoping review. *Addict. Behav.* **2023**, *136*, 107504. [CrossRef]
7. Delfabbro, P.; King, D.L.; Williams, J.; Georgiou, N. Cryptocurrency trading, gambling and problem gambling. *Addict. Behav.* **2021**, *122*, 107021. [CrossRef] [PubMed]
8. Jain, L.; Velez-Figueroa, L.; Karlapati, S.; Forand, M.; Ahmed, R.; Sarfraz, Z. Cryptocurrency trading and associated mental health factors: A scoping review. *J. Prim. Care Community Health* **2025**, *16*, 21501319251315308. [CrossRef]
9. Kahneman, D.; Tversky, A. Prospect theory: An analysis of decision under risk. *Econometrica* **1979**, *47*, 263–291. [CrossRef]
10. Freshman, A. Financial disaster as a risk factor for posttraumatic stress disorder: Internet survey of trauma in victims of the Madoff Ponzi scheme. *Health Soc. Work* **2012**, *37*, 39–48. [CrossRef]
11. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed.; American Psychiatric Publishing: Washington, DC, USA, 2013.
12. Young, J.E.; Klosko, J.S.; Weishaar, M.E. *Schema Therapy: A Practitioner's Guide*; Guilford Press: New York, NY, USA, 2003.

13. Ekiz, K. Early Maladaptive Schemas and Financial Risk Tolerance: A Cognitive-Psychological Framework. *SSRN Electron. J.* **2025**. Available online: <https://ssrn.com/abstract=5343550> (accessed on 6 April 2026). [CrossRef]
14. Menteş, N.; Yolbaş, İ.; Bulut, M. Development and verification of problematic cryptocurrency trading scale. *Psychiatry Clin. Psychopharmacol.* **2021**, *31*, 310–318. [CrossRef]
15. Vieira, C.; Kuss, D.J.; Griffiths, M.D. Early maladaptive schemas and behavioural addictions: A systematic literature review. *Clin. Psychol. Rev.* **2023**, *105*, 102340. [CrossRef]
16. Dönmezgil, S.; Uyar, B. Relationship between cryptocurrency trading, hopelessness, and financial well-being: A cross-sectional study among physicians. *Med. Sci. Monit.* **2025**, *31*, e951494. [CrossRef]
17. Soygüt, G.; Karaosmanoğlu, A.; Çakır, Z. Assessment of early maladaptive schemas: A psychometric study of the Turkish Young Schema Questionnaire–Short Form-3. *Turk. J. Psychiatry* **2009**, *20*, 75–84.
18. Çorapçıoğlu, A.; Yargıç, İ.; Geyran, P.; Kocabaşoğlu, N. Olayların etkisi ölçeği (IES-R) Türkçe versiyonunun geçerlik ve güvenilirliği. *Yeni Symp.* **2006**, *44*, 14–22.
19. Creamer, M.; Bell, R.; Failla, S. Psychometric properties of the Impact of Event Scale–Revised. *Behav. Res. Ther.* **2003**, *41*, 1489–1496. [CrossRef]
20. Özbek, M.; Topal, G. Problematic cryptocurrency trading among traders in Türkiye: A cross-sectional study of prevalence and associations with anxiety, depression, and problem gambling. *J. Gambl. Stud.* **2025**, Advance online publication. [CrossRef]
21. Ran, G.; Avendano, M.; Berkman, L.F.; Mukherjee, B. Negative wealth shocks and subsequent depressive symptoms and trajectories in middle-aged and older adults in the USA, England, China, and Mexico: A population-based, multinational, and longitudinal study. *Psychol. Med.* **2024**, Advance online publication. [CrossRef]
22. Ettman, C.K.; Thornburg, B.; Abdalla, S.M.; Meiselbach, M.K.; Galea, S. Financial assets and mental health over time. *Sci. Rep.* **2024**, *14*, 27370. [CrossRef]
23. Ganzini, L.; McFarland, B.H.; Cutler, D. Prevalence of mental disorders after catastrophic financial loss. *J. Nerv. Ment. Dis.* **1990**, *178*, 680–685. [CrossRef]
24. World Health Organization. Post-Traumatic Stress Disorder. 2024. Available online: <https://www.who.int/news-room/fact-sheets/detail/post-traumatic-stress-disorder> (accessed on 6 April 2026).
25. Ehlers, A.; Clark, D.M. A cognitive model of posttraumatic stress disorder. *Behav. Res. Ther.* **2000**, *38*, 319–345. [CrossRef]
26. Kleim, B.; Grey, N.; Wild, J.; Nussbeck, F.W.; Stott, R.; Hackmann, A.; Clark, D.M.; Ehlers, A. Cognitive change predicts symptom reduction with cognitive therapy for posttraumatic stress disorder. *J. Consult. Clin. Psychol.* **2013**, *81*, 383–393. [CrossRef]
27. Financial Conduct Authority. Digital Engagement Practices: A Trading Apps Experiment. 2024. Available online: <https://www.fca.org.uk/publications/research-notes/research-note-digital-engagement-practices-trading-apps-experiment> (accessed on 6 April 2026).
28. European Securities and Markets Authority. Discussion Paper on MiFID II Investor Protection Topics Linked to Digitalisation. 2023. Available online: <https://www.esma.europa.eu/document/discussion-paper-mifid-ii-investor-protection-topics-linked-digitalisation> (accessed on 6 April 2026).
29. Macaron, M.M.; Segun-Omosehin, O.A.; Matar, R.H.; Beran, A.; Nakanishi, H.; Than, C.A.; Abulseoud, O.A. A systematic review and meta-analysis on burnout in physicians during the COVID-19 pandemic: A hidden healthcare crisis. *Front. Psychiatry* **2023**, *13*, 1071397. [CrossRef]
30. Youssef, D.; Youssef, J.; Jabbour, H.; Hassan, H.; Abou-Abbas, L.; Hajj, A. Prevalence and correlates of burnout among physicians in a developing country facing multi-layered crises: A cross-sectional study. *Sci. Rep.* **2022**, *12*, 12615. [CrossRef]
31. Lian, A.E.Z.; Chooi, W.-T.; Bono, S.A. A systematic review investigating the early maladaptive schemas in individuals with trauma experiences and PTSD. *Eur. J. Trauma Dissociation* **2023**, *7*, 100315. [CrossRef]
32. Janoff-Bulman, R. *Shattered Assumptions: Towards a New Psychology of Trauma*; Free Press: Detroit, MI, USA, 1992.
33. Shorey, R.C.; Stuart, G.L.; Anderson, S. The early maladaptive schemas of an opioid-dependent sample of treatment-seeking young adults: A descriptive investigation. *J. Subst. Abuse Treat.* **2012**, *42*, 271–278. [CrossRef]
34. Aloï, M.; Verrastro, V.; Rania, M.; Sacco, R.; Fernández-Aranda, F.; Jiménez-Murcia, S.; De Fazio, P.; Segura-García, C. The potential role of early maladaptive schemas in behavioral addictions among late adolescents and young adults. *Front. Psychol.* **2020**, *10*, 3022. [CrossRef]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.