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The Relationship Between Adverse Childhood Experiences and PTSD: An Analysis of the Pandemic Responses in a Sample of European Adults

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Abstract

The COVID-19 pandemic is considered a potentially traumatic event, as it introduced new challenges and threats to people around the world, disrupting daily life due to the restrictions imposed. The psychological defenses of individuals mobilized to deal with stress reactions are influenced by a set of factors, including previous traumatic experiences, which can amplify the current trauma. Recognizing that people exposed to adverse childhood experiences (ACEs) have increased risks of an array of adverse mental and physical health outcomes throughout life, the present study aimed to investigate the relationship between ACEs—more specifically, child abuse and child neglect—and PTSD symptoms in a sample of European adults during the pandemic. A sample of 8459 participants (67.1% female and 32.9% male, with a mean of 43.95 years old) was evaluated. The survey questionnaire included questions on sociodemographic and clinical characteristics, the Primary Care PTSD Screen for DSM-5 (PC-PTSD-5), and the Adverse Childhood Experiences (ACEs) questionnaire. According to our findings, younger women who have suffered from child abuse or child neglect are more likely to develop PTSD symptoms. The most significant factor influencing the PTSD risk was child neglect, contrary to many studies that indicate that child abuse is the most impactful adverse childhood experience.

Keywords: post-traumatic stress; PTSD; adverse childhood experiences; child neglect; child abuse; COVID-19; pandemic

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1. Introduction

In the first few months of 2020, the COVID-19 pandemic was declared an international public health emergency [1]. COVID-19 is an infectious disease caused by the SARS-CoV-2 virus that can affect people in different ways. Although most patients recover without hospitalization, others may present serious symptoms that require medical attention, with deaths being reported since the first few months of the pandemic [2]. The COVID-19 pandemic is considered a potentially traumatic event, as it introduced new challenges and threats to people around the world, disrupting daily life due to the restrictions imposed [3]. In addition to physical health risks, the pandemic created an environment of fear and uncertainty, with the imposition of social isolation and widespread job losses, which had a major impact on mental health, becoming a significant stressor for individuals across the globe.

A pandemic is considered a potentially traumatic event as it can both cause and/or worsen stress reactions, via both direct threats (e.g., health, safety, and income) and indirect exposure, such as media coverage and the spread of misinformation [4,5]. The consequences of the pandemic have been far-reaching, leading to high levels of post-traumatic stress symptoms, suicidal ideation, and increased incidences of depressive and anxiety symptoms. Additionally, many individuals have reported disruptions in sleep patterns, further contributing to the mental and emotional strain caused by this global crisis [6,7].

The coping behaviors and psychological defenses of individuals mobilized to deal with stress reactions are influenced by a set of factors (e.g., severity and exposure time, personality traits, social support), including previous traumatic experiences, which can amplify the current trauma [8,9]. Adverse childhood experiences (ACEs) have been related to the development of stress-related symptoms. Studies have indicated that individuals exposed to more ACEs present significantly more psychopathologies, such as post-traumatic stress disorder (PTSD), depression, anxiety, and substance abuse, than those exposed to fewer ACEs [10,11]. One study notes that "a large body of evidence has shown that children exposed to ACEs have increased risks of an array of adverse mental and physical health outcomes throughout life" [12] (p. 2).

Adverse childhood experiences include exposure to violence, abuse, or neglect and other events that can undermine one's sense of safety, stability, and bonding [13]. "Abuse is defined as an act of commission and neglect is defined as an act of omission in the care leading to potential or actual harm", according to Gonzales et al. [14]. Child abuse and child neglect have impacts on cognitive flexibility [15], which is the ability to adjust one's thoughts, behaviors, and strategies when facing new challenges, and are significantly correlated with internalized shame [16], which can lead to negative perceptions of the events experienced throughout life. Child abuse has been associated with cognitive and affective reactiveness [15], while child neglect is associated with depression, alcoholism, and suicide [17]. Cognitive reactiveness refers to the speed and sensitivity of an individual's thought processes when triggered by a stimulus, and affective reactiveness is how intensely and immediately the individual experiences emotions in response to a stimulus. Adverse childhood experiences are potentially traumatic events that may have negative effects on physical and mental health [18].

As aforementioned, exposure to adverse childhood experiences is correlated with negative beliefs about oneself, others, and the world [19]; increased feelings of shame [16,20]; and vulnerability towards developing psychopathologies [11]. This vulnerability includes poor mental health, rumination, dissociation, psychological distress, antisocial behavior, poor social functioning, a tendency towards social conflict, and substance abuse [15,17,21–25]. In addition, adverse childhood experiences have been linked to lower levels of education, financial instability, and unemployment [17,22].

Considering the COVID-19 pandemic a potentially traumatic event and the impact that adverse childhood experiences have throughout individuals' lives, being a factor that influences the development of psychopathologies, the present study aimed to investigate the relationship between ACEs and PTSD in a sample of European adults during the pandemic. The COVID-19 pandemic directly affected people's lives, particularly due to the imposition of social isolation and the fear of losing loved ones [26], as well as activities such as going for a walk, meeting with family and friends, traveling, and going to concerts, museums, and other crowded places. Since stress reactions are influenced by previous life experiences, as well as personal beliefs, adverse childhood experiences may have played a significant role in how people responded to the pandemic. While some studies have pointed to abuse as the adverse childhood experience with the highest risk for developing PTSD [27,28], others have found a stronger relationship between child neglect and the risk

for PTSD [29]. Thus, the current study also aimed to verify the impacts of these two types of adverse childhood experiences—child abuse and child neglect—on PTSD symptoms.

2. Materials and Methods

The present study utilized the ADJUST database, provided by the European Society for Traumatic Stress Studies (ESTSS), included in the protocol for the study titled "Stressors, coping and symptoms of adjustment disorder in the course of COVID-19 pandemic—a European Society for Traumatic Stress Studies (ESTSS) pan-European study" [30]. The ESTSS launched this study with the aim of exploring the relationships between COVID-19-related risks and protective factors, stressors, and symptoms of adjustment disorder, as well as investigating whether coping behaviors moderate these relationships. The sample consisted of 15,563 adults from eleven European countries, namely Austria, Croatia, Germany, Georgia, Greece, Italy, Lithuania, the Netherlands, Poland, Portugal, and Sweeden [31]. The study was pre-registered in a study registry "OSF registry https://osf.io/8xhyg (accessed on 3 March 2025)". For further information, see the study's website "https://estss.org/adjust/ (accessed on 3 March 2025)".

2.1. Participants

The society members of the ESTSS were responsible for data collection in their respective countries. The study was planned to be an online cohort survey involving the general population. The sample was selected through the snowball sampling method. Participants formally consented to participation. The data collected from the eleven countries was organized into a common database, named ADJUST, allowing researchers to carry out several studies on the influence of the COVID-19 pandemic on the lives of European adults.

As aforementioned, the original sample consisted of 15,563 participants from eleven European countries. However, for the present study, some participants were excluded due to the absence of answers in relevant instruments, namely the ACE dimensions and the Primary Care PTSD Screen for DSM-5, resulting in a total of 8459 European adults. The sample consisted mostly of women (67.1%), with an average age of 43.95, ranging from a minimum of 18 to a maximum of 96 years old (SD = 16.13). Regarding their educational levels, 96.8% of the participants had ten or more years of education.

The study protocol included questions about participants' physical and mental health and their perceptions of the risks for severe or fatal COVID-19 symptoms. Specifically, 43.8% of the participants classified their health as good, 26.8% as very good, 23.6% as satisfactory, 5.2% as bad, and 0.7% as very bad. Moreover, towards the pandemic, 74.3% of the participants did not report a risk for severe or fatal COVID-19 symptoms, while 25.7% reported being in these risk groups. Additionally, 13.4% of the participants were diagnosed with a mental disorder but reported recovering, while 9.2% reported having a mental disorder at the time of the assessment. Among the diagnoses, depression, borderline personality disorder, anxiety, psychosis, schizophrenia, attention deficit hyperactivity disorder, substance addiction, autism, phobia, obsessive–compulsive disorder, anorexia, bipolar disorder, bulimia, burnout, and post-traumatic stress were identified in this study. The most reported mental disorders were depression (4.4%) and anxiety (3.5%).

2.2. Instruments

The survey questionnaire included questions on sociodemographic and clinical characteristics (e.g., health perception, diagnosis of mental disorder), the Adverse Childhood Experiences questionnaire, and the Primary Care PTSD Screen for DSM-5.

The Adverse Childhood Experiences (ACE) questionnaire [32] is an instrument utilized to describe the long-lasting consequences of adverse childhood experiences that present

themselves as health problems in adulthood. It is commonly used to determine the existence of adverse childhood experiences and has high reliability (Cronbach's alpha = 0.95) [33]. In the study protocol, exposure to childhood trauma was addressed by the first five items of the ACE questionnaire, which determine the occurrence of emotional, physical, and sexual abuse and experiences of neglect prior to 18 years old.

The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) [34] is a screening tool for post-traumatic stress disorder according to the DSM-5 criteria for diagnosis. It is composed of dichotomic questions, and participants answer in accordance with their previous experiences, or not, of the symptoms during the last month (0 = no, 1 = yes). This instrument provides excellent characteristics, with diagnostic utility; it is easy to understand and appropriate for primary needs contexts. Due to the ideal sensitivity (Cronbach's alpha $\geq$ 0.80) and specificity (Cronbach's alpha $\geq$ 0.90), the cut-off point was defined as 3. This score indicates that the instrument reduces false negatives and allows the early diagnosis of PTSD [34].

2.3. Data Analysis

The sociodemographic and clinical characteristics of the participants were analyzed using frequency analysis. Pearson correlation tests were performed to examine the associations between gender, age, ACE abuse scores, ACE neglect scores, and PC-PTSD-5 scores. After considering the significance of the correlations between the variables, we performed a hierarchical linear regression (HLR). Thus, these analyses included 5 blocks: Block 1—gender; Block 2—age; Block 3—educational level; Block 4—ACE abuse; Block 5—ACE neglect. The "Enter" method was used in all blocks.

The data analysis was conducted through IBM SPSS® 25.0 (IBM Corporation, Armonk, NY, USA).

3. Results

The present study included a sample of 8459 European participants, consisting of 67.1% of women, with an average age of 43.95 years old. Of the sample, 11.3% were at risk for PTSD and 30.5% reported experiences of child abuse and/or child neglect (23.5% reported child abuse and 18.7% reported child neglect). The sample characteristics are presented in Table 1.

In the current study, 23.5% of the participants reported one or more experiences of child abuse (13.2% reported one, 8% reported two, and 2.3% reported three experiences of child abuse). Among them, 4.7% were at risk for PTSD. Regarding child neglect, 18.7% of the participants reported one or more of these experiences (15.5% reported one and 3.2% reported two experiences of child neglect), with 4.7% of these being at risk for PTSD. The PC-PTSD-5 was used to assess the risk for PTSD; a score of more than three was considered indicative of an increased likelihood of developing post-traumatic stress symptomatology. The results also indicate that the risk of developing PTSD is higher for female individuals (9.1%) who have suffered from child abuse or child neglect.

The correlation tests demonstrated that the PC-PTSD-5 was positively associated with the ACE Abuse and ACE Neglect dimensions and negatively associated with age and gender (Table 2). In particular, being female and younger, in addition to having suffered from abuse or neglect in childhood, increases the likelihood of developing PTSD symptoms.

Table 1. Baseline characteristics.

	n	%
Gender		
Female	5674	67.1
Male	2785	32.9
Education Level		
Less than 10 years of education	267	3.2
More than 10 years of education	8192	96.8
ACE Abuse		
Zero experiences	6475	76.5
One experience	1119	13.2
Two experiences	674	8
Three experiences	191	2.3
ACE Neglect		
Zero experiences	6872	81.2
One experience	1315	15.5
Two experiences	272	3.2
PC-PSTD-5		
With risk	959	11.3
Without risk	7500	88.7

Note. n = 8459. Participants were, on average, 43.95 years old (SD = 16.13).

Table 2. Pearson's correlations for study variables.

Variable	n	M	SD	1	2	3	4	5
1. PC-PTSD-5	8459	1.11	1.55	-				
2. ACE Abuse	8459	0.36	0.72	0.231 *	-			
3. ACE Neglect	8459	0.22	0.49	0.270 *	0.524 *	-		
4. Age	8448	43.95	16.14	−0.132 *	−0.045 *	−0.057 *	-	
5. Gender	8459	0.33	0.47	−0.149 *	−0.066 *	−0.076 *	0.70 *	-

* $p < 0.001$.

The model of the regression analysis explained 11% ($R^2a = 0.11$) of the PTSD symptom variance. ACE Neglect was the variable with a greater influence, explaining 6.4% of the variance in the PTSD symptoms ($\Delta R^2 = 0.064$). The ANOVA demonstrated that the model was valid ($p < 0.001$). The results of this analysis are presented in Table 3.

Table 3. Hierarchical linear regression of the predictors of the scores of PTSD symptom severity, with a confidence level of 95%.

	B	SE B	*B*
Step 1			
Constant	1.667	0.049	
Age	−0.013	0.001	−0.132 *
	$\Delta R^2 = 0.017$ ($p < 0.001$)		
Step 2			
Constant	1.778	0.049	
Age	−0.013	0.001	−0.122 *
Gender	−0.463	0.035	−0.140 *
	$\Delta R^2 = 0.020$ ($p < 0.001$)		

Table 3. *Cont.*

	B	SE B	*B*
Step 3			
Constant	1.524	0.048	
Age	−0.010	0.001	−0.019 *
Gender	−0.402	0.034	−0.122 *
ACE Neglect	0.813	0.033	0.254 *
	$\Delta R^2 = 0.064$ ($p < 0.001$)		
Step 4			
Constant	1.467	0.048	
Age	−0.010	0.001	−0.107 *
Gender	−0.393	0.034	−0.119 *
ACE Neglect	0.617	0.039	0.193 *
ACE Abuse	0.252	0.026	0.117 *
	$\Delta R^2 = 0.010$ ($p < 0.001$)		

Note. B: unstandardized coefficients, SE: standard errors, β: standardized coefficients, ΔR^2: R-squared change. * $p < 0.001$.

4. Discussion

When an individual is subjected to adverse childhood experiences, the sense of threat triggers the primitive reactions of fight, flight, or freeze, which contributes to increased sensitivity and causes them to experience the same sense of danger under safe conditions [20], creating a false impression of risk while insulating such individuals from any real consequences or harm. This can be explained by the dominance of the rational brain over the emotional brain—stress hormones are dysregulated and constantly activated during the traumatic experience [19]. When these experiences are constant and cumulative, they cause changes in the brain's chemical activity and can frequently activate dysregulated rhythms, presenting as a reactive state in the individual [35].

Tabb et al. [29] (p. 675) examined the associations between adverse childhood experiences and PTSD and observed that "higher cumulative levels of ACEs were associated with higher levels of PTSD symptoms" and that individual ACEs distinctly influenced PTSD symptoms, with child neglect having the strongest association. Our study also indicated that the most significant factor influencing the PTSD risk was child neglect, with the ACE Neglect dimension having a greater impact on the variance of the PTSD symptoms. Contrary to our findings, other studies have found child abuse to be the adverse childhood experience that most contributes to PTSD symptoms [27,36].

Child neglect is one of the most common and prevalent types of maltreatment [36,37], although the overwhelming majority of child neglect cases go undetected [38]. Unlike physical or sexual abuse, neglect can be subtle and may not always leave visible marks, making it harder to detect. It can be difficult for outsiders to recognize due to neglect happening more often in private spaces, and the children appear well physically. Neglect occurs when a child's basic needs for food, shelter, education, medical care, or emotional support are not met by their caregivers. Child neglect can affect interpersonal relationships and the capacity to express one's feelings, making individuals feel compelled to try to "self-regulate" their emotions. Consequently, PTSD can be a manifestation of this attempt at self-regulation [39]. Therefore, there is an increased risk of PTSD in those who have suffered from child neglect [38,40].

According to our findings, women who have suffered from child abuse or child neglect are more likely to develop PTSD symptoms. Furthermore, age exhibited a negative correlation with PTSD symptoms, indicating that younger individuals are more susceptible to developing PTSD. "Women are typically exposed to more interpersonal trauma than

men, and often at a younger age, which can have a greater negative impact on their lives", according to [41] (p. 1). Women exhibit a strong association between trauma and low quality of life [23]. Research published in 2017 [42] suggests that women suffer from PTSD two to three times more often than men. This disparity may be attributed to the different types of trauma encountered by each gender, as women are more frequently exposed to interpersonal trauma, such as sexual assault [41,43].

Studies [44,45] have suggested that having more adverse childhood experiences may increase the likelihood of having worse mental health, increasing the incidence of psychopathologies. Stressful events in adulthood may be more likely to occur in those who experienced higher levels of stress in their early years. Regarding the impact of the COVID-19 pandemic, Doom et al. [46] found that adults with greater ACE levels reported higher levels of PTSD symptoms.

The COVID-19 pandemic has affected people's lives around the world, prompting studies on the impact of this potentially traumatic event on health and well-being. People who have experienced adverse childhood experiences are more susceptible to the adversities brought by the COVID-19 pandemic [47]. The pandemic's social restrictions have had a detrimental effect on those who were exposed to adverse childhood experiences [48], exacerbating existing vulnerabilities. Additional negative effects on health and wellbeing may result from people's capacity to adjust to change and deal with the pandemic's lower levels of social support [48]. This event highlights the challenges that people who were exposed to adverse childhood experiences are confronted with in building relationships, mainly with regard to trust issues [47].

5. Limitations

Considering the circumstances of the present study, it is reasonable to interpret these results in light of the pandemic. The use of a non-probability sample is a weakness of this study, which is reflected in the greater representation of women with higher education. Although the sample consisted of a substantial number of participants residing in Europe, there was a significant difference in the representation of each country in the final sample. Furthermore, the study might have overrepresented individuals with higher psychological distress, as they may be more inclined to participate in surveys on this topic. The use of self-report instruments, and the application of the PC-PTSD-5 to infer the presence of PTSD symptoms, can also be considered a limitation of this study. However, a study of this size would not allow the inclusion of a structured interview conducted by a clinical expert, and the use of an instrument designed to identify respondents with probable PTSD seems to be a reasonable choice.

6. Conclusions

As a pan-European cohort study, the ESTSS ADJUST COVID-19 study aimed to explore the relationships between pandemic-related risk and protective factors, stressors, and psychopathological symptoms, allowing us to verify the association between adverse childhood experiences and PTSD symptoms in a significative sample of European adults (N = 8459). Our results corroborate previous studies in this field [10,11,29,48], showing that adverse childhood experiences influence the development of PTSD symptoms in adulthood, and gender and age contribute to the risk for PTSD. Considering these findings, we agree with Bellis et al. [48] (p. 12) that people who have experienced adverse childhood experiences "may require additional or different support when facing crises or other life course challenges" [48] (p. 12). Understanding the impact of early trauma across the lifespan is crucial for mental health professionals. Exploring childhood experiences (e.g.,

within therapeutic processes) and encouraging the processing of avoided emotions can be a means of helping individuals to become stronger in facing future adversities.

7. Future Research

Further studies may focus on the influence of these variables in different adverse experiences in adulthood. Longitudinal studies may be particularly relevant to verify the impact of adverse childhood experiences throughout people's lives, including analyzing the presence of psychopathologies in groups with and without exposure to adverse childhood experiences. Additionally, analyzing the effects of child neglect alone on the risk of developing PTSD would be insightful given that most studies suggest that child abuse is a greater predictor of PTSD in adulthood. Finally, it could be important to study the differences between European countries, considering cultural and social issues.

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

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the study personnel on request. After the publication of the results of the primary studies, the European Society for Traumatic Stress Studies will be made the ADJUST database available to the public.

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