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**Regulação emocional e personalidade como  
mediadores entre experiências traumáticas  
precoces e o distress psicológico no adulto**

**Emotion regulation and personality traits as  
mediators between early life trauma and adult  
psychological distress**



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Dissertation submitted to the University of Aveiro aiming to fulfill the necessary requirements to obtain a master's degree in Health Psychology and Neuropsychology carried out under the scientific supervision of Doctor Sandra Carvalho, Assistant Professor in Neuropsychology and Coordinator of the Translational Neuropsychology Laboratory at the Department of Education and Psychology from the University of Aveiro

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## palavras-chave

Trauma na infância/adolescência, regulação emocional, ruminação, reavaliação cognitiva, supressão emocional, personalidade, distress, depressão, ansiedade, stress

## resumo

O trauma ocorrido durante a infância ou adolescência pode ter um impacto profundo na saúde mental ao longo da vida de um indivíduo e pode até mesmo predizer sintomas de *distress* na vida adulta. Fatores como estratégias de regulação emocional, incluindo ruminação, e traços de personalidade desempenham papéis mediadores nessa relação. A regulação emocional abrange a habilidade de reconhecer, entender e lidar com as emoções de maneiras adaptativas, usando estratégias como reavaliação cognitiva ou estratégias maladaptativas como supressão emocional. Uma outra estratégia maladaptativa de regulação emocional é a ruminação, que pode ser dividida em ruminação reflexiva e ruminação *brooding*. No que diz respeito à personalidade, o trauma ocorrido durante a infância ou adolescência tem o potencial de moldar e impactar significativamente a personalidade de um indivíduo, influenciando a sua formação e desenvolvimento. Este estudo teve como objetivo investigar o impacto de alguns traços de personalidade, reavaliação cognitiva, supressão emocional e ruminação como mediadores na relação entre eventos traumáticos e o desenvolvimento de sintomas de depressão, ansiedade e stress. Os resultados revelaram efeitos mediadores estatisticamente significativos da ruminação *brooding* e da ruminação reflexiva entre experiências traumáticas e o *distress* psicológico. Além disso, a reavaliação cognitiva mostrou um efeito mediador estatisticamente significativo entre abuso físico, negligência física e angústia psicológica. Também a supressão emocional apresentou um efeito mediador estatisticamente significativo entre abuso físico, negligência física, negligência emocional e *distress* psicológico. Vale ressaltar que neuroticismo, amabilidade, extroversão e conscienciosidade apresentaram efeitos mediadores estatisticamente significativos na maioria dos subtipos de traumas vivenciados. Compreender a relação entre estas experiências traumáticas e saúde mental é crucial para encontrar estratégias eficazes de prevenção, intervenção precoce e tratamento. Considerar os traços de personalidade e as estratégias de regulação emocional utilizadas é essencial para adaptar as intervenções para indivíduos que sofreram ELT, visando reduzir ou prevenir possíveis sintomas.

**keywords**

Early life trauma, emotional regulation, rumination, cognitive reappraisal, emotional suppression, personality traits, distress, depression, anxiety, stress

**abstract**

Early life trauma (ELT), occurring during childhood or adolescence, can have a profound impact on mental health throughout an individual's life and may even predict distress symptoms in adulthood. Factors such as emotional regulation strategies, including rumination, and personality traits play mediating roles in this relationship. Emotional regulation encompasses the ability to recognize, understand, and manage one's emotions in adaptive ways, employing strategies such as cognitive reappraisal or maladaptive strategies like emotional suppression. Another maladaptive emotional regulation strategy is rumination, which can be further categorized into brooding and reflection. When it comes to personality, ELT has the potential to shape and significantly impact an individual's personality, influencing its formation and development. This study aimed to investigate the impact of personality traits, cognitive reappraisal, emotional suppression, and rumination as mediators in the relationship between ELT and the development of depression, anxiety, and stress symptoms. The results revealed statistically significant mediating effects of brooding rumination and reflection rumination between ELT and distress. Additionally, cognitive reappraisal showed a statistically significant mediating effect between physical abuse, physical neglect, and psychological distress. Furthermore, emotional suppression exhibited a statistically significant mediating effect between physical abuse, physical neglect, emotional neglect, and psychological distress. Notably, neuroticism, agreeableness, extraversion, and conscientiousness showed statistically significant mediating effects on most ELT subtypes. Understanding the relationship between ELT and mental health is crucial for effective prevention, early intervention, and treatment strategies. Considering the individual's personality traits and the strategies they employ for emotional regulation is essential to tailor interventions for individuals who have experienced ELT, aiming to reduce or prevent possible symptomatology.

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## **Introduction**

Mental health is critical for individuals coping with life's challenges, recognizing their potential, performing effectively, and making positive contributions to society. It has a significant impact on overall well-being, influencing decision-making, relationships, and their impact on the world. Multiple individual, societal, and structural factors may interact to promote or harm mental health over lifespan, such as hereditary and environmental factors (WHO, 2022). Despite all of life's challenges, perceived familial and social support, for example, might lessen the negative psychological and physiological implications of an illness or exposure to a certain type of abuse or neglect. Thus, understanding these protective and risk factors is critical for fostering and sustaining healthy mental health. Early life trauma (ELT) has been identified as a significant factor that can significantly impact mental health outcomes, and recognizing the impact is crucial for adopting effective prevention and intervention strategies (Colizzi et al., 2020).

## **Early Life Trauma (ELT)**

ELT refers to the occurrence of wide range of adverse, stressful and traumatic experiences during neonatal life, childhood and adolescence that are beyond individual's ability to cope with and result in prolonged periods of stress (Pechtel & Pizzagalli, 2011). Emotional abuse (any behavior that negatively impacts a child's well-being or moral development), physical abuse (violent acts that carry the risk of injury), sexual abuse (any type of sexual behavior involving a child), emotional neglect (failure to meet a child's basic emotional and psychological needs), or physical neglect (failure to provide basic care necessities) are all examples of ELT (Carr et al., 2013).

According to the World Health Organization (WHO), more than one third of the world's population has experienced childhood trauma (Chu et al., 2022) and the consequences of ELT can significantly impact childhood development across multiple domains, including but not limited to, behavioral, emotional, social, physical, and cognitive spheres (Carr et al., 2013). There is a large body of research literature that links ELT to a variety of negative outcomes, including increased susceptibility to mental and physical health disorders, impaired cognitive function, and altered brain development (including alterations in the amygdala and prefrontal cortex, which are important for emotional regulation and decision-making) (Teicher et al., 2016). Although cognitive functions have shown some recovery after relief from the stressful environment, due to the plasticity of the



brain, and its ability to reorganize and form new connections (Lupien et al., 2009), deficits in affective functioning (such as emotion regulation) and their corresponding brain regions appear to be resilience (Pechtel & Pizzagalli, 2011).

Numerous developmental theories conjecture that adverse experiences during the early stages of life heighten the likelihood of experiencing psychological distress and exhibiting symptoms of psychopathology (Hurst & Kavanagh, 2017, Saleh et al., 2017). This idea is supported by empirical evidence, which shows that exposure to stressful events in childhood considerably increases the chance of developing mental problems, including mood and anxiety disorders (Bondar et al., 2018, Pechtel & Pizzagalli, 2011). It seems that the number of stress subtypes experienced by children during early childhood increases the level of psychopathology, and the more ELT categories they experience, the more likely they are to have poor mental health (Carr et al., 2013). In addition, studies have showed that those who experienced ELT had lower levels of education and income in adulthood, even after controlling for other factors such age, gender, socioeconomic background, mental health, and family history of adversity (Wang et al., 2018). There are even studies that investigate how certain personality traits and emotional regulation strategies can influence how individuals respond and cope with ELTs.

### **Emotion Regulation**

Emotion regulation (ER) refers to the processes through which individuals control the emotions they feel, when they feel, and how they interpret and communicate those emotions. ER entails more than just alleviating distress. It includes a variety of changes that organize human behavior and allow individuals to adjust to both temporary and ongoing life situations (Cole et al., 1994). Effective ER is a crucial component of maintaining good mental health (Gross & Muñoz, 1995), and during this process, people may increase, maintain, or decrease positive and negative emotions (Koole, 2009). This includes all of the conscious and nonconscious strategies used to increase, maintain, or decrease one or more components of an emotional response (Gross, 2001). Thus, ER has been conceptualized as processes through which individuals adjust their emotions consciously and unconsciously in order to respond appropriately to environmental demands (Aldao et al., 2010).

We can divide the emotional regulation strategies used into two broad categories: adaptive and maladaptive strategies. Adaptive emotion regulation strategies include cognitive and behavioral techniques that individuals use to effectively manage and regulate

their emotions in a way that promotes well-being and adaptive functioning. Strategies are considered maladaptive when they fail to modulate the intensity of an emotional experience, despite an individual's intention to the contrary (McRae & Gross, 2020).

Most empirical research has placed significant emphasis on two ER strategies, namely cognitive reappraisal, and emotional suppression. Cognitive reappraisal is an adaptive strategy that reduces emotional impact by reevaluating events, modifying thoughts, modifying the emotional response and decreasing stress. (Gross & John, 2003). Suppression, on the other hand, is generally considered a maladaptive strategy in which an individual inhibits or limits ongoing emotion-expressive behavior while experiencing emotional arousal (Gross & John, 2003). Individuals who frequently use reappraisal as an emotion regulation strategy experience and express more positive emotions, and less (in number and duration) negative emotions compared to those who use it less frequently. In contrast, suppression has been seen as a maladaptive response to stressors and a risk factor for distress disorders such as depression and anxiety (Gross & John, 2003).

An emotion regulation strategy that is also maladaptive is rumination. Nolen-Hoeksema et al. (2008) defined rumination as perseverative thinking about one's emotions and issues, rather than being solely related to the content of those thoughts. According to two-factor model this is divided into brooding and reflection. Brooding is a negative form of rumination, characterized by repetitive and passive thoughts about negative events or experiences, often accompanied by feelings of helplessness and hopelessness and reflection, in contrast, involves active and purposeful thinking about negative experiences, focusing on finding solutions and alternatives to problems (Treynor et al., 2003). In line with this, the study conducted by Kim et al. (2017) also showed that rumination played a mediating role in the relationship between early trauma experiences and symptoms of depression and anxiety.

Therefore, ELT is negatively associated with adaptive ERs and positively associated with maladaptive ERs. Individuals who frequently use reappraisal have fewer symptoms of depression and better positive functioning indicators such as life satisfaction, optimism, and self-esteem. On the other hand, those who habitually use suppression have more depressive symptoms, lower life satisfaction, self-esteem, and optimism (Gross & John, 2003). Numerous studies have showed that maladaptive emotion regulation strategies influence the

relationship between ELS and current depression (Chu et al., 2022; Domaradzka & Fajkowska, 2018).

### **Personality traits**

Personality, as defined by Gordon Allport (1939) 'the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to the environment'. Later, Coaley (2014) defined personality as the dynamic organization inside the person of psychophysical systems that determine the person's characteristic patterns of behavior and thought. Then, personality suffers numerous changes across lifespan and stability and maturation is expected later in adulthood and has been associated to individuals well-being and mental health (Bojanowska & Urbańska, 2021).

One of the most widely used models of personality is the Five Factor Model (FFM), that is a dimensional representation of interpersonal differences at the personality level that has been repeatedly highlighted for its validity, comprehensiveness, universality, heritability, and longitudinal stability. Thus, personality structures are organized in 5 broad dimensions: openness (including perceptiveness, curiosity, artistry, and intellectual interests), conscientiousness (encompassing impulse control, persistence, orderliness, high standards, responsibility, and dutifulness), extroversion (including positive emotions, sociability, eagerness for new situations, and sometimes assertiveness or social potency), agreeableness (including empathy and compliance), and neuroticism (including negative emotions such as anxiety, sadness, insecurity, vulnerability, and difficulty coping with stress and threats). Each dimension encompasses a range of specific traits that can vary in intensity from person to person (Shiner et al., 2017).

Early experiences determine an individual's ability to adapt to their environment, which influences the formation of their personality (Csathó & Birkás, 2018). Research indicates that adversity during childhood can negatively impact personality development, resulting in increased neuroticism in adolescence and adulthood and decreased conscientiousness and agreeableness (Shiner et al., 2017). However, even individuals considered to have a neurotic personality trait, characterized by a bias towards negative emotions, may adaptively respond to adversity, and may develop more traits such as extroversion as protective factors from the events they experience (Thomson & Jaque, 2017). According to Zuroff's personality vulnerability model, external stressful events and an

individual's personality vulnerability may contribute to a larger propensity for anxiety and depressive symptoms (Chu et al., 2022).

Given the relevance of emotion regulation mechanisms and personality traits in the general population, including persons who underwent stressful situations early in life, understanding how these dimensions may be related is critical.

### **Objectives and hypothesis**

Therefore, the overall aim of this study was to analyze the relations between emotional regulation strategies and personality traits, and levels of depression, anxiety and stress in adults with and without early life traumatic experiences in a large cohort of individuals living in Portugal. Additionally, we explored the potential mediating role of ER and personality traits between ELT and adult psychological symptoms.

Specifically, the primary objectives of the present study were to: (1) examine the role of emotion regulation strategies (such as cognitive reappraisal and expressive suppression), ruminative thinking (such as brooding and reflection) and personality traits as mediators in the relation between early life traumatic experiences and symptoms of depression, anxiety, and stress in adulthood, as assessed by the Depression Anxiety Stress Scales (DASS-21). Additionally, as secondary objectives, the current study aimed to (2) examine differences between individuals with and without early life traumatic experiences regarding the development of symptoms of depression, anxiety, and stress and (3) the adoption of emotional suppression, cognitive reappraisal, brooding and reflection rumination. Furthermore, we aim to investigate (4) the relationship between personality traits and symptomatology.

Based on these objectives, it is hypothesized that (H1) individuals who experience traumatic events (whether emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect) will exhibit higher levels of depression, anxiety, and stress symptoms. It is also expected that (H2) who manifest higher levels of cognitive reappraisal have lower distress symptoms, (H3) individuals who tend to use emotional suppression have higher levels of distress symptoms and (H4) there is a positive relationship between rumination and symptoms of depression, anxiety, and stress, i.e., greater levels of rumination, particularly brooding rumination, will be associated with higher symptomatology. More, (H5) there is a relationship between personality and symptoms of depression and anxiety, specifically, high levels of neuroticism. We further hypothesized that (H6) there is a significant relationship

between traumatic events experienced in childhood and symptomatology, mediated by personality, emotional regulation, and rumination.

## **Method**

The data presented in this dissertation is part of a doctoral research project entitled "The role of emotion regulation strategies, personality traits, and coping strategies as mediators between early life stress and depression and anxiety." The project was approved by the Ethics Committee for Research in Social and Human Sciences, with the identification number CEICSH 087/2021, and is collaboration between researchers from the University of Aveiro, University of Minho, and Portucalense University. The study was conducted in accordance with the guidelines of the Declaration of Helsinki.

### **General Procedure**

After reading an online consent form that outlines the study's summary, objectives, data confidentiality, contact information for research clarification, and advises participants to maintain a focused environment, those who opted to participate completed an online survey on Google Forms. The survey consisted of a set of questionnaires and took approximately 25 minutes to complete. The first one was the sociodemographic and clinical questionnaire, followed by the early life trauma experiences, emotion regulation, self-efficacy, coping strategies, depression, anxiety and stress symptoms, personality dimensions, quality of life, social relationship structures, and ruminative thinking. The psychological assessment instruments used were in the entire protocol are shown in Figure 1. From this, only data from 5 questionnaires were used in this work, which are briefly described later in the methods section.

Participants were recruited in different Portuguese cities through leaflets, publications on social networks such as Facebook, Instagram, or LinkedIn, and study participation links sent to different educational institutions through university dissemination via institutional email. Volunteers may be compensated for their participation in the study if they are students and were previously enrolled in the system for the attribution of credits to the School of Psychology of the University of Aveiro or the School of Psychology of the University of Minho. However, if participants requested it, there was the possibility of having access to a general summary of the results obtained in the project.

Participants were able to participate in the study according to the inclusion criteria of having at least 18 years old, having Portuguese as their first language, being able to read and

write in Portuguese, and living in Portugal. According to these criteria, of the total of 936 participants who answered the questionnaire, 8 were excluded because they were under 18 years old, resulting in a total of 928 participants in the present analysis (see figure 1). However, the integration of the rumination questionnaire in a later phase of the project resulted in a smaller number of responses for this variable.

### **Data Analysis**

Statistical data analysis were performed using the 29th version of the IBM SPSS Statistics for Windows.

For characterization of the sample, concerning sociodemographic information and psychological characteristics, descriptive analyses were conducted including means and standard variations. For categorical variables such as civil status or gender, numbers and percentages were displayed.

In order to test the relationships between early life trauma, emotion regulation strategies, rumination, personality, and some specific demographic factors and the three main levels of emotional distress, particularly depression, anxiety and stress, Pearson correlation coefficients were calculated, separately. To investigate the mediator role of two subtypes of rumination, both subtypes of personality and both specific demographic factors and the moderate role of emotion regulation strategies, in pathway between ELT and the symptomatology, model 4 in PROCESS Macro, an extension of SPSS, was used. Moreover, cases with missing values for rumination accounted for .7%.

### **Participants**

#### *Demographics and clinical characteristics*

*Table 1* presents the sociodemographic and clinical characteristics of a sample of 936 participants, aged between 18 and 79 years ( $M=30$ ;  $SD=13.052$ ), with a large majority being female (75.1%) and with Portuguese nationality (89.5%). In terms of marital status, 72.1% of participants were single and 8% were living alone. Regarding level of education, 65.9% of respondents had high degree, and 50.8% were still students. 21.9% of the sample reported to have history of psychiatric or neurological condition and 73% of the sample reported some type of consumption habit, namely 17.9% alcohol, 15.2% tobacco, and 4.8% other illicit drugs such as cannabis ecstasy, and cocaine.

### **Table 1**

#### *Sociodemographic characteristics of participants*

	<i>Frequency (f)</i>	<i>%</i>
<b>Gender</b>		
Male	227	24.5
Female	697	75.1
Other	4	0.4
<b>Nationality</b>		
Portuguese	831	89.5
Other nationalities	97	10.5
<b>Marital Status</b>		
Single	669	72.1
Non-marital partnership/ Married	218(160/58)	23.5(17.2/6.3)
Divorced	37	4
Widowed	4	0.4
<b>Household</b>		
Alone	74	8
Accompanied	854	92
<b>Education</b>		
Elementary school (1 <sup>st</sup> -4 <sup>th</sup> degree)	4	.4
Middle school (5 <sup>th</sup> – 9 <sup>th</sup> degree)	36	3.9
High school (10 <sup>th</sup> – 12 <sup>th</sup> degree)	277	29.9
Higher Education	611	65.8
<b>Occupation</b>		
Student	471	50.8
Working students	137	14.8
Workers	143	26.8
Unemployed	46	5
Retired	11	1.2
Other	20	2.2
<b>History of psychiatric and neurological diseases</b>		
	203	21.9
<b>Alcohol consumption</b>		
	166	17.9
<b>Tobacco consumption</b>		
	141	15.2
<b>Illicit drugs</b> (e.g., cannabis, ecstasy, and cocaine)		
	45	4.8

## Instruments and Questionnaires

### Questionnaire of Sociodemographic and clinical information

The Questionnaire of Sociodemographic and clinical information was created for this study and was organized in 28 questions of direct or multiple-choice answers. This questionnaire included questions about sex, age, nationality, naturalness, current residence, marital status, household composition, family mental health, diseases (neurological, psychiatric, and others) of the person and the family, medication use, education level, academic performance, field of study, profession, and substance use.

### **Early life trauma**

*Childhood Trauma Questionnaire-Short Form (CTQ-SF)*: This is a self-report questionnaire designed to assess childhood abuse and neglect experiences that occurred up to the age of 15 across five different subscales: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect (Bernstein et al., 2003). The Portuguese version of the CTQ-SF contains 25 items that measure these same five subscales, and respondents must rate how often each statement applies to them on a five-point Likert scale from 1 ("never true") to 5 ("very often true"); on each scale, a score between 5 and 25 can be obtained (Dias et al., 2013). The CTQ-SF has demonstrated good reliability and validity in various studies and has been widely used in research and clinical practice to assess the impact of childhood maltreatment on mental health outcomes ( $\alpha = .84$ ) (Dias et al., 2013).

### **Emotion Regulation and rumination**

*Emotion Regulation Questionnaire (ERQ)*: this questionnaire assesses emotion regulation strategies and is a self-report scale consisting of 10 items and is designed to measure the tendency to use cognitive reappraisal ("I control my emotions by changing the way I think about the situation i'm in") and expressive suppression ("I control my emotions by not expressing them") as strategies of emotional regulation. The final items were rated on a scale from 1 ("strongly disagree") to 7 ("strongly agree") (Gross & John, 2003).

*10-Item Rumination Response Scale (RRS-10)*: is a psychological assessment tool used to measure the tendency to engage in rumination, or repetitive negative thinking is the 10-Item Rumination Response Scale (RRS-10). The scale is composed of 10 items that are divided into two subscales: reflective, which refers to attempts to understand the reasons for the depressive mood and which is oriented towards solving problems, and the brooding, which consists of persevering thinking centered on the negative consequences of depressive mood and obstacles to problem solving (Dinis et al., 2011). The items are rated on a Likert scale ranging from 1 ("almost never") to 4 ("almost always"), with higher scores indicating a greater tendency to ruminate (Treynor et al., 2003).

### **Personality**

*Revised NEO Personality Inventory short form (NEO FFI)*: the NEO-FFI is a 60-item self-report scale that examines a person's Big Five personality traits: Conscientiousness, Neuroticism, Extraversion, Agreeableness, and Openness to experience. Each of these domains contains 12 items and a Likert scale ranging from 1 ("strongly disagree") to 4

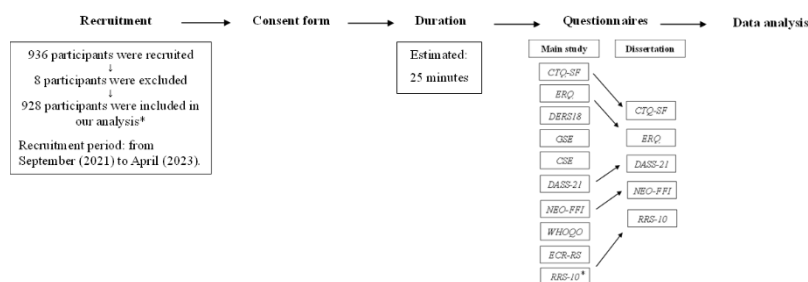


(“strongly agree”). This scale has adequate internal consistency values: Conscientiousness ( $\alpha = .81$ ), Neuroticism ( $\alpha = .81$ ), Extroversion ( $\alpha = .75$ ), Agreeableness ( $\alpha = .72$ ) and Openness to experience ( $\alpha = .71$ ) (Magalhães et al., 2014).

**Depression, Anxiety and Stress symptoms**

*Depression Anxiety Stress Scales (DASS-21)*: this questionnaire is a 21-item self-report questionnaire intended for individuals aged 17 and over and consists of three subscales to assess the presence and severity of depression, anxiety, and stress symptoms in adults (Lovibond & Lovibond, 1995). Participants rate the frequency of each symptom experienced over the past week on a 4-point scale ranging from 0 ("Did not apply to me at all") to 3 ("Applied to me very much or most of the time"). The scores on each subscale are summed to obtain a total score for each scale, where the minimum is "0" and the maximum is "21", with higher scores indicating greater symptom severity. The Portuguese adaptation of this test was used and reports good internal consistency as Cronbach's alpha is 0.85 for the subscale "Depression", 0.74 for the subscale "Anxiety" and 0.81 for the subscale "Stress" (Pais-Ribeiro et al., 2004).

**Figure 1**



Legend: Schematic representation of the study (recruitment phase, informative consent, questionnaires, data analysis). \* Rumination scale was introduced later in the project.

**Results**

**Table 2**

*Descriptive Statistics – Psychological characterization*

Table 2 shows the percentage of participants that reported ELT. Data shows that 47.7% experienced emotional abuse, 18.8% experienced physical abuse, 24.1% experienced sexual abuse, 54.1% experienced emotional neglect and 28.6% experienced physical neglect.

	None to minimal	Slight to moderate	Moderate to severe	Severe to extreme
<b>ELT</b>				

	Cutoff	5 - 8	9 - 12	13 - 15	16 - 25
Emotional abuse	n (%)	485(52.3)	223(24)	99(10.7)	121(13)
	M(SD)	6.14(1.07)	10.45(1.1)	13.9(0.84)	18.63(2.47)
	Cutoff	5 - 7	8 - 9	10 - 12	13 - 25
Physical abuse	n (%)	753(81.1)	45(4.8)	73(7.9)	57(6.1)
	M(SD)	5.18(0.49)	8.33(0.48)	10.77(0.84)	15.39(2.34)
	Cutoff	5	6 - 7	8 - 12	13 - 25
Sexual abuse	n (%)	704(75.9)	95(10.2)	76(8.2)	53(5.7)
	M(SD)	5 (0)	6.45(0.5)	9.25(1.31)	16.64(3.37)
	Cutoff	5 - 9	10 - 14	15 - 17	18 - 25
Emotional neglect	n (%)	426(45.9)	268(28.9)	138(14.9)	96(10.3)
	M(SD)	6.73(1.42)	11.83(1.37)	15.91(0.77)	19.88(1.88)
	Cutoff	5 - 7	8 - 9	10 - 12	13 - 25
Physical neglect	n (%)	662(71.3)	116(12.5)	70(7.5)	80(8.6)
	M(SD)	5.44(0.69)	8.57(0.5)	10.93(0.87)	15.28(1.96)
<b>Anxiety</b>					
Emotional abuse	M(SD)	3.94(4.5)	6.61(5.6)	7.35 (5.33)	10.12(5.49)
Physical abuse	M(SD)	5.06(5.14)	6.69(5.3)	7.84(5.83)	11.49(4.96)
Sexual abuse	M(SD)	5.08(5.21)	6.74(4.94)	7.41(5.41)	10.58(6.4)
Emotional neglect	M(SD)	4.27(4.91)	5.75(5.2)	7.91(5.71)	9.21(5.49)
Physical neglect	M(SD)	4.87(5.06)	6.37(5.73)	8.33(5.56)	9.89(5.39)
<b>Depression</b>					
Emotional abuse	M(SD)	4.46(4.51)	7.53(5.84)	8.13(5.54)	11.61(5.57)
Physical abuse	M(SD)	5.66(5.22)	7.2(5.46)	9.81(6.04)	13.19(5.16)
Sexual abuse	M(SD)	5.86(5.41)	7.07(5.23)	8.96(6.16)	10.85(6.29)
Emotional neglect	M(SD)	4.44(4.57)	6.63(5.3)	9.59(5.92)	11.06(6.09)
Physical neglect	M(SD)	5.52(5.18)	7.38(5.73)	9.1(6.13)	11.31(5.79)
<b>Stress</b>					
Emotional abuse	M(SD)	6.62(4.71)	9.54(5.05)	9.9(4.93)	13.07(4.57)
Physical abuse	M(SD)	7.9(5.1)	9.31(5.13)	10.7(5.45)	13.23(4.5)
Sexual abuse	M(SD)	7.91(5.2)	9.75(4.85)	10.03(5.028)	12.13(5.52)
Emotional neglect	M(SD)	6.94(4.97)	8.68(4.94)	10.83(5.23)	11.67(5.11)
Physical neglect	M(SD)	7.79(5.1)	9.28(5.42)	10.45(5.05)	11.7(5.25)
<b>Reappraisal</b>					
Emotional abuse	M(SD)	27.09(7.39)	27.02(6.96)	25.44(7.38)	23.04(7.33)
Physical abuse	M(SD)	26.74(7.41)	26.73(7.17)	24.60(6.87)	23.51(7.24)
Sexual abuse	M(SD)	26.5(7.48)	26.08(6.79)	26.92(7.01)	24.42(7.82)
Emotional neglect	M(SD)	27.68(7.27)	26.15(7.21)	24.41(6.86)	24.01(8.03)
Physical neglect	M(SD)	26.91(7.4)	25.72(7.37)	25.36(7.25)	23.73(6.96)
<b>Suppression</b>					
Emotional abuse	M(SD)	14.59(5.43)	15.95(5.35)	16.08(5.19)	16.91(5.75)
Physical abuse	M(SD)	14.94(5.5)	16.29(5.16)	17.38(5.1)	17.88(4.74)
Sexual abuse	M(SD)	15.14(5.5)	15.16(4.91)	16.33(5.77)	17.53(5.51)
Emotional neglect	M(SD)	14.15(5.34)	15.66(5.18)	17.06(5.26)	17.6(5.94)
Physical neglect	M(SD)	15.08(5.52)	15.25(5.16)	15.57(5.4)	17.85(5.24)
<b>Brooding</b>					
Emotional abuse	M(SD)	6.27(3.52)	7.49(3.58)	8.13(3.21)	9.57(3.4)
Physical abuse	M(SD)	6.77(3.6)	8.16(3.6)	8.46(3.59)	10.09(2.56)
Sexual abuse	M(SD)	6.98(3.6)	7.06(3.83)	8.15(3.55)	9.17(3.64)
Emotional neglect	M(SD)	6.27(3.43)	7.17(3.62)	8.66(3.65)	8.99(3.43)
Physical neglect	M(SD)	6.92(3.53)	6.93(3.96)	7.63(4.17)	9.38(2.95)
<b>Reflection</b>					
Emotional abuse	M(SD)	6.85(3.11)	7.59(2.94)	8.31(2.86)	8.83(2.86)
Physical abuse	M(SD)	7.22(3.09)	7.92(3.1)	7.69(2.9)	9.49(2.6)
Sexual abuse	M(SD)	7.28(3.12)	7.57(2.8)	7.99(3.15)	8.75(2.83)
Emotional neglect	M(SD)	7.01(2.96)	7.4(3.26)	7.80(2.94)	8.88(2.93)
Physical neglect	M(SD)	7.31(3.03)	7.11(3.06)	7.68(3.4)	8.78(3.02)
<b>Neuroticism</b>					
Emotional abuse	M(SD)	23.18(8.15)	27.53 (7.14)	27.78(7.74)	31.98(7.5)
Physical abuse	M(SD)	25.29(8.31)	27.36(7.2)	27.66(9.3)	29.89(7.46)
Sexual abuse	M(SD)	25.19(8.44)	27.15(7.17)	27.62(7.69)	29.98(8.98)

Emotional neglect	M(SD)	23.34(8.22)	26.76(7.41)	28.91(8.48)	30.18(7.88)
Physical neglect	M(SD)	25.28(8.26)	26.47(8.92)	27.9(8.53)	28.04(7.89)
<b>Extroversion</b>					
Emotional abuse	M(SD)	28(7.15)	25.82(7.52)	26.82(6.62)	22.19(7)
Physical abuse	M(SD)	27.17(7.36)	25.73(6.54)	24.44(7.52)	22.4(6.8)
Sexual abuse	M(SD)	26.65(7.41)	26.65(7)	26.80(7.62)	25.38(7.97)
Emotional neglect	M(SD)	28.47(7.15)	26.76(6.38)	23.31(8)	22.50(7.23)
Physical neglect	M(SD)	27.21(7.39)	26.28(7.2)	25.44(7.44)	22.95(6.82)
<b>Openness</b>					
Emotional abuse	M(SD)	29.12(5.87)	30.15(6.6)	29.82(6.23)	31.23(6.62)
Physical abuse	M(SD)	30.06(6.14)	30.24(5.61)	28.47(6.91)	26.35(5.80)
Sexual abuse	M(SD)	29.91(6.16)	28.41(6.22)	29.13(6.49)	30.36(6.50)
Emotional neglect	M(SD)	30.06(5.89)	29.21(6.11)	30.01(6.61)	29.16(7.29)
Physical neglect	M(SD)	30.30(6.01)	29.09(6.21)	29.20(6.95)	26.21(6.18)
<b>Agreeableness</b>					
Emotional abuse	M(SD)	33.76(5.34)	30.31(5.77)	29.96(6.32)	28.32(6.91)
Physical abuse	M(SD)	33.01(5.51)	28.98(4.9)	27.38(6.53)	23.98(5.16)
Sexual abuse	M(SD)	32.48(5.82)	30.60(5.89)	29.43(7.08)	28.57(7.19)
Emotional neglect	M(SD)	34.27(5.29)	30.99(5.31)	28.49(6.31)	28.01(6.84)
Physical neglect	M(SD)	32.96(5.41)	31.15(5.95)	29.41(6.29)	25.43(6.46)
<b>Conscientiousness</b>					
Emotional abuse	M(SD)	33.71(7.72)	30.28(7.99)	29.62(8.24)	26.47(9.27)
Physical abuse	M(SD)	32.66(7.99)	27.82(8.05)	28.26(8.96)	23.33(7.65)
Sexual abuse	M(SD)	32.67(8.31)	29.41(7.30)	27.24(7.71)	25.94(8.47)
Emotional neglect	M(SD)	34.75(7.27)	30.27(7.75)	27.11(9.00)	26.88(8.5)
Physical neglect	M(SD)	32.92(8.07)	30.97(7.97)	27.53(8.26)	24.04(7.21)

### **Relationship between Early Life Trauma, Distress Symptoms, Emotional Regulation, Rumination, and Personality**

The Pearson's correlation for all variables is provided in Annex 1. There were moderate positive correlations between symptoms of depression ( $r(926) = .481$ ;  $p < 0.001$ ), anxiety ( $r(926) = .421$ ;  $p < 0.001$ ), stress ( $r(926) = .404$ ;  $p < 0.001$ ), and ELT. The findings illustrate a clear association between history of traumatic childhood experiences and the presence of adult distress symptoms.

Regarding the use of emotion regulation, there were very weak negative correlations between cognitive reappraisal strategies ( $r(926) = -.185$ ;  $p < 0.001$ ) and ELT, and there were weak positive correlations between suppression strategies ( $r(926) = .203$ ;  $p < 0.001$ ) and all dimensions of ELT. These results indicate that higher levels of ELT are associated with a greater tendency for individuals to adopt suppression strategies and a lesser tendency to employ cognitive reappraisal strategies.

The Pearson's correlation test was also used to assess the relationship between symptomatology and emotional regulation. There were moderate positive correlations between symptoms of depression ( $r(774) = .565$ ;  $p < 0.001$ ), anxiety ( $r(774) = .534$ ;  $p < 0.001$ ) and there were strong positive correlations between symptoms of stress ( $r(774) = .607$ ;  $p < 0.001$ ), and the use of rumination strategies. Furthermore, there were weak positive

correlations between symptoms of depression ( $r(776) = .363$ ;  $p < 0.001$ ), anxiety ( $r = .346$ ;  $p < 0.001$ ), stress ( $r(776) = .382$ ;  $p < 0.001$ ) and reflection strategy. Additionally, there were weak positive correlations between depressive symptoms ( $r(926) = .394$ ;  $p < 0.001$ ), anxious symptoms ( $r(926) = .309$ ;  $p < 0.001$ ), stress symptoms ( $r(926) = .281$ ;  $p < 0.001$ ), and the use of emotional suppression strategy. On the other hand, there were weak negative correlations between symptoms of depression ( $r(926) = -.321$ ;  $p < 0.001$ ), anxiety ( $r(926) = -.256$ ;  $p < 0.001$ ), stress ( $r(926) = -.322$ ;  $p < 0.001$ ) and the use of cognitive reappraisal strategy. Thus, it can be concluded that individuals with higher distress symptoms tend to employ more dysfunctional emotional regulation strategies.

There were weak positive correlations between the use of the brooding strategy ( $r(774) = .329$ ;  $p < 0.001$ ), the use of the reflection strategy ( $r(776) = .221$ ;  $p < 0.001$ ) and the presence of ELT. These findings suggest an association between traumatic childhood experiences and the frequent utilization of rumination strategies.

Moreover, what concerning the relationship between ELT and personality traits, there were weak positive correlations between the neuroticism ( $r(926) = 0.325$ ;  $p < 0.001$ ) and ELT. Additionally, were weak negative correlations were found between extraversion ( $r(926) = -0.271$ ;  $p < 0.001$ ), and ELT, as well as moderate negative relationships between agreeableness ( $r(926) = -0.441$ ;  $p < 0.001$ ) and conscientiousness traits ( $r(926) = -0.408$ ;  $p < 0.001$ ), and ELT. Notably, the relationship between openness traits and the presence of ELT did not reach statistical significance. In summary, these findings suggest that higher levels of ELT are associated with the presence of neuroticism traits and a lower presence of agreeableness, conscientiousness, and extraversion traits.

### **Mediation of relationship between ELT and current Distress Symptoms, through Emotional Regulation, Rumination and Personality**

Simple mediation analysis were performed using PROCESS, with the objective of analyzing the mediating effect of the variables emotional regulation strategies (cognitive reappraisal and suppression), rumination dimensions (reflection and brooding) and personality dimensions (neuroticism, extroversion, agreeableness, conscientiousness and openness to experience), between the early life trauma dimensions (total ELT, emotional abuse, physical abuse, sexual abuse, emotion neglect and physical neglect) and the development of distress symptoms (depression, anxiety, stress and total DAS).

Regarding the effect of the emotion regulation strategies, results show that:

Physical abuse explained to impact the scores of reappraisal ( $t = -3.95$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and suppression ( $t = 4.67$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and had an effect on total distress symptoms. The reappraisal demonstrated to be a partial mediator of the relationship between physical abuse and total distress ( $t = 10.43$ ;  $p < .001$ ;  $R^2 = 20\%$ ), and suppression showed to be a partial mediator of the relationship between physical abuse with total distress ( $t = 10.58$ ;  $p < .001$ ;  $R^2 = 22\%$ ) (see annex 2).

Physical neglect experiences demonstrated to impact the levels of reappraisal ( $t = -4.57$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and suppression ( $t = 4.17$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and had an effect on total distress symptoms too. The reappraisal explained to be a partial mediator of the relationship between physical neglect and total distress ( $t = -9.37$ ;  $p < .001$ ;  $R^2 = 20\%$ ). The suppression showed to be a partial mediator of the relationship between physical neglect and total distress ( $t = 10.77$ ;  $p < .001$ ;  $R^2 = 22\%$ ).

Emotional neglect experiences displayed to impact the levels of reappraisal ( $t = -5.68$ ;  $p < .001$ ;  $R^2 = 3\%$ ) and had an effect on total distress symptoms. The reappraisal strategy showed to be a partial mediator of the relationship between emotional neglect and total distress ( $t = -8.85$ ;  $p < .001$ ;  $R^2 = 22\%$ ).

Regarding the effect of the rumination, results show that:

Regarding the effect of the rumination, results show that the impact of experiencing ELT on brooding dimension ( $t = 9.69$ ;  $p < .001$ ;  $R^2 = 11\%$ ) and total distress symptoms, showing brooding ( $t = 9.50$ ;  $p < .001$ ;  $R^2 = 36\%$ ) as partial mediator of the relationship between total ELT and total distress (see annex 3).

Emotional abuse experiences demonstrated to impact the levels of reflection ( $t = 6.85$ ;  $p < .001$ ;  $R^2 = 6\%$ ) and brooding ( $t = 10.16$ ;  $p < .001$ ;  $R^2 = 12\%$ ), and had a significant effect on total distress symptoms, anxious and depressive symptoms, and stress. Therefore, reflection proved to be a partial mediator of the relationship between emotional abuse and total distress ( $t = 13.07$ ;  $p < .001$ ;  $R^2 = 31\%$ ), while brooding was partial mediator of the relationship between emotional abuse and total distress ( $t = 10.40$ ;  $p < .001$ ;  $R^2 = 46\%$ ) anxious ( $t = 8.02$ ;  $p < .001$ ;  $R^2 = 34\%$ ) and depressive symptoms ( $t = 10.46$ ;  $p < .001$ ;  $R^2 = 40\%$ ) and stress ( $t = 8.66$ ;  $p < .001$ ;  $R^2 = 43\%$ ).

Emotional neglect experiences demonstrated to impact the levels of reflection ( $t = 5.21$ ;  $p < .001$ ;  $R^2 = 3\%$ ) and brooding ( $t = 8.09$ ;  $p < .001$ ;  $R^2 = 8\%$ ), and had an effect on total

distress symptoms, anxious and depressive symptoms and stress. The reflection was a partial mediator of the relationship between emotional neglect and total distress ( $t = 10.77$ ;  $p < .001$ ;  $R^2 = 27\%$ ), while brooding showed to be a partial mediator of the relationship between emotional neglect and total distress ( $t = 8.65$ ;  $p < .001$ ;  $R^2 = 43\%$ ), anxious ( $t = 6.04$ ;  $p < .001$ ;  $R^2 = 32\%$ ) and depressive symptoms ( $t = 10.75$ ;  $p < .001$ ;  $R^2 = 41\%$ ) and stress ( $t = 5.91$ ;  $p < .001$ ;  $R^2 = 40\%$ ).

Sexual abuse experiences displayed to impact the levels of reflection ( $t = 3.59$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and brooding ( $t = 5.25$ ;  $p < .001$ ;  $R^2 = 3\%$ ) and had an effect on total distress symptoms, anxious and depressive symptoms, and stress. The reflection dimension showed to be a partial mediator of the relationship between emotional neglect and total distress ( $t = 7.93$ ;  $p < .001$ ;  $R^2 = 22\%$ ), on the other hand, brooding proved to be partial mediators of the relationship between emotional neglect and total distress ( $t = 6.83$ ;  $p < .001$ ;  $R^2 = 42\%$ ), anxious ( $t = 7.20$ ;  $p < .001$ ;  $R^2 = 33\%$ ) and depressive ( $t = 6.01$ ;  $p < .001$ ;  $R^2 = 35\%$ ) symptoms and stress ( $t = 4.68$ ;  $p < .001$ ;  $R^2 = 39\%$ ).

Physical abuse explained to impact the scores of reflection ( $t = 4.70$ ;  $p < .001$ ;  $R^2 = 3\%$ ) and brooding ( $t = 7.60$ ;  $p < .001$ ;  $R^2 = 10\%$ ) and had an effect on total distress symptoms, anxious and depressive symptoms and stress. The reflection demonstrated to be a partial mediator of the relationship between physical abuse and total distress ( $t = 10.51$ ;  $p < .001$ ;  $R^2 = 26\%$ ), and brooding showed to be a partial mediator of the relationship between physical abuse with total distress ( $t = 8.50$ ;  $p < .001$ ;  $R^2 = 43\%$ ), anxious ( $t = 7.28$ ;  $p < .001$ ;  $R^2 = 33\%$ ) and depressive ( $t = 9.51$ ;  $p < .001$ ;  $R^2 = 39\%$ ) symptoms and stress ( $t = 5.41$ ;  $p < .001$ ;  $R^2 = 39\%$ ).

Physical neglect experiences demonstrated to impact the levels of reflection ( $t = 3.96$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and brooding ( $t = 5.89$ ;  $p < .001$ ;  $R^2 = 4\%$ ) and had an effect on total distress symptoms, anxious and depressive symptoms and stress. The reflection explained to be a partial mediator of the relationship between physical neglect and total distress ( $t = 10.63$ ;  $p < .001$ ;  $R^2 = 26\%$ ). The brooding showed to be a partial mediator of the relationship between physical neglect and total distress ( $t = 9.62$ ;  $p < .001$ ;  $R^2 = 45\%$ ), anxious ( $t = 8.47$ ;  $p < .001$ ;  $R^2 = 35\%$ ) and depressive symptoms ( $t = 10.27$ ;  $p < .001$ ;  $R^2 = 40\%$ ) and stress ( $t = 6.32$ ;  $p < .001$ ;  $R^2 = 40\%$ ).

Regarding the effect of the Personality traits, results show that:

The impact of experiencing ELT on Neuroticism and Agreeableness traits ( $t = 10.46$ ;  $p < .001$ ;  $R^2 = 11\%$ ;  $t = -14.97$ ;  $p < .001$ ;  $R^2 = 19\%$ ) and the effect of total ELT on total distress symptoms ( $\beta = .49$ ; 95% CI [.43-.55];  $t = 16.30$ ;  $p < .001$ ;  $R^2 = 22\%$ ), indicating neuroticism ( $t = 11.82$ ;  $p < .001$ ;  $R^2 = 53\%$ ) and agreeableness ( $t = 11.07$ ;  $p < .001$ ;  $R^2 = 29\%$ ) as partial mediators of the relationship between total ELT and total distress (see annex 4).

Emotional abuse experiences demonstrated to impact the levels of neuroticism ( $t = 12.87$ ;  $p < .001$ ;  $R^2 = 15\%$ ), extraversion ( $t = -8.45$ ;  $p < .001$ ;  $R^2 = 7\%$ ), agreeableness ( $t = -10.75$ ;  $p < .001$ ;  $R^2 = 11\%$ ) and conscientiousness ( $t = -10.53$ ;  $p < .001$ ;  $R^2 = 11\%$ ) and had a significant effect on total distress symptoms ( $\beta = 1.54$ ; 95% CI [1.36-1.74];  $t = 16.03$ ;  $p < .001$ ;  $R^2 = 22\%$ ), anxious ( $\beta = .49$ ; 95% CI [.42-.56];  $t = 13.56$ ;  $p < .001$ ;  $R^2 = 17\%$ ) and depressive ( $\beta = .56$ ; 95% CI [.49-.63];  $t = 15.34$ ;  $p < .001$ ;  $R^2 = 20\%$ ) symptoms and stress ( $\beta = .50$ ; 95% CI [.43-.57];  $t = 14.55$ ;  $p < .001$ ;  $R^2 = 19\%$ ). Thus, neuroticism proved to be a partial mediator of the relationship between emotional abuse and total distress ( $t = 9.49$ ;  $p < .001$ ;  $R^2 = 51\%$ ), anxious ( $t = 7.84$ ;  $p < .001$ ;  $R^2 = 35\%$ ) and depressive ( $t = 8.75$ ;  $p < .001$ ;  $R^2 = 49\%$ ) symptoms and stress ( $t = 7.95$ ;  $p < .001$ ;  $R^2 = 47\%$ ), while extraversion, agreeableness and conscientiousness traits were partial mediators of the relationship between emotional abuse and total distress ( $t = 13.20$ ;  $p < .001$ ;  $R^2 = 37\%$ ;  $t = 12.33$ ;  $p < .001$ ;  $R^2 = 31\%$ ;  $t = 11.45$ ;  $p < .001$ ;  $R^2 = 33\%$ , respectively) and depressive symptomatology ( $t = 12.34$ ;  $p < .001$ ;  $R^2 = 42\%$ ;  $t = 15.33$ ;  $p < .001$ ;  $R^2 = 20\%$ ;  $t = 12.52$ ;  $p < .001$ ;  $R^2 = 31\%$ , respectively).

Emotional neglect experiences demonstrated to impact the levels of neuroticism ( $t = 10.39$ ;  $p < .001$ ;  $R^2 = 10\%$ ), agreeableness ( $t = -13.48$ ;  $p < .001$ ;  $R^2 = 16\%$ ), extraversion ( $t = -10.03$ ;  $p < .001$ ;  $R^2 = 10\%$ ), and conscientiousness ( $t = -12.44$ ;  $p < .001$ ;  $R^2 = 14\%$ ) and had a significant effect on total distress symptoms ( $\beta = 1.26$ ; 95% CI [1.07-1.45];  $t = 12.94$ ;  $p < .001$ ;  $R^2 = 15\%$ ), anxious ( $\beta = .37$ ; 95% CI [.30-.45];  $t = 10.43$ ;  $p < .001$ ;  $R^2 = 11\%$ ) and depressive ( $\beta = .51$ ; 95% CI [.44-.58];  $t = 14.18$ ;  $p < .001$ ;  $R^2 = 18\%$ ) symptoms and stress ( $\beta = .37$ ; 95% CI [.31-.44];  $t = 10.74$ ;  $p < .001$ ;  $R^2 = 11\%$ ). The neuroticism and agreeableness showed to be a partial mediators of the relationship between emotional neglect and total distress ( $t = 7.76$ ;  $p < .001$ ;  $R^2 = 50\%$ ;  $t = 8.07$ ;  $p < .001$ ;  $R^2 = 25\%$ ), anxious ( $t = 5.71$ ;  $p < .001$ ;  $R^2 = 33\%$ ;  $t = 6.32$ ;  $p < .001$ ;  $R^2 = 18\%$ ) and depressive symptoms ( $t = 9.32$ ;  $p < .001$ ;  $R^2 = 50\%$ ;  $t = 9.33$ ;  $p < .001$ ;  $R^2 = 27\%$ ) and stress ( $t = 5.22$ ;  $p < .001$ ;  $R^2 = 45\%$ ;  $t = 6.17$ ;  $p < .001$ ;  $R^2 = 20\%$ ). The extraversion trait was a partial mediator of the relationship between emotional neglect and total distress ( $t = 9.07$ ;  $p < .001$ ;  $R^2 = 31\%$ ) and depressive symptoms

( $t = 10.02$ ;  $p < .001$ ;  $R^2 = 39\%$ ), on the other hand, the conscientiousness trait proved to be a partial mediator of the relationship between ELT and depressive symptoms ( $t = 9.37$ ;  $p < .001$ ;  $R^2 = 30\%$ ).

Sexual abuse experiences displayed to impact the levels of neuroticism ( $t = 5.42$ ;  $p < .001$ ;  $R^2 = 3\%$ ), agreeableness ( $t = -6.06$ ;  $p < .001$ ;  $R^2 = 4\%$ ) and conscientiousness ( $t = -7.17$ ;  $p < .001$ ;  $R^2 = 5\%$ ) and had an effect on total distress symptoms ( $\beta = 1.44$ ; 95% CI [1.12-1.76];  $t = 9.00$ ;  $p < .001$ ;  $R^2 = 8\%$ ), anxious ( $\beta = .52$ ; 95% CI [.40-.64];  $t = 9.08$ ;  $p < .001$ ;  $R^2 = 8\%$ ) and depressive symptoms ( $\beta = .50$ ; 95% CI [.38-.62];  $t = 8.33$ ;  $p < .001$ ;  $R^2 = 7\%$ ) and stress ( $\beta = .41$ ; 95% CI [.30-.53];  $t = 7.33$ ;  $p < .001$ ;  $R^2 = 6\%$ ). The neuroticism trait showed to be a partial mediator of the relationship between emotional neglect and total distress ( $t = 7.12$ ;  $p < .001$ ;  $R^2 = 49\%$ ), anxious ( $t = 7.20$ ;  $p < .001$ ;  $R^2 = 34\%$ ) and depressive ( $t = 6.22$ ;  $p < .001$ ;  $R^2 = 47\%$ ) symptoms and stress ( $t = 4.95$ ;  $p < .001$ ;  $R^2 = 45\%$ ). The agreeableness and conscientiousness traits also proved to be partial mediators of the relationship between emotional neglect and total distress ( $t = 6.54$ ;  $p < .001$ ;  $R^2 = 22\%$ ;  $t = 5.54$ ;  $p < .001$ ;  $R^2 = 26\%$ ) and depressive symptomatology ( $t = 6.98$ ;  $p < .001$ ;  $R^2 = 24\%$ ;  $t = 5.54$ ;  $p < .001$ ;  $R^2 = 26\%$ ).

Physical abuse explained to impact the levels of neuroticism ( $t = 5.04$ ;  $p < .001$ ;  $R^2 = 16\%$ ), conscientiousness ( $t = -10.75$ ;  $p < .001$ ;  $R^2 = 18\%$ ), agreeableness ( $t = -10.75$ ;  $p < .001$ ;  $R^2 = 18\%$ ) and extraversion ( $t = -5.57$ ;  $p < .001$ ;  $R^2 = 3\%$ ) and had an effect on total distress symptoms ( $\beta = 1.26$ ; 95% CI [1.02-1.49];  $t = 10.44$ ;  $p < .001$ ;  $R^2 = 5\%$ ), anxious ( $\beta = .58$ ; 95% CI [.47-.70];  $t = 9.94$ ;  $p < .001$ ;  $R^2 = 10\%$ ) and depressive symptoms ( $\beta = .58$ ; 95% CI [.47-.70];  $t = 9.94$ ;  $p < .001$ ;  $R^2 = 10\%$ ) and stress ( $\beta = .51$ ; 95% CI [.39-.62];  $t = 8.83$ ;  $p < .001$ ;  $R^2 = 8\%$ ). The neuroticism and agreeableness showed to be a partial mediator of the relationship between physical abuse and total distress ( $t = 11.22$ ;  $p < .001$ ;  $R^2 = 12\%$ ;  $t = 11.22$ ;  $p < .001$ ;  $R^2 = 35\%$ ), anxious ( $t = 8.45$ ;  $p < .001$ ;  $R^2 = 36\%$ ;  $t = 5.57$ ;  $p < .001$ ;  $R^2 = 17\%$ ) and depressive ( $t = 8.45$ ;  $p < .001$ ;  $R^2 = 36\%$ ;  $t = 11.95$ ;  $p < .001$ ;  $R^2 = 13\%$ ) symptoms and stress ( $t = 7.19$ ;  $p < .001$ ;  $R^2 = 46\%$ ;  $t = 8.83$ ;  $p < .001$ ;  $R^2 = 78\%$ ), while the conscientiousness was a partial mediator with anxious ( $t = 7.16$ ;  $p < .001$ ;  $R^2 = 17\%$ ) and depressive ( $t = 8.24$ ;  $p < .001$ ;  $R^2 = 29\%$ ) symptoms and stress ( $t = 5.92$ ;  $p < .001$ ;  $R^2 = 16\%$ ). Also, the extraversion showed to be a partial mediator of the relationship between emotional neglect with total distress ( $t = 9.59$ ;  $p < .001$ ;  $R^2 = 32\%$ ) and depressive symptoms ( $t = 11.95$ ;  $p < .001$ ;  $R^2 = 13\%$ ).

Physical neglect experiences demonstrated to impact the levels of agreeableness ( $t = -12.75$ ;  $p < .001$ ;  $R^2 = 15\%$ ), conscientiousness ( $t = -12.44$ ;  $p < .001$ ;  $R^2 = 14\%$ ), neuroticism



( $t = 4.51$ ;  $p < .001$ ;  $R^2 = 2\%$ ) and extraversion ( $t = -5.94$ ;  $p < .001$ ;  $R^2 = 4\%$ ) and had an effect on total distress symptoms ( $\beta = 1.68$ ; 95% CI [1.39-1.97];  $t = 11.28$ ;  $p < .001$ ;  $R^2 = 12\%$ ), anxious ( $\beta = .56$ ; 95% CI [.46-.67];  $t = 10.45$ ;  $p < .001$ ;  $R^2 = 11\%$ ) and depressive symptoms ( $\beta = .65$ ; 95% CI [.54-.76];  $t = 11.73$ ;  $p < .001$ ;  $R^2 = 13\%$ ) and stress ( $\beta = .46$ ; 95% CI [.36-.57];  $t = 8.69$ ;  $p < .001$ ;  $R^2 = 8\%$ ). The agreeableness and conscientiousness explained to be a partial mediator of the relationship between physical neglect and total distress ( $t = 6.58$ ;  $p < .001$ ;  $R^2 = 24\%$ ;  $t = 8.61$ ;  $p < .001$ ;  $R^2 = 25\%$ ), anxious ( $t = 6.55$ ;  $p < .001$ ;  $R^2 = 18\%$ ;  $t = 6.91$ ;  $p < .001$ ;  $R^2 = 16\%$ ) and depressive symptoms ( $t = 7.02$ ;  $p < .001$ ;  $R^2 = 24\%$ ;  $t = 9.37$ ;  $p < .001$ ;  $R^2 = 30\%$ ) and stress ( $t = 4.21$ ;  $p < .001$ ;  $R^2 = 19\%$ ;  $t = 7.12$ ;  $p < .001$ ;  $R^2 = 17\%$ ). On other hand, neuroticism and extraversion demonstrated to be a partial mediator of the relationship between physical neglect with total distress symptoms ( $t = 11.06$ ;  $p < .001$ ;  $R^2 = 52\%$ ;  $t = 9.44$ ;  $p < .001$ ;  $R^2 = 31\%$ ) and depressive symptoms ( $t = 11.58$ ;  $p < .001$ ;  $R^2 = 52\%$ ;  $t = 9.93$ ;  $p < .001$ ;  $R^2 = 39\%$ ).

In the other variables, despite the effect with and without the mediator being statistically significant ( $p < .001$ ), the indirect effect indicates that the difference between total and direct effect was not statistically significant.

### **Confirmatory Bifactor Model of Early Life Trauma and Structural Equation Modeling**

A Confirmatory Bifactorial Analysis was performed to verify the relationship between each item of the scale and the general ELT factor and for each specific dimension of the scale (EA; PA; SA; EN; PN). Thus, it was possible to analyze the ELT as a comprehensive construct, which includes the items of the five dimensions of child maltreatment, recognizing its multidimensional and explanatory nature of the shared variation between different types of childhood abuse and neglect. Model fit indices support this model (minimum fit function  $X^2 = 1764.14$ ,  $df = 250$ ,  $p < .001$ ; RMSEA = .080, 90% CI = [.077; .084]; CFI = .90). Therefore, no model modifications were undertaken (Annex 5). The factor loadings are standardized and, in relation to the general scale, all are statistically significant ( $p < .001$ ).

To assess the correlations between ELT, distress symptoms, personality traits, and emotional regulation strategies, it was performed a structural equation modeling. The results evidenced an unacceptable model fit (minimum fit function  $X^2 = 4965.16$ ,  $df = 327$ ,  $p < .001$ ; RMSEA = .087, 90% CI = [.085; .089]; CFI = .71).

## Discussion

The present study analyzed the mediating role of emotional regulation strategies and personality traits on psychological distress (levels of depression, anxiety, and stress) in large cohort of adults living in Portugal with and without history of early life traumatic experiences. Results showed that emotional regulation strategies – cognitive reappraisal, emotional suppression, and rumination (both brooding and reflection subtypes), and personality traits mediated the effect of ELT on symptoms of depression, anxiety, and stress in adulthood.

Firstly, from the analysis of the relationship between ELT and the presence of distress symptoms, results show that participants who reported higher levels of ELT, specifically emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, exhibited elevated levels of symptomatology, including higher levels of depression, anxiety, and stress, in adulthood. These findings are consistent with the first hypothesis of this study (H1), which stressed that higher levels of psychological symptomatology would be associated with the severity of experienced ELT across all evaluated subtypes of trauma (*Table 2*). These results are also congruent with literature, which states that traumatic experiences in childhood increased the risk of adult psychopathology (Carr et al., 2013; Saleh et al., 2017). These results are also congruent with literature, which states that traumatic experiences in childhood represent a risk factor for the development of psychological distress symptoms in adulthood (Carr et al., 2013; Saleh et al., 2017). A study conducted by Martins et al. (2014), in a clinical population, found that a substantial proportion of patients, specifically 71.6%, reported experiencing some type of ELT, and among these patients, a higher percentage was associated with the occurrence of emotional abuse. This study showed that, among the ELS subtypes, emotional abuse was positively associated with psychopathology in adults, particularly with mood disorders, then these patients had higher severity scores in all symptoms, such as depression and anxiety. Thus, studies have showed that ELT could increase vulnerability to depression (Chu et al., 2022; Saleh et al., 2017) and the intensity of ELS predicts symptom severity of mood episodes (Martins et al., 2014). This phenomenon may occur because ELT triggers alterations in neurobiological stress-response systems, potentially serving as a biological risk factor for the onset of depression in the future (Heim et al., 2004). For instance, the investigation conducted by Lähdepuro et al. (2019) revealed a significant correlation between emotional

abuse and physical abuse and the manifestation of anxiety symptoms during adulthood, particularly in the context of the former.

This may be partially explained by neuroimaging studies which showed ELT might have long-term consequences on development trajectories, such as structural and functional disturbances in brain regions responsible for emotional behavior (Bondar et al., 2018). So, such experiences can become biologically ingrained, making an individual susceptible to psychological and psychiatric problems later in life. A recent target review synthesis by Murphy et al (2022) showed that the impact of early life stress on the developing brain is highly complex and influenced by factors such as individual vulnerability, developmental sensitivity window, stressor type, and duration. So, it is very important to study both protective and risk factors that mediate this relationship.

Regarding the use of cognitive reappraisal strategies, their use decreases as the levels of emotional abuse, physical abuse, emotional neglect, and physical neglect increase. Thus, there is an overall tendency to use less cognitive reappraisal, following ELT. On the other hand, regarding the use of suppression, higher levels of all subtypes of ELT were associated to increased use of this strategy. Both results are in line with our hypothesis (H2 and H3). Furthermore, the correlation analysis also revealed that ELT is associated with a higher inclination towards adopting emotional suppression strategies and a lower inclination towards employing cognitive reappraisal strategies across all the different subtypes of trauma accessed. The study conducted by McRae and Gross (2020) offers supporting evidence for the adaptive nature of cognitive reappraisal. Their findings indicate that this strategy is linked to favorable outcomes, such as reduced psychopathological symptoms and enhanced well-being. Results of this study also show that suppression strategies are associated with higher levels of depression, anxiety, and stress symptoms, and cognitive reappraisal is associated to lower levels of these symptoms. Thus, these results demonstrate that exposure to ELT may impair the acquisition of adaptive emotion regulation strategies (Dvir et al., 2014) and emotion regulation strategies play a significant role in the development of symptomatology (Berking & Wupperman, 2012). Therefore, choosing adaptive strategies can promote well-being and reduce the risk of developing symptoms (Aldao et al., 2010).

Regarding rumination, specifically the brooding subtype, the results showed an overall tendency to use this type of rumination, following ELT, congruently to what was

hypothesized (H4). These findings suggest that participants who reported higher levels of all subtypes of ELT also displayed a greater inclination towards engaging in brooding rumination (*Table 2*). Regarding the reflection subtype, the results also indicated an overall tendency to engage in this type of rumination following ELT. The results suggest that participants who experienced emotional abuse, sexual abuse, and emotional neglect in childhood tend to use reflection rumination, with a greater severity of these experiences being associated with a higher likelihood of engaging in this form of rumination (*Table 2*). Correlation analysis also indicated that both brooding, and reflection rumination are associated with higher levels of depression, anxiety, and stress symptoms. Thus, these results provide evidence supporting our hypothesis and are also consistent with the existing literature, which suggests that individuals who have experienced ELT tend to exhibit a proclivity for engaging rumination. The studies demonstrates that ELT is associated with the adoption of maladaptive emotion-regulating strategies, including brooding and reflection rumination, during adulthood (Pechtel & Pizzagalli, 2011; Peters et al., 2019).

Regarding personality traits, the results indicated a general inclination towards higher levels of neuroticism and lower levels of extraversion, agreeableness, and conscientiousness, in individuals who experienced ELT. These findings are consistent with the initially formulated hypothesis (H5). Regarding the trait of openness to experience, it did not demonstrate a statistically significant relationship with ELT. In a longitudinal study conducted by Rakhshani and Furr (2021), involving individuals who experienced ELT, it was demonstrated that personality is not immune to extreme adverse life events. The results of the study provide evidence of the substantial influence that adverse experiences during early life can exert on the formation and development of one's personality and consequently, it can be inferred that traumatic events have the capacity to shape and impact an individual's personality, potentially resulting in enduring effects. The study revealed that such experiences were correlated with increased scores in neuroticism and lower scores in agreeableness. Another study by Wen et al (2022) showed that emotional abuse was most pervasively related to personality, and neuroticism was significantly associated with emotional and physical abuse and emotional and physical neglect, and sexual abuse. Regarding the trait of openness, where there were no statistically significant results, according to the literature, it would have been expected that people who experienced ELT

would report higher levels of openness to experiences in adulthood. people who ELT reported higher levels of openness to experiences in adulthood (Pos et al., 2016).

On the other hand, examining the correlations regarding the relationship between personality traits and symptomatology, results suggest that higher levels of neuroticism are associated with an increased presence of symptoms of depression, anxiety, and stress. Conversely, higher levels of extraversion, agreeableness, and conscientiousness are associated with a reduced presence of symptomatology. Several studies found that ELT was significantly associated with the risk of depression in adults, and also been found to be associated with the severity (Manea, 2019) and with the risk of anxious symptoms in adulthood (Wang et al., 2018). For instance, Kluwe-Schiavon et al. (2022), in a cohort of individuals living in Portugal during COVID-19 Pandemic, showed that both difficulties in emotion regulation as well as high levels of neuroticism were associated with increased psychological distress during the pandemic. Therefore, both emotion regulation and personality traits are important risk or protective factors that might significantly mediate the impact of stressful events.

Furthermore, exploring the mediating role of cognitive reappraisal in the relation between ELT and distress symptoms indicated that this emotion regulation strategy mediates the relationship between physical abuse and physical neglect, and the development of symptoms of distress. No statistically significant results were found for the emotional and sexual abuse and for the emotional neglect. This finding is only partially congruent with hypothesis (H6), where an overall mediating role of cognitive reappraisal was expected. Research has revealed that emotion regulation strategies, including adaptive strategies like cognitive reappraisal, play a mediating role in the link between ELT and the development of psychopathological symptoms (Hopfinger et al., 2016; Huh et al., 2017). Huh and colleagues (2017) study exploring the relationship between ELT and severity of adulthood depression and anxiety symptoms in a clinical sample, with the mediating role of cognitive emotion regulation strategies, with the purpose to evaluate a pathway of childhood trauma and its influence on psychiatric symptoms in patients with depressive disorder. Results showed that the indirect effect of adaptive emotion regulation strategies was weaker than maladaptive emotion regulation strategies, and mediation effect of adaptive strategies was limited to depressive symptoms, and the mediation effect of adaptive strategies was limited to emotional neglect. Similar findings

were also reported in studies conducted by Chu and colleagues (2022) that clinical groups may struggle to effectively implement adaptive strategies, which can result in weaker indirect effects of these strategies in mediating the relationship between childhood trauma and the severity of symptoms in adulthood. In addition, depressed patients reported using adaptive strategies such as reappraisal less frequently than patients with anxiety disorders (Huh et al., 2017). Moreover, Demir and colleagues (2020) examined the role of cognitive emotion regulation strategies as a potential mediator between ELT and current symptoms of depression and anxiety. However, no significant associations were found for this mediating effect. These findings align with the notion that maladaptive emotion regulation strategies have a stronger association with psychopathology compared to adaptive strategies. It is possible that the effectiveness of adaptive strategies depends on the context and clinical symptom severity. Individuals with mental disorders may face challenges in effectively implementing adaptive strategies, which could result in a weaker indirect effect on the relationship between early life stress and adult symptom severity.

Regarding mediation analysis, results suggest that emotional suppression plays a mediating role in relationship between emotional and physical neglect and physical abuse and the development of symptoms of distress, in adulthood. This is only partially congruent with hypothesis (H6) since an overall mediating role of suppression was expected. Result is congruent with different studies indicating that a maladaptive strategy, like suppression, were more strongly associated with psychopathology than adaptive strategies (Demir et al., 2020; Yin et al., 2022), such as depression (Hopfinger et al., 2016). Huh and colleagues (2017) conducted a study that provided evidence of the significant indirect impact of maladaptive strategies on the connection between overall emotion regulation difficulties and depression, as well as the severity of depression and anxiety. Additionally, their findings revealed that, concerning particular types of trauma, maladaptive strategies served as a mediator in the relationship between emotional abuse and current symptoms (Huh et al., 2017). Therefore, emotion regulation is a mediator of childhood trauma's negative effects and childhood trauma can lead to emotion dysregulation in later life (Kim & Cicchetti, 2010).

Moreover, results indicate that brooding rumination plays a mediating role in the relationship between ELT, including all subtypes assessed, and the development of

depression, anxiety, and stress symptoms in adulthood, congruently with what hypothesized. Additionally, results indicated that reflection rumination plays a mediating role in the relationship between ELT subtypes, and the development symptoms of distress. These results provide evidence for the relevance of targeting rumination processes in the clinical practice with individuals who experience ELT, to promote more adaptive strategies and prevent distress symptoms. This finding aligns with initial hypothesized (H6) and with several studies that have suggested rumination as a significant mediator in the association between childhood traumatic experiences and the onset of symptoms related to anxiety and depression (Deguchi et al., 2021; Kim et al., 2017). The study conducted by Lemoult and colleagues (2019) further states that only the brooding component serves as a mediator in the relationship between ELT and psychopathological symptoms.

Furthermore, results indicated that some personality traits, namely neuroticism, extraversion, agreeableness, and conscientiousness partially mediated the relationship between ELT, and the development of depression, anxiety, and stress symptoms in adulthood, congruently with what was hypothesized (H6). These results are congruent with a study by Zhang and colleagues (2018), that indicated personality traits might have mediating effect on the association between ELT and the development of depression and anxiety symptoms. Moreover Carvalho and colleagues (2015) study indicated that unexpectedly, dysfunctional personality traits, like neuroticism, displayed stronger associations with emotional events than with physical and sexual trauma. This finding is of relevance because physical and sexual abuse are typically considered to be of higher importance and because these types of trauma have been more thoroughly investigated and these data have implications for public mental health, suggesting the need for additional attention to emotional trauma and its consequences. Furthermore, regarding the openness to experience trait, in the present study, it does not mediate the relationship between ELT and the development of symptomatology. These results are not congruent with the literature stating that a part of the impact of childhood abuse on negative life events is influenced by openness to experience (Pos et al., 2016).

The outcome of the structural equation modeling analysis conducted suggests that the hypothesized model did not adequately capture the relationships between the variables of interest, contrary to expected. However, despite this, it was possible to see that the mediating variables are important in this relationship.

## **Limitations**

The current study is not without limitations. The first is our limited representation of the general population living in Portugal when sociodemographic factors are taken into account. For instance, female from the north and center of Portugal are disproportionately represented in the sample, as well as an unequal representation of participants across different trauma subtypes. Another limitation arises from the reliance on self-report questionnaires, which were completed online, making it difficult to ascertain the accuracy and reliability of the responses. Ideally, the inclusion of a professional administering the questionnaires, along with a clinical interview, would have been beneficial. Furthermore, the integration of the rumination questionnaire in a later phase of the project resulted in a smaller number of responses.

## **Conclusion**

The present findings provide evidence for the mediating role of cognitive emotion regulation in the association between childhood trauma and current symptoms of depression, anxiety, and stress. Specifically, these results support a model wherein the link between overall childhood trauma and distress symptoms is mediated by maladaptive cognitive emotion regulation strategies. This suggests that cognitive emotion dysregulation may serve as a crucial factor in individuals who have experienced childhood trauma and currently exhibit distress symptoms. It was observed that individuals who have experienced any of the subtypes of ELT displayed a greater tendency towards using strategies such as suppression, while showing a lesser inclination towards utilizing adaptive strategies like cognitive reappraisal. Similarly, concerning rumination as well, findings suggest that both the brooding and reflection subtypes of rumination play an important mediating role in the relationship between ELT and symptoms of depression, anxiety, and stress. The present study also underscores the mediating role of personality traits in the relationship between ELT and symptomatology. These findings collectively add to the understanding of the intricate mechanisms that underlie the influence of early-life trauma on psychological well-being. They provide valuable information for developing comprehensive interventions and tailored support strategies for individuals who have experienced this problem. For future investigations, it would be of utmost relevance to develop longitudinal studies to better understand this relationship.



## Bibliography

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217–237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- Allport G. W. (1961). *Pattern and Growth in Personality*. Fort Worth TX: Harcourt College Publisher.
- Berking, M., & Wupperman, P. (2012). Emotion regulation and mental health: Recent findings, current challenges, and future directions. *Current Opinion in Psychiatry, 25*(2), 128–134. <https://doi.org/10.1097/YCO.0b013e3283503669>
- Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Stokes, J., Handelsman, L., Medrano, M., Desmond, D., & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child abuse & neglect, 27*(2), 169–190. [https://doi.org/10.1016/s0145-2134\(02\)00541-0](https://doi.org/10.1016/s0145-2134(02)00541-0)
- Bojanowska, A., & Urbańska, B. (2021). Individual values and well-being: The moderating role of personality traits. *International Journal of Psychology, 56*(5), 698–709. <https://doi.org/10.1002/ijop.12751>
- Bondar, N. P., Lepeshko, A. A., & Reshetnikov, V. V. (2018). Effects of early-life stress on social and anxiety-like behaviors in adult mice: sex-specific effects. *Behavioural Neurology, 2018*, 32–34. <https://doi.org/10.1155/2018/1538931>
- Carr, C. P., Martins, C. M. S., Stingel, A. M., Lemgruber, V. B., & Juruena, M. F. (2013). The role of early life stress in adult psychiatric disorders: A systematic review according to childhood trauma subtypes. *Journal of Nervous and Mental Disease, 201*(12), 1007–1020. <https://doi.org/10.1097/NMD.0000000000000049>
- Chu, Q., Wang, X., Yao, R., Fan, J., Li, Y., Nie, F., Wang, L., & Tang, Q. (2022). Childhood trauma and current depression among Chinese university students: a moderated mediation model of cognitive emotion regulation strategies and neuroticism. *BMC Psychiatry, 22*(1), 1–13. <https://doi.org/10.1186/s12888-021-03673-6>
- Coaley, K. (2014). Theories and measurement of personality characteristics. In K. Coaley (Ed.), *An Introduction to Psychological Assessment and Psychometrics*, (2nd ed., pp. 224-264). Sage.
- Cole, P. M., Michel, M. K., & Teti, L. O. (1994). The development of emotion regulation and dysregulation: a clinical perspective. *Monographs of the Society for Research in Child Development, 59*(2–3), 73–102. <https://doi.org/10.1111/j.1540-5834.1994.tb01278.x>
- Colizzi, M., Lasalvia, A., & Ruggeri, M. (2020). Prevention and early intervention in youth mental health: Is it time for a multidisciplinary and trans-diagnostic model for care? *International Journal of Mental Health Systems, 14*(1), 1–14. <https://doi.org/10.1186/s13033-020-00356-9>
- Csathó, Á., & Birkás, B. (2018). Early-life stressors, personality development, and fast life strategies:

- An evolutionary perspective on malevolent personality features. *Frontiers in Psychology*, *9*, 1–6. <https://doi.org/10.3389/fpsyg.2018.00305>
- Carvalho, H. W., Pereira, R., Frozi, J., Bisol, L. W., Ottoni, G. L., & Lara, D. R. (2015). Childhood trauma is associated with maladaptive personality traits. *Child Abuse and Neglect*, *44*, 18–25. <https://doi.org/10.1016/j.chiabu.2014.10.013>
- Deguchi, A., Masuya, J., Naruse, M., Morishita, C., Higashiyama, M., Tanabe, H., Inoue, T., & Ichiki, M. (2021). Rumination mediates the effects of childhood maltreatment and trait anxiety on depression in non-clinical adult volunteers. *Neuropsychiatric Disease and Treatment*, *17*, 3439–3445. <https://doi.org/10.2147/NDT.S332603>
- Demir, Z., Böge, K., Fan, Y., Hartling, C., Harb, M. R., Hahn, E., Seybold, J., & Bajbouj, M. (2020). The role of emotion regulation as a mediator between early life stress and posttraumatic stress disorder, depression and anxiety in Syrian refugees. *Translational Psychiatry*, *10*(1). <https://doi.org/10.1038/s41398-020-01062-3>
- Dias, A., Sales, L., Carvalho, A., Vale, I. C., Kleber, R., & Cardoso, R. M. (2014). Estudo de propriedades psicométricas do Questionário de Trauma de Infância – Versão breve numa amostra portuguesa não clínica. *Laboratório de Psicologia*, *11*(2), 103–120. <https://doi.org/10.14417/lp.713>
- Dinis, A., Gouveia, J. P., Duarte, C., & Castro, T. (2011). Estudo de validação da versão portuguesa da Escala de Respostas Ruminativas – Versão Reduzida. *Psychologica*, *54*, 175–202. [https://doi.org/10.14195/1647-8606\\_54\\_7](https://doi.org/10.14195/1647-8606_54_7)
- Domaradzka, E., & Fajkowska, M. (2018). Cognitive emotion regulation strategies in anxiety and depression understood as types of personality. *Frontiers in Psychology*, *9*, 1–12. <https://doi.org/10.3389/fpsyg.2018.00856>
- Dvir, Y., Ford, J. D., Hill, M., & Frazier, J. A. (2014). Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harvard Review of Psychiatry*, *22*(3), 149–161. <https://doi.org/10.1097/HRP.0000000000000014>
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*(2), 348–362. <https://doi.org/10.1037/0022-3514.85.2.348>
- Heim, C., Plotsky, P. M., & Nemeroff, C. B. (2004). Importance of studying the contributions of early adverse experience to neurobiological findings in depression. *Neuropsychopharmacology*, *29*(4), 641–648. <https://doi.org/10.1038/sj.npp.1300397>
- Hopfinger, L., Berking, M., Bockting, C. L., & Ebert, D. D. (2016). Emotion regulation mediates the effect of childhood trauma on depression. *Journal of Affective Disorders*, *198*, 189–197. <https://doi.org/10.1016/j.jad.2016.03.050>
- Huh, H. J., Kim, K. H., Lee, H. K., & Chae, J. H. (2017). The relationship between childhood trauma

- and the severity of adulthood depression and anxiety symptoms in a clinical sample: The mediating role of cognitive emotion regulation strategies. *Journal of Affective Disorders*, 213, 44–50. <https://doi.org/10.1016/j.jad.2017.02.009>
- Hurst, J. E., & Kavanagh, P. S. (2017). Life history strategies and psychopathology: the faster the life strategies, the more symptoms of psychopathology. *Evolution and Human Behavior*, 38(1), 1–8. <https://doi.org/10.1016/j.evolhumbehav.2016.06.001>
- Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 51(6), 706–716. <https://doi.org/10.1111/j.1469-7610.2009.02202.x>
- Kim, J. S., Jin, M. J., Jung, W., Hahn, S. W., & Lee, S. H. (2017). Rumination as a mediator between childhood trauma and adulthood depression/anxiety in non-clinical participants. *Frontiers in Psychology*, 8, 1–11. <https://doi.org/10.3389/fpsyg.2017.01597>
- Kluwe-Schiavon, B., Zorzi, L., Meireles, J., Leite, J., Sequeira, H., & Carvalho, S. (2022). The psychological impact of the COVID-19 pandemic in Portugal: The role of personality traits and emotion regulation strategies. *PloS one*, 17(6), e0269496. <https://doi.org/10.1371/journal.pone.0269496>
- Koole, S. (2009). The psychology of emotion regulation: An integrative review. *Cognition and Emotion*, 23(1), 4–41. <https://doi.org/10.1080/02699930802619031>
- Lähdepuro, A., Savolainen, K., Lahti-Pulkkinen, M., Eriksson, J. G., Lahti, J., Tuovinen, S., Kajantie, E., Pesonen, A. K., Heinonen, K., & Räikkönen, K. (2019). The impact of early life stress on anxiety symptoms in late adulthood. *Scientific Reports*, 9(1), 1–13. <https://doi.org/10.1038/s41598-019-40698-0>
- Lemoult, J., Humphreys, K. L., Tracy, A., Hoffmeister, J., Ip, E., & Gotlib, I. H. (2019). Meta-analysis: exposure to early life stress and risk for depression in childhood and adolescence. *Journal of the American Academy of Child & Adolescent Psychiatry*. <https://doi.org/10.1016/j.jaac.2019.10.011>
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-u](https://doi.org/10.1016/0005-7967(94)00075-u)
- Lupien, S. J., McEwen, B. S., Gunnar, M. R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour and cognition. *Nature Reviews Neuroscience*, 10(6), 434–445. <https://doi.org/10.1038/nrn2639>
- Magalhães, E., Salgueira, A., Gonzalez, A. J., Costa, J. J., Costa, M. J., Costa, P., & de Lima, M. P. (2014). NEO-FFI: Psychometric properties of a short personality inventory in Portuguese context. *Psicologia: Reflexao e Critica*, 27(4), 642–657. <https://doi.org/10.1590/1678->

7153.201427405

- Manea, C. (2019). *Childhood Trauma Effects on the Development of Personality and Mental Health*. 1(1), 7–12.
- Martins, C. M., Baes, C., Tofoli, S. M., & Juruena, M. F. (2014). Emotional abuse in childhood is a differential factor for the development of depression in adults. *Journal of Nervous and Mental Disease*, 202(11), 774–782. <https://doi.org/10.1097/NMD.0000000000000202>
- McRae, K., & Gross, J. J. (2020). Emotion regulation. *Emotion*, 20(1), 1–9. <https://doi.org/10.1037/emo0000703>
- Murphy, F., Nasa, A., Cullinane, D., Raajakesary, K., Gazzaz, A., Sooknarine, V., Haines, M., Roman, E., Kelly, L., O'Neill, A., Cannon, M., & Roddy, D. W. (2022). Childhood trauma, the HPA axis and psychiatric illnesses: A targeted literature synthesis. *Frontiers in Psychiatry*, 13, 748372. <https://doi.org/10.3389/fpsyt.2022.748372>
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, 109(3), 504–511. <https://doi.org/10.1037/0021-843X.109.3.504>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, 3(5), 400–424. <https://doi.org/10.1111/j.1745-6924.2008.00088.x>
- Pais-Ribeiro, J. L., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão e stress de 21 itens de Lovibond e Lovibond. *Psicologia, Saúde e Doenças*, 5(1), 229–239. <https://repositorio.ispa.pt/bitstream/10400.12/1058/1/PSD%202004%205%282%29%20229-239.pdf>
- Pechtel, P., & Pizzagalli, D. A. (2011). Effects of early life stress on cognitive and affective function: An integrated review of human literature. *Psychopharmacology*, 214(1), 55–70. <https://doi.org/10.1007/s00213-010-2009-2>
- Peters, A. T., Burkhouse, K. L., Kinney, K. L., & Luan Phan, K. (2019). The roles of early-life adversity and rumination in neural response to emotional faces amongst anxious and depressed adults. *Psychological Medicine*, 49(13), 2267–2278. <https://doi.org/10.1017/S0033291718003203>
- Pos, K., Boyette, L. L., Meijer, C. J., Koeter, M., Krabbendam, L., Haan, L., Bruggeman, R., Cahn, W., Haan, L., Kahn, R. S., Meijer, C. J., Myin-Germeys, I., Os, J., & Wiersma, D. (2016). The effect of childhood trauma and Five-Factor Model personality traits on exposure to adult life events in patients with psychotic disorders. *Cognitive Neuropsychiatry*, 21(6), 462–474. <https://doi.org/10.1080/13546805.2016.1236014>
- Rakhshani, A., & Furr, R. M. (2021). The reciprocal impacts of adversity and personality traits: A prospective longitudinal study of growth, change, and the power of personality. *Journal of*

- Personality*, 89(1), 50–67. <https://doi.org/10.1111/jopy.12541>
- Saleh, A., Potter, G. G., McQuoid, D. R., Boyd, B., Turner, R., MacFall, J. R., & Taylor, W. D. (2017). Effects of early life stress on depression, cognitive performance and brain morphology. *Psychological Medicine*, 47(1), 171–181. <https://doi.org/10.1017/S0033291716002403>
- Shiner, R. L., Allen, T. A., & Masten, A. S. (2017). Adversity in adolescence predicts personality trait change from childhood to adulthood. *Journal of Research in Personality*, 67, 171–182. <https://doi.org/10.1016/j.jrp.2016.10.002>
- Teicher, M. H., Samson, J. A., Anderson, C. M., & Ohashi, K. (2016). The effects of childhood maltreatment on brain structure, function and connectivity. *Nature Reviews Neuroscience*, 17(10), 652–666. <https://doi.org/10.1038/nrn.2016.111>
- Thomson, P., & Jaque, S. V. (2017). Self-regulation, emotion, and resilience. *Creativity and the Performing Artist*, 225–243. <https://doi.org/10.1016/b978-0-12-804051-5.00014-7>
- Torrence, B. S., & Connelly, S. (2019). Emotion regulation tendencies and leadership performance: An examination of cognitive and behavioral regulation strategies. *Frontiers in Psychology*, 10, 1–11. <https://doi.org/10.3389/fpsyg.2019.01486>
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Ruminative reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27(3), 247–259. [10.1023/A:1023910315561](https://doi.org/10.1023/A:1023910315561)
- Wang, D., Lu, S., Gao, W., Wei, Z., Duan, J., Hu, S., Huang, M., Xu, Y., & Li, L. (2018). The impacts of childhood trauma on psychosocial features in a Chinese sample of young adults. *Psychiatry Investigation*, 15(11), 1046–1052. <https://doi.org/10.30773/pi.2018.09.26>
- Wen, Y., Bo, Q., Hou, W., Mao, Z., Li, F., He, F., Dong, F., Ma, X., Tang, Y., Li, X., & Wang, C. (2022). The effects of childhood trauma on personality in unaffected first-degree relatives of patients with major depressive disorder. *BMC Psychiatry*, 22(1), 1–8. <https://doi.org/10.1186/s12888-022-03909-z>
- Yin, W., Pan, Y., Zhou, L., Wei, Q., Zhang, S., Hu, H., Lin, Q., Pan, S., Dai, C., & Wu, J. (2022). The relationship between childhood trauma and depressive symptom among Zhuang adolescents: Mediating and moderating effects of cognitive emotion regulation strategies. *Frontiers in Psychiatry*, 13, 994065. <https://doi.org/10.3389/fpsyg.2022.994065>
- Young, E. S., Simpson, J. A., Giskevicius, V., Huelsnitz, C. O., & Fleck, C. (2019). Childhood attachment and adult personality: A life history perspective. *Self and Identity*, 18(1), 22–38. <https://doi.org/10.1080/15298868.2017.1353540>
- Zhang, M., Han, J., Shi, J., Ding, H., Wang, K., Kang, C., & Gong, J. (2018). Personality traits as possible mediators in the relationship between childhood trauma and depressive symptoms in Chinese adolescents. *Journal of Psychiatric Research*, 10, 150–155. <https://doi.org/10.1016/j.jpsychires.2018.05.019>

## Annexes

### Annex 1

*Relationship between Early Life Trauma, Distress Symptoms, Personality traits and Rumination, and Emotion Regulation strategies*

	Depression	Anxiety	Stress	Neuroticism	Extroversion	Agreeableness	Conscientiousness	Openness	Cognitive Reappraisal	Supression	Rumination	Brooding	Reflection
Emotional Abuse	.450**	.407**	.431**	.390**	-.267**	-.333**	-.327**	.122**	-.184**	.155**	.338**	.343**	.239**
Physical Abuse	.365**	.310**	.279**	.164**	-.180**	-.425**	-.303**	-.125**	-.129**	.152**	-.251**	.264**	.166**
Sexual Abuse	.264**	.286**	.234**	.175**	-.050	-.195**	-.229**	.010	-.056**	.110**	.182**	.185**	.128**
Emotion Neglect	.422**	.324**	.333**	.323**	-.313**	-.405**	-.379**	-.021**	-.183**	.226**	.270**	.279**	.184**
Physical Neglect	.360**	.325**	.275**	.147**	-.191**	-.386**	-.360**	-.170**	-.149**	.136**	.201**	.207**	.141**
Early Life Trauma Total	.480**	.421**	.404**	.325**	-.271**	-.441**	-.408**	-.028	-.185**	.203**	.320**	.329**	.221**
Depression	-	-	-	.670**	-.567**	-.452**	-.487**	-.061	-.321**	.394**	.540**	.565**	.363**
Anxiety	-	-	-	.553**	-.387**	-.374**	-.349**	-.012	-.256**	.309**	.513**	.534**	.346**
Stress	-	-	-	.656**	-.417**	-.412**	-.358**	-.010	-.322**	.281**	.577**	.607**	.382**
DASS Total				.679**	-.498**	-.448**	-.433**	-.031	-.325**	.357**	.589**	.616**	.394**

Note. \*\*p<.001

## Annex 2

### *The mediating role of Emotion Regulation in the relationship between Early Life Trauma and Psychological Distress*

Independent Variables	Mediators	Dependent Variables	Direct Effect				Indirect Effect $\beta$	95% CI		
			Unstandardized $\beta$ (SE)	Standardized $\beta$	Standardized $\beta$	Standardized $\beta$				
Early Life Trauma →	Reappraisal	→ Distress	-.50 ***	(.06)	.44 (.03)**	.43	-.25	.05	.03	.07
		→ Anxiety	-.09 (.02)***		.14 (.01)***	.39	-.18	.01	.01	.02
		→ Depression			.17 (.01)***	.44	-.24	.02	.01	.03
		→ Stress			.13 (.01)***	.36	-.26	.02	.01	.03
Emotional Abuse →	Reappraisal	→ Distress	-.51 ***	(.06)	1.40 (.10) ***	.42	-.25	.15	.09	.22
		→ Anxiety	-.30 (.05)***		.45 (.04)***	.37	-.19	.04	.02	.06
		→ Depression			.50 (.04)***	.41	-.25	.06	.03	.08
		→ Stress			.45 (.03)***	.39	.25	.05	.03	.08
Emotional Neglect →	Reappraisal	→ Distress	-.54 (.06)***		1.10 (.09)***	.34	-.26	.15	.09	.22
		→ Anxiety	-.29 (.05)***		.33 (.04)***	.29	-.20	.04	.02	.07
		→ Depression			.45 (.04)***	.38	-.25	.06	.03	.08
		→ Stress			.32 (.03)***	.28	-.27	.06	.03	.08
Sexual Abuse →	Reappraisal	→ Distress	-.63 (.06)***		1.35 (.15) ***	.27	-.31	.09	-.01	.20
		→ Anxiety	-.14 (.08)		.50 (.06)***	.27	-.24	.02	-.004	.05





Emotional Neglect	→	Suppression	→	Distress	.78 (.08)***	1.05 (.10)***	.23	.33	.28	.21	.14	.29	
			→	Anxiety	.26 (.04)***	.25 (.03)***		.31 (.04)***	.27	.25	.07	.04	.09
			→	Depression	.33 (.03)***	.42 (.03)**		.35	.32	.09	.06	.12	
			→	Stress	.21 (.03)***	-.32 (.04)***		.28	.22	.06	.03	.08	
Sexual Abuse	→	Suppression	→	Distress	.91 (.08)***	1.25 (.15)***	.11	.25	.33	.18	.07	.30	
			→	Anxiety	.20 (.06)***	.28 (.03)***		.47 (.06)***	.26	.28	.06	.02	.10
			→	Depression	.38 (.03)***	.43 (.06)***		.22	.37	.08	.03	.13	
			→	Stress	.25 (.03)***	.37 (.06)***		.21	.26	.05	.02	.08	
Physical Abuse	→	Suppression	→	Distress	.86 (.08)***	1.56 (.15)***	.15	.30	.31	.25	.14	.36	
			→	Anxiety	.29 (.06)***	.27 (.03)***		.51 (.06)***	.27	.27	.08	.04	.12
			→	Depression	.36 (.03)***	.61 (.06)***		.31	.35	.10	.06	.15	
			→	Stress	.24 (.03)***	.44 (.06)***		.24	.24	.07	.04	.10	
Physical Neglect	→	Suppression	→	Distress	.87 (.08)***	1.47 (.14)***	.14	.30	.32	.21	.11	.31	
			→	Anxiety	.24 (.06)***	.27 (.03)***		.50 (.05)***	.29	.27	.06	.03	.10
			→	Depression	.36 (.03)***	.56 (.05)***		.31	.35	.09	.05	.13	
			→	Stress	.24 (.03)***	.40 (.05)***		.24	.25	.06	.03	.09	

## Annex 3

*The mediating role of Rumination in the relationship between Early Life Trauma and Psychological Distress*

Independent Variables	Mediators	Dependent Variables	Direct Effect				Indirect Effect $\beta$	95% CI		
			Unstandardized $\beta$ (SE)		Standardized $\beta$					
Early Life Trauma →	Reflection	→ Distress	.05 (.01)***	1.46 (.15)***	.43 (.03)***	.43	.30	.06	.04	.08
		→ Anxiety		.46 (.06)***	.14 (.01)***	.38	.26	.02	.01	.03
		→ Depression		.48 (.06)***	.17 (.01)***	.45	.26	.02	.01	.03
		→ Stress		.52 (.05)***	.12 (.01)***	.35	.31	.02	.02	.03
Emotional Abuse →	Reflection	→ Distress	.16 (.02)***	1.46 (.15)***	1.31 (.10)***	.40	.30	.23	.15	.32
		→ Anxiety		.47 (.06)***	.40 (.04)***	.34	.26	.07	.05	.10
		→ Depression		.48 (.06)***	.49 (.04)***	.41	.27	.08	.05	.11
		→ Stress		.50 (.05)***	.41 (.04)***	.36	.29	.08	.05	.11
Emotional Neglect →	Reflection	→ Distress	.12 (.02)***	1.62 (.10)***	1.07 (.10)***	.34	.33	.19	.12	.28
		→ Anxiety		.52 (.06)***	.31 (.04)***	.27	.30	.06	.04	.09
		→ Depression		.53 (.06)***	.46 (.04)***	.39	.29	.06	.04	.09
		→ Stress		.57 (.06)***	.30 (.04)***	.27	.33	.07	.04	.10
Sexual Abuse →	Reflection	→ Distress	.13 (.04)***	1.77 (.16)***	1.24 (.16)***	.25	.36	.23	.11	.36
		→ Anxiety		.55 (.06)***	.47 (.06)***	.27	.31	.07	.03	.11
		→ Depression		.61 (.06)***	.43 (.06)***	.23	.33	.08	.03	.12

			→	Stress		.61 (.06)***	.34 (.06)***		.20	.36	.08	.04	.12	
Physical Abuse	→	Reflection		→	Distress		1.66 (.15)	1.64 (.16)		.33	.34	.28	.17	.41
				→	Anxiety	.17 (.04) ***	.52 (.06)***	.54 (.06)***		.30	.30	.09	.05	.13
				→	Depression		.55 (.06)***	.66 (.06)***	.17	.36	.30	.09	.05	.14
				→	Stress		.58 (.06)***	.44 (.06)***		.25	.34	.10	.06	.14
				→	Stress		.58 (.06)***	.44 (.06)***		.25	.34	.10	.06	.14
Physical Neglect	→	Reflection		→	Distress		1.70 (.15) ***	1.52 (.14) ***		.33	.35	.22	.11	.34
				→	Anxiety	.13 (.03) ***	.53 (.06) ***	.52 (.05) ***		.31	.30	.07	.04	.11
				→	Depression		.57 (.06) ***	.61 (.05) ***	.14	.35	.31	.08	.04	.11
				→	Stress		.59 (.06) ***	.40 (.05) ***		.25	.34	.08	.04	.12
Early Life Trauma	→	Brooding		→	Distress		2.1 (.11) ***	.32 (.03) ***		.32	.51	.17	.13	.20
				→	Anxiety	.08 (0.01) ***	.65 (.05) ***	.10 (.01) ***		.29	.44	.05	.04	.06
				→	Depression		.69 (.04) ***	.13 (.01) ***	.33	.36	.45	.06	.04	.07
				→	Stress		.76 (.04) ***	.08 (.01) ***		.24	.53	.06	.05	.07
Emotional Abuse	→	Brooding		→	Distress		2.13 (.12)***	.96 (.12)***		.29	.52	.58	.45	.71
				→	Anxiety	.27 (.03)***	.67 (.05)***	.29 (.04) ***		.25	.45	.18	.14	.23
				→	Depression		.71 (.05) ***	.38 (.04) ***	.34	.31	.46	.19	.15	.24
				→	Stress		.75 (.04)***	.29 (.03)***		.25	.52	.20	.16	.25
Emotional Neglect	→	Brooding		→	Distress	.22 (.03) ***	2.26 (.12) ***	.77 (.09) ***		.24	.55	.49	.36	.61
				→	Anxiety		.72 (.05) ***	.21 (.04) ***	.28	.19	.48	.15	.11	.20

		→ Depression		.73 (.04) ***	.37 (.03) ***		.31	.48	.16	.12	.20
		→ Stress		.81 (.04) ***	.19 (.03) ***		.17	.56	.17	.13	.22
		→ Distress		2.39 (.12) ***	.93 (.14) ***		.19	.58	.53	.32	.72
Sexual Abuse	→	Brooding	.22 (.04) ***	.74 (.04) ***	.38 (.05) ***	.19	.22	.49	.16	.10	.22
		→ Depression		.82 (.05) ***	.32 (.05) ***		.18	.53	.18	.11	.25
		→ Stress		.84 (.04) ***	.23 (.05) ***		.13	.58	.18	.11	.25
		→ Distress		2.28 (.12) ***	1.19 (.14) ***		.24	.55	.72	.54	.91
Physical Abuse	→	Brooding	.32 (.04) ***	.71 (.05) ***	.40 (.05) ***	.26	.22	.48	.23	.17	.29
		→ Depression		.76 (.05) ***	.51 (.05) ***		.28	.49	.24	.18	.30
		→ Stress		.82 (.04) ***	.27 (.05) ***		.16	.57	.26	.19	.33
		→ Distress		.72 (.04) ***	.42 (.05) ***		.25	.48	.17	.12	.22
Physical Neglect	→	Brooding	.23 (.04) ***	.78 (.04) ***	.50 (.05) ***	.21	.29	.50	.18	.13	.24
		→ Stress		.82 (.04) ***	.29 (.05) ***		.18	.57	.19	.13	.25

## Annex 4

*The mediating role of personality traits in the relationship between Early Life Trauma and Psychological Distress*

Independent Variables	Mediators	Dependent Variables	Direct Effect				Indirect Effect $\beta$	95% CI			
			Unstandardized $\beta$ (SE)		Standardized $\beta$						
Early Life Trauma →	Neuroticism	→ Distress	1.06 (.04)***	.29 (.02)***	.28	.20	.20	.16	.24		
		→ Anxiety	.19 (.02)***	.30 (.02)***	.10 (.01)***	.47	.27	.06	.04	.07	
		→ Depression	.39 (.02)***	.39 (.02)***	.11 (.01)***	.59	.29	.07	.06	.09	
		→ Stress	.37 (.02)***	.37 (.02)***	.08 (.01)***	.59	.21	.07	.06	.08	
Emotional Abuse →	Neuroticism	→ Distress	1.06 (.05)***	.79 (.08)***	.59	.24	.76	.63	.89		
		→ Anxiety	.72 (.06)***	.30 (.02)***	.27 (.03)***	.39	.46	.23	.22	.18	.26
		→ Depression	.39 (.02)***	.39 (.02)***	.28 (.03)***	.58	.22	.28	.23	.33	
		→ Stress	.36 (.02)***	.36 (.02)***	.24 (.03)***	.57	.21	.26	.22	.31	
Emotional Neglect →	Neuroticism	→ Distress	1.12 (.04)***	.62 (.08)***	.62	.19	.64	.51	.77		
		→ Anxiety	.57 (.06)***	.33 (.02)***	.19 (.03)***	.32	.50	.16	.19	.15	.23
		→ Depression	.40 (.02)***	.40 (.02)***	.28 (.03)***	.60	.23	.23	.19	.28	
		→ Stress	.39 (.02)***	.39 (.02)***	.15 (.03)***	.61	.13	.22	.18	.27	

Sexual Abuse	→	Neuroticism	→	Distress	1.17 (.04)***	.86 (.12)***	.17	.65	.17	.58	.38	.77	
			→	Anxiety	.49 (.09)***	.34 (.02)***		.36 (.05)***	.52	.20	.17	.11	.12
			→	Depression	.44 (.02)***	.29 (.05)***		.64	.15	.21	.14	.28	
			→	Stress	.40 (.02)***	.22 (.04)***		.63	.12	.20	.13	.26	
Physical Abuse	→	Neuroticism	→	Distress	1.16 (.04)***	1.26 (.12)***	.16	.64	.24	.54	.34	.75	
			→	Anxiety	.47 (.09)***	.34 (.02)***		.42 (.05)***	.52	.23	.16	.10	.22
			→	Depression	.42 (.02)***	.51 (.05)***		.63	.27	.20	.13	.28	
			→	Stress	.40 (.02)***	.32 (.04)***		.63	.18	.19	.12	.26	
Physical Neglect	→	Neuroticism	→	Distress	1.16 (.04)***	1.22 (.11)***	.15	.64	.25	.45	.27	.64	
			→	Anxiety	.39 (.09)***	.34 (.02)***		.43 (.05)***	.52	.25	.13	.08	.19
			→	Depression	.43 (.02)***	.48 (.04)***		.63	.27	.17	.10	.23	
			→	Stress	.40 (.02)***	.31 (.04)***		.63	.18	.16	.09	.22	
Early Life Trauma	→	Extraversion	→	Distress	-.81 (.06)***	.38 (.03)***	-.27	-.40	.36	.11	.08	.14	
			→	Anxiety	-.14 (.02)***	-.22 (.02)***		.13 (.01)***	-.29	.34	.03	.02	.04
			→	Depression	-.36 (.02)***	.14 (.01)***		-.47	.35	.05	.04	.06	
			→	Stress	-.24	.11		-.33	.31	.03	.02	.04	



		→ Stress		-.27 (.02)***	.38 (.05)***		-.38	.21	.12	.08	.18
		→ Distress		-.91 (.06)***	1.26 (.13)***		-.45	.26	.41	.27	.56
Physical Neglect	→ Extraversion	→ Anxiety	-.45 (.08)***	-.25 (.02)***	.45 (.05)***		-.33	.26	.11	.07	.16
		→ Depression		-.40 (.02)***	.47 (.05)***	-.19	-.52	.26	.18	.12	.24
		→ Stress		-.27 (.02)***	.34 (.05)***		-.37	.20	.12	.08	.17
		→ Distress		-.73 (.08)***	.35 (.03)***		-.30	.34	.14	.10	.17
Early Life Trauma	→ Agreeableness	→ Anxiety	-.19 (.01)***	-.21 (.03)***	.12 (.01)***		-.23	.32	.04	.03	.05
		→ Depression		-.28 (.03)***	.14 (.01)***	-.44	-.30	.35	.05	.04	.06
		→ Stress		-.25 (.03)***	.10 (.01)***		-.29	.28	.05	.03	.06
		→ Distress		-.81 (.07)***	1.18 (.10)***		-.33	.36	.36	.27	.47
Emotional Abuse	→ Agreeableness	→ Anxiety	-.45 (.04)***	-.24 (.03)***	.38 (.04)***		-.27	.32	.11	.08	.14
		→ Depression		-.31 (.03)***	.42 (.04)***	-.33	-.34	.34	.14	.11	.18
		→ Stress		-.26 (.03)***	.38 (.03)***		-.30	.33	.12	.08	.15
		→ Distress		-.85 (.08)***	.81 (.10)***		-.35	.25	.45	.35	.56
Emotional Neglect	→ Agreeableness	→ Anxiety	-.53 (.04)***	-.26 (.03)***	.24 (.04)***		-.29	.21	.14	.10	.18
		→ Depression		-.31	.34	-.41	-.34	.29	.16	.13	.21



				(.03)***	(.04)***					
		→ Stress		-.29	.22					
				(.03)***	(.04)***					
		→ Distress		-1.01	1.04					
				(.07)***	(.15)***					
		→ Anxiety		-.29	.40					
				(.03)***	(.06)***					
Sexual Abuse	→ Agreeableness	→ Depression	-.40	-.38	.35					
			(.07)***	(.03)***	(.06)***					
		→ Stress		-.33	.28					
				(.03)***	(.05)***					
		→ Distress		-.91	.99					
				(.08)***	(.17)***					
		→ Anxiety		-.26	.35					
				(.03)***	(.06)***					
Physical Abuse	→ Agreeableness	→ Depression	-.90	-.33	.41					
			(.06)***	(.03)***	(.06)***					
		→ Stress		-.31	.23					
				(.03)***	(.06)***					
		→ Distress		-.91	.99					
				(.08)***	(.15)***					
		→ Anxiety		-.26	.37					
				(.03)***	(.06)***					
Physical Neglect	→ Agreeableness	→ Depression	-.76	-.34	.39					
			(.06)***	(.03)***	(.06)***					
		→ Stress		-.31	.23					
				(.03)***	(.05)***					
		→ Distress		-.52	.37					
				(.05)***	(.03)***					
Early Life Trauma	→ Conscientiousness	→ Anxiety	-.24	-.14	.12					
			(.02)***	(.02)***	(.01)***					

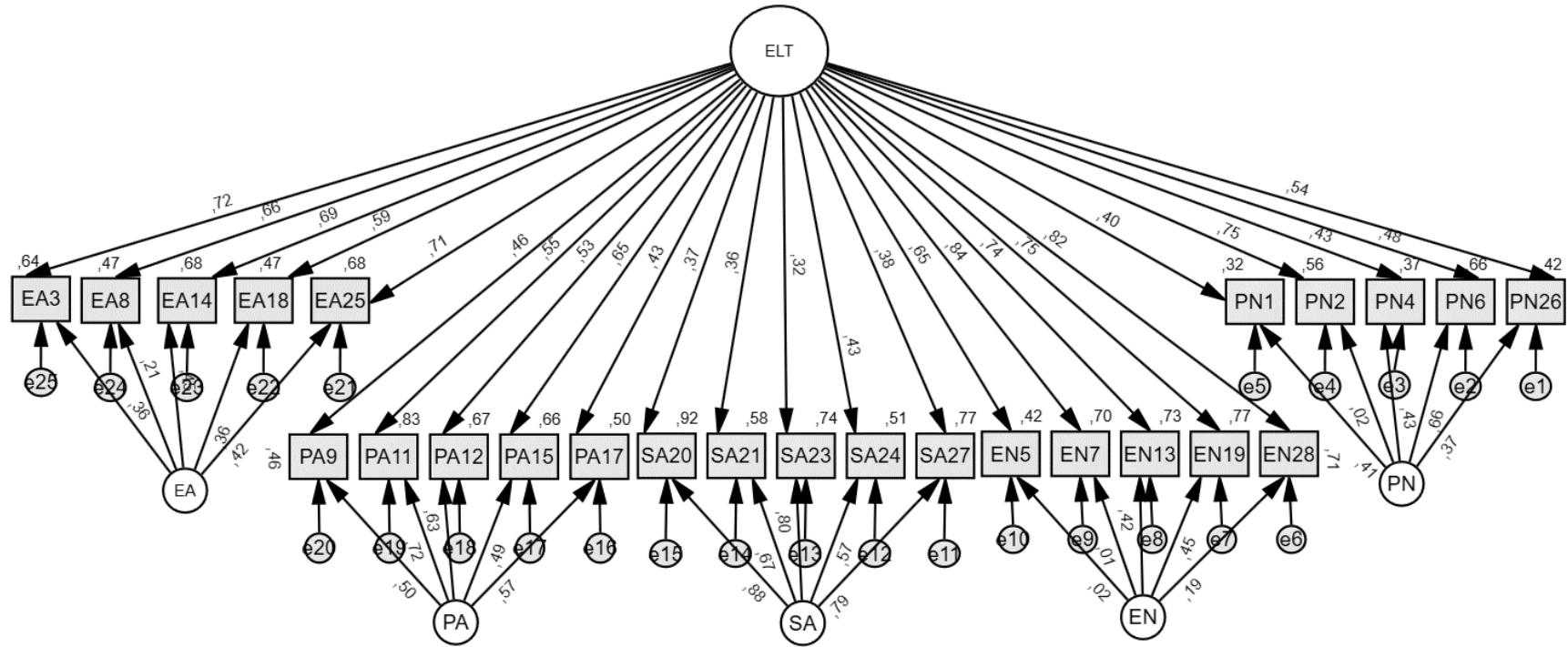
		→ Depression		-.23 (.02)***	.13 (.01)***		-.35	.34	.06	.04	.07
		→ Stress		-.15 (.02)***	.11 (.01)***		-.23	.31	.03	.02	.05
		→ Distress		-.56 (.05)***	1.21 (.10)***		-.31	.36	.34	.25	.44
		→ Anxiety		-.16 (.02)***	.39 (.04)***		-.24	.33	.09	.06	.13
Emotional Abuse	→ Conscientiousness	→ Depression	-.61 (.06)***	-.26 (.02)***	.41 (.04)***	-.33	-.38	.33	.15	.12	.20
		→ Stress		-.15 (.02)***	.41 (.04)***		-.24	.35	.09	.06	.12
		→ Distress		-.60 (.06)***	.85 (.10)		-.33	.27	.40	.31	.51
		→ Anxiety		-.17 (.02)***	.26 (.04)***		-.26	.22	.12	.08	.15
Emotional Neglect	→ Conscientiousness	→ Depression	-.68 (.05)***	-.26 (.02)***	.33 (.04)***	-.38	-.38	.28	.17	.14	.22
		→ Stress		-.17 (.02)***	.26 (.04)***		-.27	.23	.12	.08	.15
		→ Distress		-.70 (.05)***	.99 (.15)***		-.39	.19	.45	.31	.62
		→ Anxiety		-.19 (.02)***	.40 (.06)***		-.30	.22	.13	.08	.17
Sexual Abuse	→ Conscientiousness	→ Depression	-.68 (.05)***	-.30 (.02)***	.31 (.06)***	-.23	-.45	.16	.20	.14	.27
		→ Stress		-.20 (.02)***	.29 (.06)***		-.32	.16	.13	.09	.18
		→ Distress		-.65 (.05)***	1.23 (.16)***		-.36	.24	.57	.42	.73
Physical Abuse	→ Conscientiousness	→ Anxiety	-.88 (.09)***	-.18	.42	-.30	-.28	.23	.16	.11	.21

				(.02)***	(.06)***							
		→ Depression		-.28	.47			-.41	.24	.25	.18	.31
		→ Stress		-.19	.34			-.30	.19	.17	.12	.22
				(.02)***	(.06)***							
		→ Distress		-.63	1.06			-.35	.22	.61	.48	.76
		→ Anxiety		-.17	.40			-.27	.23	.17	.12	.22
Physical Neglect	→	Conscientiousness	-.97	(.02)***	(.06)***							
		→ Depression	(.08)***	-.28	.38		-.36	-.41	.21	.27	.21	.33
		→ Stress		-.19	.28			-.30	.17	.18	.13	.23
				(.02)***	(.05)***							
		→ Distress		-.04	.49			-.02	.47	.0	-.0	.0
		→ Anxiety		-.00	.16			-.0	.42	.0	-.0	.0
Early Life Trauma	→	Openness to experience	-.01	(.03)	(.01)***		-.03	-.05	.48	.0	-.0	.0
		→ Depression	(.01)	-.04	.19			-.05	.48	.0	-.0	.0
		→ Stress		.0	.15			.0	.40	.0	-.0	.0
				(.03)***	(.01)***							
		→ Distress		-.22	1.58			-.09	.48	-.03	-.07	-.01
		→ Anxiety		-.06	.50			-.06	.41	-.01	-.02	-.0
Emotional Abuse	→	Openness to experience	.17	(.03)*	(.04)***		.12	-.12	.46	-.02	-.03	-.01
		→ Depression	(.04)***	-.11	.58			-.12	.46	-.02	-.03	-.01
		→ Stress		-.05	.51			-.06	.44	-.01	-.02	-.0
				(.03)*	(.03)***							
Emotional Neglect	→	Openness to experience	-.03	-.05	1.25		-.02	-.02	.39	.0	-.01	.01
		→ Distress	(.04)	(.07)	(.10)***							

		→ Anxiety		-.0 (.03)	.37 (.04)***		-.01	.32	.0	-.0	.0
		→ Depression		-.05 (.03)	.51 (.04)***		-.05	.42	.0	-.0	.01
		→ Stress		-.0 (.03)	.37 (.03)***		-.0	.33	.0	-.0	.0
		→ Distress		-.08 (.08)	1.44 (.16)***		-.03	.28	-.0	-.02	.02
Sexual Abuse	→	Openness to experience	.02 (.07)	-.01 (.03)	.52 (.06)***	.01	-.02	.29	-.0	-.01	.0
		→ Depression		-.06 (.03)*	.50 (.06)***		-.06	.26	-.0	-.01	.01
		→ Stress		-.01 (.03)	.41 (.06)***		-.01	.23	-.0	-.01	.0
		→ Distress		.03 (.08)	1.81 (.16)***		.01	.35	-.01	-.06	.03
Physical Abuse	→	Openness to experience	-.27 (.07)***	.02 (.03)	.59 (.06)***	-.13	.03	.31	-.01	-.03	.01
		→ Depression		-.01 (.03)	.71 (.06)***		-.02	.36	.0	-.01	.02
		→ Stress		.02 (.03)	.51 (.06)***		-.03	.28	-.01	-.02	.01
		→ Distress		.07 (.08)	1.7 (.15)***		.03	.35	-.02	-.08	.03
Physical Neglect	→	Openness to experience	-.34 (.06)***	.04 (.03)	.58 (.05)***	-.17	.04	.33	-.01	-.04	.01
		→ Depression		-.0 (.03)	.65 (.06)***		-.0	.36	.0	-.02	.02
		→ Stress		.03 (.03)	.47 (.05)***		-.04	.28	-.01	-.03	.01

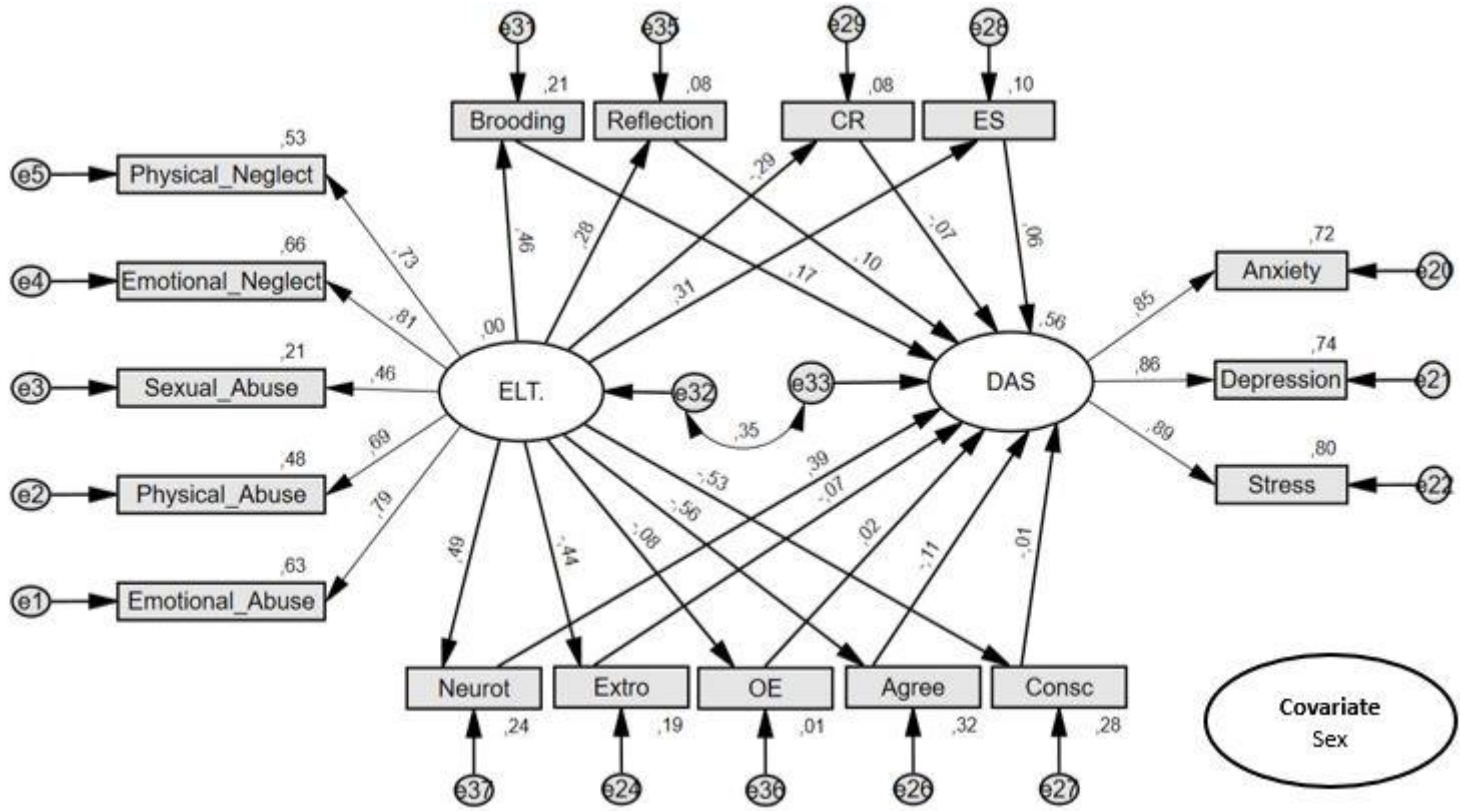
**Annex 5**

*Confirmatory Bifactor Model of Early Life Trauma*



**Annex 6**

*Structural Equation Modeling*



## Annex 7

*Estimates, standard error and p-value of the SEM*

	Estimate	SE	<i>p</i>
<b>ELT (Independent Variable)</b>			
Conscientiousness	-1.238	.077	< .001
Agreeableness	-.958	.056	< .001
Openness to Experience	-.133	.060	.026
Neuroticism	1.142	.078	< .001
Extraversion	-.902	.069	< .001
Cognitive Reappraisal	-.589	.070	< .001
Emotional Suppression	.477	.052	< .001
Reflection	.243	.032	< .001
Brooding	.462	.037	< .001
<b>Psychological Distress (Dependent Variable)</b>			
Extraversion	-.044	.016	.005
Agreeableness	-.078	.021	< .001
Conscientiousness	-.004	.015	.773
Neuroticism	.205	.015	< .001
Emotional Suppression	.051	.020	.011
Brooding	.210	.035	< .001
Cognitive Reappraisal	-.041	.015	.005
Reflection	.143	.038	< .001
Openness to Experience	.016	.017	.328