

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

# UNIVERSITY OF TWENTE.

**The Association between Adverse Childhood Experiences, Anxiety Symptoms and  
Maladaptive Coping Strategies and their Mediating Role:  
A Quantitative Study**

Santina Elisa Nicoletti

31192238

Faculty of Behavioural, Management, and Social Sciences

Department of Positive Psychology and Technology, University of Twente

Master Thesis

Course code: 202200087

First supervisor: Dr. Thomas R. Vaessen

Second supervisor: Dr. Alejandro Dominguez Rodriguez

February 5, 2024

## Table of Contents

<b>Abstract</b> .....	<b>3</b>
<b>1. Introduction</b> .....	<b>4</b>
1.1 Adverse Childhood Experiences and Anxiety Symptoms .....	4
1.2 Maladaptive Coping as Mediator .....	5
1.3 Present Study .....	7
<b>2. Methods</b> .....	<b>8</b>
2.1 Participants and Procedure .....	8
2.2 Materials .....	9
2.3 Statistical Analysis .....	11
<b>3. Results</b> .....	<b>12</b>
3.1 Sample and Descriptive Statistics .....	12
3.2 Assumption Testing.....	13
3.3 Inferential Statistical Hypothesis Testing.....	13
<b>4. Discussion</b> .....	<b>16</b>
4.1 Association between ACEs, Anxiety symptoms, and Maladaptive Coping .....	16
4.2 Mediating Role of Maladaptive Coping Behaviour .....	20
4.3 Strengths and Limitations.....	22
4.4 Conclusion and future research .....	24
<b>References</b> .....	<b>25</b>

### Abstract

**Introduction.** Adverse childhood experiences (ACEs) have been associated with a range of later life impairments, including anxiety and maladaptive coping. Despite existing evidence, research gaps remain, particularly regarding the underlying mechanisms of these associations and how they operate in the general population. Thus, this study aims to examine the interaction between ACEs, anxiety symptoms, and maladaptive coping strategies, and whether these mediate the effects of childhood trauma on anxiety in a non-clinical sample of young adults.

**Methods.** In this cross-sectional study, 58 participants ( $M_{Age} = 24$ ,  $SD_{Age} = 3.29$ ; 84.5% female) were asked to complete several self-report instruments, including the Child Trauma Questionnaire (CTQ), the Depression, Anxiety, and Stress Scales (DASS) and the Cognitive Emotion Regulation Questionnaire (CERQ). Linear and multiple regressions were used to analyse the relationship between the three variables. Additionally, a (multiple) mediation analysis was conducted to examine the mediating effects of maladaptive coping.

**Results.** Significant relationships were found between ACEs and anxiety symptoms ( $\beta = .554$ ,  $p < .001$ ) and between ACEs and maladaptive coping behavior ( $\beta = .341$ ,  $p = .009$ ). While maladaptive coping did not significantly predict anxiety ( $\beta = .246$ ,  $p = .063$ ), specific maladaptive coping strategies were associated with anxiety symptoms, except for rumination ( $\beta = -.156$ ,  $p = .197$ ). However, maladaptive coping did not significantly mediate the association between ACEs and anxiety ( $\beta = .0220$ , 95% CI [-.0129, .0219]).

**Discussion.** These findings highlight the risk posed by ACEs and maladaptive coping, offering insights for interventions and cognitive therapy approaches to prevent anxiety. Future research should incorporate longitudinal data and various measures beyond self-report to address temporary effects and enhance validity.

## **1. Introduction**

Nearly one billion people worldwide live with a mental illness, with anxiety disorders being one of the most prevalent, and the number is rapidly growing, especially among young adults (Goodwin, 2020). According to Goodwin et al. (2020) anxiety among adults increased from 5.12% in 2008 to 6.68% in 2018, with the most rapid increase among respondents aged 18-25, indicating an urgent need for action. It is not without reason that the study of important risk factors for the development of mood disorders has been a central component of scientific research for decades, as this is the only way to develop strategies to prevent or minimize the occurrence of such risks (e.g. Asendorpf, 2002, Becker-Nehring et al., 2012, Felitti et al., 1998, Wille et al., 2008, Naab et al., 2017)

### **1.1 Adverse Childhood Experiences and Anxiety Symptoms**

The current state of research indicates that traumatic childhood experiences, often referred to in the literature as Adverse Childhood Experiences (ACEs), have a high prevalence worldwide, with up to 67% of people affected at least once (e.g., Merrick et al., 2018, Witt et al., 2019), and appear to play a critical role in the development of anxiety (McLaughlin et al., 2010). They relate to various potentially traumatic childhood experiences, which can be categorized as emotional, sexual, or physical abuse or neglect and have been shown to be associated with severe long-term consequences and impairments in adult life (Felitti et al., 1998). As early as 1998, in a representative study known as the ACE Study, Felitti et al. examined the association between ACEs and potential long-term outcomes and found a 4 to 12-fold increased health risk for alcoholism, substance abuse, and depression among participants who had experienced four or more categories of exposure in childhood compared with those who had not. Since then, numerous studies have examined the association between childhood adversity and the development of various mental disorders in different populations and regions (Clark et al., 2010; Copeland et al., 2018; Husky et al., 2021; Lai et al., 2023; McLaughlin et al., 2009; Miloyan et al., 2018). They identified

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

significant associations that replicate and extend the findings of the pioneering study by Felitti et al. (1998); for instance, McLaughlin et al. (2010) found strong and consistent associations between ACEs and impairments related to anxiety and concluded that early negative experiences may lead to a cognitive predisposition to perceive events as beyond an individual's control, resulting in enduring psychological vulnerability to the development of anxiety (Bolger & Patterson, 2001). Thus, while ACEs have been shown to increase risk for anxiety, understanding the underlying factors and mechanisms responsible is essential for developing intervention and prevention strategies to provide more targeted and tailored support to individuals who experienced adversity in childhood.

### **1.2 Maladaptive Coping as Mediator**

In this regard, several studies have examined possible mediating and moderating variables in the relationship between ACEs and the development of psychopathology in general, while this has remained largely unexplored for anxiety in particular. Research indicates that maladaptive coping and emotional dysregulation, among others, may act as potential mediators and moderators in these processes (Choi et al., 2015; Crow et al., 2014; McQuaid et al., 2015; Street et al. 2005), as adversity in childhood may directly influence the ability to cope with stressors across the lifespan. Poor coping skills, in turn, can promote the development of mental illness, self-harm, and suicidality (McLafferty et al., 2019).

The term coping was defined by Lazarus & Folkman (1984) as a person's cognitive and behavioral efforts to cope with specific external and/or internal demands that are judged to strain or exceed his or her own resources and thus includes both mental processes such as reinterpreting a situation or repressing a problem and behaviors such as active problem solving and help seeking. One of many conceptualizations distinguishes between adaptive and maladaptive coping strategies, where adaptive coping includes all functional actions that improve the stressful situation and solve the problem (Zeidner & Saklofske, 1996).

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Maladaptive coping, on the other hand, is classified as dysfunctional, is characterized by avoidance behaviors, and includes among others self-blame, blaming others, rumination, or catastrophizing (Garnefski & Kraaij, 2007). According to Garnefski and Kraaij (2007), self-blame in this context refers to thoughts of blaming oneself for the experience, whereas blaming others refers to thoughts of blaming the environment or another person. The other two dysfunctional coping strategies are more related to negative thoughts, as rumination involves dwelling on the feelings and thoughts associated with the negative event, and catastrophizing entails thoughts that explicitly emphasize the negative event (Garnefski & Kraaij, 2007).

Research has shown that maladaptive coping is related to ACEs (e.g., Curran et al., 2021), that it simultaneously predicts the development of anxiety (e.g., Chi et al., 2021, McLaughlin et al., 2010), and that there are differences among the four different maladaptive strategies in terms of strength, direction, and their role (e.g., Chan et al., 2014; Garnefski et al., 2002; Martin & Dahlen, 2005), suggesting the need for further investigation. For example, Martin and Dahlen (2005) showed that blaming others was negatively correlated with anxiety, whereas the other maladaptive coping strategies were positively associated, and Chan et al. (2014) found that catastrophizing, but not rumination, mediated the effects of daily stress on anxiety. One of various explanatory approaches to the complex relationship between ACEs, anxiety and maladaptive coping behaviours, namely the signal detection approach developed by Bateson et al. (2011), postulates that adverse life experiences increase vulnerability to potential threats and consequently induce anxiety. According to this, an individual's anxiety response is more likely to be elicited because adverse life events signal an increased likelihood that bad things will continue to happen in the environment, on the one hand, and reduce the ability to cope with potential threats, on the other (Bateson et al., 2011). From this perspective, the combination of an increased likelihood of threats occurring and reduced

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS  
coping capacity leads to increased vulnerability, which in turn is associated with a higher risk of anxiety (Miloyan et al., 2018).

Although this explanatory approach, as well as relevant findings on the association between the three variables (e.g., Carrant et al., 2023, McLaughlin et al., 2010), suggest that maladaptive coping may act as a mediator between ACEs and anxiety in this triadic relationship, there is currently a lack of research investigating precisely this (Panagou & Macbeth, 2022). The few studies that have examined coping behaviour as a mediator have primarily focused on other mental disorders such as depression (Song et al., 2020) and/or middle to older age (Sheffler et al., 2019) or clinical samples (Crow et al., 2014). However, it is important to examine this in a general population sample of young adults in particular, given evidence that they appear to be at higher risk of developing an anxiety disorder in general (Goodwin et al., 2020), that the onset of a mental disorder may be exacerbated in young adults exposed to ACEs (Kessler et al., 2007), and that young adults who have experienced ACEs appear to cope differently (Solberg et al., 2023). Investigation in such a sample could therefore provide important evidence for the development of preventive interventions to mitigate the negative effects of ACEs (Solberg et al., 2023) and reduce the risk of serious mental health problems in later adulthood at an early stage.

### **1.3 Present Study**

Overall, although current evidence provides some indication of the relationship between ACEs, maladaptive coping, and psychopathology, most studies focus on depression, and research is underdeveloped, especially regarding potential underlying factors such as mediators. Furthermore, there is no evidence that has investigated this in a non-clinical sample of young adults and in relation to anxiety. Thus, the aim of the present study is to further examine the relationship between ACEs, anxiety symptoms, and maladaptive coping on the one hand, and the mediating role of (specific) maladaptive coping strategies (i.e.,

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS  
rumination, catastrophizing, self-blame, blaming others) on the association between ACEs and anxiety on the other hand, in a general population sample of young adults. Based on previous research, the following hypotheses were formulated:

**H1:** A higher number of reported ACEs is associated with higher levels of anxiety symptoms.

**H2:** A higher number of reported ACEs is associated with more frequent use of maladaptive coping strategies.

**H3:** More frequent use of maladaptive coping strategies is associated with higher levels of anxiety symptoms.

**H4:** The frequency of the use of maladaptive coping strategies mediates the association between ACEs and anxiety symptoms.

**Exploratory:** The literature provided initial evidence that the mediating effect might differ between the different coping strategies (Chan et al., 2014; Song et al., 2020). Therefore, in an exploratory hypothesis, the mediating effect of the four different maladaptive coping strategies (i.e., rumination, catastrophizing, self-blame, blaming others) on the association between ACEs and anxiety symptoms was examined separately.

## **2. Methods**

### **2.1 Participants and Procedure**

This work was part of a larger study that measured a variety of different variables. However, in the context of the master's thesis, attention was focused only on the measurements relevant to the research questions. The sample size was pre-determined by this and amounted to a total of fifty-eight volunteers between the ages of 19 and 35 who were recruited through flyers and social media. Fluency in the Dutch language was a prerequisite for participation. In addition, subjects with hormonal and/or cardiovascular disorders or relevant allergies were excluded from the study due to measures that were part of the broader project. Before the start of the study, all participants signed an informed consent form, and



ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS after completing the baseline questionnaires on several variables during a lab session in the early afternoon digitally via RedCap, they were rewarded with 30 euros. Ethical approval (ethical approval number: G-2018 09 1339) was obtained from the Sociaal- Maatschappelijke Ethische Commissie (SMEC) of KU Leuven.

## **2.2 Materials**

### ***2.2.1 Demographics***

To gather various demographic information, participants were asked to complete a demographic questionnaire on age, gender, nationality, occupational and educational background, and marital status before completing the baseline questionnaires.

### ***2.2.2 Questionnaire***

**Adverse Childhood Experiences.** The short version of the Child Trauma Questionnaire (CTQ; Bernstein et al., 2013) was used for retrospective assessment of adverse childhood experiences. It consists of a total of 28 items rated on a 5-point Likert scale ranging from 1 (never true) to 5 (very often true) and includes a total of 5 subscales as follows: Emotional Abuse, Physical Abuse, Sexual Abuse, Physical Neglect, and Emotional Neglect and an additional trivialization scale which measures the tendency to trivialize or deny experiences of abuse. The respondents are asked to make statements about their childhood and their understanding of their trauma as an adolescent or adult. The total score for each subscale ranges from five points (no childhood or adolescent maltreatment) to 25 points (extreme maltreatment experiences). An overall severity score was calculated by summing the scores for the 25 items (excluding the three minimization items). The internal consistency of all scales (except for physical neglect) has been high in previous studies (Cronbach's  $\alpha \geq 0.89$ ) (Wingenfeld et al., 2010).

**Anxiety.** Anxiety was measured using the Dutch version of the Depression, Anxiety, and Stress Scale (DASS-21) which is a self-questionnaire developed by Lovibond and

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Lovibond (1995) with a total of 21 items on the three subscales ‘depression’, ‘stress’, and ‘anxiety’. For the present studies, only the 7 items of the anxiety scale were of interest, rated on a 4-point Likert scale from 0 (does not apply to me at all) to 3 (applies to me very strongly or mostly). The total score for this subscale was calculated by summing the scores for the 7 items, with a cut-off of 6 indicating an increased level of anxiety. In a Dutch sample with a total of 7972 participants, the anxiety subscale showed good internal consistency scores with a reliability of 0.94 as measured by Cronbach's alpha (Wardenaar et al., 2018).

**Maladaptive Coping Strategies.** The use of various cognitive emotion regulation strategies in response to threatening and stressful life events was surveyed using the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2002). This self-questionnaire comprises a total of 36 items, which are composed of the following nine conceptually distinct subscales: self-blame, blaming others, rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance, and refocus on planning, with only the first four being of interest in the current study, as these belong to the less effective ways of cognitively reappraising a stressful or demanding situation (maladaptive strategies). Accordingly, the CERQ items were divided into adaptive and maladaptive coping strategies for analysis, following the authors' instructions (Garnefski et al., 2002). The items were rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always), and total scores for each subscale were obtained by summing the scores of the items associated with each subscale (ranging from 5 to 20). In addition, all total scores for the 4 subscales were summed to produce an overall score, which indicates the frequency of use of maladaptive coping strategies in general. According to previous research, all subscales have good internal consistencies between .68 and .86 (Garnefski et al., 2002).

### 2.3 Statistical Analysis

The statistical analyses were all conducted using IBM SPSS 26 Software. Descriptive statistics were first analyzed to evaluate the demographic questionnaire. Linear regression analyses were then carried out to examine the first three hypotheses related to the associations between 1. ACE (independent variable) and anxiety symptoms (dependent variable), 2. ACE (independent variable) and maladaptive coping (dependent variable) and 3. maladaptive coping (independent variable) and anxiety (dependent variable). To further investigate the third hypothesis, a multiple regression was conducted with the individual maladaptive strategies as independent variables and anxiety as the dependent variable. Subsequently, Hayes' (2018) PROCESS macro was used to conduct a mediation analysis to examine the role of maladaptive coping behaviour as a mediator between ACE and anxiety symptoms. For this purpose, the number of repetitions of the bootstrapping procedure was gradually increased in order to determine the point at which the estimates become stable. Based on this testing, a bootstrap approach with 1000 repetitions was carried out to analyse the mediation effect. The indirect effect was considered significant if the 95% confidentiality interval (CI) did not include zero. The same programme was used to test the exploratory hypothesis. Here, a multiple mediation analysis was conducted in which the different maladaptive coping strategies (i.e. rumination, self-blame, catastrophizing, blaming others) were included in the model as parallel mediators in order to compare their indirect effects on the association between ACEs and anxiety simultaneously.

**Covariates.** As there is some evidence in the literature that there are differences in coping between the genders (Matud, 2004), a sensitivity analysis was conducted with gender as a possible covariate. This showed that gender did not make a significant explanatory contribution, as the results remained stable even when gender was included. In addition,

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

correlations were calculated between gender and all variables, which also showed no significant result. Thus, gender was not included as a covariate in the analyses.

### 3. Results

#### 3.1 Sample and Descriptive Statistics

A total of 58 participants completed the baseline questionnaires. As all data relevant for the analysis were complete, no participant was excluded. The sample consisted of 84.5% women ( $n = 49$ ) and 15.5% men ( $n = 9$ ). The age distribution ranged from 19 to 35 years, with a mean age of 24 years ( $SD = 3.29$ ). Overall, 39.7% of participants ( $n = 23$ ) reported being employed, while 58.6% were students of various disciplines and one participant did not respond. The lowest and highest observed value, the mean and the standard deviation for all variables are shown in Table 1.

**Table 1**

*Descriptive statistics for variables*

Variables	Minimum <sup>a</sup>	Maximum <sup>a</sup>	Mean	SD
<i>CTQ</i>				
Emotional abuse	5	25	9.05	5.00
Physical abuse	5	21	5.74	2.41
Sexual abuse	5	25	5.98	3.74
Emotional neglect	5	24	9.93	4.58
Physical neglect	5	16	6.58	2.39
ACE	25	111	37.29	15.12
<i>CERQ</i>				
Self-blame	4	20	10.72	3.94
Rumination	4	20	13.31	4.24
Catastrophizing	4	18	6.53	2.76
Blaming others	4	19	6.62	2.98
Maladaptive Coping	16	68	37.19	9.99
<i>DASS</i>				
Anxiety Symptoms	0	14	2.22	2.85

*Note.*  $N = 58$ . ACE: Adverse Childhood Experiences. <sup>a</sup>Lowest and highest observed value.

### 3.2 Assumption Testing

Interval scaling was assumed for all variables used. For linear regression, multicollinearity of the residuals was also tested using the variance inflation factor (VIF = 1.0), uncorrelatedness of the residuals using the Durbin-Watson test (1.58 - 2.20), normal distribution of the residuals using a histogram and PP plot, and homoscedasticity using a scatter plot ( $y = ZRESID$ ,  $x = ZPRED$ ). The statistical requirements for testing hypotheses 1 to 3 were considered to be met based on the above analyses.

For the (multiple) mediation analysis only the linearity between the variables must be considered. As determined by visual inspection of the scatter plots after LOESS smoothing, the relationship between all variables involved in the mediation analysis was approximately linear.

### 3.3 Inferential Statistical Hypothesis Testing

#### 3.3.1 Association between ACEs, Anxiety Symptoms, and Maladaptive Coping

The standardized regression coefficients of the linear regression analyses can be seen in Figure 1. In line with the first hypothesis, a regression analysis between childhood adversity and self-reported anxiety symptoms showed a significant positive effect ( $\beta = .554$ ,  $p < .001$ ;  $F(1,56) = 24.745$ ,  $p < .001$ ;  $R^2 = .306$ ) with a high effect size according to Cohen (1988); suggesting that more ACE's were associated with higher levels of anxiety symptoms. ACE accounted for 30.6% of the variance in anxiety.

Consistent with the second hypothesis, a regression analysis between ACE and maladaptive coping showed that ACEs were significantly associated with maladaptive coping ( $\beta = .341$ ,  $p = .009$ ;  $F(1,56) = 7.373$ ,  $p = .009$ ;  $R^2 = .116$ ) which is a moderate effect according to Cohen (1988). A higher number of reported ACE was associated with more frequent use of maladaptive coping strategies. The identified variance explanation of maladaptive coping through adverse childhood adversity was 11.6%.

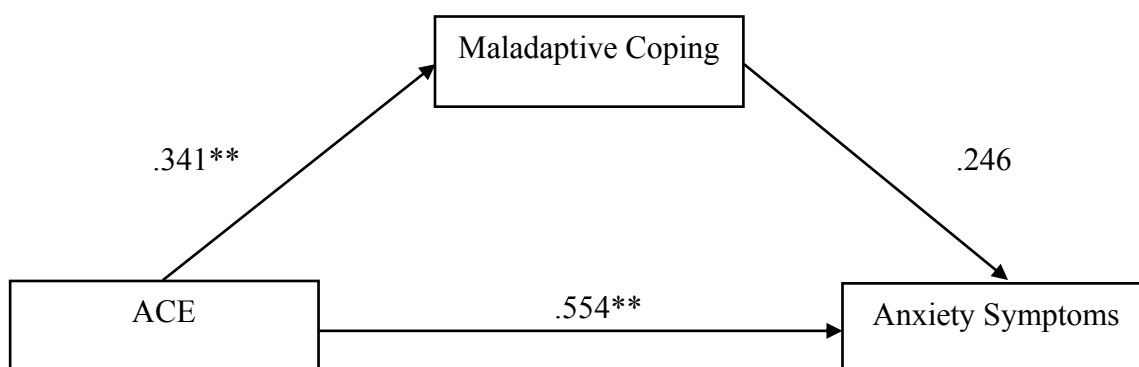
## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Contrary to the third hypothesis, linear regression analysis with maladaptive coping as the predictor and anxiety symptoms as the outcome did not yield a significant result, i.e., maladaptive coping did not explain a significant percentage of the variance in self-reported anxiety symptoms,  $\beta = 0.246, p = .063; F(1,56) = 3.604, p = .063; R^2 = .060$ . These results indicate that more frequent use of maladaptive coping strategies was not significantly associated with higher levels of anxiety symptoms.

To investigate this further, a post-hoc multiple regression was calculated with each maladaptive coping strategy as predictor and anxiety symptoms as outcome. The model was able to explain a total of 42.6% of the variance in anxiety,  $F(4, 53) = 9.828, R^2 = .426, p < .001$ , with catastrophizing explaining the greatest variance in anxiety symptoms ( $\beta = .690, p < .001$ ). The two coping strategies self-blame ( $\beta = .416, p < .001$ ) and blaming others ( $\beta = -.577, p < .001$ ) were also significantly associated with anxiety. According to Cohen (1988), this can be interpreted as a large effect. No significant effect was found for the predictive validity of rumination on anxiety ( $\beta = -.156, p = .197$ ).

**Figure 1**

*Standardized regression coefficient for linear regression paths according to the proposed model*



Note. \*  $p \leq .05$ . \*\*  $p \leq .01$ .

**3.3.2 Maladaptive coping as mediator between ACEs and anxiety symptoms**

Simple mediation analysis was then conducted to examine whether ACEs predicted anxiety symptoms and whether the direct pathway would be mediated by the frequency of use

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

of maladaptive coping strategies. A significant effect of ACEs on anxiety symptoms was observed,  $b = 0.1005$ ,  $p = .0361$ . After including the mediator in the model, ACEs significantly predicted the mediator ( $b = 0.2253$ ,  $p = .0197$ ), but the mediator in turn did not significantly predict anxiety symptoms ( $b = 0.0185$ ,  $p = .6157$ ). Contrary to the fourth hypothesis, the bootstrap analysis with 1000 replicates showed no significant indirect effect,  $\beta = .220$ , 95% CI [-.0828, .0997], suggesting that the association between ACEs and anxiety symptoms was not mediated by maladaptive coping.

**Exploratory Hypothesis.** Due to evidence in the research that the four types of maladaptive coping strategies may have different effects on the relationship between ACEs and anxiety (Chan et al., 2014; Garnefski et al., 2002; Martin & Dahlen, 2005), a multiple mediation analysis was ultimately conducted. The standardized indirect effects of the four strategies (i.e. rumination, self-blame, catastrophizing and blaming others) were calculated simultaneously, and a 1000-repeat bootstrap procedure was used to test whether the effect was statistically significant. The analysis revealed no significant indirect effect, indicating that none of the maladaptive strategies mediated the relationship between ACEs and anxiety symptoms. The standardized coefficients and associated confidence intervals can be found in Table 2.

**Table 2**

*Results of multiple mediation analysis (Exploratory Hypothesis)*

Path	Indirect Effect	95% CI	
	$\beta$	Lower	Upper
ACE $\rightarrow$ RU $\rightarrow$ AS	-.1010	-.0722	.0173
ACE $\rightarrow$ SB $\rightarrow$ AS	.0886	-.0204	.1918
ACE $\rightarrow$ CA $\rightarrow$ AS	.2094	-.0107	.4786
ACE $\rightarrow$ BO $\rightarrow$ AS	-.1247	-.4920	.0399

*Note.* ACE: Adverse Childhood Experience. MC: Maladaptive Coping. AS: Anxiety Symptoms. RU: Rumination. SB: Self-Blame. CA: Catastrophizing. BO: Blaming Others.

#### **4. Discussion**

The primary aim of the study was to empirically investigate the relationship between ACEs, maladaptive coping strategies and anxiety symptoms in a non-clinical sample of young adults. Based on the findings, it was postulated that there is a significant correlation between all three variables. The number of ACEs was a strong predictor of anxiety symptoms, and a moderate correlation was found between ACE and maladaptive coping. Unexpectedly, the general use of maladaptive coping did not significantly predict self-reported anxiety symptoms, and use of maladaptive coping strategies did not mediate the relation between exposure to ACEs and anxiety symptoms. Post-hoc analyses showed a strong effect of catastrophizing, self-blame and blaming others being significantly associated with anxiety symptoms, while rumination was not a significant predictor. The subsequent exploratory multiple mediator analysis, in which the various maladaptive strategies were included as mediators in the model, also revealed no significant effect.

##### **4.1 Association between ACEs, Anxiety symptoms, and Maladaptive Coping**

Previous research, such as Elmore & Crouch (2020), found that children and adolescents ages 8 to 17 who were exposed to four or more ACEs were more likely to suffer from anxiety than those who were exposed to fewer ACEs, and McLaughlin et al. (2010) demonstrated this association for a large national sample of adults ages 18 to over 60. The current study's significant findings of a positive relationship between ACEs and anxiety symptoms extend previous evidence by demonstrating such associations in a young, non-clinical sample between the ages of 18 and 35. Thus, the negative effects of ACEs appear to persist across the life span, from childhood and adolescence (Elmore & Crouch, 2020) through young adulthood (current study) and into old age (McLaughlin et al., 2010).

In addition, Curran et al. (2020), examining an American epidemiological sample with a range of complex childhood trauma exposures, showed that ACEs not only appear to



ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS promote the development of anxiety, but also lead to increased use of maladaptive coping strategies such as catastrophizing, rumination, self-blame, or blaming others. This was also demonstrated in the present study by the moderately positive correlation, suggesting that maladaptive coping behavior also play a role in young adults of the general population and thus appears to be established early in development.

Furthermore, the relationship between maladaptive coping and anxiety has been investigated in several previous studies, in which significant associations have been found (e.g., Garnefski et al., 2002; Garnefski et al., 2007; Jacob & Anto, 2006; Kraaij et al., 2003; Solgi, 2018). However, these findings were only partially confirmed in the present study, as maladaptive coping did not predict the occurrence of anxiety symptoms, but the differentiated analysis of the different maladaptive coping strategies yielded a significant result. The relationship between maladaptive coping in general and anxiety may have been attenuated by the fact that two of the four coping strategies - blaming others and rumination - were (strongly) negatively associated with anxiety symptoms. Thus, almost 43% of the variance in anxiety could be explained by the use of the four maladaptive coping strategies, with catastrophizing showing the greatest predictive value.

According to the cognitive model of Beck et al. (1985), affective disorders such as anxiety are associated with cognitive errors, with studies showing that catastrophizing seems to play a particularly important role (Weems et al., 2001). Catastrophizing thoughts involve anticipating the worst possible outcomes, overestimating the likelihood of negative consequences, and underestimating one's control over future events (Martin & Dahlen, 2005). Since these cognitive distortions are very typical for various anxiety disorders and contribute to their maintenance, it seems logical that catastrophizing as a maladaptive strategy had a high explanatory value for anxiety in the present study.

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

However, there is a striking difference in the direction of the associations found in the present study in contrast to previous findings, in that rumination was negatively correlated with anxiety, although it was not significant. Nevertheless, this raises the question of what might have caused such a departure from previous research. Watkins (2009) suggests that specific, concrete, and process-oriented rumination, involving active self-reflection, may be a beneficial psychological process. From this perspective, if individuals perceive their thoughts as productive and controllable, rumination may have an anxiety-reducing effect, what could explain the negative association observed in the present study. Such an effect would probably be less likely in a larger sample that is more representative of the population as a whole, since helpful rumination might be more pronounced than usual in the current non-clinical sample, which consists of people with a certain socio-demographic background, i.e. people with a high level of education and a high level of functioning, given that more than half of the sample consisted of students (58.9%) and the remaining participants (39.7%) were professionals.

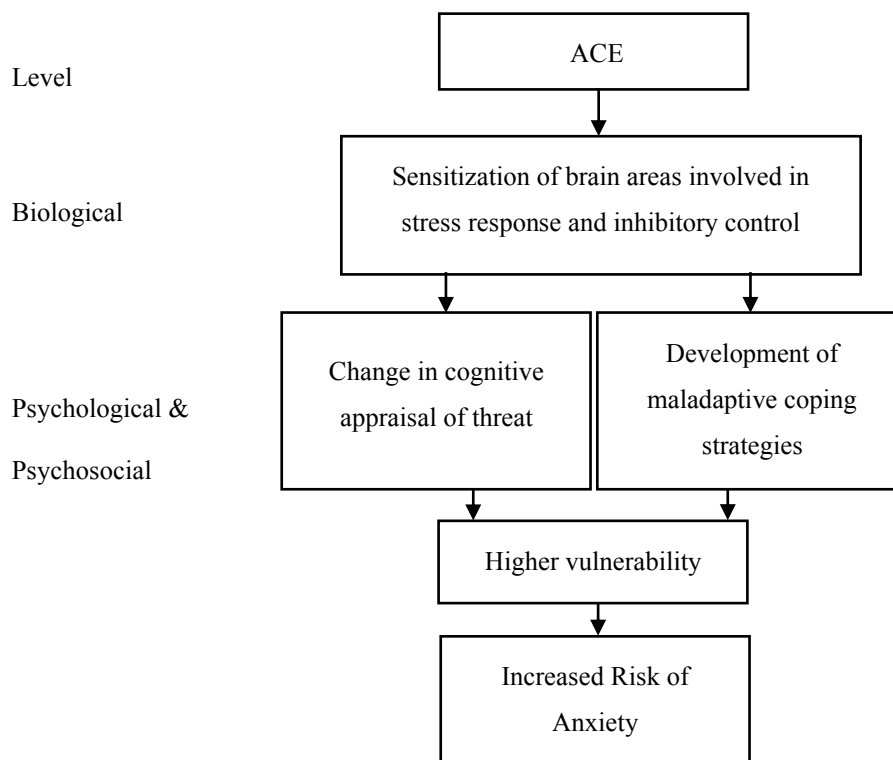
With the exception of small variations, the present study overall provides evidence for the relationship between ACEs, anxiety, and maladaptive coping strategies among young adults. One theoretical explanation for the association between the three variables, schematically represented in Figure 2 based on previous findings, relates to biological, psychological, and psychosocial changes caused by ACEs (Nusslock & Miller, 2016; Miloyan et al., 2018; Sheffler et al., 2019). For example, Sheffler et al. (2019) attributed this association to the fact that ACEs are complex early stressors that disrupt the normal developmental process at all levels of the biopsychosocial model. Accordingly, at a biological level, processes of emotion regulation are affected by changes in the structure and function of brain areas, because the experience of childhood adversity seems to sensitize parts of the brain that play a role in stress response and inhibitory control (Nusslock & Miller, 2016; Sheffler et

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

al., 2019). These biological changes in turn influence cognitive threat appraisals at the psychological level, i.e. altered interpretations and beliefs about threats, as well as coping behaviour at the psychosocial level as they promote the development of maladaptive coping strategies. From this perspective, people who experience ACEs are therefore more likely to perceive a situation as stressful and to develop and use less adaptive coping styles (Sheffler et al., 2019). The diminished ability to cope with potential threats and the cognitive distortions regarding these threats lead to greater vulnerability to emotional distress, which in turn increases the risk of experiencing anxiety (Bateson et al., 2011; Miloyan et al., 2018). However, the assumptions that can be derived from this explanatory approach are not fully in line with the results of the present study. For this reason, a modified explanatory model is proposed as illustrated in Figure 3, which contains adjustments based on the current findings.

**Figure 2**

*Biopsychosocial model proposed to explain the association between ACEs, Anxiety and Maladaptive Coping according to previous research*



*Note.* This is a schematic illustration that synthesizes various previous theoretical findings (Nusslock & Miller, 2016; Miloyan et al., 2018; Sheffler et al., 2019).

#### **4.2 Mediating Role of Maladaptive Coping Behaviour**

Despite existing evidence, there is a lack of research on the mediating effect of maladaptive coping on the association between ACEs and anxiety symptoms, whereas this has been better explored and documented in the context of depression (e.g. Song et al., 2020). One of the few cross-sectional studies in this field of research was able to show that emotional dysregulation mediates the association between emotional abuse as a category of ACEs and generalized anxiety disorder in a sample of college students (Soenke et al. 2010). Although the present study found significant evidence of a direct relationship between ACE, the different maladaptive coping strategies and anxiety, the (multiple) mediator analysis did not yield a significant indirect effect of maladaptive coping behaviour. Against this background, the biopsychosocial explanatory model (Figure 2) presented to explain the relationship between the three variables should be reconsidered, as it suggests that maladaptive coping increases the risk of anxiety, at least to some extent. There may be other interactions between the analyzed variables that were not taken into account in the mediation analysis. Based on the present operationalization of the different constructs, the measurement procedure, and the results of the study, a different explanatory model for the association between ACEs, anxiety, and maladaptive coping is proposed and schematically represented in Figure 3. In this modified explanatory approach, the basic assumption that ACEs lead to changes at the biological, psychosocial and psychological levels remains the same, but the temporal sequence of the interaction is adjusted according to the findings. Thus, no mediating effect of maladaptive coping could be demonstrated in the present study, but the pattern of correlations, i.e. the significant correlation between ACEs and anxiety as well as maladaptive coping and between the different maladaptive coping strategies and anxiety, suggests that there may be a theoretical overlap between the latter two variables, especially with regard to catastrophizing. As already explained above, catastrophizing can be understood as a main component of

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

anxiety and at the same time it represents a cognitive distortions in threat appraisal (Martin & Dahlen, 2005; Weems et al., 2001), which may explain the high correlation found on the one hand and the lack of a mediator effect on the other. Against this theoretical background, an overlapping of the two constructs seems very likely, even beyond the measurement procedure. According to this explanation model, maladaptive coping, especially catastrophizing and early anxiety symptoms, may overlap and together lead to serious (mental) health problems and other difficulties in life. Of course, further research is necessary for a more in-depth investigation of these assumptions.

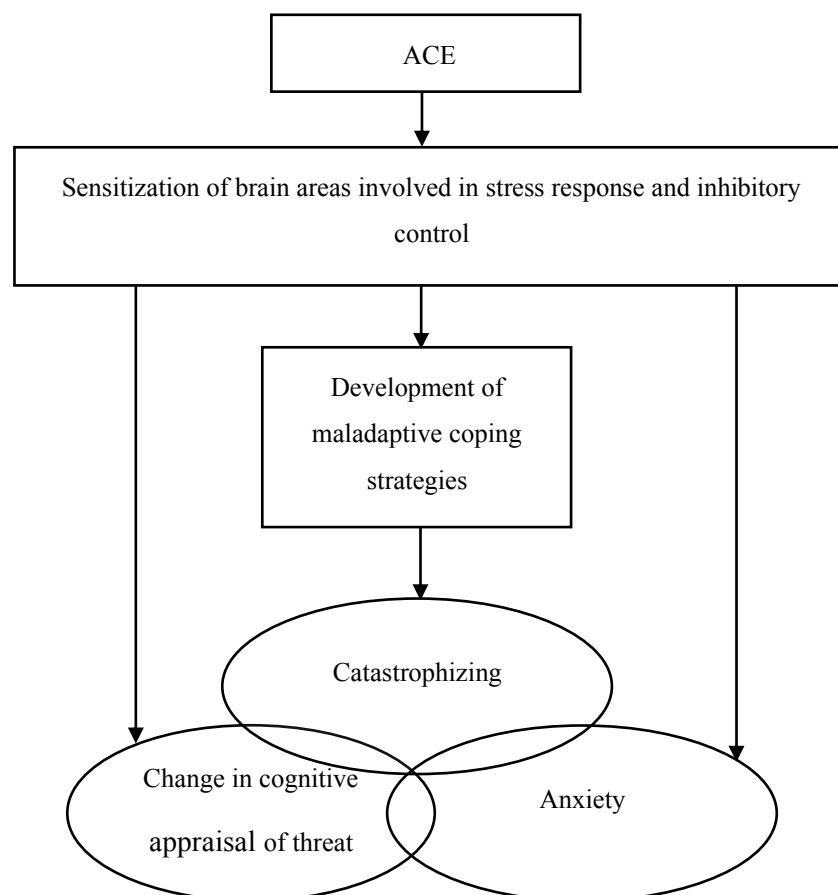
**Figure 3**

*Biopsychosocial model proposed to explain the association between ACEs, Anxiety and Maladaptive Coping according to the current study*

Level

Biological

Psychological &  
Psychosocial



*Note.* This is a schematic illustration that synthesizes various previous theoretical findings (Nusslock & Miller, 2016; Miloyan et al., 2018; Sheffler et al., 2019) and has been modified based on current findings.

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Methodological explanations for the non-significant mediation effect could, of course, also be related to the cross-sectional design of the study, i.e. all data were collected at the same time. This makes it difficult to identify causal relationships, as no temporal sequence between variables can be established. In addition, when interpreting the results, it should be noted that this was a non-clinical sample with, on average, normal levels of anxiety according to the DASS-21 classification (Lovibond & Lovibond, 1995). The descriptive scores of the CTQ (Bernstein et al., 2013) also showed mean scores that could be classified as no to low childhood adversity and a skewed distribution resulting from a 0-inflation. The low level of the measured variables and the low variance resulting from the skewed distribution of ACEs may have affected statistical power and should be taken into account when interpreting the results.

### **4.3 Strengths and Limitations**

A strength of this study is that, to my knowledge, it is the first to examine maladaptive coping as a possible underlying mechanism of the relationship between ACE and anxiety symptoms in a general population sample of young adults, which is of high practical relevance for the development of effective interventions. Although the results did not provide a significant effect regarding the mediating role of maladaptive coping, they did show that catastrophizing and self-blame in particular appear to be important risk factors for the development of anxiety symptoms in young adulthood. At the same time, the study suggests that there may also be a theoretical overlap between maladaptive coping strategies, in particular catastrophizing, and the early stages of anxiety. It is therefore important that preventive interventions focus on developing adaptive coping strategies while reducing dysfunctional coping behaviours and restructuring the cognitive distortions that underlie anxiety.

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

However, it is important to be aware of the various limitations when interpreting the results. The most important limitation is the cross-sectional design, which does not allow conclusions to be drawn about causality and direction of influence (Setia, 2016), which has a greater impact on the mediation analysis and should therefore be taken into account when interpreting the results. Furthermore, it is of high relevance that the assessment of childhood maltreatment was retrospective. The fact that the ACEs occurred years earlier can lead to a recall bias that can confound the data in many ways. Especially with such a sensitive and emotional topic, memories of the event may be distorted, and/or may have been suppressed and therefore not reported, which should be taken into account when interpreting the data. Another limitation is the lack of generalizability of the results to a larger population due to convenience sampling. In a convenience sample, not all members of the target population have an equal chance of being included, leading to potential biases, such as motivational bias, because the motivation to participate may be based on interest in the research topic or a desire to support one's particular opinions (Stratton, 2021). Therefore, the participants cannot be considered representative of the population, which raises concerns about the external validity (Sedgwick, 2013) and should be considered when interpreting the results. Regarding the sample, there are other limitations related to the small sample size on the one hand, the imbalance between female and male participants, and the high level of education on the other hand. This not only makes it more difficult to detect small effects, but also affects the generalizability of the results. In addition, the study data was collected entirely on the basis of self-reported evaluations, which may lead to a bias in the responses. This is a common problem with self-report measures, where participants' responses can be influenced by social desirability and various other sources such as mood or agreement (Podsakoff et al., 2003).

#### **4.4 Conclusion and future research**

Overall, the study provided evidence for the relationship between ACEs, anxiety and the use of maladaptive coping strategies among young adults of the general population, even though the mediating effect of the latter variable did not yield a significant result. The findings obtained here illustrate the risk potential posed by ACEs and maladaptive coping, which is of great practical relevance for the design of preventive interventions and cognitive therapy concepts. Thus, it becomes clear that especially in the early, non-clinical stages of anxiety, it may be very useful to use existing reframing and cognitive restructuring techniques to challenge catastrophizing and self-blame and to break through associated negative thought patterns (Garnefski et al., 2002). Future studies should build on the present results and further investigate the complex interaction between the variables studied. In this context, self-report should be complemented by other forms of data collection, such as interviews or external assessments, e.g. by including the assessment of close caregivers, in order to counteract social desirability and other response biases. This may also contribute to a more complete and objective view of the constructs under investigation and may enhance the validity and reliability of the data. In addition, various screening instruments on coping behavior should be used in the future to accurately capture both the cognitive and behavioral levels of coping and obtain a comprehensive picture of it. There is also a need to further investigate the overall interaction between the variables using longitudinal studies, as summarized in the systematic review by Thurston et al. (2023), and including other possible confounding variables to better understand the underlying mechanisms and develop more targeted interventions.



### References

- Agorastos, A., Pervanidou, P., Chrousos, G. P., & Baker, D. G. (2019). Developmental Trajectories of Early Life Stress and Trauma: A Narrative Review on Neurobiological Aspects Beyond Stress System Dysregulation. *Frontiers in Psychiatry, 10*, 118. <https://doi.org/10.3389/fpsy.2019.00118>
- Asendorpf, J. B. (2002). Risikofaktoren in der Kindheit für soziale Phobien im Erwachsenenalter. *Soziale Phobie und soziale Angststörung, 246–263*.
- Bateson, M., Brilot, B., & Nettle, D. (2011). Anxiety: An Evolutionary Approach. *The Canadian Journal of Psychiatry, 56*(12), 707–715. <https://doi.org/10.1177/070674371105601202>
- Beck, A. T. (1985). Theoretical perspectives on clinical anxiety. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 183–196). Lawrence Erlbaum Associates, Inc.
- Becker-Nehring, K., Witschen, I., & Bengel, J. (2012). Schutz- und Risikofaktoren für Traumafolgestörungen: Ein systematischer Review. *Zeitschrift für Klinische Psychologie und Psychotherapie, 41*(3), 148–165. <https://doi.org/10.1026/1616-3443/a000150>
- Benjet, C., Borges, G., & Medina-Mora, M. E. (2010). Chronic childhood adversity and onset of psychopathology during three life stages: Childhood, adolescence and adulthood. *Journal of Psychiatric Research, 44*(11), 732–740. <https://doi.org/10.1016/j.jpsychires.2010.01.004>
- Berman, I. S., Petretric, P., & Bridges, A. J. (2021). Beyond child maltreatment: The incremental value of household dysfunction in the prediction of negative beliefs and internalizing symptoms in women. *Journal of American College Health, 69*(5), 537–545. <https://doi.org/10.1080/07448481.2019.1687483>
- 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)

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

- Bolger, K. E., & Patterson, C. J. (2001). Pathways from child maltreatment to internalizing problems: Perceptions of control as mediators and moderators. *Development and Psychopathology, 13*, 913–940.
- Brent, D. A., & Silverstein, M. (2013). Shedding Light on the Long Shadow of Childhood Adversity. *JAMA, 309*(17), 1777. <https://doi.org/10.1001/jama.2013.4220>
- Chan, S. M., Chan, S. K., & Kwok, W. W. (2015). Ruminative and Catastrophizing Cognitive Styles Mediate the Association Between Daily Hassles and High Anxiety in Hong Kong Adolescents. *Child Psychiatry & Human Development, 46*(1), 57–66.  
<https://doi.org/10.1007/s10578-014-0451-9>
- Chi, X., Jiang, W., Guo, T., Hall, D. L., Luberto, C. M., & Zou, L. (2023). Relationship between adverse childhood experiences and anxiety symptoms among Chinese adolescents: The role of self-compassion and social support. *Current Psychology, 42*(15), 12822–12834.  
<https://doi.org/10.1007/s12144-021-02534-5>
- Choi, K. W., Sikkema, K. J., Velloza, J., Marais, A., Jose, C., Stein, D. J., Watt, M. H., & Joska, J. A. (2015). Maladaptive coping mediates the influence of childhood trauma on depression and PTSD among pregnant women in South Africa. *Archives of Women's Mental Health, 18*(5), 731–738. <https://doi.org/10.1007/s00737-015-0501-8>
- Clark, C., Caldwell, T., Power, C., & Stansfeld, S. A. (2010). Does the Influence of Childhood Adversity on Psychopathology Persist Across the Lifecourse? A 45-Year Prospective Epidemiologic Study. *Annals of Epidemiology, 20*(5), 385–394.  
<https://doi.org/10.1016/j.annepidem.2010.02.008>
- Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences* (0 Aufl.). Routledge.  
<https://doi.org/10.4324/9780203771587>
- Copeland, W. E., Shanahan, L., Hinesley, J., Chan, R. F., Aberg, K. A., Fairbank, J. A., Van Den Oord, E. J. C. G., & Costello, E. J. (2018). Association of Childhood Trauma Exposure With

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Adult Psychiatric Disorders and Functional Outcomes. *JAMA Network Open*, 1(7), e184493.

<https://doi.org/10.1001/jamanetworkopen.2018.4493>

Crow, T., Cross, D., Powers, A., & Bradley, B. (2014). Emotion dysregulation as a mediator between childhood emotional abuse and current depression in a low-income African-American sample. *Child Abuse & Neglect*, 38(10), 1590–1598.

<https://doi.org/10.1016/j.chiabu.2014.05.015>

Curran, E., Perra, O., Rosato, M., Ferry, F., & Leavey, G. (2021). Complex childhood trauma, gender and depression: Patterns and correlates of help-seeking and maladaptive coping. *Journal of Affective Disorders*, 292, 603–613. <https://doi.org/10.1016/j.jad.2021.06.011>

Elmore, A. L., & Crouch, E. (2020). The Association of Adverse Childhood Experiences With Anxiety and Depression for Children and Youth, 8 to 17 Years of Age. *Academic Pediatrics*, 20(5), 600–608. <https://doi.org/10.1016/j.acap.2020.02.012>

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (2019). REPRINT OF: Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 56(6), 774–786.

<https://doi.org/10.1016/j.amepre.2019.04.001>

Fitzgerald, M., & Gallus, K. (2020). Emotional support as a mechanism linking childhood maltreatment and adult's depressive and social anxiety symptoms. *Child Abuse & Neglect*, 108, 104645. <https://doi.org/10.1016/j.chiabu.2020.104645>

Garnefski, N., & Kraaij, V. (2007). The Cognitive Emotion Regulation Questionnaire. *European Journal of Psychological Assessment*, 23(3), 141–149. <https://doi.org/10.1027/1015-5759.23.3.141>

Garnefski, N., Legerstee, J., Kraaij, V., Van Den Kommer, T., & Teerds, J. (2002). Cognitive coping strategies and symptoms of depression and anxiety: A comparison between

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS  
adolescents and adults. *Journal of Adolescence*, 25(6), 603–611.

<https://doi.org/10.1006/jado.2002.0507>

Gong, J., & Chan, R. C. K. (2018). Early maladaptive schemas as mediators between childhood maltreatment and later psychological distress among Chinese college students. *Psychiatry Research*, 259, 493–500. <https://doi.org/10.1016/j.psychres.2017.11.019>

Goodwin, R. D., Weinberger, A. H., Kim, J. H., Wu, M., & Galea, S. (2020). Trends in anxiety among adults in the United States, 2008–2018: Rapid increases among young adults. *Journal of Psychiatric Research*, 130, 441–446. <https://doi.org/10.1016/j.jpsychires.2020.08.014>

Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, 98, 39–57. <https://doi.org/10.1016/j.brat.2016.11.001>

Husky, M. M., Sadikova, E., Lee, S., Alonso, J., Auerbach, R. P., Bantjes, J., Bruffaerts, R., Cuijpers, P., Ebert, D. D., Garcia, R. G., Hasking, P., Mak, A., McLafferty, M., Sampson, N. A., Stein, D. J., Kessler, R. C., & WHO WMH-ICS collaborators. (2023). Childhood adversities and mental disorders in first-year college students: Results from the World Mental Health International College Student Initiative. *Psychological Medicine*, 53(7), 2963–2973. <https://doi.org/10.1017/S0033291721004980>

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., Aguilar-Gaxiola, S., Alhamzawi, A. O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., De Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., ... Williams, D. R. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *British Journal of Psychiatry*, 197(5), 378–385. <https://doi.org/10.1192/bjp.bp.110.080499>

Lai, C.-L. J., Fan, Y., Man, H. Y., & Huang, Y. (2023). Childhood adversity and depression in Chinese populations: A multilevel meta-analysis of studies using the Childhood Trauma

ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Questionnaire (CTQ). *Asian Journal of Psychiatry*, 84, 103582.

<https://doi.org/10.1016/j.ajp.2023.103582>

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. Springer Publishing Company. <https://books.google.nl/books?id=i-ySQQuUpr8C>

Legerstee, J. S., Garnefski, N., Verhulst, F. C., & Utens, E. M. W. J. (2011). Cognitive coping in anxiety-disordered adolescents. *Journal of Adolescence*, 34(2), 319–326.

<https://doi.org/10.1016/j.adolescence.2010.04.008>

Martin, R. C., & Dahlen, E. R. (2005). Cognitive emotion regulation in the prediction of depression, anxiety, stress, and anger. *Personality and Individual Differences*, 39(7), 1249–1260. <https://doi.org/10.1016/j.paid.2005.06.004>

Matud, M. P. (2004). Gender differences in stress and coping styles. *Personality and Individual Differences*, 37(7), 1401–1415. <https://doi.org/10.1016/j.paid.2004.01.010>

McLafferty, M., Armour, C., Bunting, B., Ennis, E., Lapsley, C., Murray, E., & O'Neill, S. (2019). Coping, stress, and negative childhood experiences: The link to psychopathology, self-harm, and suicidal behavior. *PsyCh Journal*, 8(3), 293–306. <https://doi.org/10.1002/pchj.301>

McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2010). Childhood adversities and adult psychopathology in the National Comorbidity Survey Replication (NCS-R) III: Associations with functional impairment related to DSM-IV disorders. *Psychological Medicine*, 40(5), 847–859.

<https://doi.org/10.1017/S0033291709991115>

McQuaid, R. J., Bombay, A., McInnis, O. A., Matheson, K., & Anisman, H. (2015). Childhood adversity, perceived discrimination, and coping strategies in relation to depressive symptoms among First Nations adults in Canada: The moderating role of unsupportive social interactions from ingroup and outgroup members. *Cultural Diversity and Ethnic Minority Psychology*, 21(3), 326–336. <https://doi.org/10.1037/a0037541>

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

Merrick, M. T., Ports, K. A., Ford, D. C., Afifi, T. O., Gershoff, E. T., & Grogan-Kaylor, A.

(2017). Unpacking the impact of adverse childhood experiences on adult mental health. *Child Abuse & Neglect*, *69*, 10–19. <https://doi.org/10.1016/j.chiabu.2017.03.016>

Miloyan, B., Joseph Bienvenu, O., Brilot, B., & Eaton, W. W. (2018). Adverse life events and the onset of anxiety disorders. *Psychiatry Research*, *259*, 488–492.

<https://doi.org/10.1016/j.psychres.2017.11.027>

Ms. Shefeena Jacob & Dr. Milu Maria Anto. (2016). A Study on Cognitive Emotion Regulation and Anxiety and Depression in Adults. *International Journal of Indian Psychology*, *3*(2).

<https://doi.org/10.25215/0302.030>

Naab, S., Kunkel, J., Fumi, M., & Voderholzer, U. (2017). Psychosoziale Risikofaktoren für psychische Störungen im Jugendalter. *Pädiatrie*, *29*(5), 24–32.

<https://doi.org/10.1007/s15014-017-0941-x>

Nusslock, R., & Miller, G. E. (2016). Early-Life Adversity and Physical and Emotional Health Across the Lifespan: A Neuroimmune Network Hypothesis. *Biological Psychiatry*, *80*(1), 23–32. <https://doi.org/10.1016/j.biopsych.2015.05.017>

Panagou, C., & MacBeth, A. (2022). Deconstructing pathways to resilience: A systematic review of associations between psychosocial mechanisms and transdiagnostic adult mental health outcomes in the context of adverse childhood experiences. *Clinical Psychology & Psychotherapy*, *29*(5), 1626–1654. <https://doi.org/10.1002/cpp.2732>

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>

Sedgwick, P. (2013). Convenience sampling. *BMJ*, *347*(oct25 2), f6304–f6304.

<https://doi.org/10.1136/bmj.f6304>

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

- Setia, M. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, 61(3), 261. <https://doi.org/10.4103/0019-5154.182410>
- Sheffler, J. L., Piazza, J. R., Quinn, J. M., Sachs-Ericsson, N. J., & Stanley, I. H. (2019). Adverse childhood experiences and coping strategies: Identifying pathways to resiliency in adulthood. *Anxiety, Stress, & Coping*, 32(5), 594–609. <https://doi.org/10.1080/10615806.2019.1638699>
- Sheffler, J. L., Stanley, I., & Sachs-Ericsson, N. (2020). Chapter 4—ACEs and mental health outcomes. In G. J. G. Asmundson & T. O. Afifi (Hrsg.), *Adverse Childhood Experiences* (S. 47–69). Academic Press. <https://doi.org/10.1016/B978-0-12-816065-7.00004-5>
- Soenke, M., Hahn, K. S., Tull, M. T., & Gratz, K. L. (2010). Exploring the Relationship Between Childhood Abuse and Analogue Generalized Anxiety Disorder: The Mediating Role of Emotion Dysregulation. *Cognitive Therapy and Research*, 34(5), 401–412. <https://doi.org/10.1007/s10608-009-9264-8>
- Solberg, M. A., Peters, R. M., Resko, S. M., & Templin, T. N. (2023). Does Coping Mediate the Relationship Between Adverse Childhood Experiences and Health Outcomes in Young Adults? *Journal of Child & Adolescent Trauma*, 16(3), 615–627. <https://doi.org/10.1007/s40653-023-00527-z>
- Solg, Z., & Yaseminejad, P. (2018). *The role of cognitive emotion regulation strategies in depression, anxiety and stress of coronary heart disease patients*. <https://api.semanticscholar.org/CorpusID:164449319>
- Song, X., Wang, S., Wang, R., Xu, H., Jiang, Z., Li, S., Zhang, S., & Wan, Y. (2020). Mediating Effects of Specific Types of Coping Styles on the Relationship between Childhood Maltreatment and Depressive Symptoms among Chinese Undergraduates: The Role of Sex. *International Journal of Environmental Research and Public Health*, 17(9), 3120. <https://doi.org/10.3390/ijerph17093120>

## ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

- Stratton, S. J. (2021). Population Research: Convenience Sampling Strategies. *Prehospital and Disaster Medicine*, 36(4), 373–374. <https://doi.org/10.1017/S1049023X21000649>
- Street, A. E., Gibson, L. E., & Holohan, D. R. (2005). Impact of childhood traumatic events, trauma-related guilt, and avoidant coping strategies on PTSD symptoms in female survivors of domestic violence. *Journal of Traumatic Stress*, 18(3), 245–252. <https://doi.org/10.1002/jts.20026>
- Thurston, C., Murray, A. L., Franchino-Olsen, H., & Meinck, F. (2023). Prospective longitudinal associations between adverse childhood experiences and adult mental health outcomes: A protocol for a systematic review and meta-analysis. *Systematic Reviews*, 12(1), 181. <https://doi.org/10.1186/s13643-023-02330-1>
- Wardenaar, K. J., Wanders, R. B. K., Jeronimus, B. F., & De Jonge, P. (2018). The Psychometric Properties of an Internet-Administered Version of the Depression Anxiety and Stress Scales (DASS) in a Sample of Dutch Adults. *Journal of Psychopathology and Behavioral Assessment*, 40(2), 318–333. <https://doi.org/10.1007/s10862-017-9626-6>
- Watkins, E. R. (2009). Depressive Rumination: Investigating Mechanisms to Improve Cognitive Behavioural Treatments. *Cognitive Behaviour Therapy*, 38(sup1), 8–14. <https://doi.org/10.1080/16506070902980695>
- Weems, C. F., Berman, S. L., Silverman, W. K., & Saavedra, L. M. (2001). [No title found]. *Cognitive Therapy and Research*, 25(5), 559–575. <https://doi.org/10.1023/A:1005505531527>
- Wille, N., Bettge, S., & Ravens-Sieberer, U. (2008). Risk and protective factors for children's and adolescents' mental health: Results of the BELLA study. *European Child & Adolescent Psychiatry*, 17(S1), 133–147. <https://doi.org/10.1007/s00787-008-1015-y>
- Wingenfeld, K., Spitzer, C., Mensebach, C., Grabe, H., Hill, A., Gast, U., Schlosser, N., Höpp, H., Beblo, T., & Driessen, M. (2010). Die deutsche Version des Childhood Trauma Questionnaire (CTQ): Erste Befunde zu den psychometrischen Kennwerten. *PPmP - Psychotherapie* ·



ADVERSE CHILDHOOD EXPERIENCES, MALADAPTIVE COPING AND ANXIETY SYMPTOMS

*Psychosomatik · Medizinische Psychologie*, 60(11), 442–450. <https://doi.org/10.1055/s-0030-1247564>

Yepuri, H. (2022). *How Adverse Childhood Trauma Affects Coping Behaviors and Anxiety in College Students During COVID-19: A Neurobiological Perspective*.  
<https://doi.org/10.31922/SRHS-8M27>

Zeidner, M., & Saklofske, D. (1996). *Adaptive and maladaptive coping*.