

Coping as a Mediator of the Association Between Adverse Childhood Experiences and
Symptoms of Anxiety/Depression in Adolescence

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Abstract

Objectives. Adverse childhood experiences (ACEs) refer to childhood traumatic events and are significant predictors of psychopathology. ACEs include abuse (physical, emotional, sexual) and neglect (physical, emotional). Coping and emotion regulation involve controlled responses to stress and may mediate the association between ACEs and psychopathology, however, little research has studied the relations between maltreatment and specific coping and emotion regulation strategies. The present study investigated ACEs, symptoms of anxiety/depression in adolescents, and coping with stress as reflected in three types of coping – primary control coping, secondary control coping, and disengagement coping. *Method.* Ninety-seven adolescents with a variety of ACE exposure completed self-report measures of ACE exposure, coping, and symptoms of anxiety/depression, while their caregivers completed these same measures about the adolescents. Pearson correlations, linear multiple regression, and path analyses were used to test associations. *Results* ACE exposure, coping, and symptoms of anxiety/depression were significantly correlated. The total indirect effect of ACE exposure on symptoms of anxiety/depression through all types of coping (primary control, secondary control, and disengagement) was significant ($\beta = 0.04, 0.16, 0.08$). *Conclusion* All types of coping are essential factors in understanding the association between ACE exposure and symptoms of anxiety/depression. Coping skills exist as potential targets for intervention to reduce the risk of anxiety/depression in adolescents exposed to ACEs.

Introduction

Adverse Childhood Experiences

Adverse childhood experiences (ACEs) encompass a variety of forms of childhood trauma, maltreatment, and stress (Felitti et al., 1998; Walsh et al. 2019). The widely accepted definition of ACEs is “childhood events, varying in severity and often chronic, occurring within a child’s family or social environment that cause harm or distress, thereby disrupting the child’s physical or psychological health and development” (Scully et al., 2020). ACEs exposure includes emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, and other household challenges, such as parental death, medical trauma, and parental/caregiver impairment due to psychopathology, substance abuse, and criminal behavior (Felitti et al., 1998).

The term “ACEs” was coined in 1998 as part of a collaboration between the U.S. Center for Disease Control and the Kaiser Permanente Health System to examine childhood trauma and its subsequent negative effects on adult lives (Felitti et al., 1998). In this initial landmark study on ACEs, Felitti et al. (1998) surveyed 13,494 adults about their exposure to ACEs, as well as adult risk behaviors, health statuses, and diseases. They found that half of participants reported at least one ACE, one-fourth reported two or more ACEs, and that there was a significant linear, dose-response relationship between ACEs and adult health risk behaviors and disease (Felitti et al., 1998). Health risk behaviors in this study included drug abuse, alcoholism, smoking, suicide attempts, severe obesity, while physical diseases included chronic lung disease, liver disease, cancer, heart disease (Felitti et al., 1998). This study was the first to demonstrate the broad and damaging effects associated with ACEs and recognize ACEs as a major target for future research (Felitti et al., 1998).

After decades of subsequent research, the Centers for Disease Control and Prevention

estimate the prevalence of ACEs in the United States to be 60% of the population, although this is likely an underestimate of the prevalence of ACEs due to underreporting of these sources of trauma (Kalmakis et al., 2014). Exposure to ACEs has been linked to almost every psychiatric disorder, low quality of life, risky health behaviors, chronic health conditions, and early death (e.g., Henry et al., 2021; Petruccelli et al., 2019). The Centers for Disease Control and Prevention encourages additional research to prevent, identify, and improve outcomes of children exposed to ACEs (*Adverse Childhood Experiences Prevention Strategy*, 2020).

Researchers have aimed to understand the mechanisms by which traumatic early life experiences yield such considerable and diverse effects on physical and mental health outcomes in adulthood. One hypothesis posits that the chronic and extreme stress associated with ACEs exceeds an individual's ability to both physically and mentally cope with stress (McEwen., 2007). McEwen (2000) describes this phenomenon as "allostatic overload." When psychological and biological stress response systems are repeatedly and exceedingly activated, the body experiences detrimental levels of stress hormones and potential brain changes (McEwen, 2000). In addition to physiological changes, overworked stress systems may lead individuals to develop compromised coping strategies in response to stress (Sheffler et al., 2019).

Coping and Emotional Regulation

The way in which individuals consciously cope with stress and regulate their emotions can determine in part why some children are adversely affected by stressful events, including ACEs, and some children are not (Compas et al., 2017). Coping and emotional regulation involve controlled and purposeful efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to a stressful event or chronic stressful conditions in the environment (Compas et al., 2017). Coping processes are contrasted with involuntary/automatic

stress responses, which include ruminative and intrusive thoughts, impulsive action, emotional arousal, and physiological arousal (Compas et al., 2017).

The model of coping/emotional regulation used in the current research is organized around the controllability of the stressor (e.g., Compas et al., 2001). This model of coping has been confirmed in adolescents from a variety of cultural backgrounds with exposures to a variety of stressors (e.g., Benson et al., 2011; Connor-Smith & Calvete, 2004; Wadsworth et al., 2004). Three types of coping responses are outlined in this control-based model: primary control coping involves acting directly on a stressor or the related emotions (e.g., problem solving, emotion expression, and emotional modulation); secondary control coping involves adapting to a stressor (e.g., acceptance, cognitive reappraisal, distraction, and positive thinking); and disengagement coping describes efforts to evade the stressor (e.g., avoidance, denial, and wishful thinking) (Connor-Smith et al., 2000). Greater use of primary control coping and secondary control coping has been associated with lower levels of internalizing and externalizing symptoms, and greater use of disengagement coping has been associated with higher levels of internalizing and externalizing symptoms (Compas et al., 2017). Of the three forms of coping, secondary control coping has been shown to be the strongest predictor of positive psychological outcomes (Compas et al., 2017).

Impact of ACEs on Coping and Emotional Regulation

Exposure to ACEs is associated with increased levels of emotional dysregulation and impairment in coping and emotion regulation skills (Gruhn & Compas, 2020). For example, Sheffler et al. (2019) conducted a study to examine if coping mediates the relationship between ACEs and psychopathology. The structure of coping used in this study differentiated problem-focused coping from avoidant emotion-focused coping (Sheffler et al. 2019). They found that

ACEs were associated with lower use of problem-focused coping and greater use of avoidant emotion-focused coping (Sheffler et al. 2019). They also found that avoidant emotion-focused coping, but not problem-focused coping, mediated the relationship between ACEs and psychopathology.

The structure of coping used by Sheffler et al. (2019) does not differentiate primary control coping from secondary control coping. Primary control coping involves acting directly on a stressor or the related emotions and includes problem solving, emotion expression, and emotional modulation, whereas secondary control coping involves adapting to a stressor and acceptance, cognitive reappraisal, distraction, and positive thinking (Compas et al., 2017). Several factor analytic studies have confirmed the distinction between primary control and secondary control coping; thus, it is important to include this differentiation in this present study (Benson et al., 2011; Compas et al., 2006; Connor-Smith & Calvete, 2004; Connor-Smith et al., 2000; Wadsworth, Rieckmann, Benson, & Compas, 2004; Xiao et al., 2010).

The meta-analytic review conducted by Gruhn and Compas (2020) analyzed the effects of maltreatment on coping and emotion regulation in 35 studies. They found maltreatment to be significantly associated with decreased overall emotion regulation, but insufficient evidence to calculate effect sizes for specific coping factors (primary control coping and secondary control coping) (Gruhn & Compas, 2020). They elucidated this factor level as an important target for future research (Gruhn & Compas, 2020).

Current Study

The proposed research utilized data collected from a study of adolescents who had been exposed to varying levels and types of ACEs (R21HD098454; Adverse Childhood Experiences,

Adolescent and Caregiver Emotion Regulation, and Adolescent Physical and Mental Health; Compas PI) to address four primary aims and four hypotheses.

Aim 1

Examine the associations among exposure to ACEs and coping in response to stress.

Hypothesis 1. Greater exposure to ACEs will be positively associated with the use of disengagement coping, and negatively associated with the use of primary control coping and secondary control coping.

Aim 2

Examine the associations symptoms of anxiety/depression and coping in response to stress. **Hypothesis 2.** Greater symptoms of anxiety/depression will be positively associated with the use of disengagement coping, and negatively associated with the use of primary control coping and secondary control coping.

Aim 3

Examine the associations among exposure to ACEs and symptoms of anxiety/depression.

Hypothesis 3. Greater exposure to ACEs will be positively associated with symptoms of anxiety/depression.

Aim 4

Examine if coping partially accounts for the relationship between ACEs and symptoms of anxiety/depression **Hypothesis 4:** All forms of coping (primary control coping, secondary control coping, and disengagement coping) will significantly mediate the relationship between ACEs and symptoms of anxiety/depression.

Method

Participants

Participants were adolescents and their caregivers who participated in the study, “Adverse Childhood Experiences, Adolescent and Caregiver Emotion Regulation, and Adolescent Physical and Mental Health” (R21HD098454; Compas PI). The sample included 97 caregiver-adolescents (M age child = 12.07 years, SD child = 2.11 years; M age caregiver = 42.04, SD caregiver = 7.01). All adolescents were between the ages of 10 and 15 years old. Adolescent-caregiver dyads ($n = 194$ total participants) were recruited from five sites in Nashville, Tennessee area: Vanderbilt Center of Excellence for Children in State Custody, Vanderbilt Child and Adolescent Psychiatry Outpatient Clinic, Nashville Children’s Alliance, Mental Health Co-op of Middle Tennessee, and the Vanderbilt Research Match and Vanderbilt Kennedy Center Study Finder web-based research advertising sites. Recruitment from these five sites was designed to obtain a sample of adolescents with histories of exposure to a wide range of adverse childhood experiences (ACEs) and adolescents without histories of ACEs.

Design

The current study looks investigate two aims. First, this study looks to test relationships between ACE scores, symptoms of anxiety/depression, and coping. The independent variable was exposure to ACEs, as assessed by a score on The Childhood Trauma Questionnaire – Short Form (CTQ- SF; Bernstein et al., 2003). The dependent variables were symptoms of anxiety/depression, as assessed by a score on The Youth Self Report (YSR; Achenbach and Rescorla, 2001) and Child Behavior Checklist (CBCL; Achenbach and Rescorla, 2001), and coping, as assessed using by a score on The Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000). Second, this study looks to test if coping partially accounts for the relationship between ACEs and symptoms of anxiety/depression.

Measures and Materials

Self-report questionnaires were used to assess ACEs, coping, and psychopathology. Along with the printed questionnaire, participants were given a clipboard and pen.

Adverse Childhood Experiences (ACEs)

Adolescent ACEs were assessed using the Childhood Trauma Questionnaire (CTQ), a 28-item scale that assesses the presence, severity, and frequency of exposure to maltreatment. The CTQ produces scores on five clinical scales: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Scores range from 5 to 25, with higher scores indicating greater severity of maltreatment. Continuous scores of total maltreatment range from 25 to 125. The CTQ is among the most commonly used measures of child maltreatment, and has excellent internal consistency, test-retest reliability, and convergent and discriminant validity with interview measures and clinician reports (Bernstein et al., 1994). Both adolescent self-report and caregiver-report on adolescent were collected.

Symptoms of Anxiety/Depression

Symptoms of anxiety/depression were assessed using YSR, completed by the adolescent, and CBCL, completed by the caregiver (Achenbach & Rescorla, 2001). The YSR and CBCL assess symptoms of anxiety/depression over the past six months, by rating behaviors on a 3-point scale (0 = not true, 2 = very true or often true) (Achenbach & Rescorla, 2001). In both the YSR and CBCL, the anxious depressed subscale was used. The reliability and validity of the CBCL and YSR are well established (Achenbach & Rescorla, 2001).

Coping/Emotion Regulation (ER)

Adolescent coping was assessed by RSQ (Connor-Smith et al., 2000). Both adolescents and their caregivers completed the RSQ, a 57-item measure that assesses the ways in which adolescents cope with and react to stress (Connor-Smith et al., 2000). The RSQ measures three

factors of coping that have been confirmed in factor analytic studies: primary control coping (PCC), secondary control coping (SCC), and disengagement coping (DC) (Compas et al. 2006).

Procedure

The laboratory study and battery of questionnaires were approved by the Vanderbilt Institutional Review Board (IRB #181531). The laboratory visits were conducted in a private laboratory space in the Stress and Coping Laboratory at Vanderbilt University in Nashville, Tennessee. At the laboratory visit, adolescents and caregivers were instructed to complete a demographic questionnaire. Adolescents and their caregivers were instructed to complete CTQ. Next, adolescents were instructed to complete the YSR about themselves, while caregivers completed the CBCL about their children. Lastly, adolescents and their caregivers were instructed to complete RSQ, Child and Parent Versions respectively. After the visit, adolescents received \$50 and caregivers will receive \$100.

Results

In Table 2, bivariate correlations are presented to examine correlations amongst ACE exposure, coping, and symptoms of anxiety and depression. In support of the first hypothesis, greater exposure to ACEs was positively associated with the use of disengagement coping ($r = .24, p \leq .05$), and negatively associated with the use of primary control coping ($r = -.24, p \leq .05$) and secondary control coping ($r = -.36, p \leq .001$). In support of the second hypothesis, we found that greater symptoms of anxiety/depression were positively associated with the use of disengagement coping ($r = .37, p \leq .001$), and negatively associated with the use of primary control coping ($r = -0.38, p \leq .001$) and secondary control coping ($r = -0.49, p \leq .001$). In support of the third hypothesis, greater exposure to ACEs was also positively associated with symptoms of anxiety/depression ($r = 0.27, p \leq .01$).

Table 3 presents regression model to test the effect of ACE exposure and coping on symptoms anxiety/depression. This regression analysis was conducted in four blocks. In block 1, demographic variables (i.e., gender and age) were tested and controlled for in all subsequent blocks. In block 2, the main effects of ACE exposure were added. In block 3, the main effects of coping were added. In block 4, a two-way interaction term was added to examine the product of ACE exposure and secondary control coping.

In block one, only child gender was significantly association with symptoms of anxiety/depression ($\beta = .38, p < .001$). This relation was maintained in blocks 2, 3, and 4. Child age was not significantly associated with symptoms of anxiety/depression. In block two, the main effect for ACE exposure was a significant predictor of symptoms of anxiety/depression ($\beta = .43, p < .001$). In block three, the relationship between ACEs and symptoms of anxiety/depression remained significant ($\beta = .24, p < .05$). Only secondary control coping significantly predicted symptoms of anxiety and depression ($\beta = -.42, p < .001$), while primary control coping ($\beta = -.11, p = 0.41$), and disengagement coping ($\beta = -.03, p = 0.84$) were nonsignificant. In block 4, the interaction term ACE Exposure x Secondary Control Coping was added. The main effect of ACEs and symptoms of anxiety/depression became nonsignificant ($\beta = .21, p = 0.69$), while the main effect of secondary control coping and symptoms of anxiety/depression approached significance ($\beta = -0.43, p = 0.08$). The two-way interaction between ACE exposure and secondary control coping was nonsignificant ($\beta = 0.03, p = 0.96$).

To better understand the indirect of effect of coping in the association of ACE exposure and symptoms of anxiety/depression, further analyses were conducted using PROCESS. The indirect of secondary control coping in the association of ACE exposure and symptoms of anxiety/depression is shown in Figure 1. The direct association between ACE exposure and

symptoms of anxiety/depression (path c) was positive and significant ($\beta = .27, p < .01$). The direct association between ACE exposure and secondary control coping (path a) was negative and significant ($\beta = -.35, p < .001$). In the full model, the effect of secondary control coping on anxiety/depression (path b) remained significant ($\beta = -0.46, p < .001$), whereas the effect of ACE exposure was no longer significant when secondary control coping was included in the model (path c¹; $\beta = 0.10$, not statistically significant [*ns*]). In support of the fourth hypothesis, the total indirect effect of ACE exposure on anxiety/depression through secondary control coping (path ab) was significant, $\beta = 0.16$ (standard error [*SE*] = 0.04; 95% CI [0.02, 0.18]).

The indirect of primary control coping in the association of ACE exposure and symptoms of anxiety/depression is shown in Figure 2. The direct association between ACE exposure and symptoms of anxiety/depression (path c) was positive and significant ($\beta = .27, p < .01$). The direct association between ACE exposure and primary control coping (path a) was negative and significant ($\beta = -.24, p < .05$). In the full model, the effect of primary control coping on anxiety/depression (path b) remained significant ($\beta = -0.32, p < .01$), whereas the effect of ACE exposure was no longer significant when primary control coping was included in the model (path c¹; $\beta = 0.19$, not statistically significant [*ns*]). The total indirect effect of ACE exposure on anxiety/depression through primary control coping (path ab) was significant, $\beta = -.08$ (standard error [*SE*] = 0.03; 95% CI [0.02, 0.15]).

Finally, the indirect of disengagement coping in the association of ACE exposure and symptoms of anxiety/depression is shown in Figure 3. The direct association between ACE exposure and symptoms of anxiety/depression (path c) was positive and significant ($\beta = .27, p < .01$). The direct association between ACE exposure and disengagement coping (path a) was positive and significant ($\beta = .24, p < .05$). In the full model, the effect of disengagement coping on

anxiety/depression (path b) remained significant ($\beta = 0.33$, $p < .01$), whereas the effect of ACE exposure was no longer significant when disengagement coping was included in the model (path c¹; $\beta = 0.19$, not statistically significant [*ns*]). The total indirect effect of ACE exposure on anxiety/depression through primary control coping (path ab) was significant, $\beta = -.08$ (standard error [*SE*] = 0.04; 95% CI [0.02, 0.16]).

Supplementary Analyses: Multiple Informants

Supplementary analyses were conducted to integrate caregiver reports of adolescent symptoms of anxiety/depression. In Table 4, bivariate correlations are presented to examine correlations amongst ACE exposure, coping, and caregiver-report symptoms of anxiety/depression. Greater symptoms of caregiver-report anxiety/depression were negatively associated with the use of primary control coping ($r = -0.25$, $p \leq .05$) and secondary control coping ($r = -0.47$, $p \leq .01$). Surprisingly, caregiver-report symptoms of anxiety/depression were not significantly associated with the use of disengagement coping. Greater exposure to ACEs was also positively associated with caregiver-report symptoms of anxiety/depression ($r = 0.28$, $p \leq .01$). To address the question of residual variance, we ran regression analyses.

Table 5 presents regression model to test the effect of ACE exposure and coping on caregiver-report symptoms anxiety/depression. This regression analysis was conducted in four blocks. In block 1, demographic variables (i.e., gender and age) were tested and controlled for in all subsequent blocks. In block 2, the main effects of ACE exposure were added. In block 3, the main effects of coping were added. In block 4, a two-way interaction term was added to examine the product of ACE exposure and secondary control coping.

In block one, both child gender ($\beta = .13$, $p = 0.21$) and age ($\beta = .11$, $p = 0.29$) were nonsignificant. In block two, the main effect for ACE exposure was a significant predictor of

symptoms of anxiety/depression ($\beta=.29$, $p<.01$). In block three, the relationship between ACEs and symptoms of anxiety/depression became nonsignificant ($\beta=.12$, $p=.18$). Secondary control coping ($\beta= -.50$, $p<.001$), primary control coping ($\beta= -.28$, $p<.05$), and disengagement coping ($\beta= -.30$, $p<.05$) all significantly predicted caregiver-reported symptoms of anxiety and depression. In block 4, the interaction term ACE Exposure x Secondary Control Coping was added. The main effect of ACEs and symptoms of anxiety/depression remained nonsignificant ($\beta=-0.08$, $p = 0.85$), while the main effect of secondary control coping ($\beta= -0.60$, $p <.001$), primary control coping ($\beta= -0.29$, $p <.05$), and disengagement coping ($\beta= -0.32$, $p <.05$) remained significant. The two-way interaction between ACE exposure and secondary control coping was nonsignificant ($\beta= 0.20$, $p = 0.61$).

Figure 4 presents further analyses using PROCESS, revealing the direct association between ACE exposure and caregiver-report symptoms of anxiety/depression (path c) was positive and significant ($\beta= .28$, $p<.01$). The direct association between ACE exposure and secondary control coping (path a) was negative and significant ($\beta= -0.36$, $p<.001$). In the full model, the effect of secondary control coping on caregiver-report anxiety/depression (path b) remained significant ($\beta= -0.41$, $p<.001$), whereas the effect of ACE exposure was no longer significant when secondary control coping was included in the model (path c¹; $\beta= 0.13$, not statistically significant [*ns*]). The total indirect effect of ACE exposure on anxiety/depression through primary control coping (path ab) was significant, $\beta= 0.15$ (standard error [*SE*] = 0.06; 95% CI [0.05, 0.28]).

Discussion

The present study examined coping as a mediator of the association between adverse childhood experiences and symptoms of anxiety/depression in adolescents. Children exposed to

ACEs are at an increased risk for all forms of psychopathology, as well as elevated morbidity and mortality (Normal et al. 2012). Therefore, it is crucial to identify and understand potential buffers to minimize long term consequences of ACE exposure. The current study provides new findings on interplay between early-life maltreatment, coping/emotion regulation strategies, and symptoms of anxiety/depression.

With regard to the first hypothesis, and consistent with previous research (e.g., Gruhn and Compas 2020), greater exposure to ACEs was positively associated with the use of disengagement coping, and negatively associated with the use of primary control coping and secondary control coping. Taken with previous research, these findings suggest that early-life maltreatment may disturb adaptive emotion regulation and coping processes, leading to greater use of avoidance and denial rather than problem solving, acceptance, cognitive reappraisal, etc. Gruhn and Compas 2020 provide a possible explanation for this finding, as they believe the uncontrollability of childhood maltreatment may lead children to believe that all stressors are uncontrollable, thus leading children to avoid stressors or inhibit their emotional responses.

Consistent with the second hypothesis and previous research (e.g., Compas et al. 2017) we found that greater symptoms of anxiety/depression were positively associated with the use of disengagement coping, and negatively associated with the use of primary control coping and secondary control coping. This study provides further evidence of these associations through a multiple informant approach (i.e., parent's report of adolescent symptoms of anxiety/depression). Greater symptoms of caregiver-report anxiety/depression were negatively associated with the use of both primary and secondary control. However, caregiver-report symptoms of anxiety/depression were not significantly associated with the use of disengagement coping.

Support was also found for the third hypothesis. Greater exposure to ACEs was positively associated with symptoms of anxiety/depression. In addition, greater exposure to ACEs was positively associated with caregiver-report symptoms of anxiety/depression. A large body of evidence supports this association of early childhood maltreatment and elevated symptoms of anxiety/depression (e.g., Álvarez et al., 2011; Nanni, Uher, & Danese, 2012; Petruccelli et al. 2019; Scully et al. 2020).

Consistent with the fourth hypothesis, all forms of coping (primary control coping, secondary control coping, and disengagement coping) mediated the relationship between ACEs and symptoms of anxiety/depression. These findings suggest that early life adversity is associated with higher levels of anxiety/depression, because of a compromised ability to use primary control coping strategies (i.e., problem solving, emotional expression) and secondary control coping strategies (i.e., cognitive reappraisal, acceptance), as well a tendency to use disengagement copings strategies (i.e., denial and avoidance).

The current study had several notable strengths. First, we employed standardized and well validated self-report measures of ACE exposure, coping, and symptoms of anxiety/depression. Second, the sample size was large, which allowed for enhanced statistical power, and included adolescents with a wide range of ACE exposure. Third, the use of a multiple informant in our supplementary analyses reduced the chance that shared method variance accounted for significant effects.

We also note several limitations that can be addressed in future research studies. First, the analyses are cross-sectional, so directionality of associations among ACE exposure, coping skills, and symptoms of anxiety/depression cannot be inferred. For example, an adolescent's ability to cope with stress may lead to decreased symptoms of anxiety/depression, while an

adolescent's decreased symptoms of anxiety/depression may also lead to their ability to better cope with stress. A longitudinal design in which ACE exposure is measured initially, then coping is measured at a second point in time, and symptoms of anxiety/depression are measured at a third point, would allow for directionality and temporal precedence to be established. Second, the sample consists of children primarily of ages 10 to 15. As such, the results may not generalize beyond this population. In addition, the sample consists primarily of white children (72.2% white, 15.5% black or African American, 5.2% Asian, 5.2% more than one race, and 2.1% other). A more diverse sample is needed to better understand the relationship between ACE exposure, coping, and symptoms of anxiety-depression, as well as to better generalize the findings. Third, we examined mixed anxiety/depression symptoms. Future research could differentiate these symptoms to identify any unique effects. Lastly, this study does not give insight into the mechanism by which ACEs and coping interact. Two prevailing hypotheses explore this pathway more closely. The first posits that early childhood trauma may affect brain function and development, thereby causing deficits in executive functioning skills (McLaughlin et al. 2020). Without executive functioning skills, individuals may not be able to engage in the complex cognitive processes necessary to cope with stress. Second, children exposed to early childhood trauma may be in home environments where caregivers do not serve as positive models of stress coping. Without these socialized coping and emotion regulation skills, children may be unable to engage in positive coping/emotion regulation strategies.

In summary, the current study provides evidence of coping skills as a potential mediator in the association of ACEs and psychopathology. This study highlights coping as a target for prevention and early intervention efforts. The current findings suggest that all forms of coping are responsible for the ACE-psychopathology relationship, suggesting that it may be important

for interventions to focus separately on teaching each form of coping. In doing so, future interventions may be able to decrease symptoms of anxiety/depression in adolescents exposed to early childhood trauma.

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Table 1
Caregiver and Child Demographic Descriptive Statistics

Variable	<i>n</i>	<i>M</i>	<i>SD</i>
Child Age	97	12.07	2.11
Child Gender	97	1.55	0.52
Caregiver Age	97	42.04	7.01
Caregiver Gender	97	1.90	0.31

Note. For gender, 1= male, 2= female

Table 2

Descriptive Statistics and Correlations for ACE exposure, coping, and symptoms of anxiety/depression

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. ACE Exposure	97	8.95	4.48	—				
2. Primary Control Coping	96	0.18	0.04	-0.24*	—			
3. Secondary Control Coping	96	0.25	0.05	-0.36**	0.23*	—		
4. Disengagement Coping	96	0.16	0.03	0.24*	-0.60**	-0.43**	—	
5. Symptoms of Anxiety/Depression	97	6.44	4.63	0.27**	-0.38**	-0.49**	0.37**	—

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3
Regression Analyses Predicting Symptoms of Anxiety/Depression

	<i>Beta</i>	<i>t</i>	<i>Sig (p)</i>
Step 1.			
Child Age	-0.99	-0.78	0.44
Child Gender	0.38	3.01	0.004
Step 2.			
Child Age	-0.08	-0.74	0.46
Child Gender	0.43	3.79	< 0.001
ACE Exposure	0.43	3.79	< 0.001
Step 3.			
Child Age	-0.10	-0.96	0.34
Child Gender	0.37	3.51	< 0.001
ACE Exposure	0.24	2.08	0.04
Primary Control Coping	-0.11	-0.83	0.41
Secondary Control Coping	-0.42	-3.56	< 0.001
Disengagement Coping	0.03	0.21	0.84
Step 4.			
Child Age	-0.10	-0.93	0.36
Child Gender	0.37	3.48	0.001
ACE Exposure	0.21	0.40	0.69
Primary Control Coping	-0.11	-0.83	0.41
Secondary Control Coping	-0.43	-1.79	0.08
Disengagement Coping	0.03	-0.21	0.86
ACE Exposure x Secondary Control Coping Interaction	0.27	0.06	0.96

Dependent Variable =
Symptoms of
Anxiety/Depression

Figure 1. Direct and indirect associations of ACE Exposure and symptoms of anxiety and depression through secondary control coping without covariates. Standardized path coefficients, with standard errors in parentheses, are given. * $p < .05$. ** $p < .01$. *** $p < .001$.

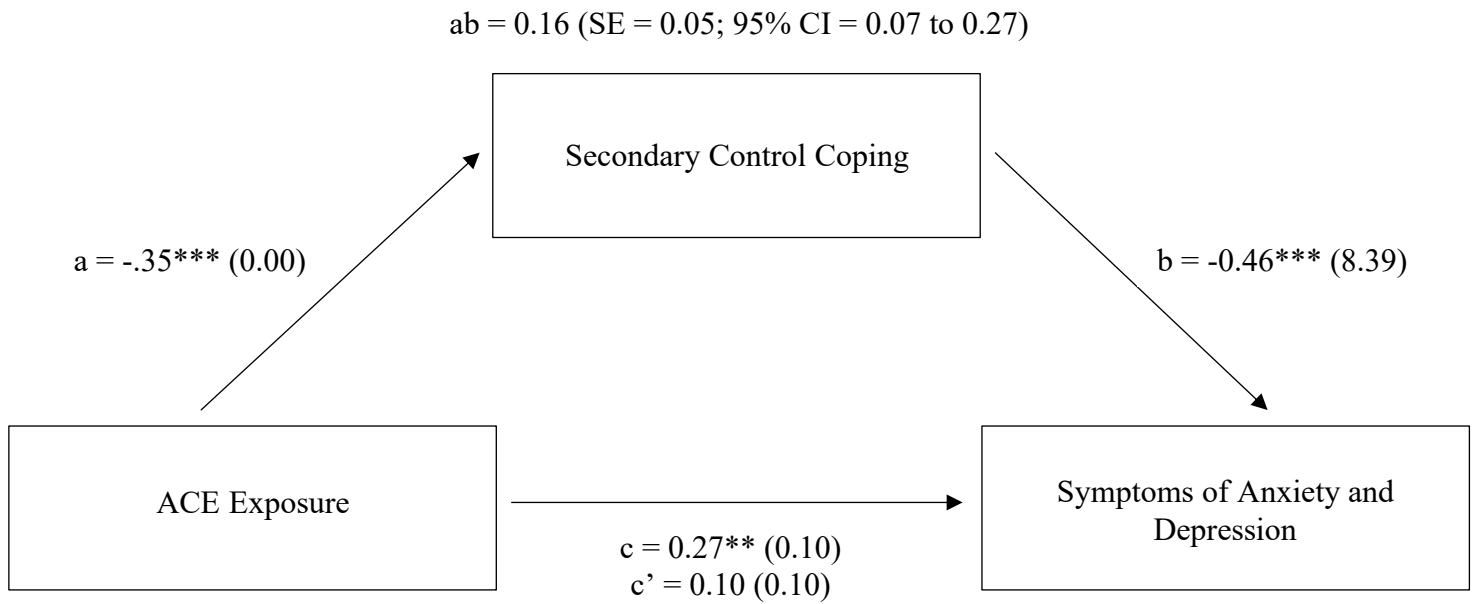


Figure 2. Direct and indirect associations of ACE Exposure and symptoms of anxiety and depression through primary control coping without covariates. Standardized path coefficients, with standard errors in parentheses, are given. * $p < .05$. ** $p < .01$. *** $p < .001$.

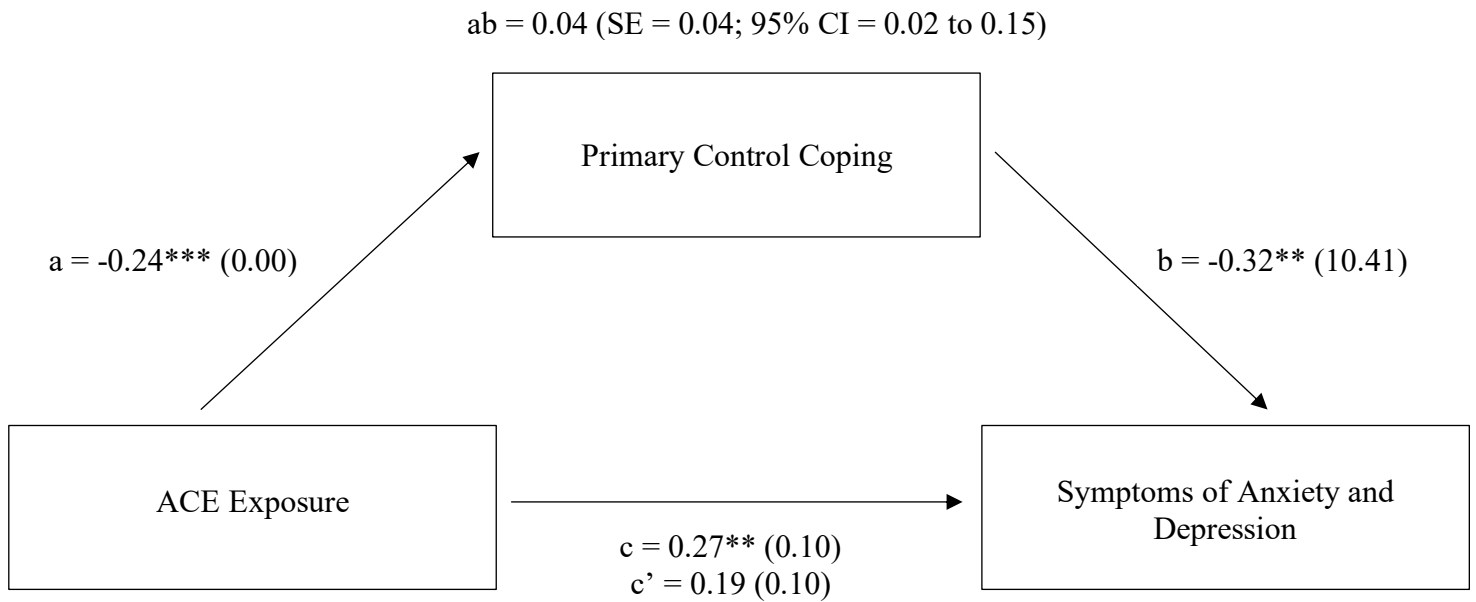
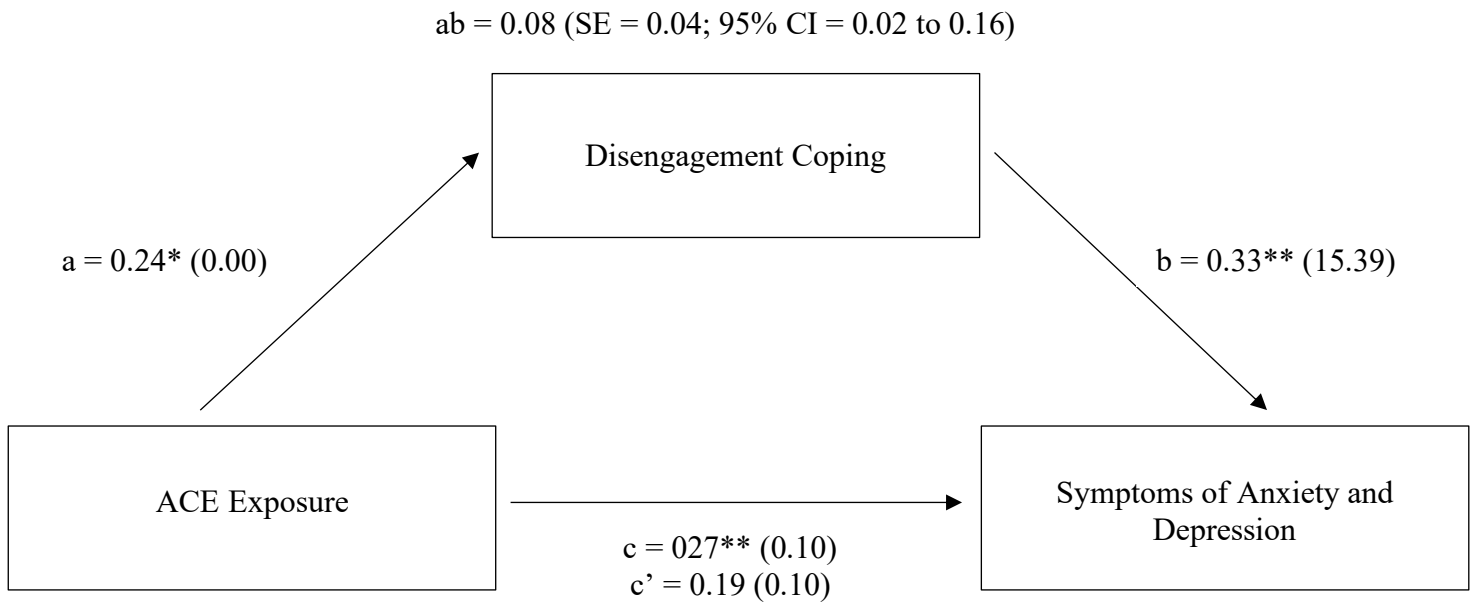


Figure 3. Direct and indirect associations of ACE Exposure and symptoms of anxiety and depression through disengagement coping without covariates. Standardized path coefficients, with standard errors in parentheses, are given. * $p < .05$. ** $p < .01$. *** $p < .001$.



Appendix

Table 4

Descriptive Statistics and Correlations for ACE exposure, coping, and caregiver-report symptoms of anxiety/depression

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. ACE Exposure	97	8.95	4.48	—				
2. Primary Control	96	0.18	0.04	-0.24*	—			
Coping								
3. Secondary Control	96	0.25	0.05	-0.36**	0.23*	—		
Coping								
4. Disengagement	96	0.16	0.03	-0.24*	-0.60**	-0.43**	—	
Coping								
5. Caregiver-Report	97	5.32	4.79	0.26**	-0.25*	-0.47**	0.14	—
Symptoms of								
Anxiety/Depression								

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 5
Regression Analyses Predicting Caregiver-Report Symptoms of Anxiety/Depression

	<i>Beta</i>	<i>t</i>	<i>Sig (p)</i>
Step 1.			
Child Age	0.11	1.06	0.29
Child Gender	0.13	1.26	0.21
Step 2.			
Child Age	0.08	0.79	0.43
Child Gender	0.10	1.03	0.31
ACE Exposure	0.25	2.50	0.01
Step 3.			
Child Age	0.08	0.94	0.35
Child Gender	0.09	1.05	0.30
ACE Exposure	0.13	1.40	0.17
Primary Control Coping	-0.28	-2.51	0.01
Secondary Control Coping	-0.51	-5.22	< 0.001
Disengagement Coping	-0.30	-2.54	0.01
Step 4.			
Child Age	0.09	0.98	0.34
Child Gender	0.10	1.12	0.27
ACE Exposure	0.08	0.67	0.51
Primary Control Coping	-0.28	-2.49	0.02
Secondary Control Coping	-0.54	-5.17	< 0.001
Disengagement Coping	-0.31	-2.58	0.01
ACE Exposure x Secondary Control Coping Interaction	0.08	0.73	0.47

Dependent Variable =
Symptoms of
Anxiety/Depression

Figure 4. Direct and indirect associations of ACE Exposure and caregiver-report symptoms of anxiety and depression through secondary control coping without covariates. Standardized path coefficients, with standard errors in parentheses, are given. * $p < .05$. ** $p < .01$. *** $p < .001$.

