

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Moderating Role of Religiosity in the Relationship between Adverse Childhood Experiences and Post-Traumatic Growth Among Emerging Adults Via Coping

by

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Table of Contents

ACKNOWLEDGMENTS	I
LIST OF TABLES.....	IV
LIST OF FIGURES	V
ABSTRACT.....	VI
CHAPTER 1.....	1
INTRODUCTION.....	1
THE PREVALENCE OF ACES	2
<i>Theoretical Model.....</i>	<i>12</i>
POST-TRAUMATIC GROWTH	3
<i>The Relationship Between ACEs and Post-traumatic Growth.....</i>	<i>4</i>
COPING	6
<i>Coping Mediates the Relationship between ACEs and Post-traumatic Growth.....</i>	<i>7</i>
RELIGIOSITY	9
<i>Intrinsic Religiosity as a Moderator between ACEs and Coping.....</i>	<i>11</i>
PRESENT STUDY.....	13
CHAPTER 2.....	15
METHODS.....	15
PARTICIPANTS	15
MEASURES	15
<i>Demographics.....</i>	<i>15</i>
<i>Adverse Childhood Experiences (ACE).....</i>	<i>16</i>
<i>Coping.....</i>	<i>16</i>
<i>Intrinsic Religiosity.....</i>	<i>17</i>
<i>Post-Traumatic Growth.....</i>	<i>17</i>
PROCEDURE	18
CHAPTER 3.....	20
RESULTS.....	20
POST-TRAUMATIC GROWTH	20
RELIGIOSITY OF PARTICIPANTS	20
RELATIONSHIP BETWEEN VARIABLES.....	21
MEDIATION, MODERATION, AND MODERATED MEDIATION BETWEEN VARIABLES	22
CHAPTER FOUR.....	25
DISCUSSION.....	25
STRENGTHS AND LIMITATIONS.....	31
IMPLICATIONS	33
CONCLUSIONS.....	34

TABLES	35
APPENDIX A	44
RELIGIOSITY RELATED QUESTIONNAIRE	44
APPENDIX B	46
ADVERSE CHILDHOOD EXPERIENCES (ACES) QUESTIONNAIRE	46
APPENDIX C	50
BRIEF COPE	50
APPENDIX D	59
RELIGIOUS ORIENTATION SCALE.....	59
APPENDIX E	65
POST-TRAUMATIC GROWTH INVENTORY	65
REFERENCES	75

List of Tables

Table 1: Descriptive Statistics of Demographic Variables ($N=442$)	35
Table 2: Differences Between the Original Posttraumatic Growth Inventory and PTG COVID-19 scale ($N=442$)	38
Table 3: Frequency Distribution of Religiosity Questions ($N=442$)	39
Table 4: Correlation Matrix Showing a Relationship between Adverse Childhood Experiences and Post-Traumatic Growth ($N=442$)	41
Table 5: The direct effect of the Intrinsic Religiosity Between ACEs and Avoidance Coping	42
Table 6: The direct and Conditional direct effect of Adverse Childhood Experiences on Posttraumatic Growth	43

List of Figures

Figure 1: Model to Explain Mediation Between ACEs and Post-traumatic growth through coping and moderating role of Religiosity among ACEs and Coping..... 12

Abstract

Adverse childhood experiences (ACEs) pose significant health concerns in today's society, encompassing various forms of physical and emotional abuse, neglect, and dysfunctional household experiences during childhood (Beutel et al., 2017). Previous research has shown that childhood adversities are associated with negative outcomes, including severe physical and emotional distress. However, the literature suggests that some individuals may experience post-traumatic growth, leading to improved relationships, self-perception, and overall outlook on life (Kashdan et al., 2011). This study aimed to investigate the relationship between ACEs, coping strategies (approach and avoidance coping), intrinsic religiosity, and post-traumatic growth in a sample of 442 emerging adults residing in the United States who had experienced at least one form of childhood adversity. Participants completed online self-report measures via MTurk. Correlation analysis revealed that individuals with higher ACEs reported higher levels of both approach and avoidance coping, but no significant correlation was found with intrinsic religiosity. Hierarchical regression analyses indicated a marginal curvilinear relationship between ACEs and post-traumatic growth. Both approach coping and avoidance coping significantly mediated the relationship between ACEs and post-traumatic growth. Although intrinsic religiosity was considered as a moderator of this relationship, it was not significant for approach coping and only marginally significant for avoidance coping with the mediation relationship strongest for those exhibiting low levels of intrinsic religiosity. This study highlights the complex interplay between the variables under investigation. Implications and recommendations for future studies to deepen our understanding of these relationships are considered.

Keywords: Adverse Childhood Experiences, Post-traumatic Growth, Approach Coping, Avoidance Coping, and Intrinsic Religiosity

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Chapter 1

Introduction

Adverse childhood experiences (ACEs) are one of the significant health concerns of current times in both developed and developing countries. ACEs encompass various forms of physical and emotional abuse, including neglect and dysfunctional household experiences in childhood. They can greatly impact an individual's functioning, emotional well-being, and personality (Beutel et al., 2017). ACEs include a variety of experiences, from parental conflicts to abuse (physical, emotional, and psychological) and multiple biological, psychological, social, and environmental factors that make an individual more vulnerable to experiencing trauma in their early life (Reiser et al., 2014). Adversities in childhood increase the risk for multiple health conditions and mortality in adulthood (Whitaker et al., 2014). However, many people exposed to traumatic experiences do not develop traumatic symptoms; in fact, several report post-traumatic growth in the aftermath of traumatic exposure (Kashdan et al., 2011). The focus of the present study will be to examine how experiencing ACEs relates to how an individual responds and rebuilds after a life-changing or threatening event (Kashdan et al., 2011).

The term post-traumatic growth refers to the positive psychological and behavioral change in an individual, pushing an individual to a higher level of functioning than before. This growth involves suffering and growth at once (Malhotra & Chebiban, 2016). Post-traumatic growth is not the only term to describe this process. Some of the interchangeable labels used to denote post-traumatic growth are adversarial growth, benefit-finding, flourishing, heightened existential awareness, perceived benefits, positive by-products, positive changes, positive meaning, post-traumatic growth, quantum change, self-renewal,

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

stress-related growth, thriving, and transformational coping (Joseph & Linley, 2006). Post-traumatic growth can have a long-term impact on the appreciation of life, greater personal strength, better relations with others, and a more integrated outlook toward life (Akbar & Witruk, 2016). Literature related to post-traumatic growth repeatedly indicates that those life circumstances which are highly disturbing to the individual are seen to be associated with more growth if the person has an optimistic approach toward life (Malhotra & Chebiyan, 2016).

This study aims to clarify underlying concepts related to ACEs and their relation to post-traumatic growth. It will further explore the role of religion and coping in the relationship between childhood trauma and post-traumatic growth in adulthood. Expanding our knowledge of these relationships will help to improve public health across the lifespan.

The Prevalence and Impact of ACEs

Felitti and colleagues' study in 1998 is one of the most influential studies related to ACEs. More than 17,000 adults participated. Almost two-thirds (64%) of the surveyed population had a history of at least one form of adversity during their childhood. Similar results were reported in an extensive study of five states (Arkansas, Louisiana, Mexico, Tennessee, and Washington). Among the 26,229 participants, 59% reported at least one ACE (Bynum et al., 2011). According to the Centers for Disease Control and Prevention (CDC), more than 60% of adults report experiencing at least one ACE during childhood, and nearly 1 in 6 adults report experiencing four or more ACEs (Gervin et al., 2022). In 2011–12, the National Survey of Children's Health (NSCH) assessed ACE exposure in children 0 – 17 years of age using a nationally representative sample (95,677 children: approximately 1800 per state). Almost half (48%) reported experiencing one ACE, and 22.6% reported experiencing two or more ACEs (Bethell et al., 2014). Based on this and other studies, it is estimated that over half of U.S. adults have experienced one or more ACEs.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Research consistently indicates that Adverse Childhood Experiences (ACEs) increase the likelihood of negative outcomes. ACEs are associated with various physical and mental health problems, such as chronic diseases including heart disease, obesity, and diabetes (Felitti et al., 1998; Anda et al., 2006). Additionally, individuals who have experienced ACEs face an elevated risk of mental health issues such as depression, anxiety, post-traumatic stress disorder (PTSD), and substance abuse (Chapman et al., 2004; Felitti et al., 1998). ACEs also contribute to social and behavioral challenges, leading to risky behaviors like smoking, alcohol or drug abuse, early sexual activity, and involvement in criminal activities (Dube et al., 2001; Anda et al., 1999). Furthermore, ACEs can negatively affect educational attainment and occupational outcomes, resulting in academic difficulties, decreased school engagement, and higher dropout rates (Anda et al., 2006; Fergusson et al., 1997). In terms of interpersonal relationships, individuals who have experienced ACEs may encounter difficulties with forming and maintaining healthy connections, including struggles with intimacy, trust, and communication (Whitfield et al., 2003). Lastly, ACEs are strongly linked to an increased risk of substance abuse, as individuals may resort to substance use as a coping mechanism (Dube et al., 2003; Anda et al., 1999). While the impact of ACEs can vary, everyone who experiences ACEs is not supposed to develop negative outcomes. Multiple studies indicate that early identification, prevention, and appropriate interventions are vital in fostering resilience and mitigating the long-term effects of ACEs (Anda et al., 2006).

Post-traumatic Growth

While ACEs increase risk for negative outcomes, they do not guarantee them. Some individuals who experience ACEs fail to experience negative outcomes. In fact, some go on to experience positive outcomes. At this time, it is not entirely clear what differentiates these groups. One possible variable is post-traumatic growth. According to Tedeschi and Calhoun (1996), post-traumatic growth is a positive adjustment after any adversity in life that has a

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

long-lasting impact. Its manifestation generally includes a greater appreciation of life, more refined priorities in life, recognition of personal capabilities, a greater sense of purpose in life, and more spiritual growth.

Post-traumatic growth has three broad domains: better relationships, a better view of oneself, and a better view of overall life (Joseph et al., 2012). The first domain is better relations, in which an individual experiences more compassion for others and desires more intimate relationships. Second, people who experience more post-traumatic growth report positive changes within themselves, such as greater wisdom, strength, and acceptance of their weaknesses and capabilities. Third, post-traumatic growth is related to a better outlook on life. For example, they try to find meaning in everything happening in life and try to appreciate everything (Joseph et al., 2012). Many studies related to post-traumatic growth indicate that resilience is one of the components of personality which helps in attaining growth after adversity (Schaefer et al., 2018), thus, the literature review following touches on studies regarding resilience, in addition to post-traumatic growth.

The Relationship Between ACEs and Post-traumatic Growth

A study conducted by Park and Fenster (2004) focused on stress and growth after traumatic experiences. The study involved a sample of 94 college students who had experienced trauma. The students were asked about their personal growth in terms of cognitive processing, coping, and growth in two phases (six months apart). The results of this study suggested that though trauma survivors often experience negative outcomes, trauma can also promote new coping skills through enhanced personal and social resources in an individual. Sometimes trauma acts as a springboard for post-traumatic growth (Park & Fenster, 2004). Further, with post-traumatic growth the emphasis is on the prospect of growth resulting from the struggle an individual goes through after being exposed to adversity rather than the adversity itself, which means that the process of this growth might vary from one

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

person to another and depends on the personality of an individual and meaning given to that adverse experience (Malhotra & Chebiyan, 2016). While not the only explanation, adverse experiences may promote growth through the development of effective coping mechanisms for managing stress in the future.

There are multiple mechanisms that people may use to cope with the adversities in their lives, and people have different ways of reacting to different types of stressful events (Upenieks, 2021). Although a large body of research has considered specific biological mechanisms through which the effects of ACEs might relate to psychological and physical distress, the psychological and behavioral components related to the effects of ACEs on post-traumatic growth are largely still unexplored.

Why do some individuals grow from traumatic experiences and others experience negative outcomes? One factor that appears to play a role involves the intensity of the adversity experienced (Joseph et al., 2012). In a study conducted by Butler and colleagues (2005) on the victims of the attack of September 2001, it was found that the intensity of traumatic experience and post-traumatic growth are parallel to each other, but only up to a certain point; after exceeding that limit, growth becomes static and then begins to decline because it is difficult for an individual to cope with the extreme intensity of the experience (Butler et al., 2005). In short, when adversities exceed the capacity for reasonable coping growth is unlikely to occur following a trauma. In contrast, when the adversity can be coped with effectively growth may be more likely to occur. If this is the case, then one's potential to grow from an adverse experience is likely to occur as a function of the intensity of the experience (which is external to the individual) and their capacity for coping (which is internal to the individual).

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Coping

Coping has been defined by Lazarus (1966) as a process to overcome psychological distress (Kapsou et al., 2010). Over time, it has been seen to have critical importance related to physical and psychological health (Kapsou et al., 2010). Coping is a multidimensional construct, and according to the literature, there is no universally accepted definition of coping because different people cope in different ways. But for the sake of this study, two general coping styles will be the focus: problem-focused coping (approach coping) and emotion-focused coping (avoidant coping). Problem-focused coping is a type of coping in which people actively respond to stressful conditions and try to manage and alter difficult situations through multiple approaches like positive reframing, planning, seeking emotional support, and acceptance (Kapsou et al., 2010). Emotion-focused coping is a type of coping in which people manage situations through their emotions resulting from stressful conditions like denying reality, self-blaming, distancing, and self-controlling (Kapsou et al., 2010).

Research conducted by Eisenberg and colleagues (2011) with 273 patients with heart failure reported increased anxiety and poorer physical functioning for patients who frequently used emotion-focused coping strategies (Eisenberg et al., 2011). Further, it has been noted that emotion-focused coping is negatively associated with overall health, especially for those who suffer from medical complaints. In contrast, problem-focused coping positively relates to overall health, so it is considered more adaptive in nature (Eisenberg et al., 2011). A coping strategy can be considered adaptive when it results in the attainment of desired goals, and at that time, it might lead to higher levels of subjective well-being (Kapsou et al., 2010).

Coping styles are believed to be semi-stable cognitions or strategies which help individuals overcome or tolerate external stressors, especially during exposure to traumatic experiences. Adaptive forms of coping may promote post-traumatic growth following a trauma (Bussell & Naus, 2010). Active coping styles tend to take direct and rational methods

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

to solve different obstacles in life, and in contrast, passive coping leads people into activities (such as drug use) or mental states (such as withdrawal), which avert them from directly addressing stressful events (Chen et al., 2018).

Coping Mediates the Relationship between ACEs and Post-traumatic Growth

Research indicates that early traumatic experiences are associated with less frequent use of problem-focused (approach) coping and more avoidant-focused (avoidance) coping. Since maltreated children tend to perceive their environment as more threatening and unpredictable and feel they have little control, they are less likely to view problem-focused coping strategies as viable (Sheffler et al., 2019). A longitudinal study was conducted in which data were collected in three waves from the Midlife Development in the United States (MIDUS) survey. This study explored associations between ACEs, health outcomes, and coping. Additionally, it examined if associations between ACEs and health outcomes were mediated by the style of coping. ACEs were associated with greater emotion-focused coping (avoidance) and health problems. They were inversely associated with problem-focused (approach) coping. Further, as expected, coping style mediated associations between ACEs and health. The use of problem-focused coping weakened the association (i.e., led to fewer health issues) which implies that coping is one of the important components for developing an intervention plan for ACEs (Sheffler et al., 2019). This study established that adaptive coping may mitigate the negative impacts of ACEs but did not specifically examine if adaptive coping promotes growth.

Can adaptive coping actually promote growth following adverse experiences? A meta-analytic study by Rajandram and colleagues (2011) explored this question. These authors proposed a model suggesting that positive coping styles play an important role in the relationship between stressors and post-traumatic growth among cancer survivors. This model shows that problem-focused coping increases post-traumatic growth through active

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

coping, positive attentional bias, and positive reframing cognitions. They suggest that growth in certain individuals is due to coping being employed adaptively to manage the situation which then allows for the individual to develop a more positive revised worldview (Rajandram et al., 2011). This meta-analytic study supported the notion that problem-focused coping leads to more hope and positive growth among cancer survivors.

Many studies focusing on coping and post-traumatic growth are cross-sectional. For example, a cross-sectional study was conducted by Qu and colleagues in 2022 in which 595 Chinese peacekeepers were completing the United Nations (UN) peacekeeping mission in South Sudan and returning to China. For the purpose of this study, they filled out the Traumatic Stress Exposure Scale, Posttraumatic Growth Inventory, Simplified Coping Style Questionnaire, and the Chinese version of Connor and Davidson's Resilience Scale. Problem-focused (approach) coping was directly related to positive coping because of its long-term impact on the overall health of an individual, while emotion-focused (avoidance) coping helps just in relieving immediate stress thus, it acts as a suppressing effect in the path between traumatic events and post-traumatic growth (Qu et al., 2022).

A challenge with cross-section studies is that coping and post-traumatic growth may be confounded. However, some longitudinal studies also exist that suggest that post-traumatic growth is an outcome of adaptive coping. For example, longitudinal research was conducted by Scignaro and colleagues (2011) with a group of 41 cancer patients who were currently receiving treatment. Data for this study was collected using questionnaires at two different points (Time 1 and Time 2), which were 6 months apart. Approach or action coping was highly related to post-traumatic growth at Time 2.

Studies related to stress and trauma indicate that people who cope through reliance on personal and psychological strengths can better deal with traumatic experiences, which can lead to better post-traumatic growth with greater levels of well-being over time (Kashdan et

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

al., 2011). Although ACEs are related to later distress, many individuals exposed to adversity in their early life become competent and well-adjusted adults later in life (Beutel et al., 2017). Those who exhibit resilience have more persistence, a positive approach toward life, active problem-solving, and growth (Beutel et al., 2017). In line with other findings, those individuals who have a positive approach to life report less depression, anxiety, and somatic symptoms than vulnerable participants. Coping behavior is seen to impact the development of growth after trauma exposure because it helps an individual to manage the demands of stressful circumstances (Akbar & Witruk, 2016). A cross-sectional study was conducted in which the relationship between gender and post-traumatic growth was examined through coping. As a mediating variable, coping is considered a transactional process between traumatic experiences, the individual themselves, and the context in which that individual reacted. Action-based coping in particular is seen to have a better long-term impact than emotion-based coping and can handle stressful situations easily (Akbar & Witruk, 2016). Further, there is a significant relationship between acceptance coping, positive reinterpretation, and perceived growth, and problem-focused coping, positive reappraisal, and acceptance are positively related to growth (Akbar & Witruk, 2016). In short, individuals who are resilient are more likely to employ active and adaptive forms of coping, and this has been shown to at least partially mitigate the negative impacts associated with ACEs (Kashdan et al., 2011). While several factors are known to promote resilience, one important factor is religiosity (Le et al., 2021).

Religiosity

There are multiple aspects of religiosity, and it is a highly complex construct to define. Religiosity pertains to an individual's level of engagement, commitment, and involvement in religious beliefs, practices, and institutions. It encompasses multiple dimensions, including religious beliefs, behaviors, rituals, and personal experiences (Hill &

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Paragament, 2008). While definitions for religiosity tend to emphasize involvement with a religious community and engagement in religious activities, the impacts of religiosity may differ as a function of individuals' intentions. Thus, not all religious engagement is the same.

Allport and Ross (1967) differentiated between intrinsic and extrinsic religiosity (Power & McKinney, 2014). "Intrinsically religious individuals are those individuals who tend to live their daily lives the way that their religion dictates and have a more relationship-centered religion" (Power & McKinney, 2014, p. 1530). In other words, they try to follow the mandates of their religion based more on personal choice rather than because they feel obliged. These individuals do not live their religious lives to please others or gain status but instead do it for their personal growth and to fulfill their relationship with their higher power or creator (Power & McKinney, 2014). On the other hand, "extrinsically religious individuals are those who tend to use religion as a tool to gain personal profit and popularity or for them religion is a means to some external end" (Power & McKinney, 2014, p. 1530). For example, extrinsically motivated individuals are those individuals who use religion for personal gain and may use religion as a source to make friends and connect with others; in contrast, intrinsically motivated individuals get peace and comfort (Power & McKinney, 2014). Higher intrinsic religiosity is related to lower amounts of psychopathology, and higher extrinsic religiosity is related to a higher level of psychopathology (Power & McKinney, 2014). For the sake of this study, the focus will be on the effects of intrinsic religiosity on coping styles among people who have experienced ACEs. Spirituality is thought to be related to intrinsic religiosity as both offer meaning and purpose in difficult times. Both intrinsic religiosity and spirituality have been linked to psychological integration, creating an optimistic view by increasing acceptance of hard times and giving more control (Koenig, 2009).

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Intrinsic Religiosity as a Moderator between ACEs and Coping

The relationship between religiosity and coping is a complex one. At times, engagement in religious activity and/or with one's religious community may serve as a form of coping in and of itself. For example, in a nationally representative survey on stress reactions after the September 2001 terrorist attack, 90% of participants reported that they adjusted to adversity by turning to their religion (Schuster et al., 2001). Similarly, a recent meta-analytic study by Yanez and colleagues looked at cancer patients and intrinsic religiosity. It showed that many cancer patients find comfort through engaging in intrinsic religiosity by gaining peace or meaning in life, which leads to positive psychological outcomes by achieving hope, enhanced quality, and purpose in life (Yanez et al., 2009). Such studies indicate that religion can be a helpful medium to bounce back in times of adversity.

Further, religion may help individuals deal with different forms of adversity because it provides an opportunity for an individual spiritually connected to their religion to release psychological discomfort (Upenieks, 2021). In other words, engagement with religious groups may promote forms of coping that are adaptive. Those who practice their religion as a source of meaning or problem-solving have improved physical and mental health with better coping (Upenieks, 2021). Le and colleagues conducted a quantitative cross-sectional study on 413 middle-aged Vietnamese-born American Catholics participants, where correlational analysis indicated that physical and mental health problems are negatively related to spirituality, religious involvement, and post-traumatic growth. These findings support the notion that religiosity and resilience are important resources for managing psychological distress and enhancing life satisfaction for those who score higher on spirituality and have more religious involvement (Le et al., 2021). Religion provides an optimistic approach to individuals who go through trauma by providing positive cognitive, personal, and social resources (Jung., 2018).

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

A cross-sectional study by Harris and Colleagues on post-conventional spiritual growth and traumatic experiences among 327 adults revealed that those individuals who experience adversity in their early life tend to report more post-conventional spiritual growth, spiritual struggle, and faith development. This relationship was found to be multi-dimensional, meaning that specific types of spiritual distress experienced in response to trauma are related to an individual's ability to use those experiences as a springboard for further personal and spiritual growth (Harris et al., 2015). However, the authors note that some types of spiritual struggles are associated with positive outcomes, and others are associated with more negative outcomes. Individuals who were highly religious or spiritual (intrinsically religious) tended to view their lives as a part of a divine master plan. Generally, they tend to let go of things that hurt them by reframing their early adversities as positive opportunities for religious and spiritual growth (Harris et al., 2015).

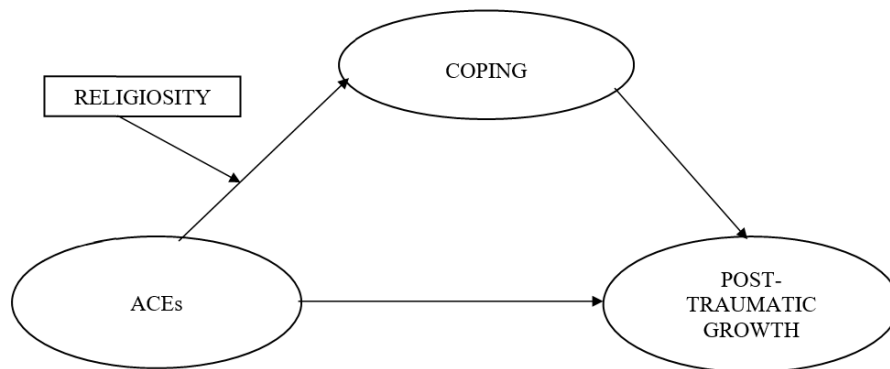
Theoretical Model

The primary purpose of this study is to explore the relationship between ACEs, post-traumatic growth, coping, and religiosity. It is hypothesized that the frequency of ACEs will be related to higher post-traumatic growth, and this relation is mediated by coping. The relationship between ACEs and coping is predicted to be moderated by religiosity, particularly intrinsic religiosity, such that the negative relationship between ACEs and coping will be reduced for those with higher intrinsic religiosity. Further, greater problem-focused (approach) and less emotion-focused (avoidance) coping will be related to greater post-traumatic growth. This predicted relationship is shown in Figure 1 below:

Figure 1

Model to Explain Mediation Between ACEs and Post-traumatic growth through coping and moderating role of Religiosity among ACEs and Coping

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

**Present Study**

Adverse Childhood Experiences (ACEs) are prevalent occurrences that increase the risk of negative outcomes. However, the impact of ACEs varies among individuals, necessitating further research to identify factors that explain why some are adversely affected while others show resilience and growth. One potential influential factor is adaptive coping, as individuals who employ adaptive coping strategies demonstrate lower vulnerability to negative outcomes. In this regard, religiosity has been proposed as a promoter of adaptive coping strategies. Therefore, investigating the interplay between religiosity, ACEs, and coping can provide valuable insights into understanding resilience and identifying potential protective factors. Multiple studies have demonstrated the relationship between ACEs, coping, and post-traumatic growth. This study will add to the literature in terms of exploring potential mechanisms related to the relationship between ACEs and post-traumatic growth by considering the role of coping style as a mediator (problem-focused and emotion-focused) as well as the role of intrinsic religiosity as a potential moderator of these relationships. Examining these relationships can shed light on the differential impact of ACEs and the factors that contribute to positive outcomes in the face of adversity. The hypotheses for this study are:

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- 1- Greater ACEs will be related to increased post-traumatic growth, but at the highest level of trauma, post-traumatic growth starts to decrease, representing a curvilinear relation between ACEs and Post-traumatic growth.
- 2- Greater ACEs will be related to decreased approach coping and increased avoidance coping.
- 3- Decreased approach coping and increased avoidance coping will be related to less post-traumatic growth.
- 4- The relationship between ACEs and Post-traumatic growth will be mediated by coping such that more ACEs are related to less approach and more avoidant coping, which will relate to less post-traumatic growth.
- 5- Intrinsic religiosity will moderate the relationship between ACEs and coping, such that intrinsic religiosity will reduce the negative impact of ACEs for those high in religiosity.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Chapter 2**Methods****Participants**

There were 3,546 participants who completed the initial screening questions. Of these, 2,897 cases were ineligible (i.e., did not meet study criteria for inclusion). Of the 659 eligible participants, 16 were deleted due to missing attention checks and taking significantly less time than average. An analysis was run to assess multivariate outliers, resulting in four additional cases to be deleted, leaving the final sample of 629 participants. Of these, only 442 completed the key dependent variable (see analysis related to the Post Traumatic Growth in Results).

Participants ranged in age from 18 years old to 25 years old ($M= 22.7$; $SD= 1.80$); Most were born in the U.S. ($n = 427$; 96.6%). There were more males ($n = 225$; 50.9%) than females ($n = 212$; 48.0%). In terms of sexual orientation, over three-quarters identified themselves as straight or heterosexual ($n = 321$; 72.6%). About three-quarters of the participants were either never married ($n = 150$; 33.9%) or were currently in a relationship ($n = 144$; 32.6%). Most were currently employed ($n = 389$; 88.0%) with about three quarters ($n = 298$; 88.0%) working full time. In terms of race and ethnicity, the majority were Whites ($n = 334$; 75.6%). Over half of the participant's parents had some sort of high school or college degree ($n = 347$; 78.5%). For further details refer to Table 1.

Measures***Demographics***

The demographic questionnaire assessed age, gender, marital status, sexual orientation, employment status, ethnicity, and parental education. Next, all participants were

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

asked to answer questions related to religiosity through four commonly used items (Strawbridge et al., 1998). Participants reported their religious affiliation and then the importance of their religion to them on a 5-point Likert scale ranging from 1 (*Not at All Important*) to 5 (*Extremely Important*). Further, they were asked to rate how often they engage in worship or attend religious activities, how often they engage with their religious scripture, and how often they engage in praying on a 7-point Likert scale ranging from 1 (*Never*) to 7 (*Daily*).

Adverse Childhood Experiences (ACE)

The Adverse Childhood Experiences (ACE) Scale is a 10-item scale that was utilized to measure the intensity and type of childhood trauma (Blodgett et al., 2018), it was adapted from Felitti and colleagues (1998) original ACEs survey. In this measure, five items are related to experiencing trauma directly (physical abuse, verbal abuse, sexual abuse, physical neglect, and emotional neglect) with the remaining five items focused on trauma related to family members (a parent who's an alcoholic, a mother who's a victim of domestic violence, a family member in jail, a family member diagnosed with a mental illness, and the disappearance of a parent through divorce, death, or abandonment). The ACE questionnaire is frequently used in the retrospective assessment of adverse childhood experiences (Folayan et al., 2020). Participants responded to each item with a "yes" or "no," and a cumulative score of "yes" answer resulted in the client's ACEs score. A higher score indicates more ACEs. Cronbach's alpha in the present study was .82.

Coping

Coping among participants was assessed through the Brief COPE (Carver, 1997), a shortened version of the original COPE (Carver et al., 1989). It consisted of four subscales (Approach Coping, Avoidant Coping, Altering Consciousness, and Seeking Support) with 9 items in approach coping, 9 items in avoidant coping, 5 items in altering consciousness, and 5

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

items in seeking support subscales, so a total of 28 items in the whole scale. For the sake of this study, only subscales of approach and avoidant coping were used. The responses on the Brief COPE were rated on four points Likert scale, which ranged from 1 (*I haven't been doing this at all*) to 4 (*I've been doing this a lot*). Based on previous factor analysis by Grosso and colleagues (2014), Cronbach alphas were 0.83 and 0.73 for approach and avoidant coping factors. Cronbach's alpha in the present study was .83 for approach coping and .82 for avoidance coping.

Intrinsic Religiosity

Religiosity was measured by the Religious Orientation Scale-Revised ROS-R (Gorsuch & McPherson, 1989), a 14-item Likert self-report scale designed to measure religious orientations in an individual. It is a revised version of the Religious Orientation Scale (Allport and Ross 1967) where there are two subscales of this measure: intrinsic and extrinsic religiosity. Extrinsic religiosity is defined as following religious practice for personal gain, which is thought to promote comfort and social support, whereas intrinsic religiosity is defined as being an ultimate source of peace and meaning in life (Darvyri et al., 2014). The focus of the present study was on intrinsic religiosity with each of the six items scored on a 5-point Likert scale from *strongly disagree* to *strongly agree*. Alpha in past research was (0.83) (Gorsuch & McPherson, 1989). Cronbach's alpha for intrinsic religiosity in the present study was .93.

Post-Traumatic Growth

Post-Traumatic growth among participants was assessed through the 21-Item Post-Traumatic Growth Inventory, which was initially developed by Tedeschi and Calhoun (1996). It includes five major dimensions: relating to others (seven items), new possibilities (five items), personal strength (four items), spiritual change (two items), and appreciation of life

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

(three items) (Qu et al., 2022). These items use a 6-point Likert scale with response options ranging from 1 (*not at all*) to 7 (*to a very great degree*).

Given the focus of the original PTG scale on adversity experienced in childhood, a modified version was created for those who had not experienced any childhood adversity. Those individuals completed the post-traumatic growth scale in response to COVID-19. The lead in question that was used to give a background before answering the actual questionnaire was, “While growing up, everyone has difficult experiences. When you think about your childhood, how would you describe the most difficult experiences you had?” And the responses options were 1 (*mildly challenging, what most kids experience*), 2 (*moderately challenging, somewhat more difficult than most kids experience*), 3 (*severely challenging, quite a bit more difficult than most kids experience*), and 4 (*traumatic, significantly more difficult than most kids experience*). Those who selected mildly challenging were directed to post-traumatic growth in response to COVID-19 while the rest were directed to the original post-traumatic growth scale in response to adversity in their childhood. In previous studies, Cronbach's alpha of the Post-Traumatic Inventory was 0.90 (Tedeschi & Calhoun, 1996). Cronbach's alpha for the post-traumatic growth scale after childhood adversity was 0.93 while Cronbach's alpha for the post-traumatic growth scale in response to COVID-19 was 0.96. Overall, Cronbach's alpha for the post-traumatic growth scale in the present study was 0.93.

Procedure

Initially, approval was sought from the University of Michigan IRB and then the study participants were recruited online. The questionnaire started with eligibility questions which included questions like were the participants were born and raised in the U.S. or when they moved to the U.S., then a demographic questionnaire was administered to assess age, gender, ethnicity, education, parent's education, and sexual orientation. All measures used in this

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

study were self-reported, and then participants were asked to complete a one-time online questionnaire in English. To maintain the high quality of data duplicate IP addresses and suspicious accounts were blocked. In addition, there were three attention checks to monitor repeated or biased responses by the participants. Eligible participants were directed to the consent form, which gave a brief description of the study along with participant expectations, estimated time to complete the survey, potential benefits, associated risks of the study, compensation, the voluntary nature of the study, confidentiality of data collected, future use of the collected data and contact information for any future references.

Along with the questionnaires, a few questions regarding age, gender, ethnicity, religious affiliation, marital status, and educational status were asked as part of the demographics. After this, they were asked to answer a few questions regarding adverse childhood experiences in their childhood followed by a few questions regarding intrinsic religiosity, coping, and growth after the exposure to adversity. While asking about post-traumatic growth a new version of the PTG scale was used which started with a lead-on question. At the end of the survey, everyone received a completion code. Participants who satisfactorily completed the survey were given a compensation of \$3.00. The participants took approximately 30 minutes to complete the study.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Chapter 3

Results

Statistical analysis was conducted in IBM SPSS Statistics 28. Prior to running any data analysis, it was scrutinized for normalcy. The data was cleaned and checked for any missing items, outliers, and inconsistencies. For cases in which there were missing scale items, an average score was calculated by using the total scores for answered items divided by the number of answered items. Multivariate outliers were tested through regression analysis and four cases were removed.

Post-traumatic Growth

There were 442 participants who completed the original Posttraumatic Inventory and 187 participants who completed the Posttraumatic Inventory thinking about COVID-19. At this point, analyses were conducted to examine whether it would be appropriate to combine these two groups for the purpose of the analyses which follow. A series of independent sample *t*-tests were done with the two versions of the Posttraumatic Inventory as the independent variable and adverse childhood experiences, intrinsic religiosity, approach coping, and avoidant coping as dependent variables. The results of these analyses indicated that the two groups differed significantly on all four of the key dependent variables in the study.

Therefore, the remainder of the analyses will focus only on 442 participants who responded to the original post-traumatic Inventory thinking about their growth following adversity in childhood. For further details refer to Table 2.

Religiosity of Participants

Descriptive analyses were run on the four items regarding general religiosity. There was a large range of religiosity among the study participants. For the item that assessed the

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

overall importance of religion, the average response was slightly less than the midpoint of the scale ($M= 2.83$; $SD= 1.48$). However, a substantial amount of people reported that religion is not at all important (28.70%) with fewer reporting that religion is extremely important (19.00%). Similarly, the average response for attending religious activities ($M= 2.84$; $SD= 1.79$), engaging in private prayer ($M= 4.71$; $SD= 2.22$), and engaging in private scripture reading ($M= 3.00$; $SD=2.04$) suggests that the average participant only occasionally engages in these religious activities. Again, there was considerable diversity in responding with many people reporting that they never engage in any of these activities and others reporting much more frequent participation (see Table 3).

Relationship between Variables

Correlational analyses assessed relationships between the variables (see Table 4). As hypothesized, people who experience greater childhood adversity reported more approach coping and post-traumatic growth. Avoidance coping was also moderately correlated to greater ACEs. Contradictory to predictions, adverse childhood experiences were not related to intrinsic religiosity. Further, intrinsic religiosity was positively related to higher levels of approach coping and avoidance coping, as well as more post-traumatic growth. Approach and avoidance coping were positively correlated with each other. Approach coping was strongly related to greater post-traumatic growth, but contrary to our prediction avoidance coping was also positively related to post-traumatic growth.

A hierarchical regression analysis was conducted to test the hypothesis regarding the curvilinear relationship between ACEs and posttraumatic growth. An adverse childhood experiences variable squared was created and then hierarchical regression was run to predict post-traumatic growth where adverse childhood experiences was entered on the first step and adverse childhood experiences variable squared was entered on the second step. There was a marginal effect on the second step suggesting a curvilinear relationship between ACEs and

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

post-traumatic growth. Thus, as ACEs increase, post-traumatic growth increases but only up to a certain point. At higher levels of adverse childhood experiences, post-traumatic growth tends to decrease.

Mediation, Moderation, and Moderated Mediation between Variables

To test our hypothesis that approach coping mediates the relationship between adverse childhood experiences and post-traumatic growth we used the PROCESS macro in SPSS (Hayes 2017, Model 4) with adverse childhood experiences as the independent variable, approach coping as a mediator, and post-traumatic growth as the dependent variable. This analysis revealed that the path from adverse childhood experiences to approach coping was significant ($\beta = .21$, $SE = .06$, $p = <.001$), and the path from approach coping to post-traumatic growth was also significant ($\beta = 1.11$, $SE = .08$, $p = <.001$). The direct path from adverse childhood experiences to post-traumatic growth was non-significant ($\beta = .03$, $SE = .08$, $p = .735$). Bootstrapping with 5,000 samples revealed that the mediation model was significant, ($\beta = .23$, $SE = .07$) with a 95% confidence interval (CI) excluding zero [.106, .360]. As hypothesized individuals who experienced more adversities in their childhood reported more approach coping which is related to having higher levels of post-traumatic growth.

To examine the mediating role of avoidance coping on the relationship between adverse childhood experiences and post-traumatic growth, a simple mediation analysis was conducted using the PROCESS macro in SPSS (Hayes 2012, Model 4) with adverse childhood experiences as the independent variable, avoidance coping as a mediator, and post-traumatic growth as the dependent variable. This analysis revealed that the path from adverse childhood experiences to avoidance coping was significant ($\beta = .29$, $SE = .06$, $p = <.001$), and the path from avoidance coping to post-traumatic growth was also significant ($\beta = .34$, $SE =$

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

.09, $p = <.001$). But the direct path from adverse childhood experiences to post-traumatic was non-significant ($\beta = .16$, $SE = .11$, $p = .122$). Bootstrapping with 5,000 samples revealed that the mediation model was significant, ($\beta = .09$, $SE = .03$) with a 95% confidence interval (CI) excluding zero [.039, .172]. Contrary to predictions, individuals who experienced more adversities in their childhood tended to use more avoidance coping and this is related to greater post-traumatic growth.

To examine the moderating effect of intrinsic religiosity on the relationship between adverse childhood experiences and approach coping, the PROCESS macro model 1 was used in SPSS (Hayes, 2017). Intrinsic religiosity did not have a significant effect on the approach coping ($\beta = -.02$, $SE = .11$, $p = .857$). Nor did intrinsic religiosity moderate the relationship between ACEs and approach coping ($\beta = .08$, $SE = .06$, $p = .158$).

A similar analysis was conducted to consider the moderating effect of intrinsic religiosity on the relationship between adverse childhood experiences and avoidance coping. Intrinsic religiosity was found to be positively related to avoidance coping ($\beta = .32$, $SE = .11$, $p = .005$). Further, intrinsic religiosity was a marginal moderator of the relationship between ACEs and avoidance coping ($\beta = -.11$, $SE = .06$, $p = .058$) such that at lower levels of intrinsic religiosity, higher ACEs relates to higher avoidance coping while the relationship between ACEs and avoidance coping, while still significant, is weaker at higher levels of intrinsic religiosity. See Table 5 for further details.

Next to check the estimated direct and indirect effects of adverse childhood experiences on post-traumatic growth through approach and avoidance coping as moderated by intrinsic religiosity two separate moderated mediation analyses were conducted using the PROCESS macro model 7 in SPSS (Hayes, 2012). Contradictory to predictions, although approach coping mediates the relationship between ACEs and PTG, the results of the

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

moderated mediation analysis were not significant based on the index of moderated mediation ($\beta = .09$, $SE = .07$, LLCI = $-.051$, ULCI = $.225$). Thus, there was not any evidence for moderated mediation for approach coping.

Results for avoidance coping were marginal and are examined here in greater detail. As described above avoidance coping mediates the relationship between ACES and PTG, and intrinsic religiosity marginally moderates the relationship between ACES and avoidance coping. Although the index of moderated mediation ($\beta = -.04$, $SE = .02$, LLCI = $-.091$, ULCI = $.001$) was not statistically significant, it was very close. As seen in Table 6 the direct effect of ACES on PTG is not significant. There is evidence that avoidance coping mediates the relationship between ACES and PTG conditional on the level of intrinsic religiosity such that there is a stronger mediation effect at lower levels of intrinsic religiosity.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Chapter Four

Discussion

The present study aimed to examine the relationships between adverse childhood experiences (ACEs), coping strategies (approach and avoidance coping), intrinsic religiosity, and post-traumatic growth (PTG). The results revealed several interesting findings that contribute to our understanding of the complex dynamics between these variables. Consistent with our hypotheses, a positive correlation was found between ACEs and approach coping as well as post-traumatic growth. This suggests that individuals who experienced greater childhood adversity were more likely to employ approach coping strategies and exhibit higher levels of post-traumatic growth. These findings align with previous research that has demonstrated the resilience and personal growth individuals may experience in the face of adversity (Tedeschi & Calhoun, 2004). The positive relationship between approach coping and post-traumatic growth further supports the notion that proactive coping efforts can lead to positive psychological outcomes following traumatic events (Carver et al., 2010).

Avoidance coping was also moderately correlated with ACEs. This finding suggests that individuals who experienced higher levels of childhood adversity were engaged in avoidance coping strategies. Avoidance coping involves efforts to escape or avoid stressors rather than directly confronting and resolving them. Avoidance coping has traditionally been viewed as maladaptive and detrimental to psychological well-being (Compas et al., 2001). A study by De Venter et al. (2019) examined the connection between Adverse Childhood Experiences (ACEs) and coping strategies in adolescents. They found that adolescents with ACEs were more inclined to use avoidant coping methods, such as emotional avoidance,

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

denial, and distraction, compared to those without ACEs. The researchers speculated that the adoption of avoidant coping strategies among these adolescents may stem from the emotional burden and overwhelming nature of their past adversities. By avoiding or suppressing their emotions, they could temporarily alleviate the immediate distress associated with their ACEs. The link between ACEs and avoidant coping may be attributed to the emotional burden and overwhelming nature of these childhood adversities, which may lead individuals to adopt avoidance as a means of self-protection and emotional regulation. Another concept that can be used to understand this phenomenon would be Seligman's "learned helplessness" model. The concept of learned helplessness posits that when individuals are exposed to uncontrollable and distressing events, they perceive themselves as powerless and unable to influence future situations (Maier & Seligman, 1976). These events are often unpredictable and inescapable, leading individuals to attribute negative outcomes to internal, stable, and global factors. Consequently, a cognitive and motivational pattern of helplessness emerges, impacting their coping strategies and resulting in reduced motivation, persistence, and problem-solving abilities (Seligman et al., 1980). This state of learned helplessness is associated with lower levels of well-being, increased vulnerability to mental health issues, and impaired functioning in various areas of life. But it is crucial to recognize that protective factors and individual differences, such as social support and resilience, can moderate the effects of learned helplessness. Ongoing research explores the applicability of this model in specific contexts, including Adverse Childhood Experiences (ACEs) and coping mechanisms. However, it is important to note that in this study avoidance coping was positively related to post-traumatic growth, indicating that it may serve as a coping mechanism for individuals to navigate and make meaning of their traumatic experiences. Some of the possible explanations for this relationship would be first, individuals who have experienced childhood adversity may have learned to rely on avoidant coping strategies as a means of self-preservation and

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

protection (Fergus & Zimmerman, 2005). These strategies may have been adaptive in their early environment but can become maladaptive in adulthood. Second, the psychological and emotional impact of adverse childhood experiences may make it challenging for individuals to directly confront and cope with stressors, leading them to turn to avoidant strategies as a means of temporary relief. Third, it might be possible that sometimes acceptance and optimism in the face of adversity can act as a cognitive process that is necessary for rebuilding the shattered world of a survivor (Linley & Joseph, 2004). But future research should explore the underlying mechanisms that explain the relationship between ACEs, avoidance coping, and post-traumatic growth in detail.

Recent research suggests that religiosity can play a beneficial role in coping with challenging situations by providing individuals with interpretive frameworks and meaning (Pargament, 1997). Religious practices, rituals, and the support of a religious community can offer comfort during times of stress (Park, 2005). Several studies have found that individuals who exhibit higher levels of religiosity tend to employ positive coping strategies, including seeking social support, participating in religious activities, and utilizing religious techniques such as prayer and meditation. Religious coping can facilitate emotional regulation, instill a sense of control or surrender to a higher power, foster hope, and provide a sense of purpose in the face of adversity (Park, 2005). It is important to note, however, that the relationship between religiosity and coping is multifaceted and inconsistent across studies. Because many people can be religious for many reasons, but we do not know if there is any direct impact of ACEs. For example, many religions in general discourage maladaptive coping like alcohol consumption or taking drugs but we cannot say there is any direct association between decreased risk for maladaptive coping and religiosity. Further, not all individuals may experience the same benefits, and certain forms of religious coping, such as passive religious deferral or spiritual bypassing, may have limitations depending on the circumstances.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

However, it is important to note that the moderating effect of intrinsic religiosity on the relationship between ACEs and avoidance coping was marginally significant but there was not any association for the approach coping and this association can be driven by other confounding variables.

The results of the mediation analyses indicated that both approach coping and avoidance coping mediated the relationship between ACEs and PTG. Individuals who experienced more childhood adversities were more likely to employ both approach and avoidance coping strategies, which, in turn, were associated with higher levels of post-traumatic growth. These findings highlight the potential dual role of coping strategies in the post-traumatic growth process. Approach coping may facilitate active engagement with the traumatic experience and its aftermath, leading to personal transformation and growth, while avoidance coping may provide individuals with temporary relief and help them process their experiences in a more controlled manner (Calhoun & Tedeschi, 2004).

Lastly, the analysis examining the conditional indirect effects of ACEs on PTG through approach coping as moderated by intrinsic religiosity did not yield significant results. However, the analysis examining the conditional indirect effects of ACEs on PTG through avoidance coping as moderated by intrinsic religiosity revealed a marginal effect. This suggests that the relationship between ACEs and PTG through avoidance coping is stronger at lower levels of intrinsic religiosity. This suggests that avoidance coping plays a mediating role in the relationship between adverse childhood experiences and post-traumatic growth, especially among individuals who exhibit lower levels of intrinsic religiosity. Adverse childhood experiences encompass various forms of early life stressors, such as abuse, neglect, or household dysfunction, while post-traumatic growth refers to positive psychological changes that involve positive psychological changes, such as increased personal strength, a greater appreciation for life, enhanced relationships, and a sense of new possibilities, that can

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

occur following traumatic experiences. The mediation model suggests that individuals who have experienced adverse childhood experiences may be more likely to engage in avoidance coping strategies to manage the emotional and psychological impact of trauma. In the context of adverse childhood experiences, this study highlights the complex interplay between all study variables and suggests that avoidance coping may serve as a protective mechanism to alleviate distress. It is important to note that this relationship holds true regardless of an individual's level of religiosity. Religiosity, which encompasses religious beliefs, practices, and involvement, has been considered a potential factor influencing coping strategies in the face of adversity. Religious beliefs and practices can provide individuals with a sense of meaning, social support, and guidance, which may contribute to their coping abilities and post-traumatic growth (Park, 2013). Previous research has suggested that individuals with higher levels of religiosity may draw on their faith as a source of support and guidance during challenging times (Pargament, 2010). However, the current study's findings suggest that even among individuals with varying degrees of religiosity, the relationship between adverse childhood experiences and avoidant coping remains significant. These results suggest that individuals who have experienced ACEs may be more prone to employing avoidant coping strategies as a means of managing the emotional and psychological impact of their past traumas (Davis et al., 1998). The link between ACEs and avoidant coping may be attributed to the emotional burden and overwhelming nature of these childhood adversities, which may lead individuals to adopt avoidance as a means of self-protection and emotional regulation. Despite employing avoidant coping strategies, individuals with ACEs can still experience post-traumatic growth, which suggests their capacity for resilience and personal development (Xu et al., 2016). The process of post-traumatic growth may be facilitated by various factors such as cognitive reappraisal, social support, psychological flexibility, and the ability to find meaning and purpose in life (Leonidou et al., 2019). It is important to note that post-traumatic

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

growth is a complex and multifaceted phenomenon that can occur alongside avoidant coping, indicating the potential for psychological resilience and transformation in the face of adversity.

The notion that adverse childhood experiences (ACEs) can act as a catalyst for post-traumatic growth, even among individuals who employ avoidant coping strategies, is supported by previous research. Studies have shown that individuals who have experienced ACEs often face significant challenges and are more likely to engage in avoidant coping strategies as a means of managing the overwhelming emotions and distress associated with their past traumas (Bonnano et al., 2004). However, despite the use of avoidant coping, research has demonstrated that individuals with ACEs can still experience post-traumatic growth. For example, studies on survivors of childhood sexual abuse have found that even among those who initially employ avoidant coping mechanisms, a significant number report experiencing positive changes such as increased self-esteem, greater appreciation for life, and enhanced personal relationships (Frazier et al., 2009). One possible explanation for this phenomenon is that avoidant coping strategies serve as a temporary mechanism for emotional regulation and protection. They allow individuals to regulate their emotions and create a psychological distance from the traumatic experiences, which may be necessary for initial coping (Linley & Joseph, 2004). However, over time, individuals may begin to engage in more adaptive coping strategies, such as cognitive reappraisal and seeking social support, which facilitates the process of post-traumatic growth (Tedeschi & Calhoun, 2004).

Additionally, the experience of adversity in childhood can create a context for personal transformation and growth. The challenges faced during childhood can lead individuals to develop unique strengths and abilities, such as resilience, empathy, and a greater appreciation for life's complexities (Tedeschi & Calhoun, 1996). These personal

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

resources, along with the gradual shift from avoidant coping to more adaptive coping strategies, may contribute to the emergence of post-traumatic growth.

In summary, previous literature supports the notion that adverse childhood experiences can serve as a catalyst for post-traumatic growth, even among individuals who initially employ avoidant coping strategies. The experience of trauma can create a context for personal transformation, and individuals may gradually transition to more adaptive coping mechanisms over time. These findings highlight the potential for positive psychological changes and resilience in the face of childhood adversity. However, further research is needed to deepen our understanding of the intricate relationships between adverse childhood experiences, intrinsic religiosity, avoidance coping, and post-traumatic growth. Exploring the underlying mechanisms and identifying additional factors that may influence this process can contribute to the development of more effective interventions that promote resilience and positive psychological outcomes among individuals who have experienced early life trauma.

Strengths and limitations

The primary strength of this study was the comprehensive examination of the study variables allowing for an examination of the complex dynamics between adverse childhood experiences (ACEs), coping strategies (approach and avoidance coping), intrinsic religiosity, and post-traumatic growth (PTG). Further, the findings of the study align with previous research on resilience and personal growth following adversity showing that adversity can lead to personal growth as an adult. Another novel finding which was a strength of this study was that it uncovers an unexpected finding that there is a positive correlation between avoidance coping and post-traumatic growth challenging the traditional view of avoidance coping as maladaptive in the long run, suggesting that it may serve as a coping mechanism for individuals to navigate and make meaning of their traumatic experiences and it suggests

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

that any form of coping is better than none. This novel finding adds complexity to our understanding of coping strategies in the context of childhood adversity.

In terms of limitations of this study, there were several. First, the cross-sectional design limits the ability to establish causal relationships between the variables. Longitudinal studies are better suited to examine the temporal sequences and directionality of the relationship between the study variables. Second, the study relies on self-reported measures, which could be impacted by potential biases such as social desirability, and recall, but multiple sources of data like open-ended questions to gather more in-depth data along with study measures would have enhanced the validity of the findings. Third, the study sample may not be fully representative of the broader population due to the limited sample size and participants were from only U.S so we cannot generalize the study findings and caution should be exercised when applying these findings to other populations because every population has their own cultural and socio-economical differences. Fourth, in terms of demographics, a majority of the participants were either married or in a relationship which could be a confounding variable. Fifth, coping and religiosity both are very diverse and complex constructs. In terms of coping future studies should explore more about thought patterns and emotion regulation processes leading to coping in the longer run. In terms of religiosity, the focus of this study was on intrinsic religiosity, but future studies should consider the role of extrinsic religiosity and the potential role of religious participation as coping. Lastly, the study does not account for potential confounding variables or underlying mechanisms (psychological processes or contextual factors) that may influence the relationship between studied variables. Factors such as social support, personality traits, educational status of the participant, parenting styles, or other stressors could impact the associations observed in the study. Future studies should control for these variables to enhance the validity and reliability of the findings.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Implications

Like many good studies, this study raises more questions than it answers. Some of the practical implications for this study could be that future studies should focus more on the variable which can lead an individual to develop unique strengths and abilities to face a challenging situation in their lives and how some people show positive change even after being exposed to adversity. Further, it calls for future studies to identify different mechanisms through which individuals regulate their emotions and create a psychological distance from traumatic experiences. It might be possible that these individuals may foster some sense of agency or mental schema that helps them to regulate their emotions. Therefore, future studies should examine changes in emotions, cognitions, and behavior among individuals that lead to an enhanced capacity for resilience and personal development among those who have experienced ACEs.

Additionally, this study opens an avenue for future researchers to examine how exposure to adversity in early childhood can be influenced by various factors such as cognitive reappraisal, social support, psychological flexibility, and the ability to find purpose or meaning in life. These factors can act as protective factors. By uncovering some of the unanswered questions, this study reinforces existing knowledge and encourages future studies to contribute to the understanding of how individuals navigate and cope with childhood adversity. This understanding can inform future research and interventions in trauma and resilience, leading to improved comprehensive support systems and trauma-informed care for those who need trauma support.

Future studies should employ longitudinal designs to establish causal relationships between ACEs, coping strategies, intrinsic religiosity, and post-traumatic growth. These studies should also consider multiple cultural and contextual factors.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Conclusions

In conclusion, this study explored the relationships between adverse childhood experiences (ACEs), coping strategies (approach and avoidance coping), intrinsic religiosity, and post-traumatic growth (PTG). The findings suggest that individuals who have experienced childhood adversity are more likely to employ both approach and avoidance coping strategies. Surprisingly, avoidance coping was also positively related to post-traumatic growth, challenging the traditional view of its maladaptive nature. Although no significant relationship was found between ACEs and intrinsic religiosity, the moderating effect of intrinsic religiosity on the relationship between ACEs and avoidance coping was marginally significant. The study highlights the need for more evidence-based studies to develop empirical support to develop interventions that address religious and spiritual needs while providing alternative coping strategies. Future research should explore longitudinal designs, underlying mechanisms, and cultural factors to enhance our understanding of these relationships. Overall, the study contributes to our knowledge of the impact of ACEs on coping and post-traumatic growth, emphasizing the potential for resilience and personal development in the face of childhood adversity.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Tables

Table 1Descriptive Statistics of Demographic Variables (*N* =442)

Sample Characteristics	Categories	F	%
Gender	Males	225	50.9%
	Females	212	48.0%
	Prefer to self-Identify	5	1.1%
Born in U. S	Yes	427	96.6%
	No	15	3.4%
Marital Status	Married	137	30.1%
	Divorced	1	0.2%
	Separated	9	2.0%
	In a Relationship	144	32.7%
	Never Married	150	34.0%
Sexual Orientation	Straight or Heterosexual	321	72.6%
	Gay	11	2.5%
	Lesbian	10	2.3%
	Bisexual	83	18.8%
	Pansexual	10	2.3%
	Asexual	6	1.4%

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

	Prefer to Self-identify	1	0.2%
<hr/>			
Employment Status	Yes	389	88.0%
	No	53	12.0%
<hr/>			
Type of Employment	Full Time	298	67.4%
	Part Time	91	20.6%
<hr/>			
Race/ Ethnicity	White	334	75.6%
	African American	67	15.2%
	American Indian or Alaska Native	7	1.6%
	Asian	28	6.3%
	Native Hawaiian or Pacific Islander	2	0.5%
	Arab or Middle Eastern	7	1.6%
	Hispanic	37	8.4%
	Prefer to Self-Identify	4	0.9%
	<hr/>		
Parental Education	High school graduate	83	18.8%
	Some College	74	16.7%
	2-years College Degree	46	10.4%
	4-years College Degree	144	32.6%
	Master's Degree	79	17.9%

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Doctoral Degree	7	1.6%
Professional Degree	9	2.0%

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Table 2

Differences Between the Original Posttraumatic Growth Inventory and PTG COVID-19 scale
($N = 442$)

Variables	PTG Original		PTG COVID		t (627)	p	Cohen's <i>d</i>
	<i>n</i> =442		<i>n</i> =187				
	M	SD	M	SD			
ACEs	1.77	.48	1.26	.37	-12.75	.001	-.93
Intri Religiosity	2.37	.91	2.17	.96	-2.46	.007	-.04
App Coping	2.66	.58	2.42	.70	-4.55	.001	-.23
Avo Coping	2.19	.59	1.66	.54	-10.3	.001	-.72

Note * $p < 0.05$ ** $p < 0.01$; ACEs- Adverse Childhood Experiences; Intri Religiosity- Intrinsic Religiosity; App Coping- Approach Coping; Avo Coping- Avoidance Coping

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Table 3Frequency Distribution of Religiosity Questions (*N* =442)

Sample Characteristics		N	%
Importance of Religion	Not at All Important	127	28.7%
	A Little Important	64	14.5%
	Somewhat Important	90	20.4%
	Quite Important	77	17.4%
	Extremely Important	84	19.0%
Attendance At Religious Center	Never	146	33.0%
	Less than Once a Month	96	21.7%
	Once a Month	42	9.5%
	2-3 Times a Month	44	10.0%
	Once a Week	78	17.6%
	2-3 Times a Week	25	5.7%
	Daily	11	2.5%
Engagement in Private Prayer	Never	112	25.3%
	Less than Once a Month	56	12.7%
	Once a Month	51	11.5%
	2-3 Times a Month	53	12.0%
	Once a Week	47	10.6%
	2-3 Times a Week	43	9.7%
	Daily	79	17.9%

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Private Script Reading	Never	161	36.4%
	Less than Once a Month	70	15.8%
	Once a Month	43	9.7%
	2-3 Times a Month	48	10.9%
	Once a Week	40	9.0%
	2-3 Times a Week	51	11.5%
	Daily	28	6.3%

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Table 4Correlation Matrix Showing a Relationship between Study Variables ($N=442$)

	Variables	M	SD	1	2	3	4	5
1	ACEs	1.78	0.48	-				
2	Int Rel	2.37	0.91	.01	-			
3	App Cop	2.66	0.57	.18**	.21**	-		
4	Avo Cop	2.19	0.59	.24**	.18**	.21**	-	
5	PTG	3.52	1.06	.12*	.41**	.61**	.21**	-

Note. * $p < 0.05$ ** $p < 0.01$; ACEs- Adverse Childhood Experiences; Int Reli- Intrinsic

Religiosity; App Cop-Approach Coping; Avo Cop- Avoidance Coping; PTG- Post-Traumatic

Growth

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Table 5

The direct effect of the Intrinsic Religiosity Between ACEs and Avoidance Coping

Avg IR	Effect	SE	t	LLCI	ULCI
1.1250	.44	.09	4.66***	.253	.623
1.6250	.27	.06	4.58***	.152	.379
3.2500	.19	.08	2.52*	.042	.345

Note. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$; Avg IR- Average Intrinsic religiosity; ACEs- Adverse Childhood Experiences; LLCI- The lower bound within the 95% confidence interval; ULCI- The upper bound within the 95% confidence interval.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Table 6

The direct and Conditional direct effect of Adverse Childhood Experiences on Posttraumatic Growth

Avg IR	Effect	SE	t	p	LLCI	ULCI
442	.16	.11	1.55	.123	-.044	.370
1.1250	.15	.05			.058	.254
1.6250	.09	.03			.033	.159
3.2500	.06	.03			.008	.138

Note. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$; Avg IR- Average Intrinsic religiosity; LLCI- The lower bound within the 95% confidence interval; ULCI- The upper bound within the 95% confidence interval.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Appendix A**Religiosity Related Questionnaire**

1. How important is religion to you?

Not at All Important (1)

A Little Important (2)

Somewhat Important (3)

Quite Important (4)

Extremely Important (5)

2. How often do you attend church, mosque, temple, or other religious activities?

Never (1)

Less than Once a Month (2)

Once a Month (3)

2-3 Times a Month (4)

2-4 Once a Week (5)

2-5 2-3 Times a Week (6)

2-6 Daily (7)

3. How often do you engage in private prayer?

Never (2)

Less than Once a Month (3)

Once a Month (4)

2-3 Times a Month (5)

2-4 Once a Week (6)

2-5 2-3 Times a Week (7)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

2-6 Daily (8)

4. How often do you engage in private scripture reading?

Never (1)

Less than Once a Month (2)

Once a Month (3)

2-3 Times a Month (4)

2-4 Once a week (5)

2-5 2-3 Times a week (6)

2-6 Daily (7)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Appendix B**Adverse Childhood Experiences (ACES) Questionnaire**

ACE1 While you were growing up, during your first 18 years of life:

Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?

- Never (1)
- Once (2)
- More than once (3)

ACE2 While you were growing up, during your first 18 years of life:

Did a parent or other adult in the household often push, grab, slap, or throw something at you? or ever hit you so hard that you had marks or were injured?

- Never (1)
- Once (2)
- More than once (3)

ACE3 While you were growing up, during your first 18 years of life:

Did an adult or person at least 5 years older than you ever touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you?

- Never (1)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Once (2)

More than once (3)

ACE4 While you were growing up, during your first 18 years of life:

Did you often or very often feel that no one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?

Never (1)

Once (2)

More than once (3)

ACE5 While you were growing up, during your first 18 years of life:

Did you often or very often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

Never (1)

Once (2)

More than once (3)

ACE6 While you were growing up, during your first 18 years of life:

Were your parents ever separated or divorced?

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- Never (1)
- Once (2)
- More than once (3)

ACE7 While you were growing up, during your first 18 years of life:

Was your mother or stepmother often pushed, grabbed, slapped, or had something thrown at her? or sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit at least a few minutes or threatened with a gun or knife?

- Never (1)
- Once (2)
- More than once (3)

ACE8 While you were growing up, during your first 18 years of life:

Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

- Never (1)
- Once (2)
- More than once (3)

ACE9 While you were growing up, during your first 18 years of life:

Was a household member depressed or mentally ill, or did a household member attempt suicide?

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- Never (1)
- Once (2)
- More than once (3)

ACE10 While you were growing up, during your first 18 years of life:

Did a household member go to prison?

- Never (1)
- Once (2)
- More than once (3)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Appendix C**Brief COPE**

The following questions ask how you have sought to cope with hardship in your life. Read the statements and indicate how much you have been using each coping style.

BC1 I've been turning to work or other activities to take my mind off things.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC2 I've been concentrating my efforts on doing something about the situation I'm in.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC3 I've been saying to myself "this isn't real."

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

I've been doing this a lot (4)

BC4 I've been using alcohol or other drugs to make myself feel better.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

I've been doing this a medium amount (3)

I've been doing this a lot (4)

BC5 I've been getting emotional support from others.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

I've been doing this a medium amount (3)

I've been doing this a lot (4)

BC6 I've been giving up trying to deal with it.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

I've been doing this a medium amount (3)

I've been doing this a lot (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

BC7 I've been taking action to try to make the situation better.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC8 I've been refusing to believe that it has happened.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC9 I've been saying things to let my unpleasant feelings escape.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC10 I've been getting help and advice from other people.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC11 I've been using alcohol or other drugs to help me get through it.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC12 I've been trying to see it in a different light, to make it seem more positive.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC13 I've been criticizing myself.

- I haven't been doing this at all (1)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC14 I've been trying to come up with a strategy about what to do.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC15 I've been getting comfort and understanding from someone.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC16 I've been giving up the attempt to cope.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

I've been doing this a medium amount (3)

I've been doing this a lot (4)

BC17 I've been looking for something good in what is happening.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

I've been doing this a medium amount (3)

I've been doing this a lot (4)

BC18 I've been making jokes about it.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

I've been doing this a medium amount (3)

I've been doing this a lot (4)

BC19 I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.

I haven't been doing this at all (1)

I've been doing this a little bit (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC20 I've been accepting the reality of the fact that it has happened.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC21 I've been expressing my negative feelings.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC22 I've been trying to find comfort in my religion or spiritual beliefs.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I've been doing this a lot (4)

BC23 I've been trying to get advice or help from other people about what to do.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC24 I've been learning to live with it.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC25 I've been thinking hard about what steps to take.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

BC26 I've been blaming myself for things that happened.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC27 I've been praying or meditating.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

BC28 I've been making fun of the situation.

- I haven't been doing this at all (1)
- I've been doing this a little bit (2)
- I've been doing this a medium amount (3)
- I've been doing this a lot (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Appendix D**Religious Orientation Scale**

Please indicate the extent to which you agree or disagree with each item below by using the following rating scale.

ROS1 I enjoy reading about my religion.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS2 I go to church because it helps me to make friends.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS3 It doesn't much matter what I believe so long as I am good.

- Strongly Disagree (1)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS4 It is important to me to spend time in private thought and prayer.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS5 I have often had a strong sense of God's presence.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

ROS6 I pray mainly to gain relief and protection.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS7 I try hard to live all my life according to my religious beliefs.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS8 What religion offers me most is comfort in times of trouble and sorrow.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Strongly Agree (5)

ROS9 Prayer is for peace and happiness.

Strongly Disagree (1)

Disagree (2)

Neither Agree nor Disagree (3)

Agree (4)

Strongly Agree (5)

ROS10 Although I am religious, I don't let it affect my daily life.

Strongly Disagree (1)

Disagree (2)

Neither Agree nor Disagree (3)

Agree (4)

Strongly Agree (5)

ROS10 Although I am religious, I don't let it affect my daily life.

Strongly Disagree (1)

Disagree (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS11 I go to church mostly to spend time with my friends.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS12 My whole approach to life is based on my religion.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS13 I go to church mainly because I enjoy seeing people I know there.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

ROS14 Although I believe in my religion, many other things are more important in life.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Disagree (5)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

Appendix E**Post-Traumatic Growth Inventory**

PTG1 I changed my priorities about what is important in life.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (6)
- I experienced this change to a very great degree as a result of my crisis (7)

PTG2 I have a greater appreciation for the value of my own life.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG3 I have developed new interests.

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG4 I have a greater feeling of self-reliance.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG5 I have a better understanding of spiritual matters.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG6 I more clearly see that I can count on people in times of trouble.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG7 I established a new path for my life.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a great degree as a result of my crisis (7)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG8 I have a greater sense of closeness with others.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG9 I am more willing to express my emotions.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

PTG10 I know that I can handle difficulties.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG11 I can do better things with my life.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG12 I am better able to accept the way things work out.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG13 I can better appreciate each day.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG14 New opportunities are available which wouldn't have been otherwise.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG15 I have more compassion for others.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG16 I put more effort into my relationships.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

PTG17 I am more likely to try to change things that need changing.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG18 I have stronger religious faith.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG19 I discovered that I'm stronger than I thought I was.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG20 I learned a great deal about how wonderful people are.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)
- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

PTG21 I better accept needing others.

- I did not experience this as a result of my crisis (1)
- I experienced this change to a very small degree as a result of my crisis (2)
- I experienced this change to a small degree as a result of my crisis (3)
- I experienced this change to a moderate degree as a result of my crisis (4)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

- I experienced this change to a great degree as a result of my crisis (5)
- I experienced this change to a very great degree as a result of my crisis (6)

ADVERSE CHILDHOOD EXPERIENCES AND POST-TRAUMATIC GROWTH

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