

## Research Article

# Overcoming the Odds: The Relationship Between Childhood Adversity, Lifetime Trauma, and Resiliency in Empathy and Conscientiousness

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**Abstract:** The connection between trauma and the development of resiliency is not well understood or agreed upon, especially when examining the link between that relationship and other characteristics defined by adaptability, such as empathy and conscientiousness. In two studies, the relationship between each concept was examined in healthy adults. Study one examined recollected childhood adversity's correlation with total resiliency and empathy. Study two examined recollected childhood adversity and overall lifetime trauma's correlation with resiliency, empathy, and their subconstructs (i.e., intrapersonal and interpersonal resiliency, and cognitive and affective empathy) and compared those to conscientiousness scores. Study one's findings supported positive relationships between recollected childhood adversity, total resiliency, and empathy. Study two's findings showed that cumulative trauma scores were positively associated with interpersonal resiliency and affective empathy. Further, interpersonal resiliency was negatively correlated with conscientiousness, while intrapersonal resiliency was positively correlated with conscientiousness.

**Keywords:** adversity, conscientiousness, empathy, personality, resiliency, trauma

## 1. Introduction

### 1.1 Overview

Childhood adversity and overall lifetime trauma are experiences people encounter that are thought to be linked with the way one develops traits and characteristics. Studies also suggest that experiencing adversity in childhood increases the likelihood of trauma in adulthood (Zlotnick et al., 2008). There is currently a debate in the literature if resiliency is strengthened in healthy adults after exposure to childhood adversity and overall lifetime trauma (Folke et al., 2010; Masten et al., 1990). To better understand how adversity and trauma are linked to resiliency, recollected childhood adversity and total resiliency were initially examined in study one, and overall lifetime trauma and resiliency subconstructs, interpersonal resiliency and intrapersonal resiliency were added in study two. These subconstructs of resiliency provide a better understanding of whether internal or external resiliency factors are linked to trauma and how they correlate with other characteristics.

Additionally, empathy and conscientiousness, both tie into the ability to adapt to the surrounding environment, which is also used to define an individual's resiliency (Folke et al., 2010). Specifically, empathy is the ability to effectively adapt and respond to another individual's emotions (Leontopoulou, 2010). Total empathy was the point of interest in study one due to the close tie to adaptability. Empathy was broken into cognitive and affective empathy

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subconstructs for study two in conjunction with total empathy scores to understand better empathy mechanisms used when adversity and trauma are present. Cognitive empathy helps individuals understand and perceive the emotions of others (Gladstein, 1983), while affective empathy elicits emotions within the perceiver (Davis, 1983; Davis et al., 1994). Finally, conscientiousness was added to study two because it relies on adapting to changing environments to achieve goals and success (Arora & Rangnekar, 2016). Conscientiousness scores were also compared to total resiliency and resiliency subconstruct scores. Overall, it is important to understand the relationship between adversity and trauma, resiliency (intrapersonal and interpersonal), empathy (cognitive and affective), and conscientiousness because each variable relies on adaptability.

## 1.2 Resiliency

Although factors on the development of resiliency have been studied in past literature, especially regarding societal factors and childhood upbringing, the link between trauma and resilience is not clear (Harms, 2015; Miller-Karas, 2015). For example, the authors of *The Link Between Childhood Trauma and Mental Illness* explain that two-thirds of patients in psychiatric settings have a history of childhood adversity and abuse. The book goes on to list factors that could decrease the chance of mental illness occurring from trauma, including resiliency. They defined resiliency as “the notion that some individuals can withstand greater levels of psychological or physiological assault than others can” (Everett & Gallop, 2001, pp. 25-26). Although this perspective supports the protective effect resiliency has against trauma-related mental illnesses due to a person’s adaptability in a traumatic event, the initial study did not examine the effect trauma had on resiliency directly. Further, the idea that adaptability is essential for resilience is supported by an individual’s ability to handle environmental changes and internal processes associated with trauma to continue through their daily life (Folke et al., 2010). Resiliency and adaptability require practice, which traumatic experiences may provide. Masten et al. (1990, p. 425) found three measurements for resiliency outcomes after trauma occurred: “good outcomes for high-risk children, sustained competence in children under stress, and recovery from trauma.” It was found that children in chronic adversity can recover better and quicker when they have a stable and competent support system through the trauma. Two separate studies also examined lower-class, minority families to further support this and found that adverse societal factors (i.e., poverty, racial tension, parental status) are tied to higher resiliency levels in parents, which result in similar high resiliency levels and better outcomes from trauma in their children due to their upbringing (Bershad & Ross, 2019; Brodsky & DeVet, 2000). It appears children in high-stress environments learn coping skills and protective strategies from their parents. This may indicate if their support system is resilient, then they are more likely to be resilient also. In some instances, adverse childhood experiences (ACEs) are used to examine how early trauma is associated with resilience. ACEs are defined by common stressors that occur before age 18, including abuse, household challenges, and neglect (Felitti et al., 1998). Similarly, overall lifetime trauma is defined by commonly occurring stressors throughout life by using the Lifetime Stressor Checklist-Revised (LSC-R). Overall lifetime trauma differentiates from ACEs by including natural disasters, job loss, car accidents, and other personal experiences typically occurring during adulthood (Wolfe & Kimerling, 1997). It would be beneficial to combine recollected childhood adversity and overall lifetime trauma to create a cumulative trauma score to examine a further correlation with resilience.

Resiliency can also be defined through two subconstructs, interpersonal resiliency, and intrapersonal resiliency. Interpersonal resiliency focuses on the connections with external resources the individual has access to, including social resources and family cohesion; Intrapersonal resiliency is defined through an individual’s internal resources by evaluating their ability to maintain structure for themselves, planned future, self-perception, and social competence (Morote et al., 2017). The intrapersonal subconstruct is often used in research to define resilience by examining an individual’s ability to respond to stress through positive attributes, including personal competence, stress tolerance, and acceptance to change (Cui & Xie, 2022). Using the definitions of resiliency subconstructs, both interpersonal and intrapersonal resiliency should provide protective factors for trauma. It is beneficial to examine both although interpersonal resiliency might be more impactful as environmental factors provide the best outcome post-trauma exposure (Bershad & Ross, 2019; Brodsky & DeVet, 2000; Masten et al., 1990). Previous studies focused on the positive impact external factors have on individuals that endure trauma, so interpersonal resiliency may be impacted more, although this was not specifically tested. It is unclear the role trauma and other factors might play in differentiating intrapersonal and interpersonal resiliency.

Previous studies support trauma facilitating resiliency development, but some literature suggests that people can be resilient without experiencing trauma. According to Bell and Suggs (1998), children who participate in sports have higher resiliency levels than children who do not. This study concluded that sports or other activities that require determination to succeed facilitate resiliency development in childhood. Adverse backgrounds in the children were not examined in the study because researchers believed resiliency is created from positive experiences. Additionally, spirituality has been shown to support resiliency in older adults. Many articles cite spirituality and religiosity to be a source of strength for people later in life, including as a possible protective factor against suicide attempts (Lawrence et al., 2016). Although these articles include adverse experiences in their study (i.e., cancer, aging, burnout), the researchers believe that spirituality is the primary factor for resiliency development to overcome those experiences (Gray, 2017; Sytsma et al., 2018; Washburn, 2013). Despite many articles examining external factors that are the focus for resiliency development, genetic factors may support resiliency in a person before they are born. In a landmark study, twins and their parents took an ego-resiliency questionnaire, which scored their ability to adapt and express self-control depending on the situation. Genetic factors explained 77% of resilience factors in boys and 70% in girls, while the remaining 23% to 30% were explained by environmental factors (Waaktaar & Torgersen, 2012). This presents an alternative idea that resiliency is already present in a person due to their genetic makeup and adversity, or other external factors that are not necessary for someone to be resilient.

One important note is trauma occurs throughout life separately from familial experience and childhood upbringing, which proposes resiliency may need to be learned and practiced through those negative experiences to aid in an individual's adaptability through future trauma, even if first developed through genetics or early life experiences. Research is needed to determine the relationship between cumulative trauma, using recollected adverse childhood experiences and overall lifetime trauma, and resiliency.

### 1.3 Empathy

Given a possible link between resiliency and traumatic experiences, it is important to examine if other aspects are present in this relationship. One such possible aspect is the link between empathy, trauma, and resiliency. Empathy is defined as the capacity to understand and adapt to the experiences of another person, which may relate to the adaptability needed for resilience (Feddes et al., 2015). Feddes et al. (2015) did not find a statistically significant increase in empathy and perspective-taking after resiliency training was completed; however, it was trending in that direction. This finding may support a relationship between resiliency and empathy, but that relationship was not explicitly stated in the article. Another study found resiliency and empathy as positive predictors of altruism in children (Leontopoulou, 2010). In this instance, resilience was defined as the ability to adapt one's self-control in different situations, thus showing studies occasionally separate empathy into cognitive empathy and affective empathy to better understand the two empathetic reactions individuals can experience. Cognitive empathy helps individuals understand and perceive the emotions of others (Gladstein, 1983), while affective empathy elicits emotions within the perceiver (Davis, 1983; Davis et al., 1994). Dividing empathy into subconstructs can define the mechanism used when encountering individuals experiencing similar traumas. Literature supports heightened nervous system response in individuals with post-traumatic stress disorder when thinking about reliving or thinking about a traumatic experience (Sherin & Nemeroff, 2011). It may be beneficial to examine if affective empathy is linked to trauma due to its ties to heightened emotionality or if cognitive empathy is better associated with the presence of trauma due to the individual's ability to understand. This separation is important to note when discussing how the subconstructs of resiliency are correlated with empathy, although they have not been studied. Interpersonal resiliency requires individuals to interact with others emotionally; therefore, it appears to align with affective empathy, while intrapersonal resiliency requires individuals to rely on their own experiences and skills, similarly to cognitive empathy. Although there is a commonality regarding adaptability for the two traits, their correlational findings tend to lose focus in most studies due to their marginal significance or the study's main purpose did not include the relationship, so their overall connection remains vague.

### 1.4 Conscientiousness

Another concept that can be associated with resiliency is the Big Five personality trait of conscientiousness, which is defined by high levels of self-discipline, follow-through, and goal-directed behavior (Goldberg, 1992). Several

studies have supported a positive relationship between resiliency and conscientiousness (Campbell-Sills et al., 2006; Fayombo, 2010; Friborg et al., 2005). One study explains that task-oriented coping skills are necessary for resiliency and conscientiousness to exist separately for individuals to be adaptable in any situation. Conscientiousness supports the ability to accomplish goals, while resiliency supports us through rapidly changing situations. Both concepts require adaptability, and these studies highlight their possible overlap (Campbell-Sills et al., 2006). However, extremely high levels of conscientiousness may be associated with fixation and a lack of adaptability. In a subsequent study, individuals with high levels of conscientiousness had a negative relationship with their well-being as they experienced failure, such as long-term unemployment, which showed a drop in life satisfaction scores, suggesting those with high levels of conscientiousness may be less adaptable in longer-term negative situations (Boyce et al., 2010). Even though this study may suggest trauma negatively correlates with conscientiousness, the relationship between trauma and resiliency's link to conscientiousness has not been studied.

Additionally, two studies previously used three types of resiliencies to predict conscientiousness scores: ego-resiliency, psychological resiliency, and career resiliency. In both studies, conscientiousness was positively predicted through resiliency levels in each category to suggest adaptability may be necessary to be successful (Arora & Rangnekar, 2016; Oshio et al., 2018). This study focused on resiliency constructs associated with an individual's internal ability to succeed and achieve their goals rather than the external resources that allowed them to be successful. This suggests a need for intrapersonal resiliency for conscientiousness rather than interpersonal resiliency although this was not specifically tested.

## **2. Study one**

The initial study was conducted to examine the connection between recollected adverse backgrounds and the development of resiliency while examining the link between that relationship on the development of empathy in healthy adult populations. Specifically, the study was created to answer two main questions: (1) Do recollected adverse experiences in childhood correlate with resiliency? (2) Is empathy linked to the relationship between recollected adverse backgrounds and resiliency? Using the ACE questionnaire, participants' levels of recollected adverse backgrounds were compared to their subsequent resiliency scores to determine if recollected adverse backgrounds are associated with resiliency (measured via the Resiliency Scale for Adults - RSA). Additionally, empathy levels (measured via the Empathy Questionnaire - EQ) were used to determine how different traits are associated with adversity.

### **2.1 Hypotheses**

#### **2.1.1 Hypothesis 1**

There will be a positive correlation between recollected childhood adversity and resilience.

#### **2.1.2 Hypothesis 2**

Empathy will predict resiliency beyond adverse childhood experiences.

### **2.2 Methods**

#### **2.2.1 Participants**

Fifty-eight students volunteered to participate in the study ranging in age from 18 to 26 years ( $M = 19.3$ ; 16 males, 42 females). A convenience sample was obtained as students in an introductory psychology course signed up for a time to arrive in the lab and were granted partial course credit for participating. As this was a pilot study, an a priori power analysis was not conducted. However, a post hoc power analysis for multiple regressions contained a power of .80 or greater with a sample size of 58, using a two-tailed test with  $f^2 = 0.15$ ,  $\alpha = .05$ , and two predictors.

### 2.2.2 Design and procedures

This study was approved by Missouri State University's Institutional Review Board (IRB). All procedures took place in the psychophysiology laboratory with one research assistant and the participants present. After consenting to the study, the participants were asked to complete a series of questionnaires using Qualtrics online software, which randomized the ACE, RSA, and EQ and concluded with a demographic survey (see Measures below for descriptions). Once they finished the questionnaires, all participants were debriefed.

## 2.3 Measures

### 2.3.1 Demographic questionnaire

This 6-question survey assessed age, sex, gender identity, ethnicity, socioeconomic status, and year in school. The information gained from this questionnaire was used to evaluate general patterns in the participant pool.

### 2.3.2 CDC-Kaiser Permanente ACEs

This 10-question survey assessed the presence of adverse childhood backgrounds in the participants' life. Participants answered "yes/no" questions relating to "psychological, physical, or sexual abuse; violence against mother; or living with household members that were substance abusers, mentally ill or suicidal, or ever imprisoned" (Felitti et al., 1998, p. 248). Each "yes" answer was coded as 1 point and each "no" answer was coded as 0 points, so the higher number of points indicates more recalled childhood adversities. The ACE has a test-retest reliability of .52 to .72 and a Cronbach alpha of .88 for a high internal consistency (Murphy et al., 2014).

### 2.3.3 RSA

This 40-question 5-point Likert scale evaluates personal competence, social competence, family coherence, social support, and personal structure to score the number of protective resources each participant has to determine levels of resiliency development. The five RSA scales have a Cronbach alpha of .70 and a total score Cronbach alpha of .90 (Friborg et al., 2003). Although five subconstructs can be used, Friborg et al. (2003) suggest adding all variables together for a total resiliency score, which was done for the current study.

### 2.3.4 EQ

This is a 22-item questionnaire. Statements are given on a 4-point Likert scale that assesses cognitive styles associated with empathizing (e.g., focusing on people, their intentions, and needs). It has a Cronbach's alpha of .90 (Baron-Cohen & Wheelwright, 2004). A composite score is created by totaling all items, and a higher score shows a greater level of empathy.

## 2.4 Study one results

Hypotheses were investigated using correlations and a multiple linear regression equation conducted through IBM SPSS Statistics Software 22. Alpha was set as .05 for all inferential tests in this paper.

To test the first hypothesis, a correlation was conducted using the self-reported retrospective childhood adversity and resiliency scores from the ACE and RSA. Results revealed that adversity scores were positively correlated with resiliency scores,  $r(58) = .40, p = .002$ . This analysis suggests that participants with higher adversity scores on the ACE also scored higher on the RSA to show increased levels of resiliency.

A hierarchical multiple regression analysis was conducted to test the second hypothesis that retrospective childhood adversity and resiliency predict self-reported empathy. The model revealed a significant positive effect of childhood adversity on resiliency ( $\beta = .39, p = .003$ ), and accounted for 15% of the variance,  $R^2 = .15, F(1, 55) = 9.71, p = .003$ . For empathy scores, a significant positive effect of empathy on resiliency was also found ( $\beta = .33, p = .006$ ), accounting for 11% of the variance,  $R^2 = 0.11, F(2, 54) = 9.53, p = .006$ .



### 3. Study two

Study two further examines if trauma is related to resiliency by comparing reported overall lifetime trauma (using the LSC-R) and recollected adverse childhood experiences with resiliency scores in healthy adults. Because in study one, ACE was associated with resiliency we wanted to examine if it was only childhood trauma that impacted resiliency or overall lifetime trauma as well. A composite score was created with the ACE and the LSC-R to represent cumulative trauma. Further, the subconstructs of resiliency (interpersonal resiliency and intrapersonal resiliency) will be examined, as they may provide a better understanding of whether internal or external resiliency factors are linked to trauma and how they correlate with other characteristics. The literature supports both aspects as protective factors against trauma, but environmental factors appear to have the most support for positive outcomes from trauma (Bershad & Ross, 2019; Brodsky & DeVet, 2000; Masten et al., 1990).

Additionally, empathy was examined in two categories: cognitive empathy and affective empathy, rather than defining empathy as a single construct to determine if either empathy subconstruct is linked to trauma and resiliency more than the other. Using subconstructs, the link trauma has to empathy can be better understood by examining the mechanism empathy is portrayed through, i.e., thought processes vs. feelings. Cognitive empathy helps individuals understand and perceive the emotions of others (Gladstein, 1983), while affective empathy elicits emotions within the perceiver (Davis, 1983; Davis et al., 1994). Empathy was measured via self-report with the Questionnaire of Cognitive and Affective Empathy (QCAE) rather than the EQ to determine if a relationship between resiliency and empathy exists and if cognitive or affective empathy is correlated with the presence of resiliency.

Finally, it was hypothesized that healthy individuals with high conscientiousness scores have low adaptability due to being hyper-focused on their plan to complete their goals, which would prevent them from adapting to possible problems. In study two, conscientiousness scores obtained from the International Personality Item Pool (IPIP) 50 were examined in relationship to intrapersonal and interpersonal resiliency to see if conscientiousness correlates with a specific aspect of resiliency.

#### 3.1 Hypotheses

##### 3.1.1 Hypothesis 1

There will be a positive correlation between recollected adversity scores and overall lifetime trauma scores.

##### 3.1.2 Hypothesis 2

There will be a positive correlation between cumulative trauma and resiliency scores. Specifically, when both recollected adverse childhood experiences and overall lifetime trauma are present, resiliency will be the highest.

##### 3.1.3 Hypothesis 3

An increase in cumulative trauma will result in an increase in interpersonal resiliency and a decrease in intrapersonal resiliency.

##### 3.1.4 Hypothesis 4

Once the trauma/resiliency relationship is defined, cognitive and affective empathy scores will be examined to determine how empathy subconstructs are linked to the presence of resiliency subconstructs. Using multiple linear regression, the relationship will be examined between resiliency, trauma, and cognitive and affective empathy. It is predicted that affective empathy is positively correlated with resiliency, while cognitive empathy is not correlated with resiliency.

##### 3.1.5 Hypothesis 5

Finally, the conscientiousness scores obtained from the IPIP 50 will be examined with intrapersonal, interpersonal, and total resiliency to see if conscientiousness is linked to the subconstructs of resiliency as well as total resiliency. It is

predicted to be positively correlated with all three types of resiliencies.

## **3.2 Methods**

### **3.2.1 Participants**

The final sample included 160 participants ranging in age from 17 to 43 years ( $M = 19.5$ ; 49 males, 110 females, 1 nonbinary). One hundred and sixty-one participants volunteered to participate in the study. As the study was running, the Qualtrics survey link displayed incorrect surveys to one participant. A convenience sample was obtained as students in an introductory psychology course signed up for a time to arrive in the lab and were granted partial course credit for participating. An a priori power analysis was conducted at a medium effect size and moderate level. The sample size needed to run the statistical analysis was 159 participants.

### **3.2.2 Design and procedures**

This study was approved by Missouri State University's IRB. All procedures occurred in a psychophysiology laboratory with one research assistant and the participant present. After consenting to the study, the participants completed a series of questionnaires using Qualtrics online software to randomize the ACE, LSC-R, RSA, QCAE, and IPIP 50 and concluded with a demographic survey. Once they finished the questionnaires, all participants were debriefed.

## **3.3 Measures**

### **3.3.1 Questionnaires from study one**

The demographic questionnaire, ACE, and IPIP 50 used in study two were the same as those used in study one. The RSA was also used in both studies, while study two integrated the scale's interpersonal resiliency and intrapersonal resiliency subconstructs (see below).

### **3.3.2 LSC-R**

This questionnaire uses 30 "yes/no" questions to assess the presence of traumatic experiences in the participants' lives and was designed to screen for criterion A in the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV) for post-traumatic stress disorder (PTSD). Each "yes" answer was coded as 1 point, and each "no" answer was coded as 0 points, so the higher number of points indicates more life stressors. The LSC-R has a test-retest reliability of 0.65 and a Cronbach alpha of .72 for high internal consistency. Validity for the LSC-R was compared to other anxiety, depression, and PTSD scales for a concurrent validity of 0.32 to 0.51 (Choi et al., 2017; Norris & Hamblen, 2004; Wolfe & Kimerling, 1997).

### **3.3.3 RSA**

This 40-question 5-point Likert scale evaluates personal competence, social competence, family coherence, social support, and personal structure to score the number of protective resources each participant has to determine levels of resiliency development. The five RSA scales have a Cronbach alpha of .70 and a total score Cronbach alpha of .90 (Friborg et al., 2003). Although five subconstructs can be used, Friborg et al. (2003) suggest adding all variables together for a total resiliency score. More recent research conducted by Morote et al. (2017) found that a 2-factor structure could be created from the RSA questionnaire. The two factors were interpersonal resiliency and intrapersonal resiliency. Interpersonal resiliency was defined through family cohesion ( $\alpha = .80$ ) and social resources ( $\alpha = .76$ ) questions, while intrapersonal resiliency was defined from structured style ( $\alpha = .48$ ), planned future ( $\alpha = .71$ ), and self-perception ( $\alpha = .78$ ) questions (Morote et al., 2017).

### **3.3.4 QCAE**

To better measure empathy, Reniers et al. (2011) developed a questionnaire from four previous questionnaires

(Interpersonal Reactivity Index, Impulsiveness and Venturesomeness Questionnaire, Empathy Quotient, and the Hogan Empathy Scale). They created a 2-factor structure involving both cognitive and affective empathy. The final resulting scale contained 19 cognitive empathy questions and 12 affective empathy questions all on a four-point Likert scale. The QCAE showed positive correlations between cognitive and affective empathy (.31) and convergent validity with the Basic Empathy Scale for cognitive empathy (.62) and affective empathy (.76; Reniers et al., 2011).

### 3.4 Study two results

All hypotheses were investigated using Pearson correlations and a multiple linear regression equation through IBM SPSS Statistics Software 22. Alpha was set as .05 for all inferential tests in this paper.

To test the first hypothesis, recollected childhood adversity scores would be associated with self-reported lifetime trauma scores, a correlation was conducted using the ACE and LSC-R scores. Results revealed scores from the ACE positively correlated to scores from the LSC-R,  $r(157) = .659, p = .000$ . This analysis suggests that participants with higher childhood adversity scores on the ACE also scored higher on the LSC-R show increased reported overall lifetime trauma.

To test the second hypothesis, recollected childhood adversity and overall lifetime trauma scores were combined into a total cumulative trauma score to correlate it with the total self-reported resiliency score and the resiliency subconstructs (interpersonal and intrapersonal resiliency) from the RSA. Results revealed the total cumulative trauma scores were positively correlated with the interpersonal resiliency subconstruct,  $r(156) = .215, p = .007$ , and did not correlate with the intrapersonal resiliency subconstruct,  $r(153) = -.016, p = .840$ , and the total resiliency scores,  $r(152) = .108, p = .187$ . This analysis suggests that higher cumulative trauma is associated with higher interpersonal resiliency scores on the RSA. Since the second hypothesis supported the relationship between the interpersonal resiliency subconstruct and total cumulative trauma and not the total resiliency score or intrapersonal resiliency, the interpersonal resiliency subconstruct will be used for the third hypothesis analysis.

To test the third and fourth hypotheses to analyze interpersonal resiliency, cumulative trauma, and self-reported cognitive and affective empathy scores, a multiple linear regression analysis was conducted. The results of the regression indicated that the model explained 9.8% of the variance and it was a significant predictor of interpersonal resiliency  $F(3, 145) = 5.24, p = .002$ . Upon further analysis, it appears only cumulative trauma ( $\beta = .22, p = .006$ ) and affective empathy ( $\beta = .18, p = .03$ ) contributed significantly to the model, while cognitive empathy ( $\beta = .15, p = .06$ ) did not.

Finally, the last hypothesis was conducted by correlating self-reported conscientiousness scores on the IPIP 50 with interpersonal, intrapersonal, and total resiliency scores from the RSA. Conscientiousness was significantly positively correlated with intrapersonal resiliency,  $r(158) = .177, p = .026$  and significantly negatively correlated with interpersonal resiliency,  $r(159) = -.162, p = .041$ . Conscientiousness was not significantly correlated with total resiliency scores,  $r(156) = .074, p = .357$ . These results suggest high interpersonal resiliency scores and low intrapersonal resiliency scores significantly predict high conscientiousness scores.

## 4. Discussion

Study one's results reveal that recollected adverse childhood experiences and resiliency are linked in healthy adult populations. This suggests that experiencing adversity in one's childhood may be one way to facilitate the development of resiliency, which allows for adaptation to those turbulent environments. It may also be the case that resiliency was instilled early in the individual's personality through genetics and parental upbringing before adversity occurred, but those adverse experiences allowed for their resiliency to be practiced and strengthened (Bershad & Ross, 2019; Brodsky & DeVet, 2000; Folke et al., 2010; Masten et al., 1990; Waaktaar & Torgersen, 2012). However, both scenarios indicate that childhood adversity is linked to resiliency in healthy adults.

Results for the second hypothesis link the relationship between recollected childhood adversity and resiliency to empathy. Empathy appears to have a significant positive correlation with resiliency when using scores from the EQ to support the second hypothesis by suggesting resiliency may be linked to an increase in empathy. When healthy individuals go through trauma (as seen in adverse childhood backgrounds associated with resiliency), they may be more



likely to understand and respond empathetically to others going through trauma (Feddes et al., 2015; Leontopoulou, 2010).

In study two, the result of the first hypothesis supported the prediction that higher rates of recollected childhood adversity are associated with higher rates of overall lifetime traumatic events in healthy adult populations. This was expected because the literature suggests a similar relationship between trauma and other negative life stressors, such as the development of mental illness and substance use (Garami et al., 2019; Zlotnick et al., 2008). It was also predicted cumulative trauma and resiliency were associated because experiencing trauma may be one way to allow for adaptation in unstable environments to facilitate the development of resiliency. It may also be the case that resiliency was instilled early in the individual's personality through genetics and/or parental upbringing before the adversity took place, but those trauma experiences would allow for their resiliency to be strengthened. Both scenarios suggest that trauma may allow for resiliency to be practiced and strengthened through negative experiences. Despite this expected relationship between trauma and resiliency, study two found only interpersonal resiliency and trauma are associated rather than overall resiliency. This may be explained by the way different generations approach solving problems, specifically, younger generations may ask for help more often than older generations. One study analyzed different characteristics between a Generation X cohort and a Millennial cohort in medical school. The Generation X cohort scored higher on self-reliance, while the Millennial cohort scored higher on emotional stability (Borges et al., 2006). This finding aligns with the mean sample age of 19 years old suggesting the sample collected is more likely to reach out to others for help, which would align with interpersonal resiliency.

The third and fourth hypotheses' results support an increase in affective empathy when the trauma/resiliency relationship increases. This trend is supported by the idea that affective empathy occurs when emotions are elicited within the perceiver and cognitive empathy allows an individual to understand and perceive the emotions of others (Davis, 1983; Davis et al., 1994; Gladstein, 1983). It was predicted that higher levels of trauma and resiliency would cause an individual to emotionally attend allowing them to understand someone that has experienced a similar trauma, which may prevent them from cognitively reacting to the situation (Feddes et al., 2015).

Finally, hypothesis four examined another trait associated with adaptability. The researchers expected that by dividing resiliency into interpersonal and intrapersonal resiliency, conscientiousness would be positively correlated with intrapersonal resiliency due to the need to be self-reliant for personal success. Although previous literature supported the positive relationship between resiliency and conscientiousness (Arora & Rangnekar, 2016; Oshio et al., 2018), one study found a negative relationship when long-term goals were impacted (Boyce et al., 2010). It is possible that the endorsement of adverse childhood experiences and resiliency changed the facets of the conscientiousness trait during early childhood. The previous work did not include resilient individuals from adverse backgrounds. High conscientiousness has been shown to be associated with a lack of adaptability in certain facets, specifically dependability (Griffin & Hesketh, 2005). Taken together, it may be that early adverse experiences lead the individual to be more adaptable in uncertain circumstances, and therefore lower conscientiousness could be associated with increased resiliency. This is further supported by possible differences in the way generations seek out help, specifically younger generations asking for help from others and older generations seeking internal resources to succeed (Borges et al., 2006). Conscientiousness is defined by the individuals' ability to succeed (Goldberg, 1992), so the concept may rely more on intrapersonal resiliency rather than interpersonal resiliency. The sample collected scored higher in interpersonal resiliency, so they rely on others to solve their problems instead of relying on themselves.

#### **4.1 Limitations and future directions**

One limitation of these studies is the use of a convenient sample of college students, whose demographics were majority young adults, female, and indicated "White" for race, so their demographics prevent the study's findings from being generalizable. Future studies would benefit from a more diverse sample by adding individuals who may not benefit from trauma-supporting protective factors, such as resiliency. The current study's findings may be linked to survivorship bias as the healthy sample increased in resiliency, but this may not have been found with a broader sample. For example, a study by Czeisler et al. (2021) showed that survivorship bias accounted for a discrepancy in findings related to mental health. Another limitation includes the use of questionnaires and retrospective data to create the study's results. Future studies would benefit from longitudinal or prospective studies to better understand trait and characteristic development before, during, and after trauma is introduced. Finally, the sample size collected was not large enough to

determine if resiliency, empathy, and conscientiousness were associated with trauma and adversity in a curvilinear way. A possible curvilinear relationship may provide beneficial information regarding the development of these variables. The results of the relationship between childhood adversity, overall lifetime trauma, and resiliency may suggest that the environment can play a role in a child's development. This may also explain how mental illness is associated with trauma. Future studies could examine if resiliency training could be conducted as a preventative rather than a corrective measure.

## 5. Conclusion

Overall, the studies demonstrate that recollected childhood adversity is associated with overall lifetime trauma, suggesting those with more instances of traumatic experiences in childhood are more likely to experience trauma in adulthood. Similarly, cumulative trauma is associated with interpersonal resiliency in healthy adults, which may allow individuals to seek help from others and adapt more successfully to changing situations. Interpersonal resiliency was also associated with affective empathy, which may allow individuals to relate to others emotionally, thereby further facilitating their willingness to reach out. It also appears that as individuals' interpersonal resiliency increases, their conscientiousness decreases, showing that this sample might be resilient by relying on others and displaying emotional affect while not relying on intrapersonal aspects, such as conscientiousness. Although trauma can negatively impact people's lives, resiliency can provide necessary protective factors after trauma for better overall outcomes in life. The overall results highlight the importance of examining the trauma-resiliency relationship and how it may be expanded upon in therapeutic situations.

## Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

## Ethical statement and informed consent

All of the research described in the paper was conducted in accordance with APA's guidelines for the ethical treatment of human participants and was reviewed and approved by the IRB of this university (study number IRB-FY2019-380). Informed consent was signed by all participants as per IRB protocol.

## Availability of data and material

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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## Appendix

**Table A.** Descriptive statistics for study one and study two

	Study One	Study Two
Male/Female	16/42	49/114
Age Mean (Range)	19.28 (18-26)	19.52 (17-43)

**Table B.** Correlational results for study one

	ACE
RSA	$r = .402^{**}$
	$p = .002$

**Table C.** Correlation results for study two

	ACE	LSC-R	Cumulative Trauma	Intrapersonal Resiliency	Interpersonal Resiliency	Conscientiousness
ACE	1	.659** $p < .001$	.147 $p = .069$	.030 $p = .710$	.214** $p = .007$	-.052 $p = .516$
LSC-R	.659** $p < .001$	1	.076 $p = .349$	-.039 $p = .627$	.193* $p = .015$	-.049 $p = .543$
Cumulative Trauma	.147 $p = .069$	.076 $p = .349$	1	.813** $p < .001$	.412** $p < .001$	.074 $p = .357$
Intrapersonal Resiliency	.030 $p = .710$	-.039 $p = .627$	.813** $p < .001$	1	-.196* $p = .014$	.177* $p = .026$
Interpersonal Resiliency	.214** $p = .007$	.193* $p = .015$	.412** $p < .001$	-.196* $p = .014$	1	-.162* $p = .041$
Conscientiousness	-.052 $p = .516$	-.049 $p = .543$	.074 $p = .357$	.177* $p = .026$	-.162* $p = .041$	1

**Table D.** Regression results for study one

Model	$R$	$R^2$	Adjusted $R^2$	Std. Error of the Estimate	Change Statistics				
					$R^2$ Change	$F$ Change	$df1$	$df2$	Sig. $F$ Change
1	.387 <sup>a</sup>	0.150	0.135	15.05163	0.150	9.714	1	55	0.003
2	.511 <sup>b</sup>	0.261	0.233	14.16686	0.111	8.084	1	54	0.006

a. Predictors: (Constant), ACE total

b. Predictors: (Constant), ACE total, EQ total



**Table E.** Regression results for study two

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	Std. Error of the Estimate	Change Statistics				
					<i>R</i> <sup>2</sup> Change	<i>F</i> Change	<i>df</i> 1	<i>df</i> 2	Sig. <i>F</i> Change
1	.393 <sup>a</sup>	.155	.149	2.91054	.155	27.109	1	148	< .001
2	.416 <sup>b</sup>	.173	.162	2.88872	.018	3.245	1	147	.074
3	.418 <sup>c</sup>	.175	.158	2.89534	.002	.329	1	146	.567

a. Predictors: (Constant), Cumulative Trauma

b. Predictors: (Constant), Cumulative Trauma, Affective Empathy

c. Predictors: (Constant), Cumulative Trauma, Affective Empathy, Cognitive Empathy