INTERPERSONAL RELATIONSHIPS AS MODERATORS IN THE LINK BETWEEN ACEs AND EMERGING ADULT ADJUSTMENT: AN EXPLORATION OF CROSS-DOMAIN RESILIENCE

By

AMY L. MCGEHEE

Bachelor of Science in Biology

The University of Texas at Arlington

Arlington, Texas

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Thesis Approved:

Michael Criss, Ph.D.

Thesis Adviser

Amanda Harrist, Ph.D.

Isaac Washburn, Ph.D.

Darcy Jones (DJ) McMaughan, Ph.D.

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Name: AMY MCGEHEE

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Abstract: Well over half (58.3%) of U.S. adolescents have been exposed to at least one adverse childhood experience (ACEs), among whom 59.7% reported multiple ACEs. Research has demonstrated links between ACEs and youth physical and mental health outcomes. While evidence in the literature suggests that supportive relationships with parents, peers, and romantic partners may serve as protective factors among individuals exposed to ACEs, there have been few studies exploring whether these protective factors are applicable across outcomes or may be salient only for specific domains. The current study examined the links between ACEs and emerging adult (EA) physical and mental health outcomes (i.e., depressive symptoms, risky behavior, and health problems). It also investigated whether ACEs were uniquely related to the three outcomes when examined simultaneously. Finally, the third research goal analyzed whether supportive interpersonal relationships with parents, friends, and romantic partners moderated the links between ACEs and emerging adult physical and mental health outcomes. The sample consisted of 869 college students (M_{age} = 19.55, SD = 1.35; 57.8% self-identified female). Results indicated that ACEs were significantly and positively related to EA depressive symptoms, health problems, and risky behavior. In addition, high levels of ACEs were related to high levels of EA depressive symptoms and health problems (but not risky behavior) when examined simultaneously. The results demonstrated little evidence of interpersonal relationships as moderators in the links between ACEs and EA mental and physical health outcome. In a small subset of analyses that found evidence of moderation, high levels of openness and involvement *magnified* the link between ACEs and EA adjustment. This pattern of findings suggests that the utility and value of protective factors offered by supportive relationships may vary by context. In conclusion, social connections, such as relationships, may act as an effective means of rewiring the stress response system and promoting resilience through prosocial behavior as indicated in the literature but may only do so in the context of healthy, functional relationships. Further research is needed to understand more about the risks and protective factors among individuals exposed to ACEs.

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CHAPTER I

INTRODUCTION

Emerging adulthood is a developmental stage characterized by dramatic developmental changes, especially in relationships with parents, peers, and romantic partners (Arnett, 2004; Cardbery & Burhmeister, 1998; Pitman & Scharfe, 2010). Many emerging adults had adverse childhood experiences (ACEs) (Kessler et al., 2010; McLaughlin et al., 2012). Indeed, well over half (58.3%) of U.S. adolescents have been exposed to at least one ACE, among whom 59.7% reported multiple ACEs (Kessler et al., 2010; McLaughlin et al., 2012). Research has demonstrated links between ACEs, risky behavior, and physical and mental health. For example, high levels of ACEs have been linked to high levels of risky behavior, depressive symptoms, and health problems (Espeleta et al., 2018; Seon et al., 2021).

The links between ACEs and risky behavior and mental and physical health problems has been well established in the literature. Preliminary evidence has indicated that supportive relationships with parents, peers, and romantic partners may serve as protective factors among youth exposed to ACEs (Bethel et al., 2019; Crouch et al., 2019). While evidence in the literature suggests that supportive relationships with parents, peers, and romantic partners may serve as protective factors among individuals exposed to ACEs, there has been little research exploring whether these protective factors are applicable across outcomes (i.e., cross-domain resilience) or

may be salient only for specific outcomes (i.e., domain-specific resilience).

The proposed investigation had three research goals:

1. The first research goal was to examine the link between ACEs and emerging adult physical and mental health outcomes (i.e., depressive symptoms, risky behavior, and health problems).
2. The second research goal was to investigate whether ACEs were uniquely related to the three outcomes (i.e., depressive symptoms, risky behavior, and health problems) when examined simultaneously.
3. The third research goal was to analyze whether supportive interpersonal relationships (i.e., parents, friends, romantic partners) moderated the link between ACEs and emerging adult physical and mental health outcomes.

CHAPTER II

REVIEW OF LITERATURE

Developmental Transformations during emerging Adulthood

Emerging adulthood, a recent cultural phenomenon in industrialized countries and now recognized as a distinct developmental period in many cultures (Urry et al., 2011), follows adolescence and occurs during the span of time between 18 and 25 years of age. The experience of this developmental period was precipitated by postponed movement from adolescence to adulthood due to a delay in marriage for both genders (Kins & Beyers, 2010) and a shift in attitudes about secondary education, especially for women. For example, the median age at first marriage in 1970 was 20.8 for women and 23.4 for men (United States Census Bureau, 1970). The median age for marriage in 2020 was 28.2 for women and 30.0 for men in the United States (B12007: Median Age at First Marriage - Census Bureau Table, n.d.). The percentage of 18- to 24-year-old men enrolled in college in the United States has increased from 32.1% in 1970 to 37% in 2019. Even more significantly, the percentage of 18- to 24-year-old women enrolled in college has increased from 20.3% in 1970 to 44.3% in 2019 (Digest of Education Statistics, 2020, n.d.)

Emerging adulthood is distinct from adolescence and adulthood, and is characterized by specific developmental milestones. For example, emerging adulthood is a time of self-focus and

prolonged identity development (Arnett, 2004; Lane, 2020). Almost 75 years ago, Erik Erikson (1950), who was an early prominent theorist on identity, proposed that it was primarily associated with adolescence. After 50 years of further research on the concept of identity, we recognized that identity exploration continues during emerging adulthood (Côté, 2006). Emerging adulthood is also a time of dramatic changes and characterized by exploration, risk-taking, growing independence, shifting social identity, development of career interests, expansion and solidification of worldviews, and intensification of romantic partnering (Arnett, 2000). In addition, this developmental period is a time of demographic and relational instability (e.g., multiple residence changes leading to social disruptions). It is also can be time of possibility and hope: envisioning the future and believing in the ability to transform one's life (Arnett, 2004; Lane 2020).

Though emerging adulthood is recognized as a generalizable stage of development, this developmental period is also an individualized, complex phenomenon encompassing multiple dimensions of one's identity. An emerging adult's individual experience may be determined in large part by factors such as culture, gender, and ethnicity (Claxton, 2021; Thibeault et al., 2018; Srivastava et al., 2019). For example, some research provides evidence that emerging adulthood is a developmental stage only in industrialized countries where the majority of the occupations require higher education, but not in countries or cultures where individuals are not allowed a long period of personal exploration, but are expected to go directly into the labor force following adolescence (Facio et al., 2007)

Relationships during emerging Adulthood

During emerging adulthood, there tend to be transformations in interpersonal relationships. For example, the parent-emerging adult relationship begins to shift dramatically.

Specifically, most emerging adults come to see their parents in a more sympathetic, benevolent, and balanced light, as persons and not merely as parents (Arnett, 2004). Sometimes the relationship can experience a type of role-reversal, in that parents may even use their children as a source of social support and share information with them that may have earlier seemed as though it was off-limits (e.g., personal information about the other parent; van der Valk, 2008). There also may be conflict between emerging adults and their parents related to new issues that arise during this stage of development. For example, there may be differences in opinion between the emerging adult and the parent definition of what constitutes adulthood (Nelson et al., 2007). Also, too much contact with the parent may lead to adjustment difficulties for the emerging adult, especially among emerging adults who have not left home at this stage (Arnett, 2000; Hong & Cui, 2020).

As the primary caregiver-emerging adult relationship shifts during emerging adulthood, so does the peer-emerging adult relationship. This peer relationship takes more of a central role than it did in adolescence as the peer becomes the main confidant of the emerging adult (Cardbery & Burhmeister, 1998). Emerging adults interact primarily with peers and have more cross-sex friends than they will at any other developmental stage of life (Lansu & Cillessen, 2012; Monsour, 1997). During emerging adulthood, like childhood and adolescence, relationships with peers can act as protection against loneliness and combat stress by supporting healthy emotional regulation (Uchino et al., 1999). Furthermore, reaching the intimacy goals of emerging adulthood may be contingent, to some extent, on competence in peer relationships (Hartup & Stevens, 1997; Sullivan, 1953). Rawlins (1992) found evidence that peer relationships have particular importance in emerging adulthood because they influence the emerging adult's career decisions, changing ideas of self, and romantic relationships (Bagwell et al., 2005).

Relationships with romantic partners during emerging adulthood become much more central to the emerging adult's life compared to adolescence. In particular, emerging adults experience the beginning of "serious" romantic relationships. Prior to committing to one partner, the emerging adult will typically have multiple partners (Arnett, 2004). During emerging adulthood, young people tend to prefer their romantic partner over other attachment figures (Pitman & Scharfe, 2010). Beckmeyer and Cromwell (2019) found that emerging adults who were involved in a romantic relationship had greater life satisfaction and less loneliness than their single peers. Weisskirch (2017) found evidence that romantic relationships during emerging adulthood may play a key role in terms of happiness and self-esteem. In summary, primary caregiver, peer, and romantic partner relationships play a central role in emerging adults' lives. In addition, there are unique changes in these relationships during emerging adulthood and the role they play in the emerging adults' lives.

Adverse Childhood Experiences (ACEs)

Well over half (58.3%) of U.S. adolescents have been exposed to at least one adverse childhood experience (ACE), among whom 59.7% reported multiple ACEs (Kessler et al., 2010; McLaughlin et al., 2012). ACEs have been defined as potentially traumatic experiences occurring in childhood before the 18th birthday (Center for Disease Control, 2019). At present, there is no standardized framework for evaluating ACEs measures (Bethell et al., 2017). However, ACEs typically are self-reported retrospective surveys assessing different dimensions of early adverse experiences and events occurring in the family or near environment. These dimensions include exposure to abuse, household dysfunction, and abandonment. Three categories of abuse are usually assessed: emotional, physical, and sexual (Bethell et al., 2017; Kerker et al., 2015). Four categories of household dysfunction are also assessed: exposure to

substance abuse (e.g., drugs, alcohol), mental illness (e.g., household member mentally ill or attempted suicide), violent treatment of mother or stepmother (e.g., witnessing mother or stepmother being physically assaulted or threatened with a knife or gun), and criminal behavior in the household (e.g., a household member go to prison; Felitti et al., 1998; Qu et al., 2022). ACEs surveys also assess childhood experiences of abandonment. The parameters of abandonment vary from survey to survey, but usually include questions pertaining to divorce, separation, and death of a parent (Kerker et al., 2015). An ACEs score is typically computed by simply summing the number of "yes" answers to the survey questions (Felitti et al., 1998).

A number of investigations have demonstrated that adverse childhood experiences are significantly linked to maladaptive mental and physical health outcomes among emerging adults and adults (Seon et al., 2021; Cloitre et al., 2019; Connoly, 2020; Schafer, 2021). For example, evidence in the literature has shown that high levels of ACEs were significantly and positively related to depressive symptoms. Cloitre et al. (2019) found that ACEs were positively and significantly related to depression in adult women. These findings were comparable to results reported by Karatekin and Ahluwalia (2020) and Hatton-Bowers et al. (2021) who found that high levels of ACEs were significantly related to high levels of depressive symptoms in college students.

In addition to depressive symptoms, research has shown that high levels of ACEs have been linked to high levels of risky or antisocial behavior. For example, Connoly (2020) found that ACEs were positively and significantly linked with delinquent behavior in adolescents. Comparably, Schafer (2021) reported that high levels of ACEs were significantly related to high levels of risky drinking and risky sexual behavior in a sample of college students. Similarly, Leban and Gibson (2020) reported that ACEs were positively and significantly related to

delinquent behavior in adolescents.

Studies also have found ACEs to be associated with physical health outcomes (e.g., illnesses, disease). For example, Seon et al. (2021) found ACEs were positively and significantly related to poor physical health among college students. Additionally, Cloitre et al. (2019) found that high levels of ACEs were significantly related to high levels of physical health problems in adult women. In a comparable study, Reidl et al. (2020) reported that high levels of negative early childhood experiences were significantly associated with high levels of physical diseases in a sample of adults.

Collectively, evidence in the literature has demonstrated that high levels of ACEs are associated with high levels of depressive symptoms, risky behaviors, and physical health problems. There are a number of possible reasons ACEs may be related to these outcomes. One possible reason centers on the impact of early adverse experiences on biological systems in the body, which in turn, can lead to poor physical and mental health outcomes. For example, multiple research teams have demonstrated that early stressors can lead to lasting increases in glucocorticoid responses to stress (Plotsky & Meaney, 1993; Ladd, 1996) and altering serotonergic and GABAergic receptors, the latter of which can influence the development of depressive symptoms (Caldjii, 2000; Rosenblum, 1994; Bennett, 2002) and GABAergic changes (Caldjii, 2000). Likewise, experiencing chronic stress (which includes ACEs) has been linked to a variety of different bio-markers associated with the stress (e.g., C-reactive protein, cortisol; Iob et al., 2020) and immune/inflammation (e.g., cytokines; Hantsoo et al., 2019) systems, which in turn has been linked to various health outcomes (Perry, 2004; Taylor et al., 2006).

Another possible reason ACEs is linked to poor outcomes is that these experiences may influence a broad range of emotional developmental processes during childhood (e.g., attachment

to primary caregiver; Seon, 2021; Treat et al., 2019), which can lead to the development of internalizing symptoms such as depression. Another reason focuses on the link to future orientation and expectations. That is, exposure to adverse childhood experiences might lower one's future orientation and expectations of surviving into adulthood (Craig, 2019). Specifically, if one's expectations of survival are low, risky behavior may seem like an acceptable risk given a hopeless outlook on life. Indeed, Monahan et al. (2015) found that participants who were exposed to violence were delayed in developing a positive future orientation between the ages of 15 and 25 compared to youth who were not exposed to violence. In addition, ACEs may be linked to poor mental and physical outcomes because these experiences may limit opportunities to develop healthy coping tools (mindfulness, exercise, seeking therapy, etc.) and instead encourage unhealthy behaviors (e.g., smoking, alcohol, drugs; Barerra et al., 2019). Essentially, these unhealthy behaviors may serve as maladaptive coping strategies (Anda et al., 1999).

Resilience and protective Factors defined

While evidence in the literature has demonstrated that early childhood adverse experiences are related to a number of mental and physical health outcomes during emerging adulthood, not all individuals exposed to ACEs develop adjustment difficulties. Individuals who do not experience negative outcomes despite exposure to risk factor(s) are said to be resilient (Henry et al., 2015; Luthar et al., 2000; Masten, 2001). Specifically, resilience has been framed in terms of competence (Masten & Coatsworth, 1998), positive outcomes (Masten, 2001), successful adaptation (Masten & Monn, 2015), quick recovery of mental health (Chmitorz et al., 2020), positive trajectory over the lifespan (Liu et al., 2017), stability or even experiencing personal growth (Leipold & Greve, 2009) in the face of adversity and/or risk factors. Moreover, some researchers have approached resilience as a dynamic rather than a static process and

suggest that true resilience be characterized by the ability to overcome adversity, stress, and risk over the lifespan (Köhne et al., 2022).

Scholars who investigate resilience often focus on specific protective factors. Masten and Obradovic (2006) defined protective factors as potential assets associated with resilience in the face of adversity. In other words, protective factors attenuate (i.e., moderate) the association between risk factors (e.g., ACEs) and negative outcomes (McKeen et al., 2021). Relatedly, Rutter (1987) describes a protective factor as a variable that modifies, ameliorates, or changes an individual's response to a hazard in their environment that is linked to adverse outcomes. Researchers have looked at a number of different protective factors for at-risk youth, including: high intellectual functioning, sociability, self-efficiency, self-confidence, high self-esteem, faith, socioeconomic advantages, connections to extended supportive family networks, connections to prosocial organization, and attending effective schools (Masten & Coatsworth, 1998; Summersett et al., 2021; Asakura, 2010). Another prominent factor that has been examined as a protective factor in the literature has been close interpersonal relationships with primary caregivers, best friends, and/or romantic partners (Brown & Shillington, 2017; Criss et al., 2017; Szwedo et al., 2017).

Relationships as protective Factors

A number of studies have found that supportive relationships with parents, friends, or romantic partners may serve as a protective factor among individuals exposed to ACEs. For example, Brown and Shillington (2017) found ACEs were positively and significantly related to substance use among youth (i.e., 11-17 years old) reporting low levels of supportive adult relationships; this link was attenuated and not significant under high levels of supportive adult relationships. In addition, Crouch et al. (2019) reported that the odds of having poor health

outcomes among adults with four or more ACEs were significantly lower among participants who grew up with an adult who made them feel safe *most of the time* compared to participants who did not have adults who made them feel safe. Likewise, findings from Bethel et al. (2019) indicated that the link between ACEs and emerging adult and adult (i.e., 18 and up) depression was attenuated among participants experiencing high levels of positive childhood experiences (e.g., supportive family relationships); this association was significant among participants reporting low levels of positive childhood experiences. Furthermore, Moses et al. (2017) reported that the link between ACEs and adolescent prosocial behavior was significant under low and medium levels of peer intimacy; this association was attenuated and not significant under high levels of peer intimacy. Additionally, Criss et al. (2017) reported that neighborhood danger was positively and significantly related to youth antisocial behavior among participants reporting low and mean levels of peer emotion regulation. In contrast, this link was not significant among youth reporting high levels of peer emotion regulation. Furthermore, Szwedo et al. (2017) reported that the links between maternal hostility and adolescent depression and externalizing behavior were attenuated under high levels of romantic partner support; these associations were significant and positively under low levels of romantic partner support. Similarly, Cho and Kogan (2016) found that the link between emerging adult (i.e., 19-22) economic instability and future orientation was significant and negative under low levels of romantic partner support. However, this association was attenuated and not significant under high levels of romantic partner support. In sum, evidence from the literature has indicated that the links between ACEs and risky behavior, and youth mental and physical health outcomes were attenuated under high levels of positive and supportive relationships with parents, friends, and romantic partners.

There are a number of possible reasons why supportive interpersonal relationships may

serve as protective factors. For example, positive parent-youth relationships may be particularly salient as a buffer due to it being the most long-standing relationship in an emerging adult's life. As such, this relationship provides a long span of time during which to develop a broad range of socioemotional competencies and the ability to respond adaptively to early life stress (National Scientific Council on the Developing Child, 2004), fostering resilience in the individual even during emerging adulthood. Moreover, mothers and fathers may afford their young adult children someone who is reliable, trustworthy, and understanding for whom they can turn to when facing challenges (Morgan et al., 2010). Further, the protective benefits may be enhanced as young adults are now able to relate to their parents as both parents and people (Arnett, 2004). Because of this strength and duration, a secure parent-child relationship may provide a stable foundation and enduring, secure base (Allen et al., 2003), upon which to develop equanimity and adaptability amidst adversity. It follows that with this foundation in position, emerging adults are able to cultivate a buffer against negative health outcomes and overall well-being (Bethell et al., 2019; Brown and Shillington, 2016; Crouch et al., 2019).

In addition, supportive and positive relationships may help young adults develop confidence in themselves and their future pathways. For example, Chen and Miller (2012) postulate the *shift and persist theory*, which posits that even in the context of adversity, those who can find someone or something to provide positive support will learn to have confidence in others, better regulate their emotions, and establish the attribute of future orientation. Related to this perspective, Werner and Smith (1992, 2001) proposed that supportive relationships may offer an avenue through which individuals develop an adaptive model of themselves and others, even after experiencing adversity, which can allow them to avert poor outcomes (i.e. poor health, depression, risky behavior). Moreover, positive relationships may allow individuals to co-

construct with their relationship partners a narrative of how they have overcome past challenges, empowering them with heightened levels of confidence and the self-assurance that they can meet new challenges in a positive way (Strong et al., 2018).

Positive extrafamilial relationships (e.g., peer, romantic partner) may offer relational provisions to individuals who may not have these supportive experiences and traits in the home due to ACEs. Specifically, if the home environment was characterized by trauma, the primary-caregiver relationship may not have afforded the youth the necessary relationship provisions to become a competent member of society. Supportive peer or romantic partner relationships may allow the at-risk youth to attain these relational provisions outside the family (Price, 1996). These extrafamilial relationships may serve as behavioral and emotional interventions (Lansford et al., 2003) among youth exposed to adversity in the home (Criss et al., 2002). For example, a friend or romantic partner may provide behavioral and emotional intervention when they confront their friend or partner about an inappropriate outburst (e.g., inflammatory language) of anger. In particular, they may help their friend understand a healthier way of expressing their feelings. Another example would include friends and romantic partners providing youth experiencing ACEs a safe place to express sadness and helping them see it is healthy and normal to cry when one is sad (Morawetz et al., 2021).

In the current study, there were two dimensions of parent-emerging adult, peer-emerging adult, and romantic partner-emerging adult quality: openness and involvement. Openness reflects the extent to which the emerging adult and relationship partner have a warm, open, and mutually responsive relationship (Criss et al., 2015). Involvement reflects the amount of time that the emerging adult and their relationship partner spend together (e.g., eating dinner, watching TV; Criss et al., 2015). Although these specific variables have not been examined as moderators in

the links between ACEs and emerging adult mental and physical outcomes, there is evidence in the literature that both openness and involvement are related to adaptive adolescent outcomes (e.g., high school grades, high emotion regulation, low antisocial behavior; Criss et al., 2015, 2016, 2021).

Resilience as a Construct

Empirical research on resilience has burgeoned in the last 50 years. There are distinct variations in the definition of resilience. However, the definitions tend to have commonalities that unite the construct. Masten (2001) describes resilience as the common phenomenon of an individual demonstrating robust development even when facing severe adversity. Luthar et al. (1999, 2000) define resilience as a dynamic process encompassing positive adaptation despite exposure to stressful life experiences. Rutter (1987, 1990) describes resilience within a theoretical context as high-risk individuals whose outcomes comprise the positive end of the statistical distribution of outcomes. Cicchetti (1996) argued that resilience is when individuals who have experienced significant adversity demonstrate trajectories that are in defiance of "normative" expectations.

Cross-domain Resilience

Resilience has specific components that bear defining, as they will be pertinent to the current study. Some researchers have argued that to qualify as resilient, at-risk individuals must excel in multiple domains (Infurna & Luthar, 2017; Tolan 1996). Criss et al. (2021) termed excelling in multiple outcome domains in the face of adversity as *cross-domain resilience*. Another similar aspect of resilience is its multidimensionality. *Multidimensional resilience* has been described as an individual experiencing multiple ecological levels of resilience simultaneously (Distelberg et al., 2015). Gartland et al. (2011) said a multidimensional

assessment of resilience measures factors in the domains of self, family, peer, school, and community. O'Donnell et al. (2002) viewed multidimensional resilience as adaptive success consisting of at least two broad, separate realms: covert mental health and overt social competence. In sum, cross-domain and multidimensional resilience both imply positive outcomes in multiple domains. However, as indicated by the cited literature, cross-domain resilience pertains to specific aspects of individual outcomes (e.g., behavior, mental health, physical health), whereas multidimensional resilience pertains to positive outcomes occurring in multiple aspects of one's environment, including outcomes outside of self (e.g., family, peer, school, community). Nevertheless, there are instances when the term multi-dimensional resilience has been used to refer to resilience in outcomes only pertaining to self. When looking at a sample of deaf emerging adults, Myer and West (2011) described multidimensional resilience to include measures of psychological well-being, satisfaction with life, and self-esteem. For the current study, the term cross-domain resilience was utilized to describe positive outcomes across multiple domains: risky behavior, depressive symptoms, and physical health outcomes.

Very few studies have examined cross-domain resilience in emerging adults who have had ACEs. Most studies looking at protective factors for ACEs only focused on a single outcome (Cloitre et al., 2019; Connoly, 2020; Seon et al., 2021). When multiple domains of resilience have been considered, results across studies have been inconsistent. For example, when looking at a sample of predominantly low income, high risk youth (i.e., sixth, eighth, and tenth-graders), O'Donnell et al. (2002) found that high levels of parent support were significantly related to high resilience across multiple outcomes, while high levels of peer support were significantly related to lower levels of substance abuse, school misconduct, and depression. However, Criss et al.

(2021) used a sample of adolescents from predominantly low-income, single parent households and found that positive parent-teen relationships and peer traits served as protective factors in the link between emotion dysregulation and youth antisocial behavior, but not in the link between emotion dysregulation and depressive symptoms. In other words, Criss et al. (2021) found evidence for what could be called domain-specific resilience but not cross-domain resilience.

Summary, Research Goals, and Hypotheses

In summary, research has established that high levels of ACEs were significantly related to high levels of emerging adult depression, risky behavior, and health problems. In addition, there is growing evidence that indicates that supportive relationships with parents, peers, and romantic partners may attenuate the link between ACEs and risky behavior, mental health, and physical health outcomes. However, few studies have looked at the links between ACEs and multiple indicators of mental and physical health outcomes simultaneously in a single study. In addition, few investigations have tested whether supportive relationships serve as protective factors in the links between ACEs and multiple outcomes (i.e., cross-domain resilience). To address these gaps in the literature, there were three major goals. The **first research goal** was to examine the link between ACEs and emerging adult mental and physical outcomes (i.e., depressive symptoms, risky behavior, and health problems). It was hypothesized that high levels of ACEs would be associated with high levels of emerging adult risky behavior, depressive symptoms, and health problems. The **second research goal** was to examine whether ACEs are related to the three outcomes (i.e., depressive symptoms, risky behavior, and health problems) when examined simultaneously. Because there have been few if any published studies conducting these types of analyses, I did not have a specific hypothesis for research goal two. The **third research goal** was to examine whether supportive interpersonal (i.e., parents, friends, romantic partners)

relationships moderated the association between ACEs and emerging adult risky behavior, and physical and mental health problems. I looked at two different dimensions of relationship quality: openness and involvement. It was hypothesized that the link between ACEs and emerging adult mental and physical health outcomes would be attenuated under high levels of supportive relationships (i.e., openness, involvement) with primary caregivers, friends, and/or romantic partners. In contrast, this association was expected to be significant and positive under low levels of relationship quality. There were no specific hypotheses regarding cross-domain resilience.

CHAPTER III

METHODOLOGY

Participants and Procedure

The sample consisted of 869 college students (Age range = 18-25 years; M_{age} = 19.55, *SD* = 1.35; 57.8% self-identified female; 36.6% married/cohabitating/dating, 63.4% single; 75.9% European American, 7% African American, 5.3% Hispanic American, 3.2% Asian American, 6.2% Native American, 2.3% Other; 63.4% single; *median* yearly income $4,100, *SD* = $17,062). The data were collected during the 2019-2020 academic year through online anonymous surveys based on participant reports.

Recruitment of participants was completed at Oklahoma State University by online recruitment through the SONA system (psychology department). Participants were students enrolled in Introduction to Psychology courses and were required to participate in research as a requirement for this course. They were directed to the study recruitment website during class. If they agreed to be in the study, they signed an online consent and were then directed to a Qualtrics survey comprised of multiple questionnaires that took approximately 30-45 minutes to complete.

Measures: Adverse Childhood Experiences

ACEs were measured by the 10-item Adverse Childhood Experiences (ACEs) Survey

(Felitti et al., 1998) which is a retrospective survey assessing the respondents' first 18 years of life. Response options were dichotomized (0 "no"; 1 "yes"). Items included statements such as, "Did a parent or other adult in the household often or very 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?" The 10 items were summed ($\alpha = .78$) to create the final ACEs score, ranging from 0 to 10. An ACEs score of 2 or more has been shown to have significant effects on depression, externalizing problems (Karatekin, 2018; Schilling et al., 2007), and health-related worry (Melville, 2017).

Emerging Adult (EA) Outcomes

Risky Behavior. A 45-item questionnaire adapted from the Risky, Impulsive, and Self-Destructive Behavior Questionnaire (Sadeh & Baskin-Sommers, 2017). Using a 5 point Likert scale (1 = "never," 2 = "1-2 times," 3 = "3-4 times," 4 = "5-6 times," and 5 = "7 or more times"), participants reported how often during the past year the participant engaged in risky behavior (e.g., During the past year, how many times did you have unprotected sex with someone you just met or did not know well). The risky behavior factor was created by averaging ($\alpha = .93$) the 45 items.

Depressive Symptoms. Depressive symptoms were measured using 20 items from the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The items were pertaining to feelings or things the participant experienced doing over the last week or so and included items such as "I felt lonely" and "I felt depressed" and "I had crying spells." The items were rated on a 4-point Likert scale (0 = "rarely or none of the time (less than 1 day)," 1 = "some or little of the time (1-2 days)," 2 = "occasionally or a moderate amount of the time (3-4 days)," 3 = "most or all of the time (5-7 days)." Items 4, 8, 12, and 16 will be reverse scored. The 20 items were summed ($\alpha = .88$) to create the final depressive symptoms factor. The clinical cut-off

point for the CES-D scale is 21 (Henry et al., 2017).

Health Problems. The physical health problems measure consisted of 21 items that reflected various health issues during the past year. The 21-item measure was adapted from the Medical Outcomes Study Core Measure of Health-related Quality of Life (Hays et al., 1995) and contained two sections. For the first 9 questions, participants reported on various health issues (e.g., asthma, diabetes) using a 3-point scale ranging from 1 (*No, never*) to 3 (*Yes, and had problems with it in the last 12 months*). For the next 12 items, participants reported on other health problems (e.g., sore throat, upset stomach with vomiting or diarrhea or fever) using a 5-point scale ranging from 0 (*Never*) to 4 (*4 or more times*). The 21-items were standardized (due to different rating scales) and averaged ($\alpha = .81$) to create the final student health problems factor.

Measures: Moderating Variables

There were two domains of relationship quality that were assessed separately in the contexts of the primary caregiver-EA, best friend-EA, and romantic partner-EA relationships: openness and involvement. The participant sample reported demographic information for their primary caregiver, best friend, and romantic partners. Most of the participants' primary caregivers were biological mothers (biological mothers = 88.6%, adoptive/step/foster mother = 1.7%, biological father = 7.5%, grandparent = 1.2%, other = 1%). The participants' best friends were typically female (58.6%) and European American (79.8% European American, 7.3% African American, 4.4% Latino/Hispanic, 3.6% Asian, 2.6% Native American, and 2.4% other). The best friend mean age was 19.65 (*SD* = 1.66) and the mean length of relationship was 6.46 years (*SD* = 5.05). The participants' significant others were typically male (59.6%) and European American (79.7% European American, 6.4% African American, 5.6% Latino/Hispanic, 3.6% Native American, and 3.3% other). The significant other mean age was 20.17 years (*SD* = 2.19),

the mean length of acquaintance was 3.13 years (*SD* = 3.00), and the length of relationship (i.e., dating or married) was 1.77 years (*SD* = 1.57). Finally, among participants reporting a significant other relationship (*n* = 361), 4% of them were in same-sex relationships.

Openness. Openness assesses the extent to which the emerging adult and their relationship partner had an open, mutually responsive, and warm relationship. The 10-item measure (e.g., "I liked telling my parent about myself." "It was easy to be in tune with what my parent was feeling.") was developed by Criss et al. (2015) who adapted the Student-Teacher Relationship Scale (Pianta, 2001) and the Adult–Child Relationship Scale (Criss et al., 2003). Each item was rated on a 5-point scale ranging from 1 (*Definitely not*) to 5 (*Definitely*). The emerging adult completed the openness scale separately with respect to their relationships with their parents, best friend, and romantic partner with the items worded to reflect each relationship. Parent-emerging adult (α = .95), best friend-emerging adult (α = .95), and romantic partner-emerging adult (α = .91) openness were computed separately by averaging the 10 items for each scale.

Involvement. Involvement reflects how often the emerging adult spends with their relationship partner. The 10-item measure (e.g., "Go shopping together." "Play a board game or cards together. "Eat a meal together.") was developed by Criss et al. (2015). The items were rated on a 5-point scale ranging from 1 (Never) to 5 (Very often). As with openness, the emerging adult completed the involvement scale separately with respect to their relationships with their parent, best friend, and romantic partner with the items worded to reflect each relationship. Parent-emerging adult (α = .93), best friend-emerging adult (α = .89), and romantic partner-emerging adult (α = .87) involvement were computed separately by averaging the 10 items for each scale.

CHAPTER IV

RESULTS

Analytic Plan

All data analysis was performed using SPSS with the PROCESS macro. Descriptive statistics and bivariate correlations were computed. Means and standard deviations ($M \pm SD$) were used to describe quantitative variables and frequencies and percentages for the study variables. To examine **research goal 1**, a series of correlations were computed examining whether ACEs were correlated with emerging adult depressive symptoms, risky behavior, and/or health problems. To examine **research goal 2**, I ran a Multivariate Multiple Regression model, so that I could look at all three dependent variables in the same model with the predictor of ACEs. This allowed me to model emerging adult depressive symptoms, risky behavior, and health problems all as a function of ACEs. For **research goal 3**, hierarchical multiple regression models were computed to examine whether emerging adult adjustment (depressive symptoms, risky behavior, or health outcomes) were predicted by emerging adult sex and emerging adult age (entered on Step 1); ACEs, parent-emerging adult relationship quality, best friend-emerging adult relationship quality, and romantic partner-emerging adult relationship quality (Step 2); and the relevant two-way interactions: ACEs X primary caregiver-emerging adult relationship quality, ACEs X best friend-emerging adult relationship quality, and ACEs X significant other-emerging adult relationship quality (Step 3). Separate regressions were run for each dependent

variable (i.e., depressive symptoms, risky behavior, and health problems) and for each relationship quality factor (i.e., openness and involvement). The main effects were centered before the creation of the two-way interactions (Jaccard & Turrisi, 2003). Evidence of moderation was found when an ACEs X moderator interaction factor was significant. Significant two-way interactions were first interpreted using procedures described in Jaccard et al. (1990). Specifically, the link between ACEs and emerging adult adjustment was examined at three levels of the moderator: low (-1 *SD*), medium (*M*), and high (+1 *SD*). Next, the regression slopes at the three levels of the moderator were graphed. Next, I applied the Johnson-Neyman technique (Bulten et al., 2020; Hoyt, 1994; Montoya et al., 2019) to the significant interactions. This technique allowed me to find areas of significance regarding the predictor's effect on the moderator. This effect is conditional on the entire range of the moderator. With this method, the effect of the predictor is regressed on the outcome to show exactly where the moderator effect becomes significant and how that effect changes based on levels of the moderator. The Johnson-Neyman technique uses 95% confidence bands around the regression line to denote the regions of significance (Bauer & Curran, 2005; Luo et al., 2021). I performed the Johnson-Neyman analysis to determine how the effect of ACEs on each outcome varied from being significant or not significant based on the level of interpersonal relationship (testing each type separately) value. Process macro version 4.0 for SPSS (Hayes, 2018) was used.

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate correlations are presented in Table 1. The descriptive statistics indicated that 29.3% of the sample scored above the clinical cut-off point for emerging adult depressive symptoms. In addition, 28.1% of the sample reported 2 or more adverse childhood experiences whereas 11.3% of the sample reported experiencing 4 or more adverse

childhood experiences.

As indicated in Table 1, the associations between and within domains were consistent with expectations. Specifically, ACEs were negatively associated with best friend-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. High levels of emerging adult risky behavior were significantly related to high levels of emerging adult depressive symptoms and emerging adult health problems and low levels of primary caregiver-emerging adult openness, best friend-emerging adult openness, and significant other-emerging adult openness. High levels of emerging adult depressive symptoms were significantly related to high levels of emerging adult health problems and low levels of primary caregiver-emerging adult openness, primary caregiver-emerging adult involvement, best friend-emerging adult openness, best friend-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. Emerging adult health problems were negatively and significantly related to primary caregiver-emerging adult openness, primary caregiver-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. Primary caregiver-emerging adult openness was positively related to primary caregiver-emerging adult involvement, best friend-emerging adult openness, best friend-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. Primary caregiver-emerging adult involvement was positively and significantly related to best friend-emerging adult openness, best friend-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. Best friend-emerging adult openness was positively and significantly related to best friend-emerging adult involvement, significant other-emerging adult openness, and significant other-emerging adult involvement. Lastly, significant

other-emerging adult openness was positively and significantly related to significant other-emerging adult involvement. All other correlations were not significantly related.

Research Goal 1

The first research goal was to examine the link between ACEs and emerging adult risky behavior, depressive symptoms, and health problems. As indicated in Table 1, high levels of ACEs were significantly related to high levels of emerging adult risky behavior, depressive symptoms, and health problems.

Research Goal 2

The second research goal was to examine whether ACEs are related to the three outcomes (i.e., depressive symptoms, risky behavior, and health problems) when examined simultaneously. The overall regression model was significant ($R^2 = .15$, $F(3,842) = 48.78$, $p < .001$). Findings indicated that high levels of ACEs were related to high levels of emerging adult depressive symptoms (Std. $\beta = .33$, $p < .001$) and health problems (Std. $\beta = .08$, $p < .05$). ACEs was not significantly related to emerging adult risky behavior (Std. $\beta = .05$, ns) in this analysis.

Research Goal 3

The third research goal was to examine whether supportive interpersonal (i.e., parents, friends, romantic partners) relationships moderated the association between ACEs and emerging adult risky behavior, and physical and mental health problems. I looked at two different dimensions of relationship quality in each relationship: openness and involvement.

Openness as a Moderator. The first series of regressions examined openness as a protective factor. The first regression focused on emerging adult risky behavior as the outcome variable. As indicated in Table 2, emerging adult gender and age were not significantly related to risky behavior; the step explained 2% of the variance in the dependent variable which was not

significant. In addition, the ACEs factor was positively and significantly related to emerging adult risky behavior after controlling for demographic variables. There were no other significant main effects. Step 2 explained 8% of the variance in emerging adult risky behavior, and this was significant. Turning to Step 3, a significant ACEs x primary caregiver-emerging adult openness interaction was found in the prediction of risky behavior. As indicated in Figure 1, the ACEs factor was significantly and positively related to risky behavior at high and mean levels of primary caregiver-emerging adult openness. In contrast, this association was attenuated (albeit significant) at low levels of primary caregiver-emerging adult openness. Using the Johnson-Neyman technique to examine the conditional effect of ACEs at values of the moderator, primary caregiver-emerging adult openness, revealed that the moderation effect became significant when levels of primary caregiver-emerging adult openness were ≥ -1.27 (see Table 4). The moderator was centered, so this would indicate that this score was below the sample average. There were no other significant two-way interactions in the prediction of risky behavior.

The next regression examined emerging adult depressive symptoms as the outcome variable. As indicated in Table 2, emerging adult sex and age were not significantly related to depressive symptoms; Step 1 explained 1% of the variance in the dependent variable which was not significant. In addition, the ACEs factor was positively and significantly related to emerging adult depressive symptoms after controlling for demographic variables. Primary caregiver-emerging adult openness was negatively and marginally significantly related to depressive symptoms. Significant other-emerging adult openness was negatively and significantly related to depressive symptoms. Best friend-emerging adult openness was not significantly related to depressive symptoms in this analysis. Step 2 explained 23% of the variance in emerging adult risky behavior, and this was significant. There were no significant two-way interactions in the

prediction of depressive symptoms on Step 3 of the analysis.

The next regression analyzed emerging adult health problems as the outcome variable. As indicated in Table 2, emerging adult sex was significantly related to health problems (i.e., higher for women) whereas emerging adult age was not significant in the analysis. Step 1 explained 5% of the variance in health problems, and this was significant. In addition, the ACEs factor was positively and significantly related to emerging adult depressive symptoms after controlling for demographic variables. Significant other-emerging adult openness was negatively and significantly related to health problems. Primary caregiver-emerging adult openness and best friend-emerging adult openness were not significantly related to emerging adult health problems. Step 2 explained 14% of the variance in health problems, and this was significant. Turning to Step 3, a marginally significant ACEs x best friend-emerging adult openness interaction was found in the prediction of health problems. As indicated in Figure 2, the ACEs factor was significantly and positively related to health problems at high and mean levels of best friend-emerging adult openness. In contrast, this association was attenuated (albeit significant) at low levels of best friend-emerging adult openness. Using the Johnson-Neyman technique to examine the conditional effect of ACEs at values of the moderator, best friend-emerging adult openness, revealed that the moderation effect became significant when levels of best friend-emerging adult openness were ≥ -.58 (see Table 5). The moderator was centered, so this would indicate that this score was below the sample average. There were no other significant two-way interactions in the prediction of health problems.

Involvement as a Moderator. The next series of regressions examined involvement as a protective factor. The first regression focused emerging adult risky behavior as the outcome factor. As indicated in Table 3, emerging adult gender and age were not significantly related to

risky behavior; the step explained 2% of the variance in the dependent variable which was not significant. In addition, the ACEs factor was positively and significantly related to emerging adult risky behavior after controlling for demographic variables. Primary caregiver-emerging adult involvement was negatively and marginally significantly related to risky behavior. Best friend-emerging adult involvement and significant other-emerging adult involvement were not significantly related to emerging adult risky behavior in this analysis. Step 2 explained 8% of the variance in risky behavior, and this was significant. In step 3 of the regression, there were no significant two-way interactions.

The next regression examined emerging adult depressive symptoms as the outcome variable. As indicated in Table 3, emerging adult sex and age were not significantly related to depressive symptoms; the step explained 1% of the variance in the dependent variable which was not significant. In addition, the ACEs factor was positively and significantly related to emerging adult depressive symptoms after controlling for demographic variables. Primary caregiver-emerging adult involvement was negatively and significantly related to depressive symptoms. Best friend-emerging adult involvement and significant other-emerging adult involvement were not significantly related to emerging adult depressive symptoms in this analysis. Step 2 explained 20% of the variance in risky behavior, and this was significant. There were no significant two-way interactions in the prediction of depressive symptoms.

The next regression investigated emerging adult health problems as the outcome variable. As indicated in Table 2, emerging adult gender was significantly related to health problems (i.e., higher for women) whereas emerging adult age was not significant in the analysis. Step 1 explained 5% of the variance in health problems, and this was significant. In addition, the ACEs factor was positively and significantly related to emerging adult depressive symptoms after

controlling for demographic variables. Significant other-EA openness was negatively and marginally significantly related to health problems. primary caregiver-emerging adult involvement and best friend-emerging adult involvement were not significantly related to health problems in this analysis. Step 2 explained 14% of the variance in emerging adult health problems, and this was significant. Turning to Step 3, a significant ACEs x best friend-emerging adult involvement interaction was found in the prediction of health problems. As indicated in Figure 3, the ACEs factor was significantly and positively related to health problems at high and mean levels of best friend-emerging adult involvement. In contrast, this association was reduced (though still significant) at low levels of best friend-emerging adult involvement. Using the Johnson-Neyman technique to examine the conditional effect of ACEs at values of the moderator, best friend-emerging adult involvement, revealed that the moderation effect became significant when levels of best friend-emerging adult involvement were ≥ -.82 (see Table 6). The moderator was centered, so this would indicate that this score was below the sample average. There were no other significant two-way interactions in the prediction of health problems.

CHAPTER V

DISCUSSION

The purpose of the current investigation was to examine the link between adverse childhood experiences (ACEs) and emerging adult risky behavior, depressive symptoms, and health problems. In addition, relationship quality with primary caregivers, best friends, and significant others were examined as potential protective factors in the link between ACEs and emerging adult mental and physical outcomes. Results indicated that ACEs were significantly and positively related to emerging adult risky behavior, depressive symptoms, and health problems. In addition, high levels of ACEs were related to high levels of emerging adult depressive symptoms and health problems (but not risky behavior) when examined simultaneously. Moreover, there was little evidence (i.e., 3/18 two-way interactions) of interpersonal relationships as moderators in the link between ACEs and emerging adult adjustment. Implications of the findings for future interventions are discussed.

Research Goal 1

The **first research goal** was to examine the link between ACEs and emerging adult mental and physical outcomes (i.e., depressive symptoms, risky behavior, and health problems). It was hypothesized that high levels of ACEs would be associated with high levels of emerging adult risky behavior, depressive symptoms, and health problems. Results demonstrated that ACEs were significantly and negatively related to emerging adult risky behavior, depressive

symptoms, and health problems. These findings were consistent with the previous research in this area (Seon et al., 2021; Cloitre et al., 2019; Connoly, 2020; Schafer, 2021). One possible reason for these findings is that ACEs may impact biological systems. Specifically, evidence in the literature has suggested that the unmitigated exposure to the toxic stress may activate toxic hormones in the brain (Shonkoff et al., 2012), leading to later depressive symptoms (Bennett, 2002; Caldjii, 2000; Rosenblum, 1994). This toxic stress also creates inflammation in the body (Hantsoo et al., 2019), which has been connected to various health problems (Perry, 2004; Taylor et al., 2006). It is also possible that adverse childhood experiences may limit one's opportunities to develop healthy coping behaviors (e.g., mindfulness, seeking therapy, exercise, etc.; Barerra et al., 2019). That is, exposure to ACEs may lead to maladaptive, risky coping strategies (e.g., substance use, risky sexual behavior; Anda et al., 1999).

Research Goal 2

The **second research goal** was to examine whether ACEs were related to the three outcomes (i.e., depressive symptoms, risky behavior, and health problems) when examined simultaneously. This research goal was important because when researching the impact of ACEs, it is imperative to remember that people who have experienced ACEs will not be contending with one outcome but rather multiple, interrelated negative outcomes. To the best of my knowledge, this is the first published investigation to test this specific research goal. Findings indicated that high levels of ACEs were uniquely and incrementally related to high levels of emerging adult depressive symptoms and health problems. ACEs were not significantly related to emerging adult risky behavior in this analysis. A possible reason for these results may be the commonalities found between the adjustment domains of depressive symptoms and health problems. The biological processes that contribute to both depressive symptoms and health

problems in adulthood are both intimately linked to disruptions in brain development in early childhood due to the unmitigated exposure to toxic stress (Bennett, 2002; Caldjii, 2000; Perry, 2004; Rosenblum, 1994; Taylor et al., 2006). It is also important to consider the developmental context of this study. Risky behavior tends to decrease alongside an increase in inhibitory control during emerging adulthood (Fosco, 2019; Moilanen et al., 2010), weakening its ability to predict variance in ACEs in the same model with depression and health problems. In contrast, depressive symptoms tend to increase starting in adolescence (Wickrama et al., 2009).

Research Goal 3

The **third research goal** was to examine whether supportive interpersonal (i.e., parents, friends, romantic partners) relationships moderated the association between ACEs and emerging adult risky behavior, and physical and mental health problems. It was hypothesized that the link between ACEs and emerging adult mental and physical health outcomes would be attenuated under high levels of supportive relationships (i.e., openness, involvement) with primary caregivers, friends, and/or romantic partners. The overall findings demonstrated little or no evidence of interpersonal relationships as moderators in the link between ACEs and emerging adult depressive symptoms, health problems, and risky behavior. These findings are not consistent with previous research which suggested that supportive relationships with parents, friends, and romantic partners may reduce the risk associated with adverse childhood experiences (Brown & Shillington, 2017; Moses et al., 2017; Szwedo et al., 2017).

One possible reason for these findings could be attributed to unique characteristics of emerging adulthood. Specifically, this is a developmental period marked by notable transitions in these key interpersonal relationships (Cardbery & Burhmeister, 1998; Pitman & Scharfe, 2010; van der Valk, 2008). Moreover, it is important to remember that the emerging adults in the

current college sample have, in most cases, recently moved out of their childhood home, creating changes in their relationship with their PC consistent with this stage of development (Arnett, 2004). It is also possible that other types of relationship attributes may be more salient protective factors compared to openness and involvement (e.g., warmth, balance of power, mutual vulnerability, attachment patterns; Walsh & Zadurian, 2022; Kamenov & Jelic, 2005). It also important to acknowledge that finding evidence for moderation can be challenging in studies adopting nonexperimental designs (McClelland & Judd, 1993).

While there were only three significant two-way interactions (out of 18 tested) in the current investigation, the overall pattern of the moderation effects was similar in each case. Specifically, high levels of openness and involvement *magnified* the link between ACEs and emerging adult adjustment. This pattern runs counter to previous research which demonstrated that the link between ACEs and adjustment may be reduced under high levels of positive and supportive interpersonal relationships (Brown & Shillington, 2017; Moses et al., 2017; Szwedo et al., 2017). Although this pattern was only found in a small subset of the two-way interactions, it suggests that the utility and value of protective factors may vary by context (Criss et al., 2021; Luthar & Cicchetti 2000; Masten & Coatsworth 1998). In the ACEs X primary caregiver-emerging adult openness interaction, the primary caregiver-emerging adult openness score at which the moderation effect became significant was -1.07 when the primary caregiver-emerging adult openness score was centered. This converts to an actual uncentered score of 2.80. The average openness score for our sample was 4.07. To put the results in perspective, it may be helpful to realize that the converted score was below -1 *SD.* One possible reason for the significant ACEs X primary caregiver-emerging adult openness interaction in the prediction of emerging adult risky behavior could be due to the personal characteristics of the parent.

Specifically, parents from high ACEs homes are more likely to have certain negative attributes and characteristics, such as low parental warmth, decreased parent-child engagement, harsh discipline, and poor parental emotional regulation (Lund et al., 2022; Seteanu & Giosan, 2021; Shafer & Easton, 2021). Indeed, it is possible that the primary caregiver may be a perpetrator of at least some of the emerging adult adverse childhood experiences. That is, many of the items on ACEs measures involve a primary caregiver who lives in the home of the child (Bethell et al., 2017; Kerker et al., 2015). Furthermore, given that offspring are more open to their parents' teachings and socialization efforts in the context of a highly mutually responsive and supportive relationships (Criss et al., 2003; Kochanska, 1997), having an open and positive relationship with a parent in the context of a high ACEs home may lead to the offspring to adopt many of the parent's maladaptive behaviors.

Turning to the significant ACEs X best friend-emerging adult openness and ACEs X best friend-emerging adult involvement interactions in the prediction of emerging adult health problems, the findings indicated that the link between ACEs and health problems was magnified under high levels of best friend-emerging adult openness and involvement. In the ACEs X best friend-emerging adult openness interaction, the best friend-emerging adult openness score at which the moderation effect became significant was -.58 when the best friend-emerging adult openness score was centered. This converts to an actual uncentered score of 3.95. The average best friend-emerging adult openness score for the sample was 4.53. To put the results in perspective, it may be helpful to realize that the converted score was slightly above -1 *SD.* In the ACEs X best friend-emerging adult involvement interaction, the best friend-emerging adult involvement score at which the moderation effect became significant was -.82 when the best friend-emerging adult involvement score was centered. This converts to an actual uncentered

score of 2.72. The average best friend-emerging adult openness score for the sample was 3.54. To put the results in perspective, it may be helpful to realize that the converted score was slightly above -1 *SD.* In considering the possible reasons for these results, it is again important to consider the context of peer relationships when evaluating the viability of the relationship as a protective factor. In considering the possible reasons for these results, it is again important to consider the context of peer relationships when evaluating the viability of the relationship as a protective factor. Specifically, it has been established in the literature that ACEs are associated with dysfunction in later interpersonal relationships (Criddle et al., 2022; Davis et al., 2001; Davis & Petretic-Jackson, 2000). One possibility to consider is that the emerging adult and best friend both may have experienced shared trauma. Indeed, research on adolescent relationships has demonstrated similarity between youth and their friends, especially in terms of psychopathology. Though this was a cross-sectional study, it may still be important to consider the selection v. socialization hypothesis. Social selection is when youth seek out and form relationships with peers with whom they have similarities (Laird et al., 2008). In contrast, socialization processes occur when youth behavior is shaped by the behavior of their peers. Antisocial friends are thought to exert this influence through modeling, by reinforcing maladaptive behaviors. Youth have their own misbehaviors reinforced by the peers they are drawn to, which leads to escalation of the frequency and severity of the maladaptive behaviors in both the youth and their peers (Laird et al., 2008). If looking through the lens of social selection process, it must be considered that it may increase the probability that the emerging adult and their best friend both experienced disadvantages (e.g., dangerous neighborhood, poverty, discrimination; high antisocial or risky behavior). The shared risk between relationship partners could make the dyad more likely to experience the documented neurobiological effects

precipitating from the interaction between the relationship partners within the context of adversity (Criddle et al., 2022; Davis et al., 2001; Davis & Petretic-Jackson, 2000; Feldman, 2017). Further, this may lead to heightened risk for health problems (Ferraro et al., 2016; Lustig, 2021). For example, there is evidence in the literature that poverty is a reliable predictor of adult physical health problems (Braveman & Barclay, 2009; Braveman & Gottlieb, 2014). In addition, children who grew up in poverty are at in increased risky for behaviors detrimental to their health as adults (e.g., smoking, substance use; Melchior et al., 2007). The shared background of poverty and therefore, increased risk for health-harming behaviors, may provide social context for these shared maladaptive behaviors. Beyond this, there is evidence in the literature that positive interactions between friends may magnify the association between risk and a negative outcome. For example, Dubow et al. (1997) found that high levels of supportive friendships exacerbated the effect of stressors on adolescent antisocial behavior. Furthermore, though this was cross-sectional there is room to consider the that the dynamic might go both ways. That is, youth experiencing high disadvantage and ACEs may be attracted to friends who have had similar experiences. Alternatively, hanging out with peers from high ACEs backgrounds may introduce youth to adverse contexts and situations.

Limitations and Future Directions

Interpretation of the findings from this study should include consideration of its limitations. One limitation was that the current sample was a demographically homogeneous college sample. While there is evidence in the literature that ACEs occur universally (Felitti et al., 1998), specific demographic characteristics predispose distinct groups to ACEs. Since the sample was composed of mostly European American participants, it remains unclear whether these results can be generalized to a more diverse samples or emerging adults who do not attend

college. Subsequent research using more diverse populations will be needed. Another limitation to consider is that the design was cross-sectional. As such, this study only provides a snapshot of the interpersonal relationships, which are likely change during college (Cardbery & Burhmeister, 1998; Pitman & Scharfe, 2010). Likewise, cross-sectional designs limit the ability to infer directionality of ACEs-adjustment linkages. Future research in this area would benefit from longitudinal designs. Another limitation of the current investigation was the use of a mono-method, self-report approach in the measurement of the study factors. The use of other informants (e.g., parents, friends, romantic partners) and methods (e.g., observer ratings) may allow a better conceptualization and operationalization of the key study factors, such as interpersonal relationships. In addition, the ACEs survey utilized in the current study has received criticism for not accurately measuring the scope of possible ACEs or taking into account systematic or racial inequalities that might lend themselves to generational trauma (Helton et al., 2022; McLennan et al., 2020). Studies concentrating on assessing the long-term ramifications of ACEs should consider using other dimensions such as peer victimization, experiences with discrimination, and housing instability (Bernard et al., 2021; Mersky et al., 2016). Finally, though I examined multiple protective factors, the factors examined were not an exhaustive list. Other protective factors that could be examined might include future orientation, sleep, hope, IQ, emotional regulation, socioeconomic status (Afifi et al., 2022; Sparks et al., 2021).

Implications

The current study found evidence that ACEs were related to negative mental and physical outcomes. Although I did not find evidence of relationships as protective factors, evidence of other types of protective factors used in interventions can be found in the literature. For example,

improvement of neurobiological stress regulation through mindfulness practice and yoga has been found to attenuate the link between high ACEs and negative outcomes (Whitaker et al., 2014). Another intervention example are programs that encourage individuals at-risk to be physically active, such as organized sports. There is evidence that participating in team sports during adolescence may serve as a protective factor against negative outcomes in people who have experienced ACEs (Easterlin et al., 2019; Hays-Grudo & Morris, 2020). Considering the evidence in the extant literature that individuals who have experience ACEs are more likely to have dysfunctional interpersonal relationships in adulthood (Criddle et al., 2022; Davis et al., 2001; Davis & Petretic-Jackson, 2000), and my results indicating that supportive relationships may exacerbate the relationship between ACEs and negative outcomes in certain contexts, it seems relevant to recommend interventions in the form of social remediation in the area of healthy relationship development. Investigations of adult attachment have indicated that individuals' descriptions of their childhood experiences with their primary caregivers are associated with feelings and beliefs about interpersonal relationships (Hays-Grudo & Morris, 2020). These attitudes and beliefs may be partially responsible for the increased risk for dysfunctional interpersonal relationships in adulthood for individuals who have experienced ACEs. Social connections (i.e., relationships) may act as an effective means of rewiring the stress response system and promoting resilience through prosocial behavior, but only in the context of healthy, functional relationships (Belsky, Jaffee, Sligo, Woodward, & Silva, 2005). Overall, providing holistic interventions (e.g., increasing positive neurobiological stress response, increasing adaptive behavior: cognitive, social, and emotional, creating supportive and adaptive environments; Hays-Grudo & Morris, 2020) that help individuals acquire cognitive,

social, and emotional skills that may have been impaired by their early experiences of adversity may be the best way to protect for the negative outcomes

associated with ACEs.

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APPENDICES

Table 1

Bivariate correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9	10
1. ACEs		.18***	.37***	.20***	-.28***	-.37***	.04	-.10**	-.09	-.14**
2. EA-Risky Behavior			.28***	.39***	-.14***	-.17***	-.09*	-.06	-.24***	-.10
3. EA-Depressive Symptoms				.31***	-.29***	-.25***	-.09*	-.15***	-.27***	-.15**
4. EA Health Problems					-.09*	-.08*	.06	.03	-.15**	-.16**
5. PC-EA Openness						.54***	.38***	.29***	.32***	.15**
6. PC-EA Involvement							.25***	.49***	.18**	.39***
7. BF-EA Openness								.40***	.42***	.16**
8. BF-EA Involvement									.12*	.40***
9. SO-EA Openness										.38***
10. SO-EA Involvement										
n	859	851	852	846	846	847	758	758	362	362
M	1.21	1.34	15.41	.00	4.07	3.60	4.53	3.54	4.60	3.83
SD	1.82	.41	10.88	.48	.95	.97	.65	.88	.56	.80

Note: ***$p < .001$, **$p < .01$, *$p < .05$; ACEs = adverse childhood experiences; EA = emerging adult; PC = primary caregiver; BF = best friend; SO = significant other

Table 2

Multiple regressions examining interpersonal relationships (openness) as moderators in the link between ACEs and emerging adult adjustment

		EA Risky Behavior		EA Depressive Symptoms		EA Health Problems	
Step	Predictors	Std. β	ΔR^2	Std. β	ΔR^2	Std. β	ΔR^2
1	EA gender[a]	-.09	.02	.00	.01	.23***	.05***
	EA age	.09		-.08		-.00	
2	ACEs	.25***	.07***	.36***	.23***	.35***	.14***
	PC-EA openness	-.00		$-.10^{+}$		.03	
	BF-EA openness	-.05		.03		.08	
	SO-EA openness	-.06		-.21***		-.14*	
3	ACEs X PC-EA openness	.15*	.02	-.02	.01	-.07	.01
	ACEs X BF-EA openness	-.06		.09		$.10^{+}$	
	ACEs X SO-EA openness	-.03		-.03		-.06	

Note: [a] = coded 1 = male and 2 = female; ACEs = adverse childhood experiences; BF = best friend; EA = emerging adult; PC = primary caregiver; SO = significant other; p values ***$p < .001$, *$p < .05$, $^{+}p < .10$

Table 3

Multiple regressions examining interpersonal relationships (involvement) as moderators in the link between ACEs and emerging adult adjustment

		EA Risky Behavior		EA Depressive Symptoms		EA Health Problems	
Step	Predictors	Std. β	ΔR^2	Std. β	ΔR^2	Std. β	ΔR^2
1	EA gender[a]	-.10	.02	.00	.01	.23***	.05***
	EA age	.09		.08		-.00	
2	ACEs	.20**	.08***	.35***	.20***	.35***	.14***
	PC-EA involvement	-.14^{+}		-.17*		-.04	
	BF-EA involvement	.04		-.01		.09	
	SO-EA involvement	.02		-.01		-.10^{+}	
3	ACEs X PC-EA involvement	.11	.01	-.08	.01	-.03	.03*
	ACEs X BF-EA involvement	-.02		.05		.21**	
	ACEs X SO-EA involvement	.04		-.03		-.09	

Note: [a] = coded 1 = male and 2 = female; ACEs = adverse childhood experiences; BF = best friend; EA = emerging adult; PC = primary caregiver; SO = significant other; p values ***$p < .001$, **$p < .01$, *$p < .05$, $^{+}p < .10$

Table 4

Conditional effect of ACEs at values of PC-EA openness on risky behavior

Level of PC-EA Openness	Effect	*SE*	95% CI
-3.07	-.01	.03	[-.06,.05]
-2.87	-.001	.03	[-.05,.05]
-2.67	.003	.02	[-.04,.05]
-2.47	.01	.02	[-.04,.05]
-2.27	.01	.02	[-.03,.05]
-2.07	.02	.02	[-.02,.05]
-1.87	.02	.02	[-.01,.05]
-1.67	.02	.02	[-.01,.06]
-1.47	.03	.01	[-.001,.06]
-1.44	.03	.01	[.00,.06]
-1.27	.03*	.01	[.01,.06]
-1.07	.04**	.01	[.01,.06]
-.87	.04**	.01	[.02,.07]
-.67	.05***	.01	[.02,.07]
-.47	.05***	.01	[.03,.07]
-.27	.05***	.01	[.03,.08]
-.07	.06***	.01	[.03,.08]
.13	.07***	.01	[.04,.09]
.33	.07***	.01	[.04,.10]
.53	.07***	.02	[.04,.10]
.73	.07***	.02	[.04,.11]
.93	.08***	.02	[.04,.12]

Note. ACEs = adverse childhood experiences; PC-EA = primary caregiver-emerging adult; CI = confidence interval; p values ***$p < .001$, **$p < .01$, *$p < .05$

Table 5

Conditional effect of ACEs at values of BF-EA openness on health problems

Level of BF-EA Openness	Effect	*SE*	95% CI
-2.53	-.02	.06	[-.13,.08]
-2.38	-.02	.05	[-.12,.08]
-2.23	-.01	.04	[-.11,.08]
-2.08	-.01	.04	[-.10,.08]
-1.93	-.003	.04	[-.09,.08]
-1.78	.001	.04	[-.08,.08]
-1.63	.01	.04	[-.07,.08]
-1.48	.01	.03	[-.06,.08]
-1.33	.02	.03	[-.05,.08]
-1.18	.02	.03	[-.03,.08]
-1.03	.03	.03	[-.02,.08]
-.88	.03	.02	[-.01,.08]
-.73	.04	.02	[-.004,.08]
-.67	.04	.02	[.00,.08]
-.58	.04*	.02	[.01,.08]
-.43	.05**	.02	[.02,.08]
-.28	.05***	.02	[.02,.08]
-.13	.06***	.01	[.03,.09]
.02	.06***	.01	[.04,.09]
.17	.07***	.01	[.04,.10]
.32	.07***	.01	[.05,.10]
.47	.08***	.02	[.05,.11]

Note. ACEs = adverse childhood experiences; BF-EA = best friend-emerging adult; CI = confidence interval; p values ***$p < .001$, **$p < .01$, *$p < .05$.

Table 6

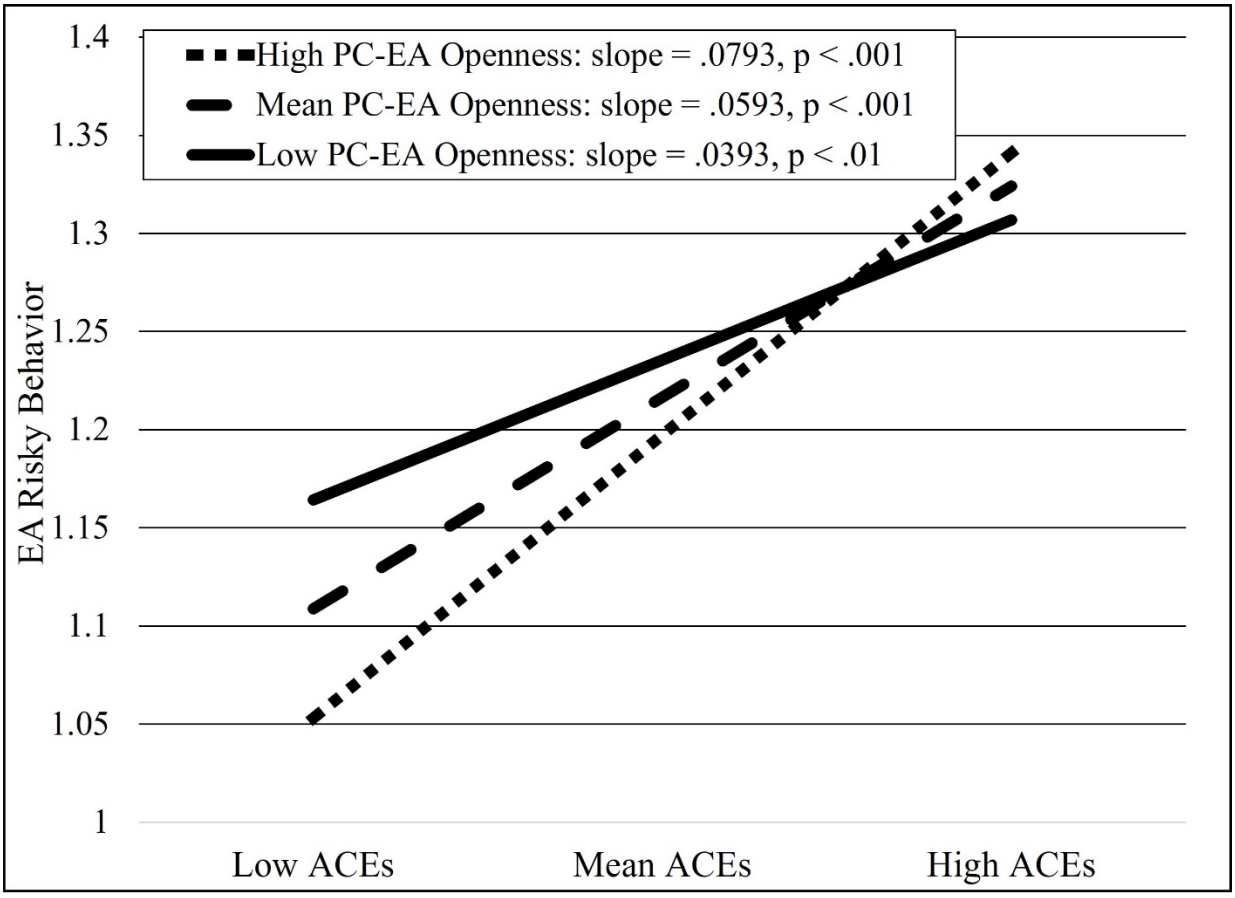
Conditional effect of ACEs at values of BF-EA involvement on health problems

Level of BF-EA Openness	Effect	*SE*	95% CI
-2.34	-.02	.04	[-.09,.05]
-2.15	-.01	.03	[-.08,.05]
-1.96	-.01	.03	[-.07,.05]
-1.77	.002	.03	[-.05,.06]
-1.58	.01	.03	[-.04,.06]
-1.39	.02	.02	[-.03,.07]
-1.20	.03	.02	[-.02,.07]
-1.01	.04	.02	[-.003,.07]
-.97	.04	.02	[.00,.08]
-.82	.04*	.02	[.01,.08]
-.63	.05**	.02	[.02,.08]
-.44	.06***	.02	[.03,.09]
-.25	.07***	.01	[.04,.10]
-.06	.08***	.01	[.05,.11]
.13	.09***	.01	[.06,.11]
.31	.09***	.02	[.06,.12]
.51	.10***	.02	[.07,.13]
.70	.11***	.02	[.08,.15]
.89	.12***	.02	[.08,.16]
1.08	.13***	.02	[.08,.17]
1.27	.14***	.02	[.09,.18]
1.46	.14***	.03	[.09,.20]

Note. ACEs = adverse childhood experiences; BF-EA = best friend-emerging adult; CI = confidence interval; p values ***$p < .001$, **$p < .01$, *$p < .05$.

Figure 1

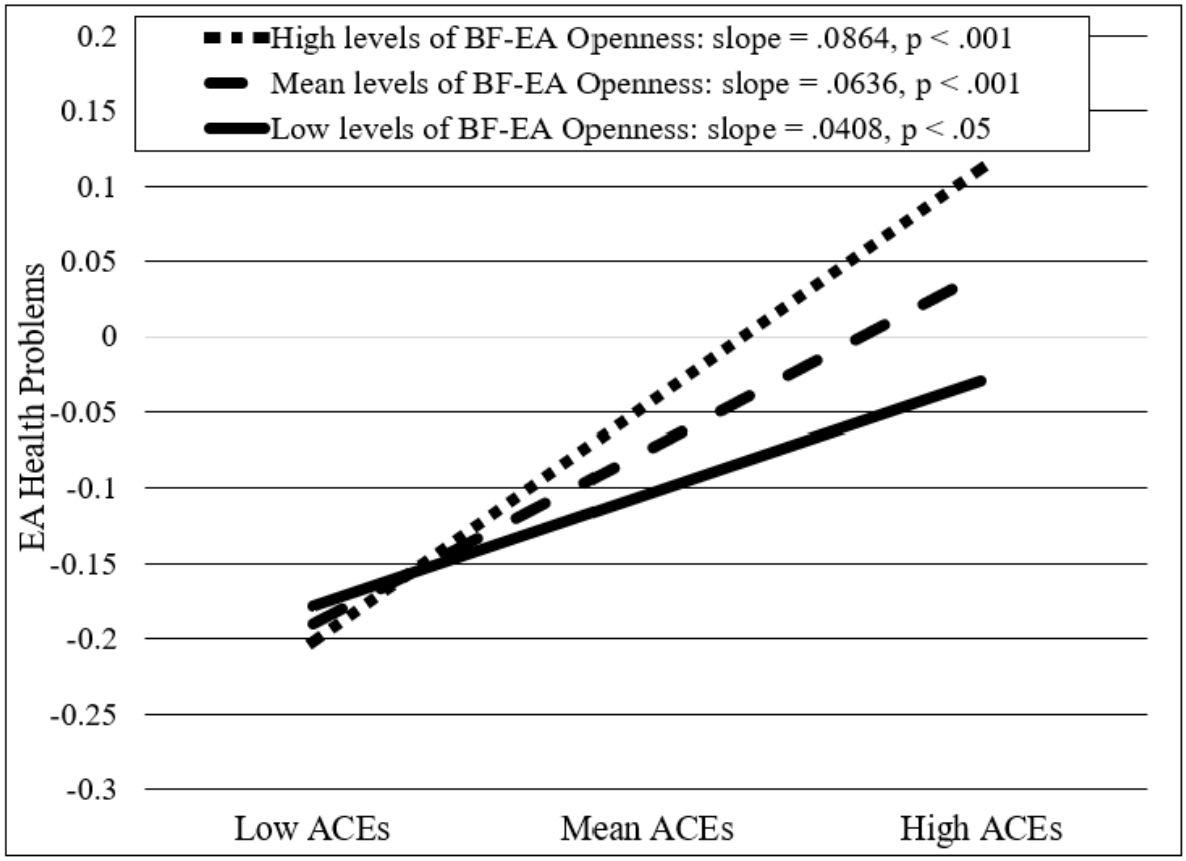
Association between ACEs and risky behavior at high, mean, and low levels of PC-EA openness



Note. ACEs = adverse childhood experiences; PC-EA = primary caregiver-emerging adult

Figure 2

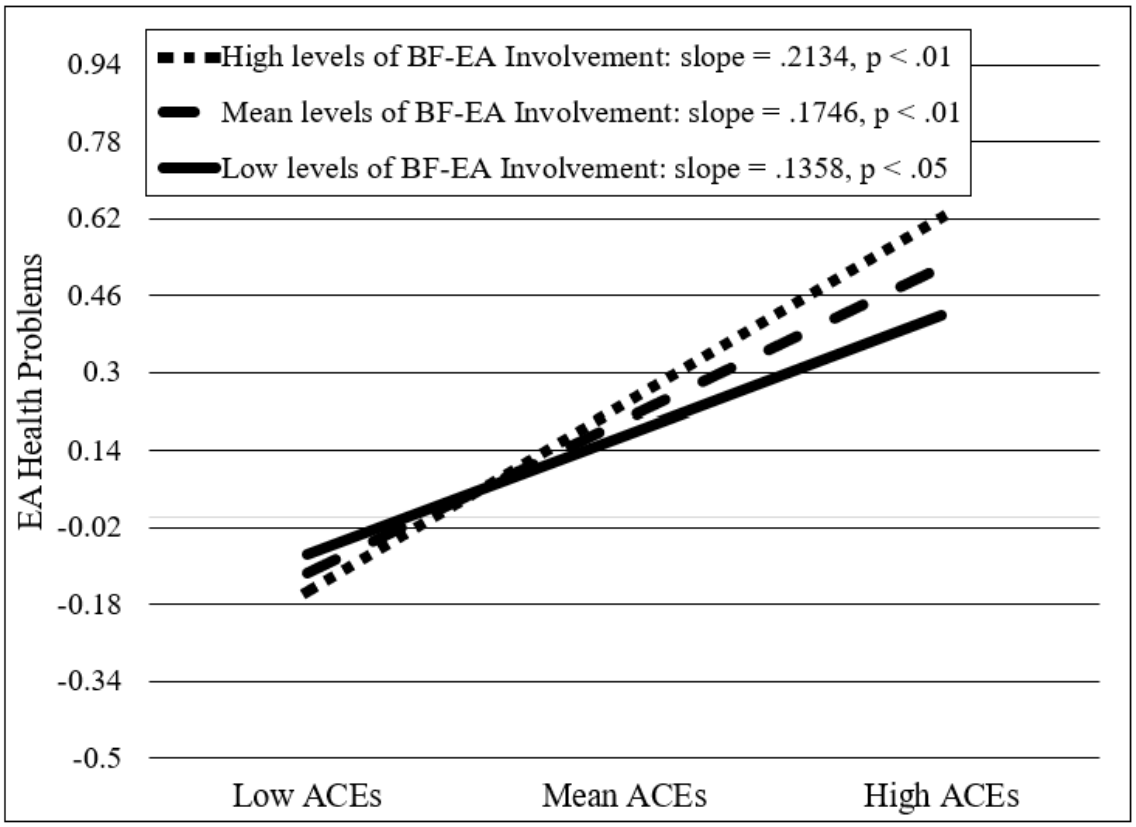
Association between ACEs and health Problems at high, mean, and low levels of BF-EA openness



Note. ACEs = adverse childhood experiences; BF-EA = best friend-emerging adult

Figure 3

Association between ACEs and health problems at high, mean, and low levels of BF-EA involvement



Note. ACEs = adverse childhood experiences; BF-EA = best friend-emerging adu

Adverse Childhood Experiences (ACEs) Survey

Directions: Please answer the following questions regarding when you were growing up, prior to your 18th birthday.

	Yes	**No**
1. Did a parent or other adult in the household often or very 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?	○	○
2. Did a parent or other adult in the household often or very often:		
Push, grab, slap, or throw something at you OR hit you so hard that you had marks or were injured?	○	○
3. 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?	○	○
4. 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?	○	○
5. 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?	○	○

6. Was your mother or stepmother or father or stepfather:

Often or very often pushed, grabbed, slapped, or had something thrown at her/him OR sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard OR ever repeatedly hit for at least a few minutes or threatened with a knife or gun?	○	○
7. Were your parents ever separated or divorced?	○	○
8. Did you live with anyone who was a problem-drinker or alcoholic or who used street drugs or prescription drugs not as prescribed?	○	○
9. Was a household member depressed or mentally ill or did a household member attempt suicide?	○	○
10. Did a household member go to prison?	○	○

Youth Risky Behavior Questionnaire

1	2	3	4	5
Never	1-2 times	3-4 times	5-6 times	7 or more times

Directions: During the past year, how many times did you…	1	2	3	4	5
1. Destroy or vandalize property?	○	○	○	○	○
2. Threaten to physically hurt someone?	○	○	○	○	○
3. Get in a physical fight?	○	○	○	○	○
4. Punch or hit someone with a fist or object?	○	○	○	○	○
5. Threaten someone with a weapon, such as a knife or gun?	○	○	○	○	○
6. Attack someone with a weapon, such as a knife or gun?	○	○	○	○	○
7. Buy drugs?	○	○	○	○	○
8. Sell drugs?	○	○	○	○	○
9. Shoplift things?	○	○	○	○	○
10. Steal money?	○	○	○	○	○
11. Rob someone?	○	○	○	○	○
12. Use marijuana?	○	○	○	○	○
13. Abuse prescription medication?	○	○	○	○	○
14. Use hallucinogens, LSD, mushrooms?	○	○	○	○	○
15. Use cocaine/crack?	○	○	○	○	○
16. Use heroin?	○	○	○	○	○
17. Use ecstasy or meth?	○	○	○	○	○
18. Use an opioid for pain issues?	○	○	○	○	○
19. Use multiple drugs at once?	○	○	○	○	○
20. Go to school intoxicated or high?	○	○	○	○	○
21. Go to work intoxicated or high?	○	○	○	○	○
22. Drive an automobile intoxicated or high?	○	○	○	○	○
23. Cut, burn, or hurt yourself on purpose without trying to die?	○	○	○	○	○
24. Bet on sports, horses, or other animals?	○	○	○	○	○
25. Play lotteries, scratch cards, or card games for money?	○	○	○	○	○
26. Go to the casinos?	○	○	○	○	○
27. Lose more money than you can afford while gambling?	○	○	○	○	○
28. Gamble illegally?	○	○	○	○	○
29. Have unprotected sex with someone?	○	○	○	○	○
30. Have unprotected sex with someone you just met or did not know well?	○	○	○	○	○

31. Have two or more sexual relationships at the same time?	○	○	○	○	○
32. Hook up with someone you did not know well for sex?	○	○	○	○	○
33. Pay for sex?	○	○	○	○	○
34. Have sex with someone while intoxicated?	○	○	○	○	○
35. Have sex with someone while high?	○	○	○	○	○
36. Have sex for drugs or money?	○	○	○	○	○
37. Have difficulty stopping eating?	○	○	○	○	○
38. Eat a lot of food when not hungry?	○	○	○	○	○
39. Drink alcohol until you blacked out or passed out?	○	○	○	○	○
40. Drive 30 mph or faster over the speed limit?	○	○	○	○	○
41. Run red lights or ignored stop signs?	○	○	○	○	○
42. Talk on your cell phone while driving?	○	○	○	○	○
43. Text on your cell phone while driving?	○	○	○	○	○
44. Impulsively buy stuff?	○	○	○	○	○
45. Buy expensive items you could not afford on the spur of the moment?	○	○	○	○	○

Youth Mood Inventory (Depressive Symptoms)

Directions: These items ask you about some of the ways you might have been feeling or things you might have been doing over the last week or so.

0	**1**	**2**	**3**
Rarely or None of the Time (Less than 1 day)	Some or a Little of the Time (1-2 days)	Occasionally or a Moderate Amount of Time (3-4 days)	Most or All of the Time (5-7 days)

	0	**1**	**2**	**3**
1. I was bothered by things that usually don't bother me.	○	○	○	○
2. I did not feel like eating; my appetite was poor.	○	○	○	○
3. I felt that I could not shake off the blues even with help from my family or friends.	○	○	○	○
4. I felt that I was just as good as other people.	○	○	○	○
5. I had trouble keeping my mind on what I was doing.	○	○	○	○
6. I felt depressed.	○	○	○	○
7. I felt that everything I did was an effort.	○	○	○	○
8. I felt hopeful about the future.	○	○	○	○
9. I thought my life had been a failure.	○	○	○	○
10. I felt fearful.	○	○	○	○
11. My sleep was restless.	○	○	○	○
12. I was happy.	○	○	○	○
13. I talked less than usual.	○	○	○	○
14. I felt lonely.	○	○	○	○
15. People were unfriendly.	○	○	○	○
16. I enjoyed life.	○	○	○	○
17. I had crying spells.	○	○	○	○
18. I felt sad.	○	○	○	○
19. I felt that people dislike me.	○	○	○	○
20. I could not "get going".	○	○	○	○

Youth Health Survey

Note: Questions 1 through 5 were purposely omitted from this survey as the response data was not used in calculating health problems scores.

Directions: Have you ever had…	**No, Never**	**Yes, but NO PROBLEMS with it in the last 12 months**	**Yes, and HAD PROBLEMS with it in the last 12 months**
6. asthma?	○	○	○
7. diabetes (Type I or Type II)?	○	○	○
8. migraine headaches?	○	○	○
9. epilepsy (seizures)?	○	○	○
10. sickle cell anemia?	○	○	○
11. hay fever or allergies?	○	○	○
12. attention-deficit hyperactivity disorder (ADHD)	○	○	○
13. other mental health problems?	○	○	○

Directions: During the past year, how many times did you have:

0	**1**	**2**	**3**	**4**
Never	Once	2 times	3 times	4 or more times

	0	**1**	**2**	**3**	**4**
14. a cold or flu?	○	○	○	○	○
15. sinus trouble?	○	○	○	○	○
16. a sore throat?	○	○	○	○	○
17. an ear infection?	○	○	○	○	○
18. upset stomach with vomiting or diarrhea or fever?	○	○	○	○	○
19. bronchitis?	○	○	○	○	○
20. a skin infection?	○	○	○	○	○
21. an eye infection?	○	○	○	○	○
22. pneumonia?	○	○	○	○	○

23. a bladder infection or urinary tract infection?	○	○	○	○	○
24. infectious mononucleosis or “mono”?	○	○	○	○	○
25. a sexually transmitted disease or infection?	○	○	○	○	○

Parent-Student Openness Questionnaire

Directions: Next, we are going to ask you questions about your relationship with your primary giver (i.e., the parent who was primarily responsible raising you during your childhood.

1. Is your primary caregiver still alive?
   - ○ Yes (1)
   - ○ No (2) (skip to page xxx)

2. Who was your primary caregiver?

01 Biological Mother	**04** Adoptive Father	**07** Foster Mother	**10** Father's Girlfriend	**13** Grandparent	**16** Sibling
02 Biological Father	**05** Step Mother	**08** Foster Father	**11** Mother's Partner	**14** Aunt	**17** Cousin
03 Adoptive Mother	**06** Step Father	**09** Mother's Boyfriend	**12** Father's Partner	**15** Uncle	**18** Other

Please using the following scale to rate each item.

1	**2**	**3**	**4**	**5**
Definitely Not	Not Really	Not Sure	Somewhat	Definitely

To what extent are the following statements true about your relationship with your primary caregiver ***during the past year***?	**1**	**2**	**3**	**4**	**5**
3. If upset about something, I would talk with my parent about it.	○	○	○	○	○
4. I liked telling my parent about myself.	○	○	○	○	○
5. It was easy for my parent to be in tune with what I was feeling.	○	○	○	○	○
6. I was open about sharing feelings and telling my parent about how things were going.	○	○	○	○	○
7. My parent liked asking me about how things were going.	○	○	○	○	○
8. If my parent was upset about something, she would talk with me about it.	○	○	○	○	○
9. My parent liked telling me about herself.	○	○	○	○	○
10. It was easy to be in tune with what my parent was feeling.	○	○	○	○	○
11. My parent was very open about sharing feelings and telling me how things were going.	○	○	○	○	○
12. I liked asking my parent about how things were going with her.	○	○	○	○	○

Parental Involvement Questionnaire

1	**2**	**3**	**4**	**5**
Never	Hardly Ever	Sometimes	Frequently	Very Often

During the past year, how often did you and your primary caregiver…	**1**	**2**	**3**	**4**	**5**
1. eat a meal together?	○	○	○	○	○
2. go shopping together?	○	○	○	○	○
3. go to the movies together?	○	○	○	○	○
4. go to a sporting event together?	○	○	○	○	○
5. go to church together?	○	○	○	○	○
6. do something fun together?	○	○	○	○	○
7. watch TV or a video together?	○	○	○	○	○
8. do household chores together?	○	○	○	○	○
9. play a board game or cards together?	○	○	○	○	○
10. drive in the car together?	○	○	○	○	○

Best Friend-Student Openness Questionnaire

1	2	3	4	5
Definitely Not	Not Really	Not Sure	Somewhat	Definitely

To what extent are the following statements true about your relationship with **your friend**?	1	2	3	4	5
1. If upset about something, I would talk with my friend about it.	○	○	○	○	○
2. I liked telling my friend about myself.	○	○	○	○	○
3. It was easy for my friend to be in tune with what I was feeling.	○	○	○	○	○
4. I was open about sharing feelings and telling my friend about how things were going.	○	○	○	○	○
5. My friend liked asking me about how things were going.	○	○	○	○	○
6. If my friend was upset about something, she would talk with me about it.	○	○	○	○	○
7. My friend liked telling me about herself.	○	○	○	○	○
8. It was easy to be in tune with what my friend was feeling.	○	○	○	○	○
9. My friend was very open about sharing feelings and telling me how things were going.	○	○	○	○	○
10. I liked asking my friend about how things were going with her.	○	○	○	○	○

Best Friend Involvement Questionnaire

1	2	3	4	5
Never	Hardly Ever	Sometimes	Frequently	Very Often

During the past year, how often did you and **your friend**:	**1**	**2**	**3**	**4**	**5**
. eat a meal together?	○	○	○	○	○
2. go shopping together?	○	○	○	○	○
3. go to the movies together?	○	○	○	○	○
4. go to a sporting event together?	○	○	○	○	○
5. go to church together?	○	○	○	○	○
6. do something fun together?	○	○	○	○	○
7. watch TV or a video together?	○	○	○	○	○
8. do household chores together?	○	○	○	○	○
9. play a board game or cards together?	○	○	○	○	○
10. drive in the car together?	○	○	○	○	○

Significant Other-Student Openness Survey

Directions: We're interested in learning more about your relationships with your significant other. ***To what extent are the following statements true about your relationship with your significant other?***

1	**2**	**3**	**4**	**5**
Definitely Not	Not Really	Not Sure	Somewhat	Definitely

	1	**2**	**3**	**4**	**5**
1. If upset about something, my significant other talked with me about it.	○	○	○	○	○
2. My significant other liked telling me about him/herself.	○	○	○	○	○
3. It was easy to be in tune with what my significant other was feeling.	○	○	○	○	○
4. My significant other was open about sharing feelings and telling me about how things were going.	○	○	○	○	○
5. I liked asking my significant other about how things were going with him/her.	○	○	○	○	○
6. If I was upset about something, I talked with my significant other about it.	○	○	○	○	○
7. I liked telling my significant other about myself.	○	○	○	○	○
8. It was easy for my significant other to be in tune with what I was feeling.	○	○	○	○	○
9. I was very open about sharing feelings and telling my significant other how things were going.	○	○	○	○	○
10. My significant other liked asking me about how things were going.	○	○	○	○	○

Significant Other Involvement Survey

1	2	3	4	5
Never	Hardly Ever	Sometimes	Frequently	Very Often

During the past year, how often did you and your significant other:	1	2	3	4	5
1. eat a meal together?	○	○	○	○	○
2. go shopping together?	○	○	○	○	○
3. go to the movies together?	○	○	○	○	○
4. go to a sporting event together?	○	○	○	○	○
5. go to church together?	○	○	○	○	○
6. do something fun together?	○	○	○	○	○
7. watch TV or a video together?	○	○	○	○	○
8. do household chores together?	○	○	○	○	○
9. play a board game or cards together?	○	○	○	○	○
10. drive in the car together?	○	○	○	○	○

Participant Information Form

Project Title: Investigation of Moderators in the Link between Adversity and Emerging Adult Adjustment

Primary Investigator: Dr. Michael M. Criss

Co-Investigator: Dr. Jennifer Byrd-Craven

Project Purpose: The purpose of this project is to examine the links between social and environmental adversity (e.g., daily stress, economic strain) and emerging adulthood adjustment (e.g., risky behavior, internalizing symptoms). In addition, we will explore whether interpersonal relationships (e.g., parents, friends, mentors) serve a protective factors among individuals exposed to adversity.

Overview of study: If you decide to participate in this project, you will complete a series of questionnaires on SONA that will take approximately 30-45 minutes to complete. Here is an overview of topics that will be covered in the questionnaires:

1. Demographics questionnaire
2. Social and environmental adversity (e.g., stress, discrimination).
3. Supportive relationships with parents, romantic partners, friends, and mentors.
4. Emerging adult adjustment (e.g., emotion regulation, depressive symptoms, risky behaviors)
5. Emerging adult sexual behavior and attitudes
6. Emerging adult health and exercise

Study Risks: There are no known risks associated with this project which are greater than those ordinarily encountered in daily life. However, you may view some of the items in the questionnaires as personal. Moreover, some questions may be bring up upsetting past and recent memories.

Optional Participation: Note that your participation in this study is optional. In addition, if you become uncomfortable or too upset by the questions, you may discontinue your participation in the project.

Study Benefits: By participating in this study via SONA, you will be granted 1 research credit. Contributions made by your participation will help us understand how interpersonal relationships may help serve as a protective factors among at-risk individuals. In addition, by participating in this project, you may learn more about your relationships and yourself overall.

Confidentiality: All of your answers will be kept anonymous as we will be using the automating credit assignment which will allow us to give you credit for your participating without having to download your name. Moreover, no identifying information will be collected. Your data will be stored on a password protected Qualtrics survey account and eventually downloaded to password projected computers belonging to Drs. Criss and Byrd-Craven which will be stored in a locked office and/or research space. Only they and their research assistants will have access to the data.
The data will be stored for approximately 7 years to allow time for analyzing data, conference presentations, and writing manuscripts based on the data.

Contacts: If you have any questions pertaining to the research, feel free to contact either **Dr. Michael Criss** (michael.criss@okstate.edu; 233 Human Sciences, Department of HDFS, OSU-Stillwater) or **Dr. Jennifer Byrd- Craven** (jennifer.byrd.craven@okstate.edu; 116 N Murray Hall, OSU-Stillwater). If you have questions about your rights as a research volunteer, you may contact the Oklahoma State University Institutional Review Board (IRB) at 218 Scott Hall, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

Please select one:

I **consent** to be in the study: _____

I **do not consent** to be in the study: _____

Oklahoma State University Institutional Review Board

Date:	11/02/2018
Application Number:	HS-18-64
Proposal Title:	Investigation of Moderators in the Link between Adversity and Emerging Adult Adjustment
Principal Investigator:	MICHAEL CRISS
Co-Investigator(s):	Jennifer Craven,
Ph.D. Faculty Adviser:	
Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 223 Scott Hall (phone: 405-744-3377, irb@okstate.edu).

Sincerely,
Oklahoma State University IRB

VITA

Amy L. McGehee

Candidate for the Degree of

Master of Science

Thesis: INTERPERSONAL RELATIONSHIPS AS MODERATORS IN THE LINK BETWEEN ACEs AND EMERGING ADULT ADJUSTMENT: AN EXPLORATION OF CROSS-DOMAIN RESILIENCE

Major Field: Human Development and Family Science

Biographical:

Education:

Completed the requirements for the Master of Science in Human Development and Family Science at Oklahoma State University, Stillwater, Oklahoma in December, 2022.

Completed the requirements for the Bachelor of Science in Biology at University of Texas at Arlington, Arlington, Texas in 2002.

Experience:

Graduate Research Assistant, Oklahoma Center for Health Sciences
Graduate Research Assistant, Oklahoma State University
Graduate Teaching Assistant, Oklahoma State University

Professional Memberships:

Society for Research on Adolescents
National Council on Family Relations
Oklahoma Council on Family Relations
National Public Health Association
Oklahoma Public Health Association