# ADVERSE CHILDHOOD EXPERIENCES AND RISK-TAKING BEHAVIORS IN COLLEGE STUDENTS: EARLY MALADAPTIVE SCHEMAS AND DIFFICULTIES IN EMOTION REGULATION AS POSSIBLE MEDIATORS

by

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# ABSTRACT

DANIEL T. DICKIE. Adverse Childhood Experiences and Risk-Taking Behaviors in College Students: Early Maladaptive Schemas, and Difficulties in Emotion Regulation as Possible Mediators. (Under the direction of DR. RICHARD MCANULTY & DR. JENNIFER LANGHINRICHSEN-ROHLING)

Adverse childhood experiences (ACEs) are pervasive problems in the United States today. As many as 85% of adults report experiencing at least one adverse childhood experience (Crandall et al., 2020), and experiencing just one ACE significantly increases the risk of experiencing more (Deighton et al., 2018). Moreover, these negative experiences in childhood are associated with poorer health outcomes, increased societal costs, and increased risk-taking behavior beginning in adolescence and continuing into adulthood (Felitti, 1998; Felitti, 2002). What is less known, however, is the mechanisms through which the relationship between adverse childhood experiences and risk-taking behaviors occurs. Through a correlational design, this project explored early maladaptive schemas (EMS) from the disconnection and rejection domain (EMS:DR) and difficulties with emotion regulation (DERS) as potential mediators of the relationship between self-reported adverse childhood experiences and five types of anticipated risk-taking behaviors in college students. Finally, positive childhood experiences, or counter-ACEs, have been proposed as protective factors against negative health and behavioral outcomes. Thus, the current study hypothesized a relationship between counter-ACEs and college students' lack of expected engagement in future risk-taking behaviors. As expected, ACEs were positively correlated with both mediators (EMS:DR and DERS) as well as with expected risky behaviors related to heavy drinking, illicit drug use, aggressive and illegal activity, problematic academic and work performance, and risky sexual behaviors. Additionally,

as predicted, early maladaptive schemas in the disconnection and rejection domain were statistically shown to partially mediate the relationship between adverse childhood experiences and anticipated risk-taking related to illicit drug use, heavy drinking, aggressive and illegal behaviors, and problematic academic and work behaviors. Likewise, difficulties in emotional regulation partially mediated the relationship between adverse childhood experiences and expected future risk-taking related to increased sexual activity and problematic academic and work behaviors. Unexpectedly, counter-ACEs did not serve as a moderator and did not significantly buffer the relationship between ACEs and any tested anticipated risk-taking behaviors. Results of this study replicated and extended previous findings linking ACEs to behavioral risk-taking and established both a cognitive and an emotional pathway to partially explain this relationship. Given that the two proposed mediators are transdiagnostic mechanisms, they can be targeted via clinical interventions and techniques to potentially mitigate the negative impacts of experiencing ACEs. Future research should attempt to provide evidence for a causal pathway between these variables of interest.

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ACE An acronym for Adverse Childhood Experiences.

BCE An acronym for Benevolent Childhood Experiences Scale.

CARE An acronym for the Cognitive Appraisal of Risky Events Measure.

CDC An acronym for the Centers for Disease Control and Prevention.

CFI An acronym for the Comparative Fix Index.

Counter-ACEs An acronym for Counter Adverse Childhood Experiences.

DERS: An acronym for Difficulties in Emotions Regulation.

DERS:SF An acronym for the Difficulties in Emotion Regulation Scale – Short Form.

DV An acronym for Dependent Variable.

EMS An acronym for Early Maladaptive Schemas.

EMS:DR An acronym for Early Maladaptive Schemas in the Disconnection and Rejection domain.

IRB An acronym for the Institutional Review Board.

IV An acronym for Independent Variable.

MDD An acronym for Major Depressive Disorder.

PACE An acronym for the Positive and Compensatory Experiences Questionnaire.

RMSEA An acronym for the Root Mean Square Error of Approximation.

SONA An acronym for the participant subject pool.

TLI An acronym for the Tucker Lewis index.

YSQ An acronym for the Young Schema Questionnaire.

# CHAPTER 1: INTRODUCTION

Adverse childhood experiences (ACEs) can have a detrimental impact on behavior, health, and adjustment in adulthood, including conferring greater risk for a variety of problematic behaviors (Crandall et al., 2020; Deighton et al., 2018; Felitti et al., 1998; Garrido et al., 2017; Pilkington et al., 2020). ACEs have been operationally defined to include 10 potential childhood events, including physical, emotional, and sexual abuse and forms of neglect (Felitti et al., 1998). However, the pathways between experiencing adverse childhood experiences and increased engagement in various risk-taking behaviors have not been explored in detail in the literature. The aim of this project was to explore the role of two potential pathways, early maladaptive schemas from the disconnection and rejection domain, a cognitive pathway, and emotion regulation problems, an emotion-focused pathway, as they might mediate the relationship between ACEs and future anticipated risk-taking behaviors among college students. Findings were expected to provide support for a theoretical framework that proposes that early maladaptive schemas from the disconnection and rejection domain and deficits in emotion regulation would function as mediators of the relationship between one's overall ACEs experience and five discrete types of subsequent anticipated risk-taking behaviors among college students (illicit drug use, aggressive and illegal behaviors, risky sexual behavior, heavy drinking, and problematic academic and work related behaviors). A visualization of this model is presented in Figure 1.1. Furthermore, it was predicted that Counter-ACEs would serve as a moderator, buffering the effect of ACEs on subsequent anticipated risk-taking behaviors, as seen in Figure 1.2. Counter-ACEs have been defined as experiences that reflect love, predictability, and support in childhood (Merrick et al., 2019).

Because most of the existing literature has separately focused on one type of childhood experience, or one type of ACE, rather than a person's overall exposure to these experiences in their family of origin, there is a substantial research gap related to outcomes of a cumulation of harmful types of childhood experiences, including possible additive effects of ACEs. For example, there is a robust literature on physical abuse effects and a separate literature on sexual abuse, as well as on emotional abuse. Additionally, numerous potential implications arise from a greater understanding of the mechanisms by which experiencing more childhood adverse events will impact college students' expectations for their risk-taking behavior. Understanding how childhood experiences influence future risk-taking behavior can allow for the creation of better prevention practices to mitigate these risks. For example, if evidence is found for early maladaptive schemas mediating the relationship between ACEs and expected engagement in problematic risk-taking behavior, targeted prevention efforts related to modifying dysfunctional schemas can be enacted to mitigate future risk, which would, in turn, lower the harms and societal costs. Given that the literature has documented a difficulty in reducing ACE exposure in children (Crandall et al., 2020), it is crucial to find ways to mitigate the associated risks.

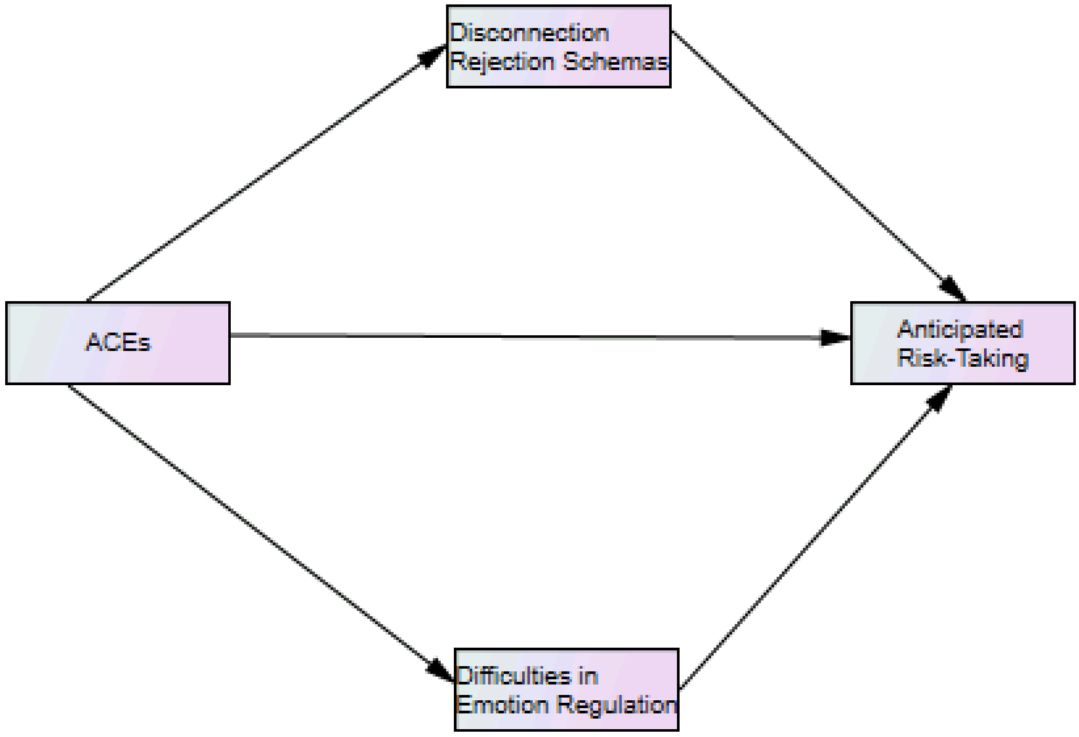


Figure 1.1: Visualization of the parallel mediation model with ACEs as the IV (X), Anticipated Risk-Taking as the DV (Y), Disconnection and Rejection schemas as a mediator ($M_1$), and Difficulties in Emotion Regulation as a mediator ($M_2$).

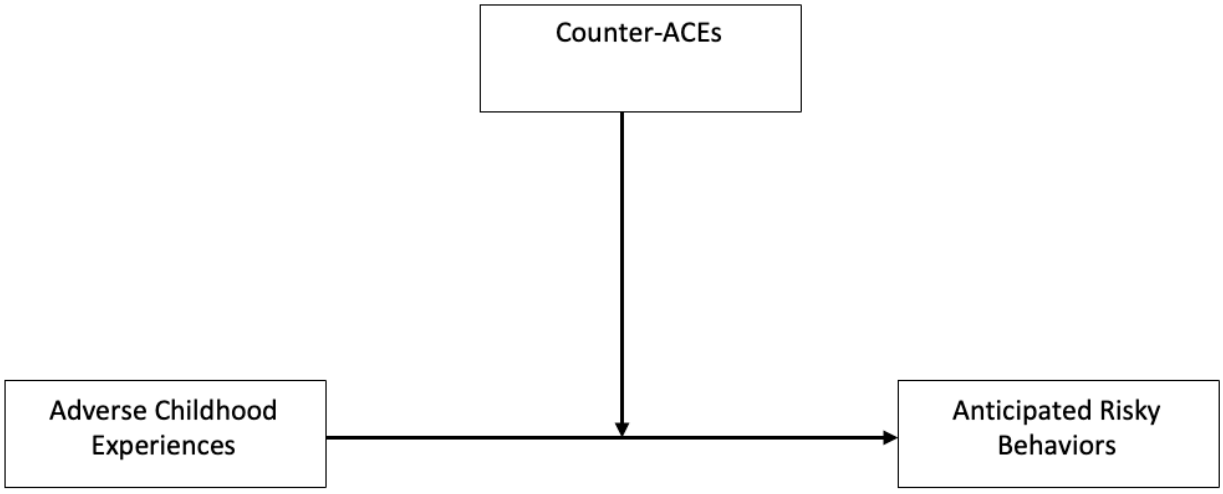


Figure 1.2 Visualization of the moderation model with Anticipated Risk-taking Behaviors as the DV, Adverse Childhood Experiences as the IV, and Counter-ACEs as the moderator (W) buffering the relationship.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Adverse Childhood Experiences

Adverse childhood experiences are harmful experiences in childhood that can be traumatic; these may be overt, covert, one-time events, or reoccurring (Pilkington et al., 2020). ACEs can include emotional, physical, and sexual abuse, neglect, witnessing violence, as well as exposure to criminality, mental health problems and substance abuse in the family (Crandall et al., 2020; Deighton et al., 2018; Garrido et al., 2017; Pilkington et al., 2020). Ten types of distinct ACEs have been delineated which fall into two broad categories: abusive experiences versus household dysfunction (Felitti et al., 1998). ACEs are pervasive in the United States, with about 85% of adults reporting at least one adverse childhood experience (Crandall et al., 2020) and one-third of adults reporting two ACEs during childhood (Karatekin, 2017). As an example of ACE prevalence, an estimated 1,000,000 children experience sexual or physical abuse in the United States each year (Neigh et al., 2009); this estimate does not include emotional abuse or neglect, which are even more common (Giano et al., 2020). An estimated 4,000,000 cases of abuse or neglect are referred to U.S. Child Protective Services annually (Ridout et al., 2018). Additionally, 15,000,000 children are estimated to have experienced two or more ACEs prior to age 18 (Ridout et al., 2018). These childhood experiences translate into an estimated annual societal expense of $124 billion per year when considering costs of healthcare, productivity loss, welfare services, and criminal justice and legal expenses (Ridout et al., 2018). Taken together, there is an estimated $200,000 per lifetime cost of child maltreatment per child (Garrido et al., 2017), which highlights the need for societal-level prevention efforts.

There is also an extensive research literature on the detrimental impact of childhood maltreatment on adult adjustment (Anda et al., 2005; Felitti et al., 1998; Felitti, 2002). Starting in

the 1980s, Felitti and colleagues began to collect data from patients receiving services through Kaiser Permanente in San Diego, California to learn more about the impact of childhood events on adult health outcomes (Felitti, 2002). A total of 8,506 patients completed the first wave of the survey, which included demographic questions, and questions related to ACE exposure, health risk-factors like smoking, alcoholism, drug use, suicide attempts, depression, and number of sexual partners, as well as disease history, including sexually transmitted infections (Felitti et al., 1998). Results of this landmark ACEs research indicated that ACEs positively predicted subsequent intravenous drug use, smoking, suicide attempts, depression, alcoholism, sexually transmitted infections, and other health problems in adulthood (Dube et al., 2001; Hillis et al., 2000; Felitti, 2002). Additionally, ACEs had a graded, dose-response effect on the probability of many of these risk-taking outcomes (Felitti, 2002), meaning that as ACE exposure increased, the risk for these health and behavioral problems also increased. Children who experience ACEs, especially those who experience repeated exposure to a particular ACE or more than one type of ACE, are at a greater risk of engaging in subsequent risk-taking behaviors. Felitti and colleagues (1998) provided a framework for these findings, proposing that adverse childhood experiences lead to social, emotion, and cognitive impairment, which leads to engagement of health-risk behaviors and reduced adult health outcomes.

## 2.2 Risk-Taking Behaviors

Risk-taking behaviors have been broadly defined in the literature. A common broad conceptualization of risk-taking behaviors includes all behaviors that may lead to harmful results (Boyer, 2006). Across the literature, however, risk-taking is often defined as engagement in one specific behavior or set of behaviors. Examples of commonly identified risk-taking behaviors include smoking cigarettes, drug use, alcohol misuse, physical aggression and violence, reckless

driving, non-suicidal self-injury, negative academic behaviors (missing class) and risky sexual behaviors (lack of contraceptive use, increased number of partners, sexual intercourse with strangers, and sexual intercourse while under the influence of alcohol or drugs) in adolescence and adulthood (Bassett et al., 2022; Crandall et al., 2020; Garrido et al., 2017; Pearson et al., 2021; Windle et al., 2018). The framework on exposure to ACEs as a predictor of engagement in subsequent risk-taking behaviors implies that the risks are potentially harmful to the individual and to others, and that the risk-taking behaviors are occurring with some regularity; in other words, it refers to a pattern of engaging in risk-taking behaviors, rather than isolated incidents.

In the current study, risk-taking behaviors are conceptualized as behaviors that can potentially cause harm to one's physical or psychological health or increase the likelihood of harm occurring (Marengo et al., 2018). For this study, anticipated or expected risk-taking behaviors were assessed among college students using the Cognitive Appraisal of Risky Events (CARE) Expected Involvement scale (Fromme et al., 1997). The CARE was designed by Fromme and colleagues (1997) and consists of 30 items scored into six distinct types of risk-taking behaviors: illicit drug use, aggressive and illegal behaviors, risky sexual behaviors, heavy drinking, high risk sports, and irresponsible or problematic academic and work behaviors (Fromme et al., 1997). In a pilot study, Fromme and colleagues (1997) found that expected risk-taking engagement scores from the CARE were significantly associated with actual engagement in future risk-taking; the study design included measuring actual risk-taking behaviors in a 10-day period following completion of the CARE Expected Involvement scale. Likewise, using the CARE Expected Involvement and Frequency of Involvement scales, Combs-Lane and Smith (2002) found that the Expected Involvement scale was related to actual engagement in risk-taking behaviors six-months later. Combs-Lane and Smith (2002) reported correlations between

self-reported expected involvement at time one and frequency of involvement at time two (six-months later); all were significant at the $p < .01$ level. Specifically, Time One (expected) and Time Two (actual) correlations were $r = .54$ for Aggressive and Illegal Behaviors, $r = .82$ for Heavy Drinking, $r = .73$ for Illicit Drug Use, and $r = .72$ for Risky Sexual Behaviors (Combs-Lane & Smith, 2002). Findings from the Combs-Lane and Smith (2002) and Fromme and colleagues (1997) studies provide evidence for the utility of using the CARE Expected Involvement scale as a way to assess engagement in future risk-taking as well. Because the base rate of risk-behaviors such as unsafe sexual behaviors (Marengo et al., 2018), heavy drinking behaviors (Dvorak et al., 2020), illicit drug use (Arria et al., 2017), aggressive behaviors (Hines & Saudino, 2003) and irresponsible academic or work behaviors (Stone et al., 2010) is fairly substantial among the college student population, they are considered a relevant population for this research and for the present study in particular. For example, previous surveys have revealed that 35% of college students engage in binge drinking (Kuntsche et al., 2017; Krieger et al., 2018; Schulenberg et al., 2020) and between 25 and 50% of students report engagement in risky sexual behaviors (Pedersen et al., 2019).

Engagement in risky behaviors may differ between men and women and risky behaviors may differentially associate with key variables for men and women in the current study. For example, in a sample of college students, Marengo and colleagues (2018) found sex differences in reports of both early maladaptive schemas and anticipated risk-taking behaviors. They also found differences in the strength of association between early maladaptive schemas and various risk-taking behaviors. Specifically, early maladaptive schemas accounted for 20% of the variance in anticipated academic and work behaviors for women, compared to 11% for men. Conversely, these schemas accounted for only 9% of the variance in anticipated risky sexual

behavior in women compared to 24% of the variance for men. In terms of violence, early maladaptive schemas accounted for 20% of the variance in college women's anticipated aggressive and illegal behaviors compared to 9% for college men (Marengo et al., 2018). Given these robust sex differences, sex at birth will be considered in all analyses.

While there is extensive extant literature on negative health outcomes associated with adverse childhood experiences, the mechanisms and pathways underlying this relationship have received little attention. One meta-analysis that considered the association between ACEs and adult mental health concluded that there are likely multiple intertwined variables functioning as mechanisms in this relationship including: coping strategies, emotion regulation, social support, self-esteem, early maladaptive schemas, and attachment (Panagou & MacBeth, 2022). It is likely that this holds for other outcomes of ACEs as well, meaning that there are potentially multiple variables mediating the relationship between adverse childhood experiences and risk-taking behaviors. This will be one of the first studies to examine the relationship between ACEs and multiple risk-taking behaviors among college students, as well as to statistically test two transdiagnostic constructs as possible parallel mediators of this relationship. In keeping with the research by Panagou and MacBeth (2022), early maladaptive schemas and difficulties with emotion regulation are the two potential mediators which will be the focus of the current study.

### 2.3 Early Maladaptive Schemas

One possible mediator of the relationship between adverse childhood experiences and risk-taking behaviors in college students is early maladaptive schemas (EMS). Early maladaptive schemas develop in childhood as a result of negative or challenging experiences, messages, and life lessons that are learned as the child's needs are not adequately met by their primary caretakers (Simpson et al., 2018). These schemas are pervasive and comprised of memories,

emotions, cognitions, and bodily sensations about oneself, others, and relationships, and are significantly dysfunctional (Pilkerton et al., 2020). Schemas are highly resistant to change, enduring, and self-fulfilling, and they affect how people perceive and understand themselves, others, their environment, and their reactions to stimuli, including life experiences (Zeynel & Uzer, 2020). The formation of early maladaptive schemas is thought to emerge from insecure attachments to primary caregivers and unmet core needs (Bach et al., 2017; Wright et al., 2009). For example, if a caregiver is emotionally abusive, it may result in the child forming negative beliefs about their self-worth (Wright et al., 2009). Then, a belief that they will never be loved, or they will always be neglected, may develop. These beliefs may then solidify into a maladaptive schema, specifically in the disconnection and rejection domain.

Early maladaptive schemas are formed in childhood and can be continuously reinforced through lived experiences. In this way, they are self-fulfilling by causing cognitive, emotional, and behavioral changes that reinforce the schema when exposed to situations that activate the schema (Bach et al., 2017). Due to their early formation and reinforcement, early maladaptive schemas may be more resistant to change than other schemas and are believed to be the foundation for development of mental health, cognitive, and behavioral problems (Ostovar et al., 2021). Early maladaptive schemas have already been shown to be positively correlated with anticipated risk-taking behaviors related to academics, sexual activity, drug and alcohol use, aggression, and unlawful activities in college student samples (Erturk et al., 2020; Marengo et al., 2019). Additionally, early maladaptive schemas are theorized to influence motivations and choices about engaging in risk-taking behaviors (Marengo et al., 2019) by creating impairment in how individuals perceive and encode cues (Marengo et al., 2019). One domain of early maladaptive schemas that has been linked to externalizing behavior and risk-taking in adulthood

is the disconnection and rejection domain (Marengo et al., 2019). Early maladaptive schemas in the disconnection and rejection domain have been shown to be positively correlated with expected future risk taking behaviors related to problematic academic and work behavior, risky sexual activity, illicit drug use, heavy alcohol use, and aggressive and illegal behaviors in both college men and women (Marengo et al., 2019).

Disconnection and rejection is one of five domains of early maladaptive schemas; the other four are impaired autonomy and performance, impaired limits, other-directedness, and over-vigilance and inhibition**.** Within each domain are specific schema. The disconnection and rejection domain includes the abandonment/instability, mistrust/abuse, emotional deprivation, social isolation/alienation, and defectiveness/shame schemas. The disconnection and rejection domain is characterized by beliefs that all relationships will fail and that core needs, such as security, safety, empathy, stability, and nurturance will not be met (Ostovar et al., 2021). The family of origin that facilitates the formation of early maladaptive schemas in this domain is thought to be cold, detached, rejecting, abusive, explosive, violent, and/or unpredictable (Richardson, 2005; Zeynel & Uzer, 2020). These family characteristics tend to correlate with negative childhood experiences like ACEs, thus suggesting that ACEs may lead to greater endorsement of disconnection and rejection schemas. There is also research supporting the link between disconnection and rejection schemas and risk-taking behaviors. For example, the disconnection and rejection domain schemas have been positively associated with violence and aggressive behaviors in interpersonal relationships, potentially due to the schema being self-fulfilling (Paim & Falcke, 2018; Shorey et al., 2015b). Shorey et al. (2015b) examined early maladaptive schemas and perpetration of aggression among 106 men in a substance use treatment facility. They utilized hierarchical multiple regression analysis to determine that

endorsement of disconnection and rejection schemas were positively associated with antisocial personality traits, physical aggression, alcohol use. and drug use at small to moderate effect sizes. Previous work has considered EMS as a potential mediator of the relationship between adverse childhood experiences and adult maladjustment. For example, early maladaptive schemas also appear to mediate the relationship between childhood maltreatment and psychological distress among college students (Gong & Chan, 2018; Wright et al., 2009). Childhood maltreatment, neglect, and abuse are associated with the presence of early maladaptive schemas in college students (Wright et al., 2009) as well. Taken as a whole, these findings suggest the possibility of early maladaptive schemas forming as a result of adverse childhood experiences, then when endorsed as core beliefs, influencing subsequent engagement of risk-taking behaviors in adulthood.

Several other lines of existing research support the proposed relationship. For example, the disconnection and rejection domain is associated with symptoms of Major Depressive Disorder (MDD) including feelings of low self-worth and defectiveness, fears of abuse and abandonment, and social isolation (Shorey et al., 2015a). Risk-taking behaviors may be ways to cope with these thoughts, feelings, and symptoms, as they can provide distraction, promote natural endorphins, or lead to a social network or peer group of other risk-takers. However, more evidence is needed to determine how the capacity to engage in risk-taking behaviors is developed (Marengo et al., 2019). Viewing risk-taking behavior as a coping mechanism for maladaptive cognitive processes aligns with the tenets of the schema therapy model. This model conceptualizes risk-taking behaviors as ways in which individuals cope with their schemas when they are activated (McDonnell et al., 2018; Simpson et al., 2018), such as through alcohol use (Boals et al., 2011). Specifically, McDonnell et al. (2018) found that early maladaptive schemas

accounted for 49% of the variance in maladaptive coping scores among 52 polydrug users. Ben-Zur and Zeidner (2009) also found that risk-taking behaviors can occur as a way to escape from negative feelings and cognitions that are associated with activated schemas.

### 2.4 Emotion Dysregulation

A second proposed mediator of relationship between adverse childhood experiences and subsequent engagement in risk-taking behaviors among college students involves difficulties with emotion regulation or emotion dysregulation. Emotion regulation refers to a person's ability to identify and respond effectively to emotional experiences (Poole et al., 2018), and the strategies and ability to do so that are formed during development (Oshri et al., 2015). Gratz and Roemer (2004) describe a conceptualization of emotion dysregulation as including a lack of awareness, understanding, or acceptance of emotions; inability to control behaviors when experiencing emotional distress; lack of strategies for dealing with emotional distress; and an unwillingness to experience emotional distress. Ineffective forms of emotion regulation include suppressing emotions, avoiding emotions, lacking emotional awareness, and impulsivity (Oshri et al., 2015; Poole et al., 2018). Healthy emotion regulation can help to reduce impulsivity, which can reduce engagement in risky behaviors (Rezaei & Soltanifar, 2022). The Difficulties in Emotion Regulation Scale (DERS) was developed by Gratz and Roemer (2004) based on their proposed conceptualization of emotion regulation. This scale contains six factor analytically derived subscales which include lack of strategies, nonacceptance of emotions, impulsivity, lack of goals, lack of awareness, and lack of clarity. These six subscales were maintained on the DERS short form developed by Kaufman and colleagues in 2016 (DERS:SF) (Kaufman et al., 2016).

Previous studies have found that emotion dysregulation functions as a mediator of the association between ACEs and interpersonal difficulties (Poole et al., 2018). Specifically, impulsivity, a key aspect of emotion dysregulation (Gratz & Roemer, 2004), functioned as a mediator in the relationship between childhood maltreatment and risk-taking behaviors in a sample of 361 undergraduate students (Oshri et al., 2015). In the same sample, Oshri et al. (2015) also reported significant positive correlations between alcohol use and the clarity, awareness, impulsivity, and nonacceptance subscales of the DERS, as well as positive correlations between drug use and lack of clarity, strategies, awareness, and greater impulsivity. Positive correlations were also reported between antisocial behavior, such as aggressive and illegal behaviors, and each subscale of the DERS. Greater impulsivity was the strongest zero order correlation for each of these behaviors (Oshri et al., 2015). Poole et al. (2018) conducted an analysis with emotion dysregulation as a mediator of the relationship between ACEs and interpersonal difficulties using self-report data from 4006 participants. This study found a significant indirect effect, indicating that emotion dysregulation was a mediator in this relationship (Poole et al., 2018). This may be due to risk-taking behaviors providing short-term, momentary positive emotions and distractions (Rezaei & Soltanifar, 2022). In a comprehensive review of the extant literature, Weiss et al. (2015) suggested that risk-taking behaviors often occur as an attempt to distract oneself from or reduce aversive emotional states, indicating the possibility of risk-taking as a coping behavior to assist when dealing with negative emotions.

Thus, the theoretical model underlying the current study posits that negative childhood experiences, and poor modeling of emotional regulation by caregivers inhibits a child's ability to learn and develop healthy emotion regulation strategies from caregivers. This leads to emotion regulation deficits, which, in turn, promote subsequent risk-taking. This increase in risk-taking

behaviors may represent maladaptive attempts to manage troubling emotional experiences (Paivio & Laurent, 2001; Soenke et al., 2010). Risk-taking behaviors may be a way to escape feeling troubling emotions, to cope with the emotions, to experience brief positive feelings, or they may occur more frequently because negative emotion states result in impaired judgement and impulsivity (Ben-Zur & Zeidner, 2009; Weiss et al., 2015). A common maladaptive way to cope with these emotions is through avoidant coping strategies, which are efforts to avoid the emotion, or avoid the situations triggering the emotion. Avoidant coping strategies are associated with risk-taking behaviors (Bal et al., 2003). Clearly, there are several ways in which ineffective emotion regulation may lead to risk-taking behaviors. Individuals may engage in risk-taking behaviors because they are attempting to cope with and distract themselves from the intolerable emotions, additionally, they may use risk-taking to feel short-term pleasure to escape from those emotions (Weiss et al., 2015). While engagement in these risk-taking behaviors may provide immediate and short-term reduction of distress, they can be reinforcing and cause additional negative consequences (Auerbach et al., 2007; Weiss et al., 2015), highlighting the need for additional prevention programs.

### 2.5 Counter-ACEs

While negative experiences can influence future behaviors, not all childhood experiences that affect future behavior outcomes are negative. Counter-ACEs (Crandall et al., 2020) are alternate childhood experiences which, in contrast to ACEs, are positive. Counter-ACEs are beneficial experiences from childhood that can serve as protective factors against the harms associated with ACEs. They include experiences like feeling happy and supported, having positive relationships with friends, family, teachers, and neighbors, and being in a safe environment while growing up (Crandall et al., 2020). Counter-ACEs are thought to increase

positive outcomes in adulthood regardless of how many ACEs were experienced (Crandall et al., 2020). These experiences may be one reason why not every child who is exposed to negative experiences in childhood has negative outcomes in adulthood (Crouch et al., 2018). These counter-ACEs serve as protective factors and foster resiliency, and as noted in the resiliency literature, these experiences can help to negate negative outcomes associated with ACEs (Crandall et al., 2020; Crouch et al., 2018). Thus, counter-ACEs may serve as a protective factor against the increase in risk-taking behaviors that is common among individuals who were exposed to ACEs.

# CHAPTER 3: RESEARCH AIMS AND HYPOTHESES

The aim of the present study was to explore early maladaptive schemas in the disconnection and rejection domain and difficulties in emotion regulation as two possible mediators of the association between ACEs and five types of anticipated risk-taking behaviors in college students. Given the existing literature, sex differences in effects were considered. The hypotheses for this study were as follows. First, (1) early maladaptive schemas in the disconnection and rejection domain will be positively correlated with adverse childhood experiences (ACEs). Second, (2) adverse childhood experiences will be positively correlated with difficulties in emotion regulation. Third, (3) ACE scores will be positively correlated with each of the subscales of the Cognitive Appraisal of Risky Events expected involvement scale. Fourth (4), early maladaptive schemas in the disconnection and rejection domain and total difficulties in emotion regulation will be positively correlated with expected risk-taking behaviors related to heavy alcohol use, illicit drug use, problematic academic and work behaviors, aggressive or illegal behavior, and risky sexual behavior. Fifth (5), early maladaptive schemas in the disconnection and rejection domain will serve as a mediator of the relationship between childhood experiences and each of these risk-taking behaviors. Sixth (6), difficulties in emotion regulation will serve as a mediator of the relationship between childhood experiences and risk-taking behaviors related to illicit drug use, heavy alcohol use, aggressive or illegal behavior, problematic academic and work behaviors, and risky sexual behaviors. Seventh (7), Counter-ACEs will serve as a protective factor, by acting as a moderator to buffers the relationship between ACEs and expected risk-taking behaviors among college students.

# CHAPTER 4: METHODS

This study utilized a cross-sectional design in which participants were given a battery of online questionnaires that had been compiled into a Qualtrics survey. The aim of this study was to explore early maladaptive schemas in the disconnection and rejection domain and difficulties in emotion regulation as possible mediators of the relationship between adverse childhood experiences and anticipated risk-taking behaviors in college students through statistical analyses of survey response data. Sex differences in effects were considered.

## 4.1: Participants

A total of 565 participants were recruited from a large university in the southeastern United States. Participants were at least 18 years old and were current students who were recruited through the University's psychology student subject pool (SONA). Participants earned course credit for participation in this study.

## 4.2: Procedures

Participants accessed an internet link through a SONA study page which directed them to a Qualtrics survey site. They were given an informed consent virtually, then were directed to a brief eligibility screener. If they chose to continue and were eligible, they moved on to a demographic questionnaire, followed by measures related to childhood experiences, the proposed mechanisms, and a questionnaire about their anticipated risk-taking behaviors. Following completion, participants were shown a debriefing screen, sharing the purpose of the study, and providing resources, including information about the University Counseling Center. Finally, participants were granted .5 SONA credits. Due to the potentially sensitive nature of the measures, participants were informed that they could discontinue their participation at any time without sanction. Local and campus mental health resources were listed strategically throughout

the survey. The total survey was created to take approximately 20 minutes to complete. This study was approved by the University's Institutional Review Board (IRB) IRB-22-0395.

### 4.3: Measures

**Demographics**. Participants answered a total of 13 demographic questions, including items related to age, sex at birth, gender identity, sexual orientation, race, ethnicity, classification in school, if they qualified for free or reduced lunch as a child, and parent's marital status.

**Adverse Childhood Experiences**. Adverse Childhood Experiences were measured using the 10-item Adverse Childhood Experience (ACE) Questionnaire (Felitti et al., 1998). The questionnaire asks participants to endorse whether or not they experienced the relevant adverse experience during their first 18 years of life. Items include the presence or absence of each of these experiences: having a parent or household adult swear at, insult, put down or humiliate you, or act in a way that made you afraid you might be physically hurt; having a parent or household adult often push, grab, slap, or throw something at you or hit you so hard that you had marks or were injured; having an adult or person at least five years older touch or fondle or have you touch their body in a sexual way or try to have oral, anal, or vaginal sex; feel as if no one loved you or thought you were important or special or your family did not look out for each other, feel close to each other, or support each other; feel that you did not have enough to eat, had to wear dirty clothes, 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 your parents were separated or divorced; if your mother or step-mother was often pushed, grabbed, slapped, had things thrown at her, or sometimes or often kicked, bitten, hit with a fist or something hard, or ever repeatedly hit over at least a few minutes or threatened with a gun or knife; live with someone who was a problem drinker or alcoholic or used street drugs; if a household member was depressed, mentally ill, or

attempt suicide; if a household member went to prison. Higher scores indicate exposure to more types of ACEs. This questionnaire has demonstrated good internal consistency in a variety of samples (Karatekin & Hill, 2019). Scores indicate the number of different types of ACES experienced in childhood; however, the frequency with which each ACE was experienced is not measured. This measure is in Appendix A. The coefficient alpha for this measure among the current sample was acceptable at $\alpha = .72$.

**Disconnection/Rejection Early Maladaptive Schemas Domain**. The Disconnection/Rejection scale of the Young Schema Questionnaire – Short Form 3 (YSQ-S3; Young & Brown, 2005) was used in this study. The Disconnection Rejection domain includes subscales of mistrust/abuse, defectiveness/shame, emotional deprivation, and social isolation/alienation. Participants rated how well each item describes them over the past year on a scale of 1 (Completely untrue of me) to 6 (Describes me perfectly). There are 25 items representing the Disconnection/Rejection domain, including items like "I haven't had someone to nurture me, share him/herself with me, or care deeply about everything that happens to me." The YSQ-S3 has demonstrated good internal consistency, test-retest reliability ($\alpha$ = .63 - .80), and convergent validity in older adults (Phillips et al., 2017). The Disconnection and Rejection items and the domain scoring information appears in Appendix B. The full-scale coefficient alpha for this sample was excellent, $\alpha = .95$.

**Emotion Dysregulation**. Problematic emotion regulation was measured using the Difficulties in Emotion Regulation Scale – Short Form (DERS:SF; Kaufman et al., 2015). The DERS:SF is an 18-item brief self-report measure derived from the larger Difficulties in Emotion Regulation Scale (DERS). The DERS:SF measures emotion dysregulation on the same factor-analytically derived subscales as the DERS, which are awareness, clarity, nonacceptance,

strategies, goals, and impulsivity (Kaufman et al., 2015). This self-report measure asks participants to rate how frequently each of the 18 items apply to them on a scale of 1 (Almost Never) to 5 (Almost Always). Sample items include "I pay attention to how I feel," "I have no idea how I am feeling," "When I'm upset, I become out of control," and "When I'm upset, I feel guilty for feeling that way." The DERS:SF has demonstrated high internal consistency with correlations of .90 to .98 in adolescent and adult samples (Kaufman et al., 2015). Higher scores on the DERS:SF indicate more difficulty with emotion regulation (Kaufman et al., 2015). This measure and scoring information appear in Appendix C. The coefficient alpha for the DERS:SF in the current sample was excellent, $\alpha$ = .91.

**Anticipated Risk-Taking Behaviors**. Anticipated risk-taking behavior was assessed using the Expected Involvement scale of the Cognitive Appraisal of Risky Events (CARE) Questionnaire (Fromme et al., 1997). The CARE consists of 30 behaviors that constitute six factor analytically derived scales (Heavy Drinking, Illicit Drug Use, Aggressive and Illegal Behaviors, Risky Sexual Behavior, High-Risk Sports, and Irresponsible Academic or Work Behaviors). The expected involvement scale asks participants to rate how likely they are in the next six months to engage in each of the 30 activities on a Likert scale of 1 (Not at all Likely) to 7 (Extremely Likely). Items include activities such as sex without protection, missing class, hitting someone with an object or weapon, and drinking more than five alcoholic beverages. CARE has demonstrated good reliability and validity with item-total Cronbach's alpha coefficients ranging from .42 to .90 in a college undergraduate sample (Fromme et al., 1997). Similarly, the coefficient alpha for the Illicit Drug Use subscale was .84. For the Aggressive and Illegal behaviors subscale, it was .82. It was .79 for the Risky Sexual Behavior subscale. For the Heavy Drinking subscale, it was .91 and for the Irresponsible Academic and Work Behaviors

subscale, it was .89. The high-risk sports subscale of the CARE was not utilized in the current project. The Cognitive Appraisal of Risky Events – Expected Involvement scale appears in Appendix D.

**Counter-Adverse Childhood Experiences**. Positive childhood experiences were measured using the 10-item Benevolent Childhood Experiences Questionnaire (Narayan et al., 2018). This questionnaire has Yes/No response options to how whether each experience occurred during the participants' first 18 years of life. Items include experiences such as having at least one good friend, liking school, feeling comfortable with yourself, and having a teacher that cared about you. This measure has been described as a culturally sensitive measure reflecting love, predictability, and support in childhood (Merrick et al., 2019). Higher scores indicate more positive childhood experiences. The BCE has demonstrated good reliability and validity in a pre-natal sample of women (Narayan et al., 2018). Scores indicate the number of protective experiences present in childhood. The coefficient alpha for this measure, in this sample, was only adequate, $\alpha = .68$. This measure appears in Appendix E.

## 4.4 Analytical Plan

The statistical plan was to exclude all participant data with lower than an 85% survey completion rate and lower than a 10-minute completion time ($n = 44$; $M$ age = 19.35 years, $SD$ = 1.13; 66.7% female, 59.1% exclusively heterosexual); this was done. Composite variables were then created for each of the constructs according to scoring instructions provided by the authors of each instrument. A missing data analysis was then conducted using Little's Missing Completely at Random (MCAR) test for SPSS. This provided information on the nature of any missing data. Next, descriptive statistics were conducted for each of the variables, including means, standard deviations, skew, and kurtosis. Then, reliability coefficients were determined for

each of the measures and their subscales. To test Hypothesis 1, a Pearson bivariate correlation was conducted between participants' total ACE score and their score on the EMS:DR. This was followed with conducting correlations between total ACE scores and each subscale of the EMS disconnection and rejection domain. Next, a Pearson bivariate correlation was conducted between total ACE scores and total emotion dysregulation scores. This was followed with correlations between total ACE scores and each of the DERS:SF subscales. To test Hypothesis 2, a Pearson bivariate correlation was completed to test the association between EMS disconnection and rejection domain scores, and the five CARE subscales scores of heavy drinking, illicit drug use, risky sexual behaviors, illicit and aggressive behaviors, and problematic academic and work behaviors. Following this, a Pearson bivariate correlation was computed to test the association between the total emotion regulation scores and scores on the five CARE subscales.

The remaining mediation-based hypotheses were tested using multiple regression and the PROCESS macro-Model 4 in SPSS. First, total ACE scores were inputted as the predictor (IV), disconnection and rejection schema scores (EMS:DR) and emotion regulation (DERS:SF) total scores were inputted as parallel mediators. Then, five separate analyses were conducted with to test each of the following outcome variables: heavy drinking, illicit drug use, risky sexual behaviors, aggressive and illegal behaviors, and irresponsible academic and work behaviors. A visualization of these models appears in Figure 1.1. The final hypothesis was tested using PROCESS macro model 1 in SPSS. Total ACE scores were inputted as the predictor, with Counter-ACE scores as a moderator. The moderator relationship was tested five times with heavy drinking, illicit drug use, risky sexual behavior, aggressive and illegal behaviors, and irresponsible academic and work behaviors as individual outcome variables (DVs).

As noted previously, in the existing literature, there are sex differences among college students reported risk-taking behaviors. As such, and in keeping with the literature (Marengo et al., 2018), sex at birth was then considered in these analyses. First, groups were made for participants that indicated male versus female sex at birth. Next, mean differences between sex at birth groups on each of the five CARE subscales were examined using independent samples t-tests. Regression analyses were then conducted separately for these two groups and compared against each other and with the full sample analyses to consider differences in the amount of variance accounted for and to compare the results obtained in this study with those published in the literature.

# CHAPTER 5: RESULTS

## 5.1 Demographic Information

A total of 521 participants were included in the data analysis for this study, with an average age of 19.58 years, *SD* = 2.95. The sample was majority female (66.8%, *n* = 348), White (57.2%, *n* = 298), non-Hispanic (83.7%, *n* = 436), freshman (54.9%, *n* = 286), and exclusively heterosexual (72.2%, *n* = 376). A majority of the sample reported their parents' marital status as currently married to each other (*n* = 322, 61.8%), and most reported never serving in the military (*n* = 509, 97.7%). Full demographic information can be found in Table 5.1.

**Table 5.1**

*Demographic Information*

| Variables | *M* | *SD* | *n* | % |
|---|---|---|---|---|
| Age | 19.58 | 2.95 | | |
| Sex at Birth | | | | |
| Male | | | 172 | 33.0 |
| Female | | | 348 | 66.8 |
| Gender Identity | | | | |
| Male | | | 170 | 32.6 |
| Female | | | 341 | 65.5 |
| Indigenous | | | 1 | 0.2 |
| Non-binary | | | 7 | 1.3 |
| Genderqueer | | | 1 | 0.2 |
| Agender | | | 3 | 0.6 |
| Genderfluid | | | 3 | 0.6 |
| Gender | | | | |
| Male | | | 172 | 33.0 |

| Variables | *M* | *SD* | *n* | % |
|---|---|---|---|---|
| Female | | | 340 | 65.3 |
| Sometimes male, sometimes female | | | 3 | 0.6 |
| Something other than male or female | | | 6 | 1.2 |
| Race | | | | |
| White/Caucasian | | | 298 | 57.2 |
| African American/Black/Afro-Caribbean | | | 117 | 22.5 |
| Multiracial/biracial | | | 37 | 7.1 |
| East Asian/East Asian American | | | 22 | 4.2 |
| Middle Eastern/Arab/North African | | | 9 | 1.7 |
| Native Hawaiian/Pacific Islander | | | 5 | 1.0 |
| South Asian/South Asian American | | | 37 | 7.1 |
| American Indian/Alaskan Native/First Nations | | | 5 | 1.0 |
| Other | | | 19 | 3.6 |
| Ethnicity | | | | |
| Hispanic | | | 72 | 13.8 |
| Non-Hispanic | | | 436 | 83.7 |
| Year in School | | | | |
| Freshman | | | 286 | 54.9 |
| Sophomore | | | 146 | 28.0 |
| Junior | | | 59 | 11.3 |
| Senior | | | 28 | 5.4 |
| Free or Reduced Lunch in Childhood | | | | |
| Yes | | | 165 | 31.7 |
| No | | | 329 | 63.1 |
| Parents' marital status | | | | |

| Variables | *M* | *SD* | *n* | % |
|---|---|---|---|---|
| Married | | | 322 | 61.8 |
| Domestic Partnership | | | 3 | 0.6 |
| Never married | | | 52 | 10.0 |
| One or both deceased | | | 21 | 4.0 |
| Currently divorcing | | | 10 | 1.9 |
| Divorced, mother remarried | | | 18 | 3.5 |
| Divorced, father remarried | | | 17 | 3.3 |
| Divorced, both remarried | | | 19 | 3.6 |
| Divorced, neither remarried | | | 44 | 8.4 |
| Other | | | 10 | 1.9 |
| Sexual Orientation | | | | |
| Exclusively heterosexual | | | 376 | 72.2 |
| Mostly heterosexual | | | 61 | 11.7 |
| Bisexual | | | 41 | 7.9 |
| Asexual | | | 4 | 0.8 |
| Mostly homosexual | | | 5 | 1.0 |
| Exclusively homosexual | | | 12 | 2.3 |
| Pan-sexual | | | 9 | 1.7 |
| Other | | | 6 | 1.2 |
| U.S. Military Status | | | | |
| Yes, active duty | | | 1 | 0.2 |
| Yes, reserves | | | 2 | 0.4 |
| No, currently retired | | | 7 | 1.3 |
| No, never served | | | 509 | 97.7 |

## 5.2 Descriptive and Correlation Analyses

Descriptive statistics for each variable are presented in Table 5.2. To test hypothesis one, a Pearson bivariate correlation was conducted between total scores on the ACE questionnaire and total scores on the Young Schema Questionnaire:SF Disconnection and Rejection subscale. Results indicated that, as predicted, ACE scores are positively and significantly correlated with Disconnection and Rejection YSQ:SF subscale scores, $r(518) = .45$, $p < .001$ with a medium effect size. As the presence of adverse childhood experiences increase, the likelihood of the presence of early maladaptive schemas in the disconnection and rejection domain also increased. Among the specific schemas in the disconnection and rejection domain, total ACE scores were positively correlated with each subscale with small to medium effect sizes (i.e., Mistrust and Abuse, $r(518) = .42$, $p < .001$, followed by Isolation and Alienation, $r(518) = .38$, $p < .001$, Defectiveness and Unlovability, $r(518) = .37$, $p < .001$, Abandonment, $r(518) = .36$, $p < .001$, and Emotion Deprivation, $r(518) = .34$, $p < .001$ respectively). These results indicate that as scores on ACE increase, so do scores for each of the schemas within the disconnection and rejection domain. These correlational relationships are depicted in Table 5.3.

**Table 5.2**

*Descriptive Statistics and Coefficient Alphas for each variable of interest.*

| Variable | *N* | *M* | *SD* | Skew | Kurtosis | α |
|---|---|---|---|---|---|---|
| Adverse Childhood Experiences | 520 | 1.58 | 1.85 | 1.29 | 1.14 | .72 |
| CounterACEs | 520 | 8.46 | 1.80 | -1.25 | 1.01 | .68 |
| **Difficulties in Emotion Regulation: SF** | 521 | 49.60 | 12.32 | 0.45 | -0.19 | .91 |
| Strategies | 520 | 7.20 | 3.23 | 0.66 | -0.38 | .80 |

| Variable | *N* | *M* | *SD* | Skew | Kurtosis | α |
|---|---|---|---|---|---|---|
| Nonacceptance | 521 | 7.88 | 3.59 | 0.47 | -0.85 | .85 |
| Impulsivity | 521 | 5.74 | 3.09 | 1.20 | 0.60 | .90 |
| Goals | 521 | 10.03 | 3.55 | -0.14 | -1.16 | .92 |
| Awareness | 521 | 6.43 | 2.69 | 0.73 | -0.15 | .76 |
| Clarity | 521 | 7.22 | 2.91 | 0.71 | -0.09 | .84 |
| **EMS: Disconnection/Rejection** | 519 | 63.60 | 27.08 | 0.64 | -0.30 | .95 |
| Emotional Deprivation | 519 | 10.51 | 6.00 | 1.07 | 0.33 | .83 |
| Abandonment | 519 | 14.30 | 7.56 | 0.49 | -0.97 | .91 |
| Mistrust | 519 | 14.92 | 6.73 | 0.35 | -0.88 | .87 |
| Isolation | 519 | 13.49 | 6.26 | 0.61 | -0.42 | .86 |
| Defectiveness | 519 | 10.39 | 6.35 | 1.29 | 0.78 | .90 |
| Illicit Drug Use | 520 | 2.20 | 1.71 | 1.38 | 0.82 | .84 |
| Aggressive/Illegal | 520 | 1.46 | 0.65 | 2.47 | 8.31 | .82 |
| Risky Sexual Behavior | 520 | 1.80 | 1.10 | 1.79 | 3.01 | .79 |
| Heavy Drinking | 518 | 2.82 | 1.97 | 0.70 | -0.90 | .70 |
| Academic/Work Behaviors | 519 | 3.48 | 1.65 | 0.35 | -0.82 | .89 |

**Table 5.3**

*Correlations between Self-Reported ACEs and Early Maladaptive Schemas in the Disconnection and Rejection Domain.*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. ACEs | -- | | | | | | | |
| 2. Counter-ACEs | -.43*** | -- | | | | | | |
| 3. EMS: DR | .45*** | -.45*** | -- | | | | | |
| 4. EMS: Emotion Deprivation | .34*** | -.41*** | .77*** | -- | | | | |
| 5. EMS: Abandonment | .36*** | -.29*** | .82*** | .46*** | -- | | | |
| 6. EMS: Mistrust | .42*** | -.33*** | .82*** | .51*** | .66*** | -- | | |
| 7. EMS: Isolation | .38*** | -.44*** | .83*** | .59*** | .55*** | .59*** | -- | |
| 8. EMS: Defectiveness | .37*** | -.40*** | .87*** | .68*** | .64*** | .59*** | .70*** | -- |

Note: $^{***}p < .001$.

To test Hypothesis 2, a Pearson bivariate correlation was conducted to test the association between ACE total scores and total scores on the Difficulties in Emotion Regulation Scale Short Form. Results indicated that, as predicted, ACEs were positively and significantly correlated with DERS:SF total scores, $r(520) = .29$, $p < .001$, indicating that as the occurrence of ACEs increases, self-reported difficulties with emotion regulation also increase. In fact, ACE total scores were correlated with each of the DERS:SF subscales with small to medium effect sizes, including the Strategies subscale, $r(519) = .30$, $p < .001$, followed by the Nonacceptance subscale, $r(520) = .28$, $p < .001$, Clarity, $r(520) = .26$, $p < .001$, Impulsivity, $r(520) = .19$, $p < .001$, Goals, $r(520) = .18$, $p < .001$, and Awareness, $r(520) = .15$, $p < .001$ respectively. These correlational relationships can be found in table 5.4.

To test Hypothesis 3, a Pearson bivariate correlation was conducted to test the association between total number of self-reported ACEs and each of the five CARE anticipated risk-taking subscales. Results indicate that, as predicted, total ACEs are positively and significantly associated with each CARE subscale with small to medium effect sizes. Specifically, ACEs were correlated with anticipated risky academic and work-related behaviors, $r(519) = .31$, $p < .001$, followed by anticipated illicit drug use, $r(520) = .30$, $p < .001$, aggressive and illegal behaviors, $r(520) = .24$, $p < .001$, risky sexual behaviors, $r(520) = .20$, $p < .001$, and heavy drinking behaviors, $r(518) = .19$, $p < .001$. These relationships can be found in table 5.5.

**Table 5.4**

*Correlations Between Self-Reported ACEs and DERS:SF scores.*

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. ACEs | -- | | | | | | | |
| 2. Counter-ACEs | -.43*** | -- | | | | | | |
| 3. DERS:SF | .29*** | -.30*** | -- | | | | | |
| 4. Strategies | .30*** | -.32*** | .85*** | -- | | | | |
| 5. Nonacceptance | .28*** | -.26*** | .75*** | .59*** | -- | | | |
| 6. Impulsivity | .19*** | -.24*** | .73*** | .60*** | .44*** | -- | | |
| 7. Goals | .18*** | -.22*** | .76*** | .60*** | .44*** | .41*** | -- | |
| 8. Awareness | .15*** | -.20*** | -.01 | .17*** | .23*** | .12** | -.01 | -- |
| 9. Clarity | .26*** | -.26*** | .66*** | .53*** | .51*** | .43*** | .35*** | .30*** |

Note: ** $p$ <.01, *** $p$ <.001.

**Table 5.5**

*Correlations Between ACEs and Anticipated Risky Behaviors.*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. ACEs | -- | | | | | |
| 2. Counter-ACEs | -.43*** | -- | | | | |
| 3. Illicit Drug Use | .30*** | -.20*** | -- | | | |
| 4. Aggressive/Illegal | .24*** | -.20*** | .44*** | -- | | |
| 5. Risky Sexual Behavior | .20*** | -.19*** | .52*** | .46*** | -- | |
| 6. Heavy Drinking | .19*** | -.10*** | .64*** | .44*** | .55*** | -- |
| 7. Academic/Work | .31*** | -.28*** | 41*** | .39*** | .34*** | .42*** |

Note: *** $p < .001$.

To test Hypothesis 4, Pearson bivariate correlations were conducted to test the association between overall schemas in the disconnection and rejection domain and anticipated risky behaviors. As hypothesized, early maladaptive schemas in the disconnection and rejection domain were positively and significantly correlated with each of the anticipated risk-taking behaviors with small to medium effect sizes (i.e., anticipated risky academic and work behaviors, $r(518) = .39$, $p < .001$; illicit drug use, $r(518) = .31$, $p < .001$; aggressive and illegal behaviors, $r(518) = .30$, $p < .001$; heavy drinking behaviors, $r(516) = .25$, $p < .001$; and risky sexual behaviors, $r(518) = .23$, $p < .001$). These relationships can be seen in full in Table 5.6. Pearson bivariate correlations were also conducted to test the association between DERS:SF scores and the five CARE subscale scores. Difficulties in emotion regulation were correlated with anticipated risky academic and work behaviors, $r(519) = .36$, $p < .001$; followed by aggressive and illegal behaviors, $r(520) = .24$, $p < .001$; illicit drug use, $r(520) = .20$, $p < .001$; risky sexual behavior, $r(520) = .20$, $p < .001$; and expected future heavy drinking, $r(518) = .19$, $p < .001$. Each correlation had a small to medium effect size. These correlational relationships are depicted in Table 5.7.

**Table 5.6**

*Correlations between EMS:DR with Anticipated Risky Behaviors.*

| Variable | DRUG | AGG/ILL | SEX | DRINK | AWB |
|---|---|---|---|---|---|
| **EMS: Disconnection/Rejection** | .31*** | .30*** | .23*** | .25*** | .39*** |
| EMS: Emotion Deprivation | .20*** | .16*** | .15*** | .11* | .24*** |
| EMS: Abandonment | .27*** | .28*** | .24*** | .32*** | .36*** |
| EMS: Mistrust | .28*** | .29*** | .23*** | .26*** | .29*** |
| EMS: Isolation | .27*** | .25*** | .14*** | .14** | .34*** |
| EMS: Defectiveness | .24*** | .25*** | .16*** | .17*** | .35*** |

Note: *DRUG* Illicit Drug Use, *AGG/ILL* Aggressive and Illegal, *SEX,* Risky Sexual Behaviors, *DRINK* Heavy Drinking, *AWB* Academic and Work Behaviors. $^{*}p < .05$, $^{**}p<.01$, $^{***}p < .001$.

**Table 5.7**

*Correlations between DERS:SF and Anticipated Risky Behaviors.*

| Variable | DRUG | AGG/ILL | SEX | DRINK | AWB |
|---|---|---|---|---|---|
| **DERS:SF** | .20*** | .24*** | .20*** | .19*** | .36*** |
| Strategies | .24*** | .21*** | .21*** | .19*** | .34*** |
| Nonacceptance | .16*** | .18*** | .12** | .18*** | .30*** |
| Impulsivity | .16*** | .27*** | .17*** | .10* | .22*** |
| Goals | .11** | .13** | .14** | .15*** | .34*** |
| Awareness | .11* | .05 | .05 | .01* | .14** |
| Clarity | .17*** | .17*** | .14*** | .17*** | .27*** |

Note: *DRUG* Illicit Drug Use, *AGG/ILL* Aggressive and Illegal, *SEX,* Risky Sexual Behavior, *DRINK* Heavy Drinking, *AWB* Academic and Work Behaviors. $^{*}p < .05$, $^{**}p < .01$ $^{***}p < .001$.

## 5.3 Mediation Analyses

To test the mediation-based hypotheses, the PROCESS Macro model 4 by Hayes was used in SPSS. A separate regression analysis was conducted using ACEs as the predictor (X), EMS:DR ($M_1$) and DERS:SF ($M_2$) scores as parallel mediators, and each of the CARE subscales individually (Anticipated Illicit Drug Use, Aggressive and Illegal Behaviors, Risky Sexual Behaviors, Heavy Drinking, and Risky Academic and Work Behaviors), excluding high-risk sport behaviors, as an outcome (Y). To screen the data for outliers in preparation for conducting the regression analysis, Mahalanobis Distance (24.32), Cook's Distance (.009), and Centered Leverage Values (.034) were examined. This resulted in a total of 18 possible outliers, which were excluded from future analyses. Due to previous literature indicating the role of sex on both early maladaptive schemas and on college student anticipated risky behaviors, sex at birth was treated as a covariate in this analysis (Marengo et al., 2018).

Results indicated that, as predicted, early maladaptive schemas in the disconnection and rejection domain emerged as a partial mediator of the relationships between ACEs and subsequent anticipated illicit drug use, aggressive and illegal behaviors, heavy drinking behaviors, and risky academic and work behaviors among the entire sample. EMS:DR did not mediate between ACEs and anticipated risky sexual behaviors. Likewise, total difficulties in emotion regulation served as a partial mediator of the relationship between ACEs and subsequent anticipated risky sexual behaviors and risky academic and work behaviors. However, DERS:SF scores did not mediate between illicit drug use, aggressive and illegal behavior, or heavy drinking behaviors.

Sex at birth differences were noted. Male and female at birth mean differences for each variable of interest can be found in Table 5.8. Among male at birth participants, EMS:DR

mediated in models with outcomes of both anticipated illicit drug use and aggressive and illegal behaviors, and for the female at birth group all outcomes were mediated except anticipated heavy drinking. For male at birth participants, DERS:SF mediated for anticipated risky sexual behavior, for female at birth DERS:SF only mediated for anticipated academic and work behaviors. A visualization of these relationships can be found in Figures 5.1 – 5.5. Full male and female at birth differences in variance accounted for by the total effect model are presented in Table 5.10 and 5.11.

**Table 5.8**

*Mean Differences between Male and Female Sex at Birth Participants among each variable of interest.*

| Variable | Male (*n*=149) | | Female (*n*=306) | | *t*-statistic |
|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | |
| Illicit Drug Use | 2.27 | 1.74 | 2.11 | 1.63 | 0.97 |
| Aggressive/Illegal | 1.49 | 0.74 | 1.41 | 0.54 | 1.35 |
| Risky Sexual Behavior | 1.92 | 1.23 | 1.71 | 0.98 | 1.86 |
| Heavy Drinking | 2.82 | 2.12 | 2.82 | 1.85 | 0.03 |
| Academic/Work | 3.28 | 1.68 | 3.50 | 1.60 | -1.33 |
| EMS: DR | 54.56 | 22.91 | 66.39 | 26.25 | -4.70*** |
| EMS: Emotional Deprivation | 10.03 | 5.71 | 10.29 | 5.79 | -0.44 |
| EMS: Abandonment | 10.64 | 5.61 | 15.85 | 7.70 | -8.17*** |
| EMS: Mistrust | 12.60 | 6.08 | 16.00 | 6.23 | -5.28*** |
| EMS: Isolation | 12.26 | 5.81 | 13.64 | 6.02 | -2.32* |
| EMS: Defectiveness | 9.02 | 5.34 | 10.61 | 6.31 | -2.80** |
| DERS:SF | 44.63 | 10.78 | 51.04 | 11.76 | -5.60*** |

| Variable | Male (*n*=149) | | Female (*n*=306) | | *t*-statistic |
|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | |
| DERS: Strategies | 6.36 | 2.83 | 7.47 | 3.25 | -4.08*** |
| DERS: Nonacceptance | 6.67 | 3.03 | 8.25 | 3.63 | -4.87*** |
| DERS: Impulsivity | 4.96 | 2.47 | 5.85 | 3.13 | -3.29*** |
| DERS: Goals | 9.05 | 3.58 | 10.40 | 3.51 | -3.80*** |
| DERS: Awareness | 6.45 | 2.54 | 6.39 | 2.80 | 0.21 |
| DERS: Clarity | 6.13 | 2.55 | 7.48 | 2.94 | -5.19*** |
| ACEs | 1.21 | 1.53 | 1.68 | 1.85 | -2.65** |
| CounterACEs | 8.52 | 1.83 | 8.57 | 1.70 | -0.30 |

Note: $n$ = 149 for male at birth and 306 for female at birth unless otherwise noted. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

**Table 5.9**

*Correlations Between CARE subscale scores and EMS:DR and DERS:SF for Male and Female College Students.*

| Variable | DRUG | | AGG/ILL | | SEX | | DRINK | | AWB | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male |
| **EMS: DR** | **.30**$^{***}$ | **.35**$^{***}$ | **.32**$^{***}$ | **.28**$^{***}$ | **.30**$^{***}$ | **.21**$^{***}$ | **.22**$^{***}$ | **.27**$^{***}$ | **.40**$^{***}$ | **.29**$^{***}$ |
| Emotion Deprivation | .18$^{**}$ | .16 | .16$^{**}$ | .14 | .15$^{*}$ | .14 | .08 | .08 | .22$^{***}$ | .16 |
| Abandonment | .27$^{***}$ | .27$^{***}$ | .31$^{***}$ | .26$^{**}$ | .32$^{***}$ | .26$^{**}$ | .31$^{***}$ | .33$^{***}$ | .38$^{***}$ | .22$^{**}$ |
| Mistrust | .27$^{***}$ | .35$^{***}$ | .32$^{***}$ | .24$^{**}$ | .28$^{***}$ | .23$^{**}$ | .21$^{***}$ | .32$^{***}$ | .29$^{***}$ | . 22$^{**}$ |
| Isolation | .24$^{***}$ | .34$^{***}$ | .25$^{***}$ | .24$^{**}$ | .18$^{**}$ | .14 | .11 | .17$^{*}$ | .34$^{***}$ | .31$^{***}$ |
| Defectiveness | .24$^{***}$ | .25$^{**}$ | .25$^{***}$ | .21$^{*}$ | .25$^{***}$ | .07 | .16$^{**}$ | .19$^{*}$ | .35$^{***}$ | .27$^{***}$ |
| **DERS:SF** | **.16**$^{**}$ | **.25**$^{**}$ | **.21**$^{***}$ | **.24**$^{**}$ | **.23**$^{**}$ | **.32**$^{***}$ | **.19**$^{**}$ | **.27**$^{***}$ | **.37**$^{***}$ | **.29**$^{***}$ |
| Strategies | .19$^{***}$ | .26$^{***}$ | .19$^{**}$ | .18$^{*}$ | .23$^{***}$ | .25$^{**}$ | .18$^{**}$ | .24$^{**}$ | .35$^{***}$ | .28$^{***}$ |
| Nonacceptance | .17$^{**}$ | .19$^{*}$ | .13$^{*}$ | .16$^{*}$ | .17$^{**}$ | .18$^{*}$ | .19$^{**}$ | .23$^{**}$ | .33$^{***}$ | .17$^{*}$ |
| Impulsivity | .13$^{*}$ | .07 | .26$^{***}$ | .26$^{**}$ | .17$^{**}$ | .28$^{***}$ | .01 | .08 | .21$^{***}$ | .13 |
| Goals | .02 | .25$^{**}$ | .07 | .18$^{*}$ | .15$^{**}$ | .21$^{*}$ | .12$^{*}$ | .24$^{***}$ | .31$^{***}$ | .34$^{***}$ |
| Awareness | .15$^{*}$ | -.01 | .11$^{*}$ | -.01 | .11 | -.10 | .14$^{*}$ | -.06 | .12$^{**}$ | .07 |

| Variable | DRUG | | AGG/ILL | | SEX | | DRINK | | AWB | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male |
| Clarity | .20*** | .12 | .21*** | .09 | .20*** | .19* | .22*** | .13 | .28*** | .22** |

Note: *DRUG* Illicit Drug Use, *AGG/ILL* Aggressive and Illegal, *SEX,* Risky Sexual Behavior, *DRINK* Heavy Drinking, *AWB* Academic and Work Behaviors. $p < .05$, $^{**}p < .01$, $^{***}p < .001$.

*Anticipated Illicit Drug Use*

A mediation regression analysis was conducted using PROCESS Macro Model 4 for SPSS. Anticipated illicit drug use was inputted as the outcome, ACEs were inputted as the predictor with sex at birth as a covariate and EMS:DR and DERS:SF scores as parallel mediators. Results indicated a statistically significant multiple regression, $F(1, 453) = 40.70$, $p < .001$, $R^2 = .08$. The path from ACEs to disconnection and rejection schemas ($a_1$) was significant and indicated that as ACE scores increase by 1, EMS:DR scores increased by 6.71, $b = 6.71$, $p < .001$, $t(453) = 11.02$. The path from ACEs to difficulties in emotion regulation ($a_2$) was also significant, and indicated that as ACE scores increase by 1, DERS:SF scores increase by 1.89, $b = 1.89$, $t(453) = 6.17$, $p < .001$.

The direct effect from ACEs to anticipated illicit drug use (c') was significant $b = .18$, $t(451) = 3.80$, $p < .001$, indicating that ACEs predict anticipated illicit drug use. The total effect from ACEs to anticipated illicit drug use with both the mediators EMS:DR and DERS:SF in the model (c) was significant, $b = .27$, $t(453) = 6.38$, $p < .001$. The indirect effect of EMS:DR scores was .10, $SE = .03$, 95% CI[0.046,0.151] indicating that early maladaptive schemas in the disconnection and rejection domain operate as a partial mediator of the relationship between ACEs and anticipated illicit drug use among college students. The indirect effect of DERS:SF was -.002, $SE = .01$, 95% CI[-0.029, 0.024] indicating no mediation and a lack of statistical significance given that the CI includes zero. When examining the male and female participant only regression analyses, these results held.

In the full sample, ACEs accounted for 21.14% of the variance in EMS:DR scores and 8% of the variance in DERS:SF scores. Taken together, ACEs, EMS:DR, and DERS:SF, or the total effect model scores, accounted for 8.24% of the variance in anticipated illicit drug use

scores. Separate models were considered for male versus female college students. Among only the participants who indicated male sex at birth, ACEs accounted for 16.06% of the variance in EMS:DR scores, 9.25% of the variance in DERS:SF scores. ACEs, EMS:DR, and DERS:SF scores, or the total effect model, accounted for 9.23% of the variance in anticipated illicit drug use scores for males. For the female sex at birth participants only, ACEs accounted for 21.46% of the variance in EMS:DR scores, and 6.09% of the variance in DERS:SF scores. ACEs, EMS:DR, and DERS:SF scores accounted for 8.68% of the variance in anticipated illicit drug use scores for female participants.

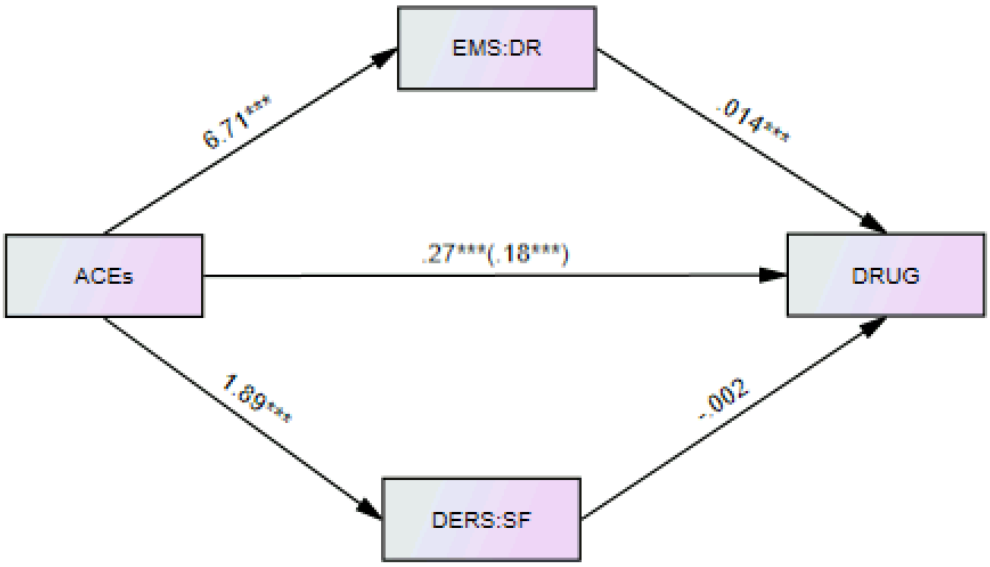


Figure 5.1: Regression coefficients for the relationship between ACEs and expected illicit drug use as mediated by difficulties in emotion regulation and disconnection and rejection early maladaptive schemas. *** $p < .001$.

*Anticipated Aggressive/Illegal Behaviors*

The model to predict anticipated aggressive and illegal behaviors resulted in a statistically significant multiple regression $F(1, 453) = 22.23$, $p < .001$, $R^2 = .05$. The path from ACEs to EMS:DR and DERS:SF ($a_1$ and $a_2$) were the same as reported in the above analysis.

The direct effect of ACEs on anticipated aggressive and illegal behaviors (c') was significant at the .05 level, $b$ = .04, $t(451) = 2.09$ , $p$ = .037, which indicates that as ACE scores increased by 1, scores on the CARE subscale related to anticipated aggressive and illegal behaviors increased by 2.09. The total effect of ACEs on anticipated aggressive and illegal behaviors (c) was significant, $b$ = .05, $t(453) = 4.72$, $p$ <.001. The indirect effect of EMS:DR was significant, indicating partial mediation (03, $SE$ = .009, 95% CI[0.018, 0.054]). The indirect effect of DERS:SF was .004, $SE$ = .005, 95% CI[-0.005, 0.014] indicating a lack of statistical significance and no mediation. For the follow-up regression analyses, which included only male or female sex at birth participants, these results held.

Taken together, ACEs, EMS:DR, and DERS:SF scores accounted for 4.68% of the variance in anticipated aggressive and illegal behaviors scores in the full sample. Separate models were again considered for male versus female college students. ACEs, EMS:DR, and DERS:SF scores accounted for 3.16% of the variance in anticipated aggressive and illegal behaviors scores for the male at birth group. In contrast, ACEs, EMS:DR, and DERS:SF scores accounted for 6.91% of the variance in anticipated aggressive and illegal behaviors for the female at birth group.

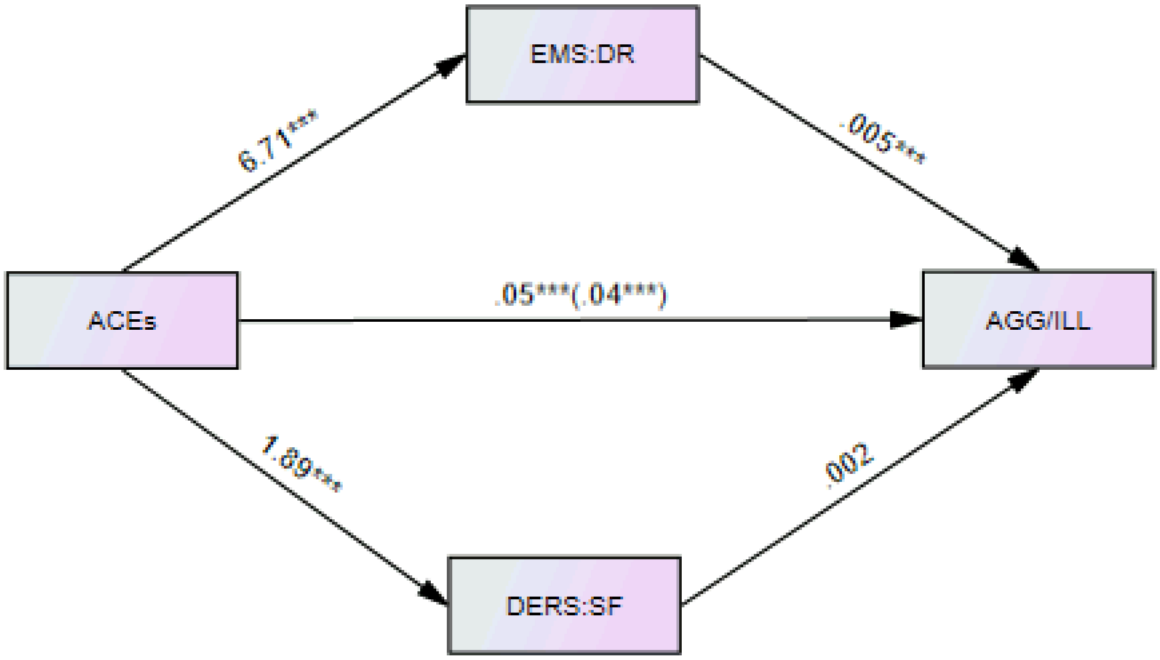


Figure 5.2: Regression coefficients for the relationship between ACEs and expected aggressive and illegal behaviors as mediated by DERS:SF and EMS:DR. $^{***}p < .001$.

*Anticipated Risky Sexual Behaviors*

The analysis with anticipated risky sexual behaviors as the outcome also yielded a statistically significant multiple regression, $F(1, 453) = 15.18$, $p < .001$, $R^2 = .03$. The direct effect of ACEs on anticipated risky sexual behaviors (c') was $b = .05$, $t(451) = 1.66$, $p = .10$. The total effect (c) was $b = .11$, $t(453) = 3.90$, $p < .001$. The indirect effect of EMS:DR was .04, $SE = .02$, 95% CI[-.001, 0.076] and the indirect effect of DERS:SF was .02, $SE = .01$, 95% CI[0.0003, 0.044]. These indirect effects indicate that DERS:SF functioned as a partial mediator of the relationship between ACEs and future anticipated risky sexual behaviors. When examining the results of the regression analyses with only the male at birth participants, these results held. However, for female participants, the indirect effect of EMS:DR was .04, $SE = .02$, 95% CI[.007, .079] and the indirect effect of DERS:SF was .01, $SE = .01$, 95% CI[-.002, .031] indicating that

EMS:DR was a partial mediator of the relationship between ACEs and anticipated risky sex for female participants in this sample but not for male participants. In contrast, DERS:SF was a partial mediator of this relationship for male participants but not for female at birth participants.

The total effect model accounted for 3.24% of the variance in anticipated risky sexual behaviors scores in the full sample. ACEs, EMS:DR, and DERS:SF scores accounted for only 0.6% of the variance in anticipated risky sexual behavior scores and was not significant for males at birth and 6.57% of the variance in anticipated risky sexual behaviors for the female at birth college students in this sample.

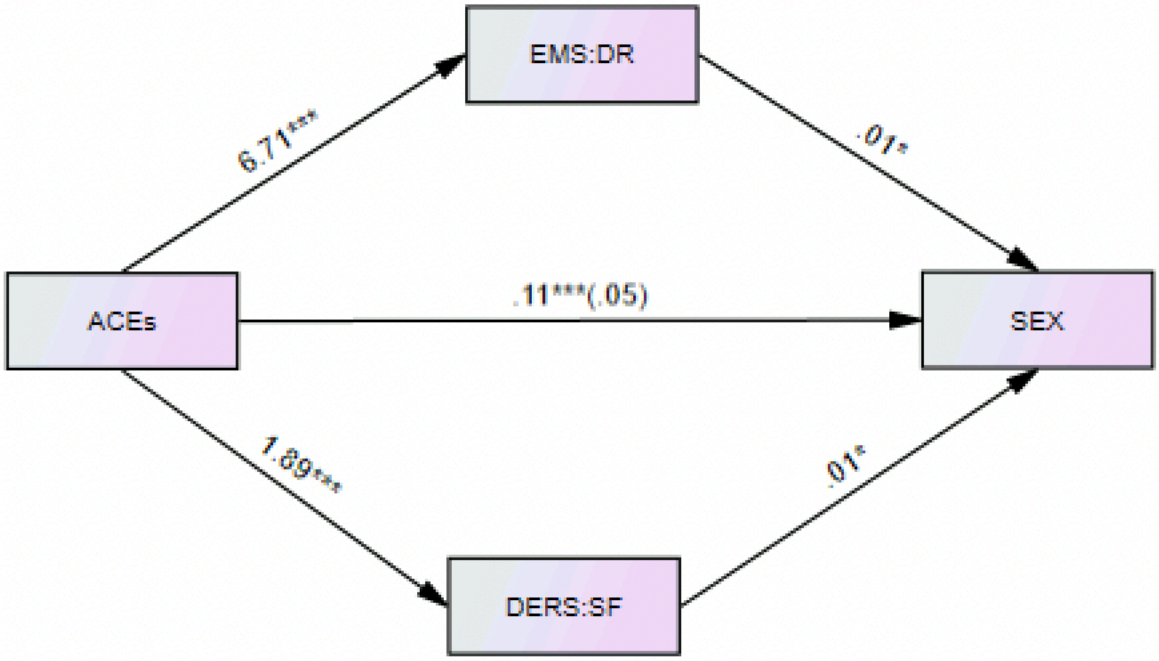


Figure 5.3: Regression coefficients for the relationship between ACEs and expected risky sexual behavior as mediated by DERS:SF and EMS:DR. $^{*}p < .05$, $^{***}p < .001$.

*Anticipated Heavy Drinking Behaviors*

This model generated a statistically significant multiple regression $F(1, 451) = 12.37$, $p < .001$, $R^2 = .03$. The direct effect from ACEs to this outcome (c') was $b = .07$, $t(449) = 1.28$, $p = .20$. The total effect of ACEs on this outcome (c) was $b = .18$, $t(451) = 3.52$, $p < .001$. The

indirect effect of EMS:DR was .07, *SE* = .03, 95% CI[0.014, 0.137], which supports EMS:DR as a partial mediator. However, DERS:SF was not a mediator with an indirect effect of *b* = .03, *SE* = .02, 95% CI[-0.002, 0.072]. When separating participants into groups based on self-reported sex at birth, neither EMS:DR nor DERS served as a partial mediator of this relationship for either group.

The total effect model accounted for 2.67% of the variance in anticipated heavy drinking behaviors scores in the full sample. Separate models were again considered for male versus female college students. ACEs, EMS:DR, and DERS:SF scores accounted for 2.66% of the variance in anticipated heavy drinking behaviors scores for males at birth. Similarly, the model accounted for 2.83% of the variance in anticipated heavy drinking behaviors for the female group.

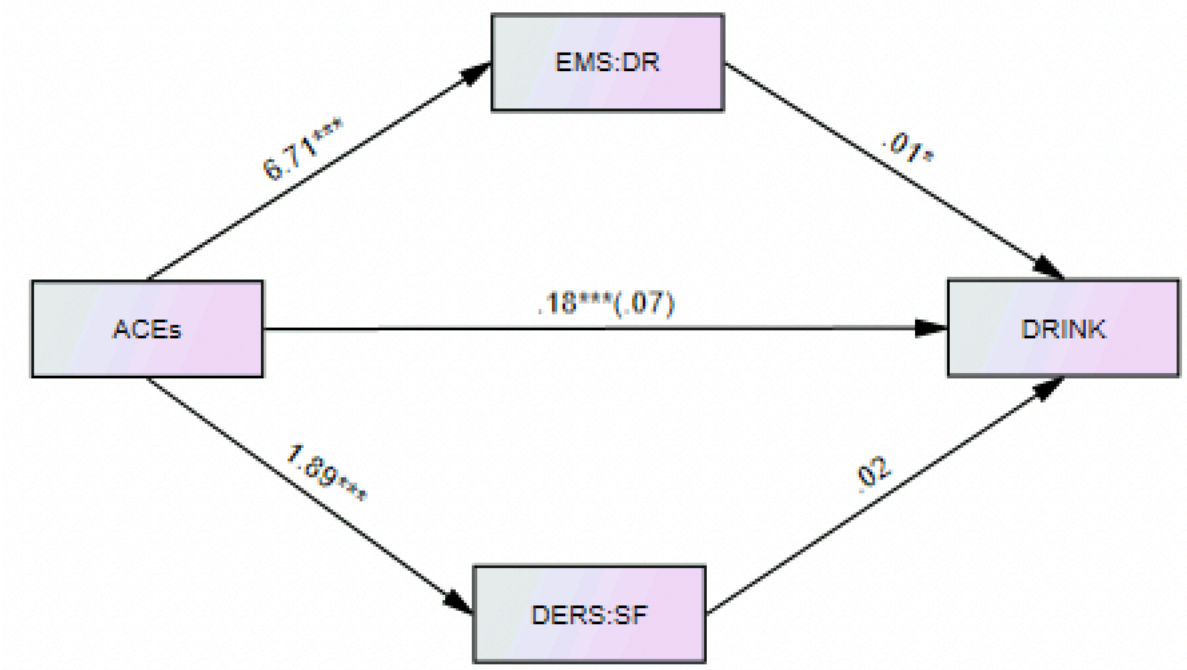


Figure 5.4: Regression coefficients for the relationship between ACEs and expected heavy drinking behaviors as mediated by DERS:SF and EMS:DR. $^{*}p < .05$, $^{***}p < .001$.

*Anticipated Risky Academic and Work Behaviors*

This regression included anticipated risky academic and work behaviors as the outcome, ACEs as the predictor, and EMS:DR and DERS:SF as mediators. The total sample model yielded a statistically significant multiple regression, $F(1, 453) = 39.58$, $p < .001$, $R^2 = .08$.

The direct effect of ACEs on this outcome variable (c') was significant, $b = .13$, $t(451) = 2.98$, $p = .003$. The total effect of ACEs on this outcome variable (c) was also significant, $b = .26$, $t(453) = 6.29$, $p < .001$. The indirect effect of EMS:DR was .08, $SE = .03$, 95% CI[0.029, 0.133] and the indirect effect of DERS:SF was .05, $SE = .02$, 95% CI[0.022, 0.092], signifying that both DERS:SF and EMS:DR serve as partial mediators of the relationship between ACEs and future anticipated risk taking related to academic and work behaviors among this college student sample. However, for male at birth group neither EMS:DR scores nor DERS:SF scores were statistically significant mediators, indicating a lack of mediation with indirect effects of .06, $SE = .05$, 95%CI[-.027, .170] and .06, $SE = .04$, 95%CI[-.005, .153].

Taken together, ACEs, EMS:DR, and DERS:SF scores accounted for 8.04% of the variance in anticipated academic and work behaviors scores in the full sample. ACEs, EMS:DR, and DERS:SF scores accounted for 4.95% of the variance in anticipated academic and work behaviors scores for males and 9.26% for the female group.

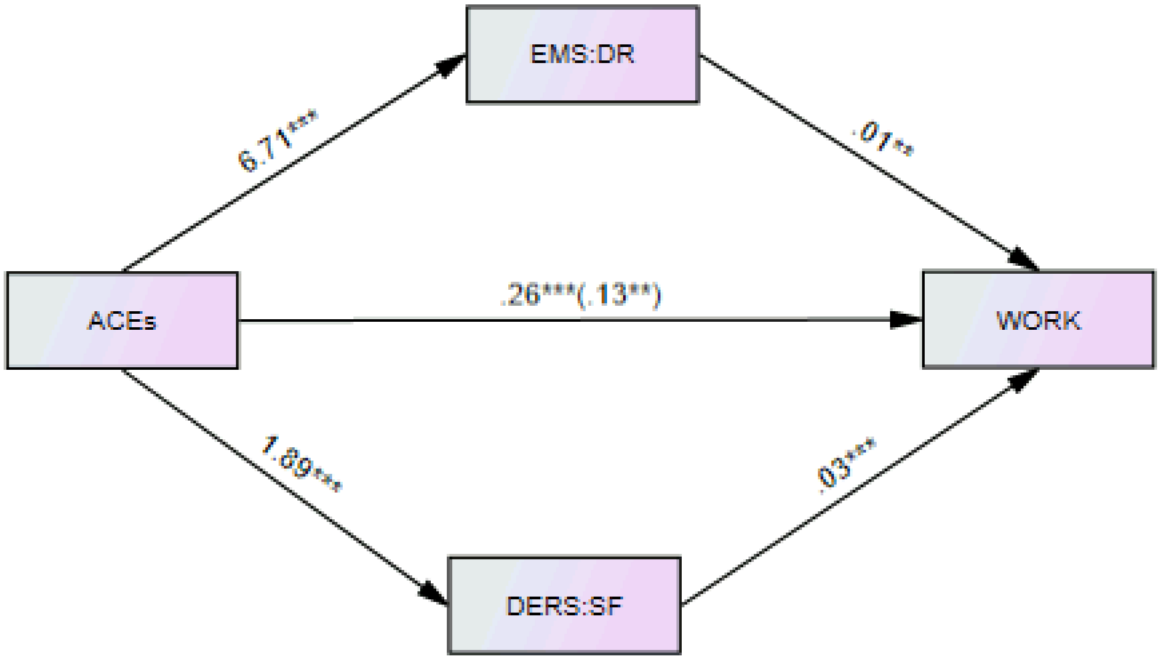


Figure 5.5: Regression coefficients for the relationship between ACEs and expected risky academic and work behaviors as mediated by DERS:SF and EMS:DR. $^{**}p < .01$, $^{***}p < .001$.

**Table 5.10**

*Regression Variance Comparisons between Male and Female Sex at Birth Groups*.

| Outcome | Total Effect Model Variance | |
|---|---|---|
| | Male % ($n$ = 149) | Female % ($n$ = 306) |
| Anticipated Illicit Drug Use | 9.23*** | 8.68*** |
| Anticipated Aggressive and Illegal Behaviors | 3.16* | 6.91*** |
| Anticipated Risky Sexual Behavior | 0.63 | 6.57*** |
| Anticipated Heavy Drinking[a] | 2.66*** | 2.83** |
| Anticipated Risky Academic and Work Behaviors | 4.95** | 9.26*** |

*Note:* $R^2$ statistics are reported as percentages of variance accounted for by the total model on the outcome variable. [a]$N$ = 305/148. *$p < .05$,**$p < .01$, ***$p < .001$.

**Table 5.11**

*Total, Direct, & Indirect Effects for Male and Female Sex at Birth Groups from PROCESS Mediation Regression Analyses.*

| Outcome | Male Group | | | | | | Female Group | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **EMS:DR** | | **DERS:SF** | | | | EMS:DR | | DERS:SF | |
| | Total Effect | Direct Effect | Indirect Effect | 95%CI | Indirect Effect | 95%CI | Total Effect | Direct Effect | Indirect Effect | 95%CI | Indirect Effect | 95%CI |
| DRUG | .35 | .21 | .12 | .031,.227 | .02 | **-.032,.086** | .26 | .17 | .09 | .031,.152 | -.002 | **-.028,.025** |
| AGG/ILL | .09 | .03 | .05 | .011,.089 | .02 | **-.006,.047** | .08 | .04 | .03 | .014,.050 | .003 | **-.005,.013** |
| SEX | .06 | -.04 | .04 | **-.032,.117** | .07 | .008,.131 | .14 | .08 | .04 | .007,.079 | .01 | **-.003,.031** |
| DRINK[a] | .23 | .04 | .11 | **-.003,.238** | .07 | **-.005,.174** | .17 | .08 | .06 | **-.007,.132** | .02 | **-.009,.062** |
| WORK | .25 | .12 | .06 | **-.027,.170** | .06 | **-.005,.152** | .26 | .14 | .08 | .017,.146 | .05 | .014,.087 |

Note: $N = 149$ for the Male at birth group; $N = 306$ for the Female at Birth Group unless otherwise specified. [a]$N = 148/305$.

## 5.4 Moderation Analysis

For the final moderation hypothesis, the PROCESS Macro Model 1 by Hayes was conducted in SPSS with the five CARE subscales as separate outcome variables (Y) individually, ACEs as the predictor (X), and Counter-ACEs as the moderator (W). None of these models yielded a statistically significant interaction effect, indicating that counter-ACEs do not serve as a moderator of the relationship between ACEs and subsequent anticipated risk-taking behaviors related to illicit drug use, $b = .02$, $t(450) = .78$, $p = .44$, aggressive and illegal behaviors $b = .01$, $t(450) = 1.06$, $p = .29$, risky sexual behaviors $b = .02$, $t(450) = 1.67$, $p = .10$, heavy drinking $b = .03$, $t(448) = 1.15$, $p = .25$, or academic and work behaviors $b = .04$, $t(450) = 1.88$, $p = .06$.

## 5.5 Structural Equation Model

To test the mediation-based hypotheses without running 5 individual regression models and thereby capitalizing on Type 1 error, a structural equation model was created which utilized 2000 bootstraps at 95% confidence interval. A visualization of this model can be found in Figure 5.6. ACEs were placed in the model as an observed variable and a predictor. The outcome variable was inputted as a latent variable of anticipated risk-taking behaviors with five CARE subscales as indicator variables. $M_1$ was inputted as the latent variable of early maladaptive schemas in the disconnection and rejection domain, with each of the subscales of the YSQ-S3 as indicator variables. Finally, $M_2$ was placed into the model as the latent variable of difficulties with emotion regulation, with the subscales of the DERS:SF as indicators. The observed variables of emotion deprivation, aggressive and illegal behaviors, and strategies were given a regression weight of 1 to ensure the model was identified for further analysis. Multiple imputation was used to adjust and account for any missing data in the dataset. Finally, maximum likelihood was the method of estimation used.

To examine the fit of the model, chi square, RMSEA, and CFI were examined. The model yielded the following, $\chi^2$ (115, N = 455) = 604.57, $p$ < .001, TLI = .82, CFI = .85, RMSEA = .097 90% CI[0.09,0.11]. These parameters indicated a poor model fit, potentially due to having low power and a sample size not sufficient for this model. Generally, at least 100 cases and a 10:1 ratio for cases to parameters estimated is necessary for structural equation modeling (Ockey & Choi, 2015). This key ratio was not achieved with this sample size, and due to the lack of fit for the model, no further analysis was conducted.

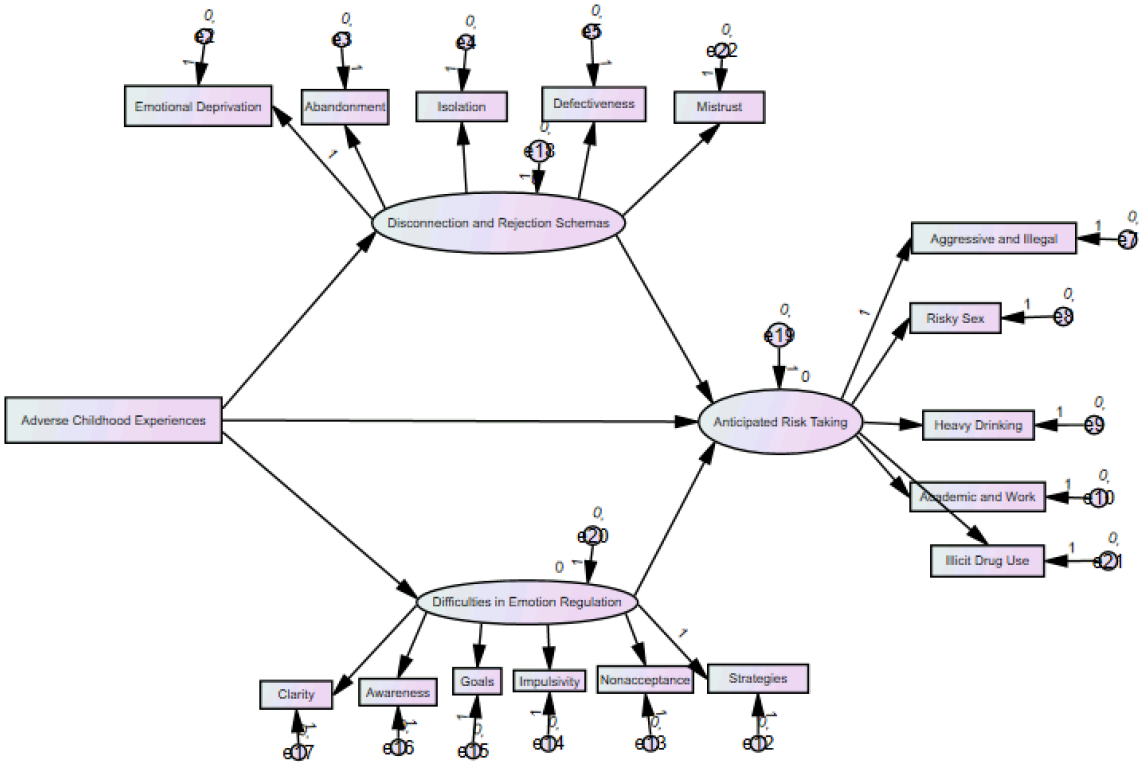


Figure 5.6: Depiction of the Structural Equation Model as described in the text.

# CHAPTER 6: DISCUSSION

This study aimed to examine two possible mediators of the association between adverse childhood experiences (ACEs) and subsequent expected risk-taking behaviors in college students. Childhood maltreatment, abuse, and neglect have been studied extensively since the 1980s and are associated with numerous adverse mental and physical health outcomes. One such outcome is the perpetration of risk-taking behaviors such as committing violent or aggressive acts, illegal acts, risky sexual behavior, and excessive consumption of alcohol and drugs (Crandall et al., 2020; Garrido et al., 2017; Grigsby et al., 2020; Lacey et al., 2020). These childhood experiences and the associated risk-taking behaviors have a considerable societal impact due to the costs associated with health care, legal and criminal fees, and loss of productivity (Ridout et al., 2018). In addition to these societal costs, there is a burden on the individual who experiences the abuse or neglect, including increased risk for mental and physical health changes. These costs to society and the vast harm to the individuals involved provide additional rationale for the importance of exploring the mechanisms underlying the relationship between early adverse childhood experiences and future risk-related outcomes.

As expected, greater endorsement of experiencing ACEs was statistically significantly and positively correlated with future anticipated subsequent risk-taking behaviors. As the presence of ACEs increases, the likelihood of anticipating risk-taking behaviors related to heavy drinking, risky sex, illicit drug use, aggressive and illegal behaviors and problematic academic, and work-related behaviors increases. These results confirm and replicate previous findings indicating that ACEs positively correlate with a variety of adult risk-taking behaviors (Bassett et al., 2022; Crandall et al., 2020; Garrido et al., 2017; Pearson et al., 2021; Windle et al., 2018). Additionally, in keeping with the literature from Combs-Lane and Smith (2002) and Fromme et

al. (1997), this association between ACE exposure and subsequent expected risk-taking may also support the contention that greater ACEs are associated with engagement in actual risk-taking behaviors as well. ACEs were also positively and statistically significantly correlated with early maladaptive schemas in the disconnection rejection domain as a whole and per each subscale and with difficulties in emotion regulation in its various forms. These relationships indicate that as increased exposure to ACEs occurs in childhood, the likelihood of developing difficulties regulating emotions and developing schemas in the disconnection and rejection domain increases. These results also support the existing evidence for an association between increased exposure to ACEs and negative outcomes in adolescence and adulthood. This connection continues to provide a rationale for exploring the impact of negative childhood experiences on future health, development, and risks. Future research should emphasize exploring the causal nature of this relationship rather than continuing to provide correlational evidence.

As expected, ACES were positively and significantly correlated with early maladaptive schemas in the disconnection and rejection domain were and each subsequent expected risk-taking behavior. Additionally, early maladaptive schemas in the disconnection and rejection domain partially mediated the relationship between ACEs and various anticipated risk-taking behaviors (illicit drug use, aggressive and illegal, heavy drinking, academic and work), providing partial support for the mediation-based hypothesis. These results indicate the existence of a relationship between ACEs and the formation of early maladaptive schemas in the disconnection and rejection domain and with future risk-taking. These findings extend those of Marengo et al. (2019) as well as Bassett et al. (2022), Crandall et al. (2020), Garrido et al. (2017), Pearson et al. (2021), Shorey et al. (2015b), and Windle et al. (2018). Moreover, the current results further elucidate earlier research findings by revealing that two important transdiagnostic constructs,

maladaptive schemas, and emotion dysregulation, partially mediate the established relationship between childhood adversity and subsequent risk-taking behaviors. As stated previously, future research should focus on exploring these relationships' causal dynamics, whether ACEs lead to the development of disconnection and rejection schemas, and if these schemas lead to some forms of subsequent risk-taking behaviors or a third variable explains these relationships. By exploring this relationship in more detail, it may be possible to support using schema therapy (Bach et al., 2017) to mitigate the effect of ACEs on future risk-taking.

Interestingly, hypothesis six was only partially supported. Difficulties in emotion regulation did not partially mediate the relationship between ACEs and each of the subsequent expected risk-taking behaviors. However, DERS:SF scores partially mediated the relationship between ACEs and anticipated risky sexual behaviors and problematic academic and work behaviors. In addition, ACE scores were positively and significantly correlated with each of the expected risk-taking behaviors. While findings from this study did not provide support for difficulties in emotion regulation as a mediator between ACEs and anticipated risk-taking behaviors related to illicit drug use, heavy drinking, or aggressive and illegal behaviors, the positive association between these constructs was supported. Additionally, Panagou and Macbeth (2022) found that there are likely numerous interplaying mechanisms explaining the relationship between ACEs and subsequent outcomes.

A possible explanation for the unexpected mediation results is that participants' appraisals of their future risk-taking as reported in the context of an online survey may not fully capture the various idiographic nuances regarding each participant. For example, a participant who has difficulty regulating emotions but is not experiencing any strong or negative emotions at the time of taking the survey may provide entirely different responses to anticipated risk-taking

than they would if they were currently experiencing those emotions. Similarly, a participant who has an early maladaptive schema in the disconnection and rejection domain that has not been activated by a stressor may respond differently. Additionally, a participant who has just experienced an adverse event, like doing poorly on an assignment or an exam, may answer questions about future risk-taking much differently, then those in a positive or neutral mood state, which may or may not be an accurate appraisal of their behaviors.

In keeping with the existing literature by Marengo and colleagues (2018), there were sex differences among the outcome variables for this sample. There were significant mean differences between male and female participants in their reports on the disconnection and rejection scale and specifically their responses to the abandonment, mistrust, isolation, and defectiveness schemas, with women reporting higher scores for each. There were also mean differences on the DERS:SF total score and on the strategies, nonacceptance, impulsivity, goals, and clarity subscales, with women, again, endorsing higher scores on each of these scales as compared to men. Women in this sample also reported experiencing more ACEs than their male counterparts. They endorsed an average of 1.68 ACEs compared to 1.21 by men. There were also sex differences when examining the correlations between EMS:DR and DERS:SF scores with CARE subscale scores.

Furthermore, when considering the mediation analyses, there were sex differences in the amount of variance explained for anticipated risky sexual behavior, anticipated heavy drinking, and risky academic and work behaviors. For risky sex, difficulties in emotion regulation emerged as a partial mediator of the relationship for men but not women. Conversely, disconnection and rejection schemas emerged as a partial mediator for women but not men. For heavy drinking, neither proposed transdiagnostic mechanism achieved statistical significance to allow for a claim

of partial mediation for either sex. Finally, for problematic academic and work behaviors, neither proposed mechanism was a partial mediator for the male at-birth group. However, both mechanisms emerged as a partial mediator for the female at-birth group. The clinical implication of these sex differences should be explored in further detail in an experiment designed to test the causality of these mechanisms.

While the extant literature is clear in indicating that ACEs result in cognitive, emotional, and behavioral vulnerabilities as well as other negative outcomes in both men and women, the differences among men and women in outcomes is unclear. It is possible that ACEs affect men and women differently and that the development of schemas or difficulties regulating emotion may also influence men and women differently. For example, ACEs may result in the formation of different mechanisms for men and women, thereby impacting future outcomes like risk-taking behaviors. Furthermore, it is possible that experiencing certain types of ACEs will result in the formation of different mechanisms as well. In fact, Leban and Gibson (2020) suggest that ACE outcomes operate through different pathways for men and women due to extant literature indicating that men and women have different outcomes and coping mechanisms after ACE exposure. Additionally, Camara and Calvete (2012) found in a sample of undergraduate students that when an early maladaptive schema is activated by a stressful event some schemas are more harmful depending on sex. They found support for different schema presentations being associated with different mental health outcomes as well (Camara & Calvete, 2012). Numerous studies have also explored the sex and gender differences in emotion regulation strategies, showing the differences in rumination, reappraisal, and acceptance of negative emotions (McRae et al., 2008; Nolen-Hoeksema, 2012; Zimmerman & Iwanski, 2014). Taken together, results of

these studies indicate the possible differences between men and women in ACE exposure, outcomes of ACEs, emotion regulation, and early maladaptive schema formation and impact.

Unexpectedly, counter-ACEs did not moderate the relationship between ACEs and the subsequent expected risk-taking behaviors in the regression analyses. While this contradicts extant literature (Crandall et al., 2020), it is essential to consider the sample when interpreting the results. For example, this sample is unique in that participants had low average ACE scores and high average counter-ACE scores, which could influence the outcome of the statistical tests. Furthermore, only 71 individuals from this sample had an ACE score of 4+, while 384 had an ACE score of 3 or less. Given these results, additional research should focus on the association of counter-ACEs with ACE outcomes among various populations with varying ACE and Counter-ACE levels. Furthermore, ACEs have been shown to have a graded dose-response effect on future risk-related outcomes; however, the impact of various levels of counter-ACEs has yet to be explored in as much depth.

### 6.1: Strengths of Study

A strength of this study is that it is one of the first to explore multiple types of expected risk-taking behaviors as an outcome of experiencing adverse childhood experiences rather than risk-taking defined broadly or as defined by a specific individual behavior (i.e., heavy alcohol use). Additionally, this is one of the first studies to examine anticipated or expected risk-taking behaviors in multiple domains, rather than a specific type of risk-taking behavior, which provides a different perspective on the outcome of ACEs. Finally, this study considered two transdiagnostic mechanisms as possible mediators of the established relationship between ACEs and future adverse outcomes, whereas most extant literature has not considered these transdiagnostic mechanisms. Furthermore, the transdiagnostic nature of both early maladaptive

schemas and difficulties in emotion regulation indicate they can be targeted using several techniques, like schema therapy, cognitive behavioral therapy, and dialectical behavior therapy, to mitigate the risks and developmental disruption associated with ACEs.

## 6.2: Limitations

A fundamental limitation of this study is the use of cross-sectional data and the inability to make causal claims regarding the outcomes. However, temporal precedence may be assumed due to the nature of the examined constructs. For example, because ACEs by nature must occur before the age of 18 and anticipated risky behaviors by nature must occur in the future, it may be assumed that ACEs happen prior. However, this still does not allow for a causal claim based on the results of this study. To establish a causal link between these constructs, longitudinal research studying the lifelong impact of ACEs should be considered. This longitudinal study should begin by recruiting families of young children of various demographic, social, and economic backgrounds to examine the effect of childhood experiences on future risk-taking behaviors. The design should consist of providing ACE questionnaires to both children and guardians and by conducting the survey repeatedly at various times throughout childhood. The ACE measure should not only assess the occurrence of an ACE but also the frequency of occurrences of that particular ACE. In addition, measures of risk-taking, emotional dysregulation, and maladaptive schemas should be given throughout the study, paired with interviews with the children and guardians.

Another critical limitation of this study is the reliance on self-report data, which may result in participants answering questions in a biased way. This bias can occur related to socially sensitive questions or when disclosing illicit behaviors. This is important for surveys, which ask about behaviors that may be viewed negatively (future risk-taking). For example, it is possible

that social desirability impacted how participants answered questions about future risk-taking, as some participants may not want to admit that they are planning to engage in riskier activities. Future research on this topic should include a measure of social desirability.

Additionally, as indicated above, the survey design does not account for each participant's idiographic details, which may have influenced survey responses. An additional limitation of this study is the generalizability of the results. This sample was primarily young, female, white, heterosexual, and Freshman with parents that were still married. While some of these demographic classifications (sex at birth) were considered as covariates in the regression mediation models, these results may not be generalizable to the entire United States college population, much less the broader United States population. Additional covariates, like race, ethnicity, sexual orientation, and socioeconomic status, should be explored in the future.

A final limitation is in the nature of the ACEs questionnaire. As it is current administered it does not assess the frequencies of experiences and it weighs each experience equally. This questionnaire assumes that experiencing an ACE once can have the same effect as experiencing that same ACE multiple times. Additionally, it assumes that each ACE has the same impact on future outcomes, whereas it is possible that being physically, emotionally, or sexually abused has a more substantial impact than having divorced parents. In the future, a new measure of ACEs and counter-ACEs should be established that considers the frequency of experiences and the perceived effect of those experiences on the individual.

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# APPENDIX A: ADVERSE CHILDHOOD EXPERIENCES QUESTIONNAIRE

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

1. Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you OR act in a way that made you afraid that you might be physically hurt?
   Yes No I choose not to answer

2. Did a parent or other adult in the household often push, grab, slap, or throw something at you OR ever hit you so hard that you had marks or were injured?
   Yes No I choose not to answer

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 try to actually have oral, anal, or vaginal sex with you?
   Yes No I choose not to answer

4. Did you 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?
   Yes No I choose not to answer

5. Did you 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?
   Yes No I choose not to answer

6. Were your parents separated or divorced?
   Yes No I choose not to answer

7. Was your mother or stepmother often pushed, grabbed, slapped, or had something thrown at her OR sometimes or often kicked, bitten, hit with a fist, or hit with something hard OR ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
   Yes No I choose not to answer

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
   Yes No I choose not to answer

9. Was a household member depressed or mentally ill or did a household member attempt suicide?
   Yes No I choose not to answer

10. Did a household member go to prison?
    Yes No I choose not to answer

# APPENDIX B: YOUNG SCHEMA QUESTIONNAIRE 3 SHORT FORM

YSQ-S3

Jeffrey Young, Ph.D.

**Instructions:** Listed below are statements that people might use to describe themselves. Please read each statement, then rate it based on how accurately it fits ***over the past year.*** When you are not sure, base your answer on what you ***emotionally feel,*** not on what you think to be true.

*A few of the items ask about your relationships with your parents or romantic partners. If any of these people have died, please answer these items based on your relationship when they were alive. If you do not currently have a partner but have had partners in the past, please answer the item based on your most recent significant romantic partner.*

Choose the **highest score from 1 to 6** on the rating scale below that best describes you.

**1 = Completely untrue of me**
**2 = Mostly untrue of me**
**3 = Slightly more true than untrue**
**4 = Moderately true of me**
**5 = Mostly true of me**
**6 = Describes me perfectly**

1. I haven't had someone to nurture me, share him/herself with me, or care deeply about everything that happens to me.
2. I find myself clinging to people I'm close to because I'm afraid they'll leave me.
3. I feel that people will take advantage of me.
4. I don't fit in.
5. No man/woman I desire could love me once he or she saw my defects or flaws.
6. I don't have people to give me warmth, holding, and affection.
7. I need other people so much that I worry about losing them.
8. I feel that I cannot let my guard down in the presence of other people, or else they will intentionally hurt me.
9. I'm fundamentally different from other people.
10. No one I desire would want to stay close to me if he or she knew the real me.

11. I haven't felt that I am special to someone.
12. I worry that people I feel close to will leave me or abandon me.
13. It is only a matter of time before someone betrays me.
14. I don't belong, I'm a loner.
15. I'm unworthy of love, attention, and respect of others.
16. I have not had someone who really listens to me, understands me, or is tuned into my true needs and feelings.
17. When someone I care for seems to be pulling away or withdrawing from me, I feel desperate.
18. I am quite suspicious of other people's motives.
19. I feel alienated or cut off from other people.
20. I feel that I'm not loveable.
21. I haven't had a strong or wise person to give me sound advice or direction when I'm not sure what to do.
22. Sometimes I am so worried about people leaving me that I drive them away.
23. I'm usually on the lookout for people's ulterior or hidden motives.
24. I always feel on the outside of groups.
25. I am too unacceptable in very basic ways to reveal myself to other people or to let them get to know me well.

Disconnection/Rejection Schemas Scoring

| | | |
|---|---|---|
| Emotion Deprivation Item Numbers: 1, 6, 11, 16, 21. | Total Score: | Mean Score: |
| Abandonment/Instability Item Numbers: 2, 7, 12, 17, 22. | Total Score: | Mean Score: |
| Mistrust/Abuse Item Numbers: 3, 8, 13, 18, 23. | Total Score | Mean Score: |
| Social Isolation/Alienation Item Numbers: 4, 9, 15, 19, 24. | Total Score: | Mean Score: |
| Defectiveness/Shame Item Numbers: 5, 10, 15, 20, 25. | Total Score: | Mean Score: |

Total Score for the Disconnection/Rejection Domain:

# APPENDIX C: DIFFICULTIES IN EMOTION REGULATION SCALE SHORT FORM

**Difficulties in Emotion Regulation Scale – Short Form (DERS-SF)**

Kaufman, Xia, Fosco, Yaptangco, Skidmore, & Crowell (2015)

**Please indicate how often the following apply to you.**

| | Almost Never (0–10%) | Some-times (11–35%) | About Half Of the Time (36–65%) | Most of the Time (66–90%) | Almost Always (91–100%) |
|---|---|---|---|---|---|
| 1. I pay attention to how I feel | 1 | 2 | 3 | 4 | 5 |
| 2. I have no idea how I am feeling | 1 | 2 | 3 | 4 | 5 |
| 3. I have difficulty making sense out of my feelings | 1 | 2 | 3 | 4 | 5 |
| 4. I care about what I am feeling | 1 | 2 | 3 | 4 | 5 |
| 5. I am confused about how I feel | 1 | 2 | 3 | 4 | 5 |
| 6. When I'm upset, I acknowledge my emotions | 1 | 2 | 3 | 4 | 5 |
| 7. When I'm upset, I become embarrassed for feeling that way | 1 | 2 | 3 | 4 | 5 |
| 8. When I'm upset, I have difficulty getting work done | 1 | 2 | 3 | 4 | 5 |
| 9. When I'm upset, I become out of control | 1 | 2 | 3 | 4 | 5 |
| 10. When I'm upset, I believe that I will end up feeling very depressed | 1 | 2 | 3 | 4 | 5 |
| 11. When I'm upset, I have difficulty focusing on other things | 1 | 2 | 3 | 4 | 5 |
| 12. When I'm upset, I feel guilty for feeling that way | 1 | 2 | 3 | 4 | 5 |
| 13. When I'm upset, I have difficulty concentrating | 1 | 2 | 3 | 4 | 5 |
| 14. When I'm upset, I have difficulty controlling my behaviors | 1 | 2 | 3 | 4 | 5 |
| 15. When I'm upset, I believe there is nothing I can do to make myself feel better | 1 | 2 | 3 | 4 | 5 |
| 16. When I'm upset, I become irritated with myself for feeling that way | 1 | 2 | 3 | 4 | 5 |
| 17. When I'm upset, I lose control over my behavior | 1 | 2 | 3 | 4 | 5 |
| 18. When I'm upset, it takes me a long time to feel better | 1 | 2 | 3 | 4 | 5 |

# APPENDIX D: CARE EXPECTED INVOLVEMENT SCALE

CARE

**EXPECTED INVOLVEMENT**

On a scale of 1 (not at all likely) to 7 (extremely likely), HOW LIKELY IS IT THAT YOU WILL ENGAGE IN EACH OF THESE ACTIVITIES in the next 6 months?

| | | Expected Involvement | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Not at all Likely** | | | **Moderately Likely** | | | **Extremely Likely** |
| 1. | Trying/using drugs other than alcohol or marijuana | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Missing class or work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | Grabbing, pushing, or shoving someone | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | Leaving a social event with someone I have just met | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | Driving after drinking alcohol | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | Making a scene in public | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | Drinking more than 5 alcoholic beverages | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | Not studying for exam or quiz | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | Drinking alcohol too quickly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | Disturbing the peace | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | Damaging/destroying public property | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | Sex without protection against pregnancy | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | Leaving tasks or assignments for the last minute | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | Hitting someone with a weapon or object | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | Rock or mountain climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | Sex without protection against sexually transmitted diseases | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | Playing non-contact team sports | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | Failing to do assignments | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. | Slapping someone | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. | Not studying or working hard enough | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. | Punching or hitting someone with fist | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. | Smoking marijuana | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. | Sex with multiple partners | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. | Snow or water skiing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. | Mixing drugs and alcohol | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. | Getting into a fight or argument | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. | Involvement in sexual activities without my consent | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. | Playing drinking games | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. | Sex with someone I have just met or don't know well | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. | Playing individual sports | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

# APPENDIX E: BCE Scale

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

1. Did you have at least one caregiver with whom you felt safe?
   Yes No I choose not to answer

2. Did you have at least one good friend?
   Yes No I choose not to answer

3. Did you have beliefs that gave you comfort?
   Yes No I choose not to answer

4. Did you like school?
   Yes No I choose not to answer

5. Did you have at least one teacher who cared about you?
   Yes No I choose not to answer

6. Did you have good neighbors?
   Yes No I choose not to answer

7. Was there an adult (not a parent/caregiver or the person from #1) who could provide you with support or advice?
   Yes No I choose not to answer

8. Did you have opportunities to have a good time?
   Yes No I choose not to answer

9. Did you like yourself or feel comfortable with yourself?
   Yes No I choose not to answer

10. Did you have a predictable home routine, like regular meals and a regular bedtime?
    Yes No I choose not to answer