ADVERSE CHILDHOOD EXPERIENCES, ATTACHMENT INSECURITY, AND EMOTION DYSREGULATION: IMPLICATIONS FOR SUBSTANCE USE IN EMERGING ADULTHOOD

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By

Thesis by Michael (Rook) Schapman

Chair: Dr. Kia Asberg
Associate Professor of Psychology
Psychology Department

Committee Members: Dr. David Solomon, Psychology
Dr. Brianna Byllesby, Psychology
Dr. Annie Wilson, Psychology

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TABLE OF CONTENTS

ABSTRACT

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Michael (Rook) Schapman, B.S.

Western Carolina University (December 2022)

Director: Dr. Kia Asberg

The new responsibilities and circumstances of individuals entering the first phases of adulthood allow for many outlets of coping that may be potentially harmful to one's health and/or wellbeing, with one such outlet being substance use. In this study, self-report measures were used to assess the relationship between adverse childhood experiences (ACEs), parental warmth, and emotion dysregulation and their potential predictive power for substance use in emerging adulthood. It was hypothesized that parental warmth, an facet of attachment, would mediate a relationship between ACEs and emotion dysregulation, with an overall effect on 1) substance use and 2) its associated negative consequences. Two hundred sixty-six participants' responses were evaluated using a moderated mediation analysis. Neither model yielded significant results relating to mediation in this study, though potential pathways for future research are expanded. The direct pathway from ACEs to substance use and associated consequences in adulthood were significant in both models. Exploratory analyses revealed the underlying assumed moderation effect of emotion dysregulation was incorrect, at least for the sample obtained for the study. However, further analyses suggest parental warmth serves a moderating role on this relationship. Results are discussed with relation to methods and limitations.

Introduction

Attachment theory maintains that humans develop enduring patterns of relating to others and the world around them based largely on early experiences and interaction with one's primary caregiver (Bowlby, 1973). Additionally, although patterns of adult attachment tend to be fairly stable, events and experiences, especially those of an interpersonal nature, can impact the formation of secure attachment in childhood (Fraley et al., 2020; Stanton et al., 2017) and thus the way an individual relates to others in adulthood (Mikulincer & Shaver, 2018). Moreover, attachment insecurity, specifically, is associated with an increased risk for depression (Fowler et al., 2013) and overall emotion dysregulation (Mikulincer et al., 2015) in the aftermath of early traumatic experiences. In fact, attachment serves to mediate the association between interpersonal trauma and distress (Sandberg et al., 2009). Similarly, the link between childhood exposure to trauma and emotion dysregulation is well established (Powers et al., 2015), which, in turn, may contribute to unhealthy coping such as substance use and associated negative consequences. Less is understood about the associations among adverse childhood experiences (ACEs), early attachment insecurity, emotion regulation, and substance use. As such, the proposed study seeks to examine predictors of substance use and substance use consequences in a sample of emerging adults (18–25-year-olds; Arnett, 2000), a group that is particularly vulnerable to using alcohol or other substances to cope (Sheidow et al., 2012).

Adverse Childhood Experiences

The effects of adverse childhood experiences (ACEs) have received a great deal of attention over the past 20 years. Exposure to ACEs has been shown to reflect differences of neurodevelopmental, psychopathological, and sociological outcomes in childhood as well as adulthood (Gordon et al., 2020). In addition, ACEs exposure may have long-term implications

that manifest in increased risk-taking and maladaptive behaviors like substance use (Compas et al., 2017; Felitti et al., 1998; Liebschutz et al., 2002)[1]. Specifically, the existing literature has identified the association between ACEs and earlier introduction to substance use, as well as ACEs and the likelihood of substance use disorder diagnosis (Bryant et al., 2020). Although the direct link between adversity and development of risk-taking behavior (e.g., substance use) has been established (Dvir et al., 2014), the association may be explained also by the individual's attempt to cope with emotional distress (Compas et al., 2017).

Moreover, the exposure to trauma and adversity in childhood may impact working models of the self in relation to others (i.e., attachment formations; Murphy et al., 2014) is a critical component of healthy childhood development (Schindler, 2019). For example, adverse or traumatic events may derail the formation of these models, which may increase the risk for later maladaptive behaviors and coping (Pilkington et al., 2020). Overall, it is important to recognize the contribution of both childhood trauma *and* insecure attachment in the development of maladaptive coping strategies. Likewise, disorganization that stem from adverse childhood experiences often reflects poorer attachment security in adulthood (Murphy et al., 2014). As such, these two constructs are implicitly associated, however there has been less attention

[1] **Limitations of the ACEs Framework.** Given the attention afforded to ACEs in this study, one must also recognize the limitations of the ACEs framework. For example, the influence of differing forms of adversity, and the measurement of ACEs in relation to outcomes, continues to be debated. Commonly used instruments (such as the ACE-Q) for measuring ACEs weigh each experience equally (Zarse et al., 2019), and may underemphasize the cumulative effect of such experiences. Polyvictimization is historically common for children raised within adversity, such that children who experience one form of trauma are likely to experience other forms (Dvir et al., 2014). As outlined by Kessler and colleagues, previous studies on adult outcomes associated with ACEs have tended to emphasize victimization, excluding child abuse, within the scope of PTSD and ignore other concurrent or adaptive outcomes (Kessler et al., 1997).

apportioned to understanding this interactive relationship. The attachment framework and associated outcomes will be discussed next.

Attachment Theory and Implications of Insecure Attachment

Attachment theory, formulated by John Bowlby in the 1950s, has earned a place among the most important subjects of research within developmental and adaptive models of psychology, and remains in the spotlight of psychology's zeitgeist. Within this framework, diverse methodologies of compensation for the moderation of what is known as attachment security are exemplified across populations, with substance use being one such outlet. Such means of compensation within the scope of attachment insecurity can be viewed as self-medicative against less risk-oriented adaptive behaviors (Schindler, 2019). Substance use and associated substance use disorders (SUDs) have likewise gained appreciable research attention over the past decades, and the integration of attachment theory in research concerning substance use is highly relevant (e.g., Liese et al., 2020).

The development of a "secure base" is a foundational aspect of attachment theory, wherein children learn that they may venture out from implicit safety of their primary caregiving figures (i.e., parents) to explore the world around them and then return at will (Bowlby, 1988). With the establishment of a secure base, and thus putting roots down in secure attachment, healthy internalized models of children's senses of self are developed, allowing for figures other than the primary caregiver to become additional secure bases, permitting the capacity for healthy relationships to be cultivated into adulthood (Holmes, 2010). Without experiencing a secure base, and subsequently forming appropriate internalized models of self, individuals become predisposed to the development of insecure attachment patterns that are, likewise, carried into adulthood (Schindler, 2019).

There are varying patterns commonly used to describe attachment, primarily stemming from differing levels of established security. These patterns are generally recognized to be best represented dimensionally, with the scale of secure-insecure attachment being the most widely acknowledged framework (Shaver & Mikulencer, 2002). Whereas secure patterns of attachment are associated with more adaptive behaviors, attachment *insecurity* or anxiety is associated with more maladaptive functional patterns. Anxious attachment styles relate to an individual's focus around their own fixation on the emotional availability of primary caregivers, including the perception of one's own capacity for handling emotions. Avoidant or dismissive adaptive attachment styles relate to a tendency to close off from difficult emotions. Disorganized attachment styles, however, relate to more severe emotion dysregulation, and are associated with experiences of severe ACEs including childhood trauma, neglect, and significant parental mental illness (Schindler, 2019).

In addition to the social developmental deficits commonly associated with attachment insecurity, there is an established body of literature outlining the heightened risk of externalizing behaviors, including substance use (Mikulencer & Shaver, 2018). As attachment security diminishes, individuals experience increased difficulty with emotion regulation, stress management, and coping. Additionally, attachment anxiety is associated with both difficulties in impulse control and limited access to effective emotion regulation strategies (Velotti et al., 2016). Consequently, the use of prescription and/or illicit substances may be the means by which the person adapts to the attachment insecurity and its associated problems (i.e., psychopathology, emotion dysregulation, relationship difficulties; Liese at al., 2020; Schindler & Bröning, 2015). The association between attachment security/insecurity may depend also on the definition and measurement of the construct, described next.

Parental Warmth. The overarching theory of attachment has a focus on the bond between a caregiver and their child. Of particular relevance to the proposed study is the aspect of attachment that is described as parental warmth, or parental responsiveness. The emotional availability of one's parents during childhood has been shown to have significant consequences later in life, such as adjustment and overall wellbeing (Moran et al., 2018). Specifically, the available responsiveness of parental figures in childhood (i.e., warmth) promotes adults' life satisfaction and functioning (Chen et al., 2019). In contrast, there are significant implications for low levels of parental warmth. Adults who did not experience available or responsive primary caregivers in terms of emotional warmth are recognized to be predisposed to higher rates of maladaptive coping strategies, such as substance use (Chen et al., 2019; Tandon et al., 2014). As such, it is this concept of parental warmth that is used as a proxy variable for attachment in this study. Under this framework, low perceptions of parental warmth during childhood are hypothesized to have negative implications for one's means of managing emotional distress, such as through substance misuse.

Emotion Dysregulation and Coping

Emotion regulation has gained much exposure within psychological literature, and contains multiple working models for self-directed means of coping with emotional distress. One inference that can be made from this existing body of research is that early exposure to significant adversity is associated with affect dysregulation, wherein greater instances of ACEs are associated with increased levels of distressing emotional states (Gross, 2013). Furthermore, it is suggested that due to this association, risk-taking behaviors such as substance misuse may become a means of regulating emotions (Coiro et al., 2017; Compas et al., 2017). Catanzaro and Mearns (1990) operationalized the concept of negative mood regulation expectancies as beliefs

individuals hold that, when experiencing poor mood states, certain behaviors or activities are capable of lifting their mood. Overall, the exposure to ACEs may have consequences for adjustment well into adulthood, including poorer overall health, lower life satisfaction, and problematic coping behaviors (Mersky et al., 2013). This association may stem from disruptions in hormonal- and emotion regulation processes (Nusslock & Miller, 2016), but may depend also on the individual's resources and coping.

There are two avenues commonly used to address handle difficult situations or stressors; problem-focused (PF) and avoidant emotion-focused (AEF) coping. In this context, PF coping deals with concentration on a given problem so that rational solutions can be identified and utilized, while AEF coping includes the concept of mood regulation expectancies, or the adaptive behaviors adopted by individuals to reduce emotional distress without emphasis on problem-solving (Sheffler et al., 2019). The tendency to use AEF coping is generally more common among individuals who have a history of ACEs, such that reducing emotional distress by more immediate means tends to take priority over resolving stressors in the long-term, thus becoming habitual behaviors (Nusslock & Miller, 2016).

Maladaptive coping mechanisms such as self-harm and increased risk-taking behaviors are commonly utilized AEF means of reducing negative emotional states. Substance use is one such form of maladaptive risk-taking that is associated with a variety of negative outcomes. Within the perspective of ACEs, substance misuse in adulthood is recognized as dose-responsive to early exposure to adverse exerpiences; individuals who have more ACEs tend to have a higher likelihood for problematic substance use and substance use disorders (Mersky et al., 2013). Substance use in this context serves as a direct means of moderating the effects of deficits in emotion regulation (Coiro et al., 2017). The adoption of AEF coping mechanisms to compensate

for those deficits in emotion regulation are, as such, likely important factors for identifying individuals at heightened risk for problematic substance use.

Additionally, attachment insecurity has been recognized as a substantial indicator of potential maladaptive substance use (Peng et al., 2020; Schindler & Bröning, 2015). Research also suggests a reciprocal relationship exists between attachment and substance use, whereby substance use may negatively impact attachment in adults (Schindler, 2019). In addition, Liese et al. (2020) found that emotion dysregulation mediated the relationship between anxious attachment and self-reported *DSM*-5 symptoms for alcohol and marijuana use, but did not address ACEs, specifically. The role of substance misuse in compensating for more favorable coping and secure attachment has not received significant research within emerging adult populations. As such, the proposed study seeks to identify how parental warmth may moderate the association between ACEs and emotion dysregulation and outcomes of increased substance misuse in emerging adulthood.

Emerging Adulthood

The age range of 18 to 25-years is accompanied by increased autonomy and independence, but also a heightened instability, including the pursuit of higher education, professional training, romantic interests, and the establishment of who a person believes themself to be. This developmental period is associated also with more risk-taking behaviors as the emerging adult tries to maintain a sense of emotional and behavioral control (Sussman & Arnett, 2014). For example, substance use as an outlet for exerting control or as a compensatory tool for deficits in emotion regulation strategies is common in this age group (Schindler, 2019). It should be noted, however, that although experimentation and risk taking is considered the norm for this age group, problematic substance use and substance use disorders are most likely to develop

during the emerging adult years (Sheidow et al, 2012). Thus, the identification of buffers and risk factors are of great importance.

Of particular relevance for the proposed study is the finding that problematic substance use is significantly lower for securely attached adolescent individuals compared to those who identify with insecure attachment patterns (Branstetter et al., 2009). Given that emerging adults have shown to be a population predisposed to a higher proclivity for problematic substance use (Sheidow et al., 2012), it is presumed that parallel adaptive strategies would be present in emerging adult populations. This life stage is rife with added stressors and expectations that may readily activate areas of distress for individuals with deficits in emotion regulation and coping.

Overall, the emerging adult population is particularly sensitive to the consequences of substance use, as well as the predilection to substance misuse in the wake of childhood adversity, attachment insecurity, and emotion dysregulation. The interplay among ACEs, attachment, and substance use within emerging adult population has received less attention. The primary study from Kaiser Permanente and the Center for Disease Control and Prevention on ACEs had a focus on middle-aged adults, with a mean age of 57 years (Anda et al., 1999). Furthermore, the influence of attachment on emotion regulation processes in emerging adults has generated mixed findings (Liese et al., 2020; Mersky et al., 2013). Thus, the association between ACEs, attachment, and increased risk of substance use warrants further study.

In this study, a collection of self-report measures was utilized to further assess the effects of these conditions on substance use in emerging adulthood. Based upon the existing body of research on adverse childhood experiences, attachment, emotion regulation, and their association with substance use, two hypotheses were developed. The first hypothesis was that ACEs predict outcomes of substance misuse in emerging adulthood, and that emotion dysregulation mediates

that association while low perceptions of parental warmth moderate the path between adverse childhood experiences and emotion dysregulation The second hypothesis was that ACEs predict substance use *consequences* in emerging adulthood characterized by negative real-world impacts from substance misuse, and again that emotion dysregulation mediates the this association while low perceptions of parental warmth moderate the path between adverse childhood experiences and emotion dysregulation.

Methods

Participants

First, G*Power (Faul et al., 2009) was used to perform a power analysis for multiple regression using adverse childhood experiences, parental warmth, and emotion regulation as predictive factors for outcomes of increased substance use in emergent adulthood. Recognizing existing literature that has identified small-to-medium effect sizes comparing attachment insecurity and substance use (Fairbairn et al., 2018), Cohen's guideline (1988) for an assumption of medium effect of $f^2 = .15$ was used. This estimate was entered into the power analysis with the following parameters: $\alpha = .05$, power = .95. The results of the power analysis suggested a sample size of $N = 107$ is required to detect an effect with 95% probability. However, given the theoretical model utilized for this analysis (moderated mediation using PROCESS; Hayes, 2017), a sample size this small would likely not detect the indirect effects of interest (Fritz & MacKinnon, 2007).

Following IRB human subject approval, 326 participants were recruited from the psychology undergraduate research pool of Western Carolina University as well as Reddit (r/samplesize and r/surveyexchange) and several Facebook groups for a graduate study exploring outcomes of substance use in emerging adults. Criteria for participation in the study required

each individual to be aged 18-25-years. The total sample size for this study was $N = 266$, with 38% of the sample coming from outside the SONA pool (Fig. 1). Eleven participants whose ages fell outside of this age range and 39 additional participants who did not complete all questionnaires were excluded from the dataset.

Figure 1

Counts and Percentages for Demographics of Participants

N	266	
Gender		
Men	128	48.1%
Women	108	40.6%
Diverse	30	11.3%
Race		
White	202	75.9%
Black	13	4.9%
Asian	5	1.9
Latinx	16	6.0
Native American	8	1.1
Other/Not Specified	22	7.3%

Procedure

Prior to study involvement, participants were informed of the content that would be presented. Care was taken to highlight the sensitive nature of the variables of interest. Participants completed a series of self-report questionnaires: the Adverse Childhood Experiences Questionnaire (ACE-Q; Felitti et al., 1998), the Adult Parental Acceptance-Rejection Questionnaire (PARQ; Rohner, 2005), the Multidimensional Behavioral Health Survey (MBHS; McCord, 2020), the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), the Short Inventory of Problems–Revised (SIP-R; Kiluk et al., 2013), and basic demographics including age, race/ethnicity, and gender identity.

All measures were completed through Qualtrics, an online tool for administering surveys and questionnaires, either by accessing the study through the WCU SONA research participant pool or upon receipt of a link provided to participants via social media. For undergraduate WCU students in psychology, there is an expectation for research participation for credit. Otherwise, there was not any form of compensation for participation in this study.

Measures

Adverse Childhood Experiences. The 10-item Adverse Childhood Experiences Questionnaire (ACE-Q; Felitti et al., 1998) was used to assess the presence and quantity of instances wherein childhood maltreatment or adverse rearing circumstances occurred for participants. The ACE-Q measures childhood adversity across three domains, including physical and emotional abuse, physical neglect, and abuse relating to household dysfunction. The items contained in the questionnaire consist of dichotomous prompts such as “You lived with a household member who served time in jail or prison” and “You lived with someone who had a problem with drinking or using drugs.” The ACE-Q has shown to reflect strong internal

consistency with a Cronbach's alpha of .88 (Wingenfeld et al., 2010).[2] When analyzed for this study, a = .77, yielding good internal consistency. The ACE-Q questionnaire can be found in Appendix A.

Perceived Parental Warmth. The Adult Parental Acceptance-Rejection Questionnaire (PARQ; Rohner, 2005) was used to measure retrospective impressions of parental warmth within the scope of perceived experiences of parental acceptance and rejection as the operational component of childhood attachment. It consists of 120 items (60 items regarding one's father figure and 60 items for one's mother figure) across four domains: warmth and affection, hostility and aggression, indifference and neglect, and undifferentiated rejection. Responses were given on a Likert scale from 1 (almost never true) to 4 (almost always true). The PARQ has demonstrated very high internal consistency, with a Cronbach's alpha of .95 including international populations (Rohner & Ali, 2016). For this study, a = .98, retaining the very high internal consistency. The PARQ questionnaire can be found in Appendix B.

Substance Use and Depression. The Multidimensional Behavioral Health Screen (MBHS) was used as a novel screening tool for both increased substance use and depressive symptoms. While validation is ongoing, the MBHS exhibits good internal consistency with Cronbach's alpha from .71 to .80 for relevant domains (McCord, 2020) and features multidimensional domains of psychopathology, with substance use and depressive symptomatology as the scales of focus for this study. The inclusion of this measure allowed for

[2] There is little debate over the prevalence and influence of ACEs. However, the validity of commonly used measures for ACEs has been called into question over the last two decades, and it is important to note this potential limitation. Arguably the most difficult challenge to supporting the efficacy of measures such as the 10-item ACE-Q is the exclusion of significant items including peer victimization, exposure to systemic violence within the community, and lower socio-economic status (Finkelhor et al., 2015). Additionally, the items that measure childhood adversity within these measures are not separated by the potential severity impact. Experiences relating to parental divorce and incarcerated parents are weighted equally with those relating instances like child neglect and sexual abuse (McClennan et al., 2020).

the interpretation of both substance use (as measured by the MBHS) and substance use consequences (as measured by the SIP-R). For this study, a = .95, indicating that the MBHS maintained high internal consistency. The MBHS questionnaire can be found in Appendix C.

Emotion Dysregulation. The 36-item Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to measure participants' perceptions of their difficulties with emotion regulation. Responses were given on a range of 1 (almost never [0 – 10%]) to 5 (almost always [91 – 100%]) across six subscales measuring awareness, clarity, goals, impulsivity, non-acceptance, and coping strategies. The DERS exhibits high internal consistency across subscales, with Cronbach's alpha ranging from .82 to .92 (Hallion et al., 2018). For this study, a = .87, yielding good internal consistency. The DERS questionnaire can be found in Appendix D.

Substance Use Consequences. The 15-item Short Inventory of Problems (SIP-R) was used as an outcome measure of the perceived impact of substance use from participants. Scores were reported for how often an event such as "I have been unhappy because of my drinking/substance use" have occurred over the past 3 months, ranging from 0 (never) to 3 (daily or almost daily). The SIP-R was utilized within this study due to its high reliability, validity, and internal consistency as an instrument for measuring adverse outcomes from the effect of substance use, with Cronbach's alpha of .95 (Kiluk et al., 2013). For this study, a = .90, indicating good internal consistency. The SIP-R questionnaire can be found in Appendix E.

Analysis

Responses were exported from Qualtrics into the statistical software, IBM SPSS Statistics (Version 27) for analysis. First, a bivariate correlation matrix was used to evaluate for association among all variables. There was some concern of multicollinearity due to statistically significant associations between predictors ACEs and parental warmth. However, further

analysis of this matrix showed no problematic levels of correlations between variables (see Figure 2). Assumptions for a regression model were otherwise met. Missing data was imputed using modal values.

A moderated mediation analysis was conducted using the "PROCESS" macro, model 7, for SPSS (Hayes, 2018). The subsequent analyses were examined with parental warmth as the proposed moderator for the *a*-path between ACEs and emotion dysregulation in both models. Emotion dysregulation served as the proposed mediating factor in both models. The dependent variables were the MBHS substance use scores (Fig. 1) and the SIP-R scores (Fig. 2).

Bootstrapping inference was selected for the analyses in order to better account for any violations of normality with bias-corrected 95% confidence intervals (n = 10,000). In order to further control for possible heteroskedasticity, a robust standard error (HC4) was selected. Continuous variables that were part of products in the models were mean-centered. For probing interactions, conditioning values of one standard deviation above and below the mean were selected. A moderated mediation index was used to test the significance of the indirect effects across levels of perceived parental warmth. Significant effects are supported by the absence of zero within the resultant confidence intervals (CI). The index of moderated mediation tests whether an indirect effect that is moderated by perceived parental warmth and is calculated by multiplying the regression rate for the interaction of the *a*-path with the regression rate for the *b*-path. Because the distribution for this index is unknown and *p* values cannot be calculated, bootstrapping was used.

Results

The hypotheses regarding the roles of childhood adversity, parental warmth, emotion regulation, and substance use and its consequences were initially examined via a correlational

matrix. Descriptive statistics along with correlation coefficients are presented in Fig. 3 along with the broad sample demographics characteristics. for all included variables in the analyses. With the exception of two correlation coefficients, all variables within this study were significantly correlated at the level of $p < .001$.

Figure 2

Means, Standard Deviations, and Correlations Between Variables

	M	*SD*	1	2	3	4	5
ACEs Score	2.12	2.27	1.00				
PARQ Score	251.80	29.40	-.73**	1.00			
SUB Score	6.66	2.90	-.24**	-.25**	1.00		
DERS Score	98.35	18.14	-.51**	-.50**	.15*	1.00	
SIP-R Score	20.63	5.26	-.21**	-.30**	.66**	.13*	1.00

*$p < .05$ **$p < .001$

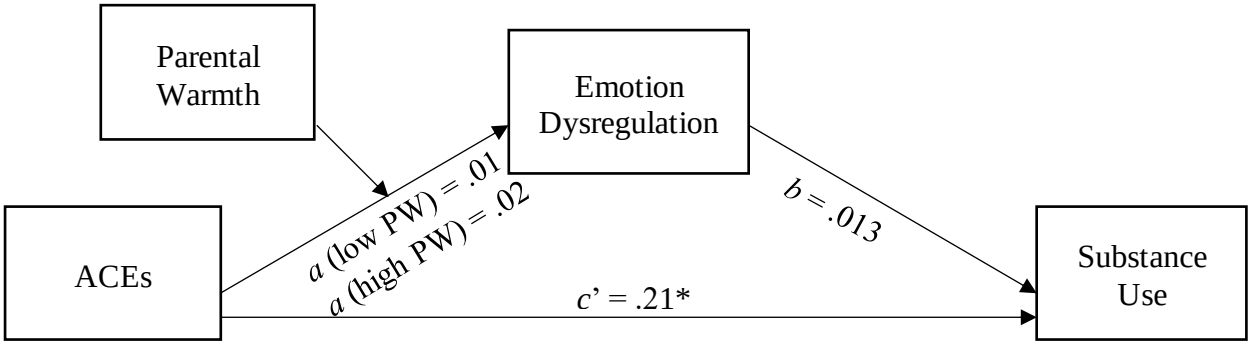
General Substance Use

Examining preliminary regression analyses for conditioned effects, parental warmth significantly predicted emotion dysregulation, $R^2 = .06$, $F(1, 264) = 15.9$, $p < .001$. Figure 3 shows that within the *c*' path, ACEs significantly predicted substance use, $R^2 = .04$, $F(1, 264) = 11.03$, $p = .001$. For overall outcomes of substance use in emerging adulthood, emotion dysregulation was regressed onto ACEs and perceived parental warmth. Zero was included in the index of moderated mediation, thus a moderated mediation was not detected, CI [-.001, .003]. That is, the effect of ACEs on emotion dysregulation was not moderated by parental warmth, $p =$

.30, 95% CI [-.034, .108]. The indirect effect of ACEs on outcomes of overall substance use via emotion dysregulation did not meet significance, with 0.62% of the variance being predicted by perceived parental warmth.

Figure 3

Moderated Mediation Model for Hypothesis I



Conditional indirect effects of ACEs and substance use via emotion dysregulation at low and high parental warmth (±1 *SD*).

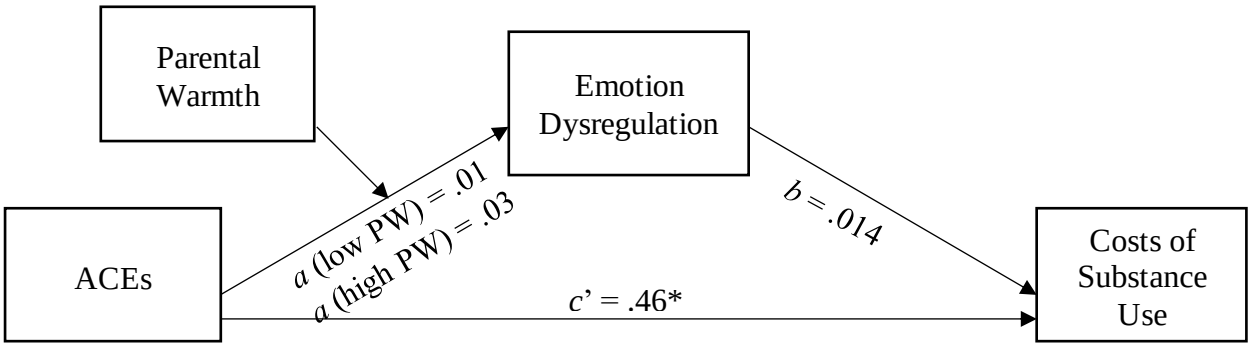
*$p < .05$

Associated Substance Use Consequences

In the preliminary regression analyses of the second model and represented in Figure 4, ACEs significantly predicted more negatively impactful consequences of substance use, $R^2 = .04$ $F(1, 264) = 11.03$, $p < .001$. Looking further into substance use consequences, emotion dysregulation was regressed onto ACEs and perceived parental warmth, and then the interaction product between ACEs and parental warmth were inspected for significance. Examining the index of moderated mediation, a moderated mediation was again not detected in this model, 95% CI [-.001, .004].

Figure 4

Moderated Mediation Model for Hypothesis II



Conditional indirect effects of ACEs and substance use consequences via emotion dysregulation at low and high parental warmth (±1 *SD*).

*$p < .05$

Exploratory Analyses

Further deconstructing the models for exploratory mediation analysis using PROCESS model 4 did not identify emotion dysregulation as a mediating variable for the path between ACEs and substance use. Likewise when examining indirect effects of ACEs on consequences of substance use, emotion dysregulation was not detected as a mediating variable. Substituting parental warmth for emotion dysregulation did yield significant results in that perceived parental warmth mediates the path between ACEs and substance use, 95% CI [.0038, .3814]. However, parental warmth was not detected as a mediating variable between ACEs and consequences associated with substance use.

Discussion

Across both models, a moderated mediation effect was not detected. That is, the effect of perception of parental warmth during childhood did not serve as a moderating effect for the path

between having experienced childhood adversity and emotion dysregulation in adulthood. Moreover, exploratory analyses did not detect a mediating effect of emotion dysregulation for the direct path between both ACEs and outcomes of substance use or ACEs and the *consequences* of substance use in emerging adulthood.

Given the existing body of literature that has identified greater instances of ACEs with greater levels of substance use in adulthood (Gross, 2013; Pilkington et al., 2020), it is surprising that these effects were not identified in this study's analyses. As such, it is expected that perceptions of parental warmth cannot moderate this relationship.

Several limitations were present for this study. First, there is a distribution trend in responses within the measure for parental warmth that is suggestive of a ceiling effect on perceived warmth. Given that possible scores on the PARQ range from 60 – 240, the distribution of responses was left-skewed (Minimum = 117; Maximum = 188; *SD* = 16.5). This effect makes accurately identifying central tendency and distribution difficult to ascertain.

Another limitation in this study lies in the design; the nature of cross-sectional designs is that the temporal component between substance use and/or substance use consequences and exposure to ACEs/emotional dysregulation/parental warmth cannot be determined due to examination of all variables across the same span of time. As such, some inferential caution should be exercised regarding significant (and non-significant) results for these data.

The sample obtained for this study stands as another limitation for multiple reasons. The primary sample pool supplied by WCU SONA is reflective of the overall student body for WCU in that the vast majority of the sample were White, cis-gendered college students. While these results may accurately represent effects of ACEs, parental warmth, and emotion dysregulation on substance use difficulties for undergraduate students in western North Carolina, generalizability

of these results outside of that population should not be inferred. Furthermore, due to the sensitivity of moderator and mediator effects, the sample size itself may not have been large enough to detect a legitimate effect of moderated mediation.

However, these limitations do not negate the results of this study. It has been recognized for decades now that the variables explored in this study are intrinsically associated with each other, and these results expand this understanding. As has been shown in the analyses, the presence of adversity/trauma during childhood stands as predictor for potentially dysfunctional substance use in emerging adulthood. These results are supportive of ACEs "critical item" for the treatment of individuals with substance use disorders, and should serve to bolster trauma-informed treatment models that recognize struggle during one's formative years as a component of the clinical picture of an individual.

In addition to the lack of attention given to research within the emerging adult population, this study aimed at providing a deeper understanding for the burgeoning societal issue of problematic substance use looking at the impact of perceived parental warmth. While this study did not yield significant results, the variables contained in it are well established to be strongly associated (Bryant et al., 2020; Felitti et al., 1998; Mersky et al., 2013). Therefore, further investigation into substance use and its consequences via these predictors for emerging adults is warranted.

In this study, the PARQ score for mothers and fathers was combined into an aggregate variable for analysis. Future directions for study should explore how the associations between these variables change when looking specifically at perceived warmth from one's mother or father, as the dynamics of these relationships can and do vary by extreme degrees. Other studies may seek to further distill emotion regulation to identify specific areas that may have more

mediation properties than the DERS is capable of measuring. People often have ambiguous relationships with their ability to cope with difficult emotions and emerging adults are at an especially vulnerable point in development where the consequences of one's actions are inherently more significant than their prior developmental period.

Other directions may further operationalize the facets of parental warmth and how it informs our understanding of attachment theory, such as by the subscales contained within the PARQ. These subscales measure more narrowband aspects of warmth including affection, hostility, indifference, and rejection. With all of these lying within the dimensional measure of warmth, they will likely serve as rich territory for further investigation into how our relationships we form through early development help facilitate various choices and circumstances experienced later in life.

References

Anda, R. F., Croft, J. B., Felitti, V. J., Nordenberg, D., Giles, W. H., Williamson, D. F., & Giovino, G. A. (1999). Adverse childhood experiences and smoking during adolescence and adulthood. *JAMA : The Journal of the American Medical Association*, 282(17), 1652-1658. https://doi.org/10.1001/jama.282.17.1652

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Bowlby, J. (1973). Attachment and Loss: Anxiety and Anger (Vol. 2). The Hogarth Press.

Bowlby, J. (1988). *A secure base*. Routledge.

Branstetter, S. A., Furman, W., & Cottrell, L. (2009). The influence of representations of attachment, MaternalAdolescent relationship quality, and maternal monitoring on adolescent substance use: A 2-year longitudinal examination. *Child Development, 80*(5), 1448-1462. https://doi.org/10.1111/j.1467-8624.2009.01344.x

Brems, C., Johnson, M. E., Neal, D., & Freemon, M. (2004). Childhood abuse history and substance use among men and women receiving detoxification services. *The American Journal of Drug and Alcohol Abuse, 30(*4), 799-821.

Bryant, D. J., Coman, E. N., & Damian, A. J. (2020). Association of adverse childhood experiences (ACEs) and substance use disorders (SUDs) in a multi-site safety net healthcare setting. *Addictive Behaviors Reports, 12*, 100293-100293. https://doi.org/10.1016/j.abrep.2020.100293

Catanzaro, S. J., & Mearns, J. (1990). Measuring generalized expectancies for negative mood regulation: Initial scale development and implications. *Journal of Personality Assessment*, 54(3-4), 546–563. https://doi.org/10.1207/s15327752jpa5403&4_11

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). L. Erlbaum Associates.

Coiro, M. J., Bettis, A. H., & Compas, B. E. (2017). College students coping with interpersonal stress: Examining a control-based model of coping. *Journal of American College Health, 65*(3), 177-186. https://doi.org/10.1080/07448481.2016.1266641

Compas, B. E., Jaser, S. S., Bettis, A. H., Watson, K. H., Gruhn, M. A., Dunbar, J. P., Williams, E., & Thigpen, J. C. (2017). Coping, emotion regulation, and psychopathology in childhood and adolescence: A meta-analysis and narrative review. *Psychological Bulletin, 143*(9), 939–991. https://doi.org/10.1037/bul0000110

Chen, Y., Kubzansky, L. D., & VanderWeele, T. J. (2019). Parental warmth and flourishing in mid-life. *Social Science and Medicine (1982), 220*, 65-72. https://doi.org/10.1016/j.socscimed.2018.10.026

Dvir, Y., Ford, J. D., Hill, M., & Frazier, J. A. (2014). Childhood Maltreatment, Emotional Dysregulation, and Psychiatric Comorbidities. *Harvard Review of Psychiatry, 22*(3), 149–161. https://doi.org/10.1097/hrp.0000000000000014

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*, *14*(4), 245–258. https://doi.org/10.1016/s0749-3797(98)00017-8

Finkelhor, D., Shattuck, A., Turner, H., & Hamby, S. (2015). A revised inventory of adverse childhood experiences. *Child Abuse & Neglect, 48*, 13-21. https://doi.org/10.1016/j.chiabu.2015.07.011

Fowler, J. C., Allen, J. G., Oldham, J. M., & Frueh, B. C. (2013). Exposure to interpersonal trauma, attachment insecurity, and depression severity. *Journal of Affective Disorders*, 149(1-3), 313–318. https://doi.org/10.1016/j.jad.2013.01.045

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The experiences in close relationships—Relationship Structures Questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment*, 23(3), 615–625. https://doi-org.proxy195.nclive.org/10.1037/a0022898

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, *18*(3), 233–239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

Gordon J. G. Asmundson, & Tracie O. Afifi. (2020). *Adverse Childhood Experiences : Using Evidence to Advance Research, Practice, Policy, and Prevention*. Academic Press.

Gratz, K. L., & Roemer, L. (2004). Difficulties in Emotion Regulation Scale. *PsycTESTS Dataset*. https://doi.org/10.1037/t01029-000

Gross, J. J. (2013). Emotion regulation: Taking stock and moving forward. *Emotion*, *13*(3), 359–365. https://doi.org/10.1037/a0032135

Hallion, L. S., Steinman, S. A., Tolin, D. F., & Diefenbach, G. J. (2018). Psychometric Properties of the Difficulties in Emotion Regulation Scale (DERS) and Its Short Forms in Adults With Emotional Disorders. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.00539

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd edition). New York: The Guilford Press.

Holmes, J. (2010). *Exploring in security: towards an attachment-informed psychoanalytic psychotherapy*. Routledge.

Horwitz, A. V., White, H. R., & Howell-White, S. (1996). The use of multiple outcomes in stress research: A case study of gender differences in responses to marital dissolution. *Journal of Health and Social Behavior, 37*(3), 278-291.

Kessler, R. C., Davis, C. G., & Kendler, K. S. (1997). Childhood adversity and adult psychiatric disorder in the US National Comorbidity Survey. *Psychological Medicine*, *27*(5), 1101–1119. https://doi.org/10.1017/s0033291797005588

Kiluk, B. D., Dreifuss, J. A., Weiss, R. D., Morgenstern, J., & Carroll, K. M. (2013). The short inventory of problems - revised (SIP-R): Psychometric properties within a large, diverse sample of substance use disorder treatment seekers. *Psychology of Addictive Behaviors, 27*(1), 307-314. https://doi.org/10.1037/a0028445

Koss, M. P., Abbey, A., Campbell, R., Cook, S., Norris, J., Testa, M., Ullman, S., West, C., White, J. (2007). Revising the SES: A collaborative process to IMPROVE assessment of sexual aggression and victimization. *Psychology of Women Quarterly, 31*(4), 357-370. doi:10.1111/j.1471-6402.2007.00385.x

Liebschutz, J., Savetsky, J. B., Saitz, R., Horton, N. J., Lloyd-Travaglini, C., & Samet, J. H. (2002). The relationship between sexual and physical abuse and substance abuse consequences. *Journal of Substance Abuse Treatment, 22*(3), 121-128. https://doi.org/10.1016/S0740-5472(02)00220-9

Liese, B. S., Kim, H. S., & Hodgins, D. C. (2020). Insecure attachment and addiction: Testing the mediating role of emotion dysregulation in four potentially addictive behaviors. *Addictive Behaviors, 107*, 106432. https://doi.org/10.1016/j.addbeh.2020.106432

McCord, D. M. (2020). The Multidimensional Behavioral Health Screen 1.0: A Translational Tool for Primary Medical Care. *Journal of Personality Assessment, 102*(2), 164–174. https://doi.org/10.1080/00223891.2019.1683019

McLennan, J. D., MacMillan, H. L., & Afifi, T. O. (2020). Questioning the use of adverse childhood experiences (ACEs) questionnaires. *Child Abuse & Neglect, 101*, 104331-104331. https://doi.org/10.1016/j.chiabu.2019.104331

Mersky, J. P., Topitzes, J., & Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: A cohort study of an urban, minority sample in the U.S. *Child Abuse & Neglect, 37*(11), 917-925. https://doi.org/10.1016/j.chiabu.2013.07.011

Mikulencer, M., & Shaver, P. R. (2018). Attachment in adulthood. The Guilford Press.

Mikulincer, M., Shaver, P. R., & Solomon, Z. (2015). An Attachment Perspective on Traumatic and Posttraumatic Reactions. Future Directions in Post-Traumatic Stress Disorder, 79–96. https://doi.org/10.1007/978-1-4899-7522-5_4

Moran, K. M., Turiano, N. A., & Gentzler, A. L. (2018). Parental warmth during childhood predicts coping and well-being in adulthood. *Journal of Family Psychology, 32*(5), 610–621. https://doi.org/10.1037/fam0000401

Moreira, H., Martins, T., Gouveia, M. J., & Canavarro, M. C. (2015). Assessing adult attachment across different contexts: Validation of the portuguese version of the experiences in close relationships-relationship structures questionnaire. *Journal of Personality Assessment*, 97(1), 22-30. https://doi.org/10.1080/00223891.2014.950377

Murphy, A., Steele, M., Dube, S. R., Bate, J., Bonuck, K., Meissner, P., Goldman, H., & Steele, H. (2014). Adverse childhood experiences (ACEs) questionnaire and adult attachment interview (AAI): Implications for parent child relationships. *Child Abuse & Neglect, 38*(2), 224-233. https://doi.org/10.1016/j.chiabu.2013.09.004

Nusslock, R., & Miller, G. E. (2016). Early-life adversity and physical and emotional health across the lifespan: A neuro-immune network hypothesis. *Biological Psychiatry (1969), 80*(1), 23-32. https://doi.org/10.1016/j.biopsych.2015.05.017

Peng, W., Liu, Z., Liu, Q., Chu, J., Zheng, K., Wang, J., Wei, H., Zhong, M., Ling, Y., & Yi, J. (2020). Insecure attachment and maladaptive emotion regulation mediating the relationship between childhood trauma and borderline personality features. *Depression and Anxiety, 38*(1), 28-39. https://doi.org/10.1002/da.23082

Powers, A., Cross, D., Fani, N., & Bradley, B. (2015). PTSD, emotion dysregulation, and dissociative symptoms in a highly traumatized sample. *Journal of Psychiatric Research*, 61, 174–179. https://doi.org/10.1016/j.jpsychires.2014.12.011

Rohner, R. P. (2005). Parental Acceptance-Rejection Questionnaire (PARQ): Test manual. In R. P. Rohner & A. Khaleque (Eds.), *Handbook for the study of parental acceptance and rejection* (4th ed., pp. 43–106). Storrs: Rohner Research Publications.

Rohner, R. P., & Ali, S. (2016). Parental Acceptance-Rejection Questionnaire (PARQ). *Encyclopedia of Personality and Individual Differences*, 1–4. https://doi.org/10.1007/978-3-319-28099-8_56-1

Sandberg, D. A., Suess, E. A., & Heaton, J. L. (2009). Attachment Anxiety as a Mediator of the Relationship Between Interpersonal Trauma and Posttraumatic Symptomatology Among College Women. *Journal of Interpersonal Violence*, 25(1), 33–49. https://doi.org/10.1177/0886260508329126

Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development*, *4*(2), 133–161. https://doi.org/10.1080/14616730210154171

Sheffler, J. L., Piazza, J. R., Quinn, J. M., Sachs-Ericsson, N. J., & Stanley, I. H. (2019). Adverse childhood experiences and coping strategies: Identifying pathways to resiliency in adulthood. *Anxiety, Stress, and Coping, 32*(5), 594-609. https://doi.org/10.1080/10615806.2019.1638699

Schindler, A. (2019). Attachment and substance use Disorders—Theoretical models, empirical evidence, and implications for treatment. *Frontiers in Psychiatry, 10*, 727-727. https://doi.org/10.3389/fpsyt.2019.00727

Schindler, A., & Bröning, S. (2015). A review on attachment and adolescent substance abuse: Empirical evidence and implications for prevention and treatment. *Substance Abuse, 36*(3), 304-313. https://doi.org/10.1080/08897077.2014.983586

Sheidow, A. J., McCart, M., Zajac, K., & Davis, M. (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal, 35*(3), 235–243. https://doi.org/10.2975/35.3.2012.235.243

Stanton, S. C., Campbell, L., & Pink, J. C. (2017). Benefits of positive relationship experiences for avoidantly attached individuals. *Journal of Personality and Social Psychology*, 113(4), 568–588. https://doi.org/10.1037/pspi0000098

Sussman, S., & Arnett, J. J. (2014). Emerging adulthood: Developmental period facilitative of the addictions. *Evaluation & the Health Professions, 37*(2), 147-155. https://doi.org/10.1177/0163278714521812

Tandon, M., Tillman, R., Spitznagel, E., & Luby, J. (2014). Parental warmth and risks of substance use in children with attention-deficit/hyperactivity disorder. *Addiction Research & Theory, 22*(3), 239-250. https://doi.org/10.3109/16066359.2013.830713

Velotti, P., D'Aguanno, M., de Campora, G., Di Francescantonio, S., Garofalo, C., Giromini, L., Petrocchi, C., Terrasi, M., & Zavattini, G. C. (2016). Gender moderates the relationship between attachment insecurities and emotion dysregulation. *South African Journal of Psychology, 46*(2), 191–202. https://doi.org/10.1177/0081246315604582

Wingenfeld, K., Schäfer, I., Terfehr, K., Grabski, H., Driessen, M., Grabe, H., Löwe, B., Spitzer, C. (2010). Reliable, valide und ökonomische Erfassung früher Traumatisierung: Erste psychometrische Charakterisierung der deutschen Version des Adverse Childhood Experiences Questionnaire (ACE). *PPmP - Psychotherapie · Psychosomatik · Medizinische Psychologie, 61*(01). https://doi.org/10.1055/s-0030-1263161

Zarse, E. M., Neff, M. R., Yoder, R., Hulvershorn, L., Chambers, J. E., & Chambers, R. A. (2019). The adverse childhood experiences questionnaire: Two decades of research on childhood trauma as a primary cause of adult mental illness, addiction, and medical diseases. *Cogent Medicine, 6*(1), 1581447. https://doi.org/10.1080/2331205X.2019.158144

Appendix A: Adverse Childhood Experiences (ACE-Q; Felitti et al., 1998)

Prior to your 18th birthday:

1. Did a parent or other adult in the household **often or very often**…
   Swear at you, insult you, put you down, or humiliate you?
   or
   Act in a way that made you afraid that you might be physically hurt?
   Yes No If yes enter 1 ____
2. Did a parent or other adult in the household **often or very often**…
   Push, grab, slap, or throw something at you?
   or
   Ever hit you so hard that you had marks or were injured?
   Yes No If yes enter 1 ____
3. Did and adult or person at least 5 years older than you **ever**…
   Touch or fondle you or have you touch their body ibn a sexual way?
   or
   Attempt to actually have oral, anal, or vaginal intercourse with you?
   Yes No If yes enter 1 ____
4. Did you **often or very often** feel that…
   No one in your family loved you or thought you were important or special?
   or
   Your family didn't look out for each other, feel close to each other, or support each other?
   Yes No If yes enter 1 ____
5. Did you **often or very often** feel that…
   You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
   or
   Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
   Yes No If yes enter 1 ____
6. Was a biological parent **ever** lost to you through divorce, abandonment, or other reason?
   Yes No If yes enter 1 ____
7. Was your mother or stepmother:
   Often or very often pushed, grabbed, slapped, or had something thrown at her?
   or
   Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
   or
   Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
   Yes No If yes enter 1 ____
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
   Yes No If yes enter 1 ____
9. Was a household member depressed or mentally ill or did a household member attempt suicide?
   Yes No If yes enter 1 ____
10. Did a household member go to prison?
    Yes No If yes enter 1 ____

Appendix B: Parental Acceptance-Rejection Questionnaire (PARQ; Rohner, 2005)

The following pages contain a number of statements describing the way fathers sometimes act toward their children. Read each statement carefully and think how well it describes the way your father treated you when you were about 7 – 12 years old. Work quickly. Give your first impression and move on to the next item. Do not dwell on any item.

Four boxes are drawn after each sentence. If the statement is *basically* true about the way your father treated you, then ask yourself, "Was it almost *always* true?" or "Was it only *sometimes* true?" If you think your father almost always treated you that way, put an *X* in the box ALMOST ALWAYS TRUE; if the statement was sometimes true about the way your father treated you then mark SOMETIMES TRUE. If you feel the statement is basically *untrue* about the way your father treated you then ask yourself, "Was it *rarely* true?" or "Was it almost *never* true?" If it is rarely true about the way your father treated you put an *X* in the box RARELY TRUE; if you feel the statement is never true then mark ALMOST NEVER TRUE.

Remember, there is no right or wrong answer to any statement, so be as frank as you can. Respond to each statement the way you feel your father really was rather than the way you might have liked him to be. For example, if in your memory he almost always hugged and kissed you when you were good, you should mark the item as follows:

	TRUE OF MY FATHER		**NOT TRUE OF MY FATHER**	
	Almost Always True	***Sometimes True***	***Rarely True***	***Almost Never True***
Hugged and kissed me when I was good	•	○	○	○

_____

Respondent's significant male caregiver (if not father)

1. Said nice things about me
2. Nagged or scolded me when I was bad
3. Paid no attention to me
4. Did not really love me
5. Talked to me about our plans and listened to what I had to say
6. Complained about me to others when I did not listen to him
7. Took a real interest in me
8. Wanted me to bring my friends home, and tried to make things pleasant for them
9. Ridiculed and made fun of me
10. Paid no attention to me as long as I did nothing to bother him
11. Yelled at me when he was angry
12. Made it easy for me to tell him things that were important to me
13. Treated me harshly
14. Enjoyed having me around
15. Made me feel proud when I did well
16. Hit me, even when I did not deserve it
17. Forgot things he was supposed to do for me

18. Saw me as a big nuisance
19. Praised me to others
20. Punished me severely when he was angry
21. Made sure I had the right kind of food to eat
22. Talked to me in a warm and loving way
23. Got angry at me easily
24. Was too busy to answer my questions
25. Seemed to dislike me
26. Said nice things to me when I deserved them
27. Got mad quickly and picked on me
28. Cared about who my friends were
29. Was really interested in what I did
30. Said many unkind things to me
31. Paid no attention when I asked for help
32. Thought it was my own fault when I was having trouble
33. Made me feel wanted and needed
34. Told me I got on his nerves
35. Paid a lot of attention to me
36. Told me how proud he was of me when I was good
37. Went out of his way to hurt my feelings
38. Forgot important things I thought he should remember
39. Made me feel unloved if I misbehaved
40. Made me feel what I did was important
41. Frightened or threatened me when I did something wrong
42. Liked to spend time with me
43. Tried to help me when I was scared or upset
44. Shamed me in front of my friends when I misbehaved
45. Tried to stay away from me
46. Complained about me
47. Cared about what I thought, and liked me to talk about it
48. Felt other children were better than I was no matter what I did
49. Cared about what I would like when he made plans
50. Let me do things I thought were important, even if it was hard for him
51. Thought other children behaved better than I did
52. Wanted other people to take care of me (for example, a neighbor or relative)
53. Let me know I was not wanted
54. Was interested in the things I did
55. Tried to make me feel better when I was hurt or sick
56. Told me how ashamed he was when I misbehaved
57. Let me know he loved me
58. Treated me gently and with kindness
59. Made me feel ashamed or guilty when I misbehaved
60. Tried to make me happy

Note. Items are mirrored for the Mother PARQ form. Sample item rating scale (*Almost Always True*; *Sometimes True*; *Rarely True*; *Almost Never True*) continued for all items.

Appendix C: Multidimensional Behavioral Health Screen (MBHS; McCord, 2020)

MBHS items grouped by construct.
Scored on scale of 0 – 3; Definitely false, somewhat false, somewhat true, definitely true.

(SOM)	1. I have pains.
	10. I feel weak.
	19. I get nauseous.
(DEM)	2. I feel useless.
	11. I am dissatisfied with my life.
	20. I feel generally discouraged.
(ANH)	3. There is little joy in my life.
	12. I have little motivation.
	21. I tend to avoid social activities.
(ANX)	4. I worry a lot.
	13. Nervousness interferes with my daily functioning.
	22. I obsess about things I can't control.
(SUI)	5. I have thought about killing myself.
	14. I have tried to kill myself.
	23. I want to die.
(COG)	6. I have trouble concentrating.
	15. I get distracted easily.
	24. I can't remember things.
(ACT)	7. I get bored easily.
	16. My thoughts race through my head very fast.
	25. I do dangerous things for thrills.
(DSC)	8. I often make impulsive decisions.
	17. I often break rules, regardless of the consequences.
	26. I don't think before I act.
(SUB)	9. I sometimes drink too much alcohol.
	18. I currently use drugs/alcohol.
	27. I have used drugs/alcohol in the past.

Note. Item numbers indicate order of administration. SOM = Somatization; DEM = Demoralization; ANH = Anhedonia; ANX = Anxiety; SUI = Suicidal Tendencies; COG = Cognitive Issues; ACT = Activation; DSC = Disconstraint; SUB = Substance Misuse.

Appendix D: Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below beside each item.
1----------2----------3----------4----------5

1) I am clear about my feelings. (CLARITY) R
2) I pay attention to how I feel. (AWARENESS) R
3) I experience my emotions as overwhelming and out of control. (IMPULSE)
4) I have no idea how I am feeling. (CLARITY)
5) I have difficulty making sense out of my feelings. (CLARITY)
6) I am attentive to my feelings. (AWARENESS) R
7) I know exactly how I am feeling. (CLARITY) R
8) I care about what I am feeling. (AWARENESS) R
9) I am confused about how I feel. (CLARITY)
10) When I'm upset, I acknowledge my emotions. (AWARENESS) R
11) When I'm upset, I become angry with myself for feeling that way. (NON-ACCEPTING)
12) When I'm upset, I become embarrassed for feeling that way. (NON-ACCEPTING)
13) When I'm upset, I have difficulty getting work done. (GOALS)
14) When I'm upset, I become out of control. (IMPULSE)
15) When I'm upset, I believe that I will remain that way for a long time. (STRATEGIES)
16) When I'm upset, I believe that I will end up feeling very depressed. (STRATEGIES)
17) When I'm upset, I believe that my feelings are valid and important. (AWARENESS) R
18) When I'm upset, I have difficulty focusing on other things. (GOALS)
19) When I'm upset, I feel out of control. (IMPULSE)
20) When I'm upset, I can still get things done. (GOALS) R
21) When I'm upset, I feel ashamed at myself for feeling that way. (NON-ACCEPTING)
22) When I'm upset, I know that I can find a way to eventually feel better. (STRATEGIES) R
23) When I'm upset, I feel like I am weak. (NON-ACCEPTING)
24) When I'm upset, I feel like I can remain in control of my behaviors. (IMPULSE) R
25) When I'm upset, I feel guilty for feeling that way. (NON-ACCEPTING)
26) When I'm upset, I have difficulty concentrating. (GOALS)
27) When I'm upset, I have difficulty controlling my behaviors. (IMPULSE)
28) When I'm upset, I believe there is nothing I can do to make myself feel better STRATEGIES
29) When I'm upset, I become irritated at myself for feeling that way. (NON-ACCEPTING)
30) When I'm upset, I start to feel very bad about myself. (STRATEGIES)
31) When I'm upset, I believe that wallowing in it is all I can do. (STRATEGIES)
32) When I'm upset, I lose control over my behavior. (IMPULSE)
33) When I'm upset, I have difficulty thinking about anything else. (GOALS)
34) When I'm upset I take time to figure out what I'm really feeling. (AWARENESS) R
35) When I'm upset, it takes me a long time to feel better. (STRATEGIES)
36) When I'm upset, my emotions feel overwhelming. (STRATEGIES)

Note. Ratings are as follows: almost never [0 – 10%]; sometimes [11 – 35%]; about half the time [36 – 65%]; most of the time [66 – 90%]; almost always [91 – 100%]. Reverse scored items denoted by "R." Subscales indicated beside item. Total score: sum of all subscales.

Appendix E: Short Inventory of Problems – Revised (SIP-R; Kiluk et al., 2013)

1. I have been unhappy because of my drinking or drug use. (INTRA)
2. Because of my drinking or drug use, I have lost weight or not eaten properly. (PHYS)
3. I have failed to do what is expected of me because of my drinking or drug use. (SOC)
4. I have felt guilty or ashamed because of my drinking or drug use. (INTRA)
5. I have taken foolish risks when I have been drinking or using drugs. (IMP)
6. When drinking or using drugs, I have done impulsive things that I regretted later. (IMP)
7. Drinking or using one drug has caused me to use other drugs more. (IMP)
8. I have gotten into trouble because of drinking or drug use. (SOC)
9. The quality of my work has suffered because of my drinking or drug use. (SOC)
10. My physical health has been harmed by my drinking or drug use. (PHYS)
11. I have had money problems because of my drinking or drug use. (SOC)
12. My physical appearance has been harmed by my drinking or drug use. (PHYS)
13. My family has been hurt by my drinking or drug use. (INTER)
14. A friendship or close relationship has been damaged by my drinking or drug use. (INTER)
15. My drinking or drug use has gotten in the way of my growth as a person. (INTRA)
16. My drinking or drug use has damaged my social life, popularity, or reputation. (INTER)
17. I have spent too much or lost a lot of money because of my drinking or drug use. (SOC)

Note. PHYS = Physical; SOC = Social; INTRA = Intrapersonal; INTER = Interpersonal; IMP = Impulse Control.