

4-2020

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Patterns of Relations Between Adverse Childhood Experiences, Risk-taking Behaviors,
and the Influence of Protective Factors on Harm Reduction and Resilience
In a University Student Sample Survey

A thesis submitted in partial fulfillment of the requirement
for the degree of Bachelor of the Arts in Psychological Sciences from
The College of William and Mary

by
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April 29, 2020

Abstract

In the landmark Adverse Childhood Experiences Study, childhood trauma was shown to have a significant effect on later risk taking behaviors, mental illness, and physical health (Felitti et al., 1998). Positive experiences in childhood, called protective factors, were found to mitigate some of these effects. This study examined the relationship between early adversity, risk-taking behavior, mental health, and protective factors in a university sample. A survey was created to measure these variables and was completed by 342 university students. Results showed that early adversity was related to increased substance abuse, number of sexual partners, younger age of first sexual encounter, engagement in abusive relationships, sexual assault, self-harm behaviors, and the development of anxiety, depressive, and trauma disorders. Protective factors were found to be associated with lower rates of alcohol and nicotine use, engagement in abusive relationships, sexual assault, self-harm behaviors and development of anxiety, depressive, and trauma disorders. Implications for research and best treatment practices are discussed.

Introduction

Origins of Risk and Resilience

In 1905, Sigmund Freud introduced the theory of psychosexual development. He believed that events during five distinct psychosexual stages influence the psychological and sexual development of people (Freud, 1905). Though much of Freud's work has been discredited today, he did introduce one very important concept to the field of psychology: The environment children are raised in affects their development (Kline, 2015).

By the 1950's psychoanalytic theory had taken this theory a step further with the conception of the label "refrigerator mother." In 1943, Leo Kanner published a paper that alleged that autism was partially caused by cold, uncaring mothers. Five years later, Frieda Fromm-Reichmann, a German psychiatrist, connected this cold, uncaring nature to the development of schizophrenia as well. She coined the term "schizophrenogenic mother" to reflect her belief that resentful and mentally ill mothers could turn a healthy baby into a "mad" adult (Johnston, 2013). Though at the time these theories were taken seriously, they have largely been discarded by modern researchers.

In the 1970's, researchers began to consider environmental causes of negative life outcomes from another angle: Childhood maltreatment. Over the next two decades, studies began to find links between child abuse, later psychological dysfunction, substance abuse, and other maladaptive behavior (Egeland, Sroufe, & Erickson, 1983; Finkelhor & Browne, 1985; Tennant, Detels, & Clark, 1975). After the Adverse Childhood Experiences study found strong relationships between childhood trauma and both mental and physical problems in 1998, research on the link between early life experiences and later negative life outcomes became increasingly popular (Felitti et al., 1998). The term "early adversity" was coined, and hundreds of

research papers have since been published exploring the environmental factors in childhood and life experiences that put people at risk of developing risk-taking behavior, health problems, and mental illnesses.

The 1970's also gave way to another important field of psychological research. Several psychologists noticed that most research focused heavily on what factors are associated with the development of mental illnesses, while very few studies were addressing factors that might protect against the development of psychological dysfunction. Many individuals endure early adversity, yet still emerge from childhood as psychologically healthy and successful adults. These researchers wanted to address factors that may help mitigate the effects of trauma and promote positive adaptation. After much debate, this field of study was named "resilience research" and focuses on both individual and family factors that promote positive life outcomes (Masten, 2018).

The Adverse Childhood Experiences Study

The idea for the original Adverse Childhood Experiences (ACE) Study began in the 1990's with an obesity treatment program at Kaiser Permanente's Department of Preventive Medicine in San Diego, California (Felitti, 2019). Dr. Felitti and his colleagues discovered that over half of the patients in this program had been exposed to childhood sexual abuse and began using eating or weight gain as a coping mechanism shortly after the first incident. This pattern was presented in 1990 at a conference for obesity, where it was criticized for its small sample size. Thus, planning began for a large-scale epidemiological study to investigate the prevalence of childhood trauma and its health implications (Felitti, 2019).

The data collection for the ACE study began in 1995 and lasted two years. A survey was sent out to over 13,000 adults who had undergone an examination at the Kaiser Permanente's

San Diego Health Appraisal Clinic. This section of the survey on childhood adversity was broken down into two subsections: questions on childhood abuse and questions on household dysfunction during childhood. The childhood abuse subsection included two questions on physical abuse, two questions on emotional abuse, and four questions on contact sexual abuse. The household dysfunction during childhood subsection included two questions on exposure to substance abuse, two questions on exposure to mental illness, four questions on violent treatment of mother or stepmother, and one question on criminal activity (Felitti et al., 1998).

Seven categories of childhood adversity were created for this study: physical abuse, emotional abuse, sexual abuse, exposure to substance abuse, exposure to mental illness, violent treatment of mother or stepmother, and criminal activity. Items were scored on a scale ranging from 0 (none) to 7 (all categories experienced). If a participant answered yes to any question within a category, they were considered to have been exposed to that type of adversity and given a point. A second wave of surveys were sent to more participants that added items on physical neglect, emotional neglect, and parental separation or divorce. These surveys were scored on a scale ranging from 0 (none) to 10 (all categories experienced) (Felitti et al., 1998).

Researchers then asked about the 10 risk factors that were most associated with mortality and morbidity in the United States: Smoking, severe obesity, physical inactivity, depressed mood, suicide attempts, alcoholism, drug abuse, parental drug abuse, a high number of sexual partners, and a history of having a sexually transmitted disease. The researchers also asked about a history of (a) ischemic heart disease; (b) any cancer, stroke, chronic bronchitis, or emphysema (COPD); (c) diabetes; (d) hepatitis or jaundice; and (e) any skeletal fractures. A final question about perceived general health was asked on a five-point scale ranging from poor to excellent (Felitti et al., 1998).

The results from Waves 1 and 2 indicated that 10.6% of participants had been emotionally abused, 28.3% had been physically abused, 20.7% had been sexually abused, 14.8% had been emotionally neglected, 9.9% had been physically neglected, 26.9% had been exposed to substance abuse, 19.4% had a parent with a mental illness, 12.7% saw their mother or stepmother treated violently, 23.3% had parents that were separated or divorced, and 4.7% had seen a household member go to prison. More than 50% of respondents reported exposure to one or more adverse childhood events and 12.5% reported four or more adverse childhood experiences (Centers for Disease Control and Prevention [CDC], 2019a).

Exposure to adverse events was associated with increased prevalence of and risk for smoking, severe obesity, physical inactivity, depressed mood, alcoholism, illicit drug use, injection of illicit drugs, high number of sexual partners, history of sexually transmitted diseases, and suicide attempts with a dose-response relationship (i.e., positive correlation between childhood exposure events and later risk factors). A dose-response relationship was also found between adverse events in childhood and ischemic heart disease, cancer, chronic bronchitis or emphysema, history of hepatitis or jaundice, skeletal fractures, and poor self-rated health (Felitti et al., 1998).

Following publication, the findings became the focus of immense scrutiny with many researchers and clinicians challenging the validity of the results (Felitti, 2019). After several replications, the ACE study became a cornerstone in developing a field of research around the effects of childhood adversity on life outcomes (Felitti, 2019). Hundreds of studies have been conducted further investigating the effects of early adversity on topics ranging from maternal childhood adverse experiences and infant birth size to school-based victimization and perpetration of violence (Appleton, Kiley, Holdsworth, & Schell, 2019; Forster, Gower, McMorris,

& Borowsky, 2020). Today, the Centers for Disease Control and Prevention (CDC) monitors levels of adverse childhood experiences throughout the country in their Behavioral Risk Factor Surveillance System (CDC, 2019b). The World Health Organization (WHO) has developed an international ACE questionnaire as well, that now monitors adverse childhood experiences in many countries (World Health Organization [WHO], 2018).

University Students as a Sample

Despite having a similar frequency of adverse childhood experiences when compared to the general population and a higher than average prevalence of mental health issues, college and university students have been historically understudied in the early adversity literature (Karatekin & Ahluwalia, 2020). Because three quarters of mental illness appears before the age of 24, the college years are an important point of intervention for those who have faced early adversity (Kessler et al., 2005). Students with a high number of adverse childhood experiences were more likely to seek both professional and informal physical and mental health interventions than their low ACE score peers, but also more likely to drop out of interventions prematurely (Karatekin, 2018).

Studies have shown that high ACE score college students have a higher prevalence of mental health issues, higher levels of stress, and difficulty functioning socially (Karatekin & Ahluwalia, 2020). However, only a small effect size was found between high ACE scores and lower grade-point averages (Merians, Baker, Frazier & Lust, 2019). Results are mixed when examining the relationship between physical health and ACE scores in college students, with some studies reporting no relationship between ACE scores and health, while others report poorer health outcomes when exposed to early adversity (Hinojosa, Nguyen, Sellers & Elassar, 2019; Karatekin & Ahluwalia, 2020).

Trauma and Risk-Taking Behaviors

The original ACE study demonstrated a higher rate of alcohol abuse and illicit drug use among those with high ACE scores (Felitti et al., 1998). Similar findings have been replicated in college samples. One study compared the past 30-day use of substances (alcohol, tobacco, cannabis, and other illicit drugs) to the past 12-month polysubstance and prescription medication misuse in university students. Results showed a dose-response relationship between adverse childhood experiences and substance and polysubstance misuse (Forster, Grigsby, Rogers, & Benjamin, 2018). A separate study examining the health behaviors of almost 3,000 college students in Georgia revealed similar results. Participants who were exposed to early adversity had higher rates of alcohol, cannabis, and cigarette use (Windle et al., 2018).

Substance abuse in college students was found to be associated with childhood sexual assault, exposure to domestic violence, and household substance abuse (Forster et al., 2018). Participants who were only exposed to emotional and physical abuse were less likely to develop substance use problems compared to participants who were exposed to parental substance use (Merians et al., 2019).

Individuals who experienced early adversity were also more likely to engage in risky sexual behavior. One study, using data from the original ACE study, found that women who had been exposed to one of the original seven adverse events were significantly more likely to have had sex by the time they were 15, compared to women who had not been exposed. This association was strongest in women who had reported being sexually abused. Almost one-third of women who were exposed to six to seven kinds of adverse events began having intercourse by the age of 15, compared with just 4% of women who had no exposure to childhood adversity (Hillis, Anda, Felitti, & Marchbanks, 2001).

Childhood sexual abuse, verbal abuse, and parental incarceration were associated with increased risk for HIV (Campbell, Walker, & Egede, 2016; Hillis et al., 2001). Childhood exposure to physical, sexual, and verbal abuse were related to having unplanned pregnancies in women over age 18 (Drevin et al., 2020). Higher ACE scores were also related to having 30 or more sexual partners in women (Hillis et al., 2001).

People who experienced childhood sexual abuse specifically are typically at a higher risk of adult revictimization (Macy, 2008). Early adversity has a cumulative effect, so exposure to childhood sexual abuse plus one or more additional adverse events puts people at an increased risk of sexual revictimization. Women who experience both childhood physical abuse and childhood sexual abuse were more likely to report adult sexual assault compared to women who only experienced childhood sexual abuse (Hetzel & McCanne, 2005). A combination of childhood physical abuse and childhood sexual abuse increased risk of sexual revictimization in men by six times (Desai, Arias, Thompson, & Basile, 2002).

Some research suggests that this may be because childhood sexual abuse makes the victim more sensitive to the aggressor and may cause them to replace the aggressor's agency with their own (Lahav, Talmon, Ginzburg, & Spiegel, 2019). Alcohol and substance abuse problems being more prevalent in those who experienced childhood adversity puts them at a greater risk for sexual revictimization, because substance abuse has been linked to greater risk of sexual assault (Conley et al., 2017; Windle et al., 2018).

Males who go on to commit single- or multi-perpetrator rape have higher reported levels of childhood adversity than men who do not commit rape. Childhood adversity factors in physical punishment and sexual abuse may make men more likely to give into peer pressure, leading to multi-perpetrator rape (Jewkes, Nduna, Jama-Shai, Chirwas, & Dunkle, 2016). In a

college sample, childhood adversity was found to be significant in classifying single incident sexual coercion or assault offenders and positively correlated with repeat offending and antisocial traits (Zinzow & Thompson, 2015). This may be because many of the adverse childhood experiences model aggression, which victims go on to perpetrate against others. Other researchers suggest the early adversity contributes to attachment insecurity, which is associated with the perpetuation of criminal activity (Grady, Levenson, & Bolder, 2017).

In addition to the risk of sexual revictimization, individuals who have experienced early adversity are more likely to report intimate partner violence (IPV) in relationships. This includes physical, sexual, and emotional abuse by romantic and/or sexual partners. Witnessing interparental violence and being a direct victim of physical violence were both associated with later engagement in IPV (Stein, Grogan-Kaylor, & Galano, 2016). In one study, the prevalence rate of being a victim of IPV was over three times higher among those who witnessed parental violence as compared to the total sample (Madruga, Viana, Abdalla, Caetano, & Laranjeira, 2017).

Childhood sexual abuse, interparental violence, and parental mental illness were specifically associated with physical violence in relationships (Miller et al., 2011). In one study, over one-third of participants had experienced IPV in multiple relationships. Sexual abuse, along with torture and being held hostage, were associated with having multiple violent partners (Stein et al., 2016). While current exposure to psychological violence was associated with having multiple violent partners, current sexual violence was associated with having fewer violent partners (Stein et al., 2016).

Some research suggests that psychosocial factors such as depression, anxiety, impulsivity, and frequent intoxication may be pathways from exposure to early adversity to later

IPV (Mair, Cunradi, & Todd, 2012). Depressive disorders, cocaine use disorders, and alcohol use disorders were associated both with witnessing parental violence as children as well as IPV as an adult (Madruga et al., 2017). When exposure to cumulative adverse experiences is paired with IPV, the negative effects of early adversity is amplified (Montalvo-Liendo, Fredland, McFarlane, Lui, Koci, & Nava, 2015). This may result in a cycle of adversity where children are exposed to IPV at a young age, then go on to enter violent relationships themselves, possibly exposing their own children to IPV. Identifying youth with these specific adversities may help to identify who is most at risk of becoming involved in a violent relationship, therefore helping pinpoint who may benefit from intervention (Miller et al., 2011).

Trauma and Psychopathology

In a two week period, it is estimated that 7.6% of Americans have been depressed. Symptoms include feeling sad, hopeless, or helpless; irritable mood; changes in sleep and appetite patterns; loss of interest in usual activities; inability to experience pleasure; feelings of guilt or worthlessness ;thoughts of death or suicide; fatigue; and difficulty concentrating and trouble making decisions (Pratt & Brody, 2014). Those who suffer from depressive disorders frequently have trouble functioning at work and home, as well as trouble engaging in social activities. Severity of the disorder varies from person to person, with some individuals having mild symptoms and others experiencing severe, overwhelming symptoms (Pratt & Brody, 2014). While there may be multiple causes of depressive disorders, the development of depression is strongly predicted by early adversity (Slavich & Sacher, 2019).

Anxiety disorders are often comorbid with depressive disorders (Pratt & Brody, 2014). Symptoms of Generalized Anxiety Disorder (GAD) include feeling restless, wound-up, or on-edge; being easily fatigued; having difficulty concentrating; mind going blank; being irritable;

having muscle tension; difficulty controlling feelings of worry; having sleep problems, such as difficulty falling or staying asleep, restlessness, or unsatisfying sleep. Other anxiety disorders include Panic Disorder, Specific Phobias, Social Anxiety Disorder, Agoraphobia, and Separation Anxiety Disorder (National Institute of Mental Health, 2018). Early adversity has also been linked to the development of anxiety disorders. Some researchers have theorized that the relationship between the development of GAD and adverse childhood events is mediated by an insecure attachment style formed after experiencing childhood maltreatment (Bifulco et al., 2006).

Approximately one in one hundred individuals ages 15 and over have been diagnosed with Obsessive-Compulsive Disorder (OCD) (Osland, Arnold, & Pringsheim, 2018). Symptoms of OCD include both obsessive thoughts and compulsive behaviors. Obsessive thoughts often manifest as repeated thoughts, urges, and mental images that cause an individual anxiety, such as needing things to be in perfect order or having intrusive and unwanted thoughts about harming others or self. In response to these obsessive thoughts, individuals with OCD engage in compulsive behaviors in an attempt to alleviate anxiety, such as reordering and organizing the things around them or repeated compulsive counting (National Institute of Mental Health, 2019a). Individuals diagnosed with OCD are more likely to be diagnosed with a substance abuse disorder and frequently have comorbid disorders of depression and other anxiety disorders. The development of OCD is associated with early adversity, with almost three-fourths of those diagnosed reporting at least one form of childhood maltreatment (Osland et al., 2018).

Trauma Disorders, such as Post-Traumatic Stress Disorder (PTSD) occurs after exposure to an extremely stressful or traumatic event and has a lifetime prevalence of 7-8% in the United States (National Institute of Mental Health, 2019b). Diagnosis includes

re-experiencing symptoms, avoidance symptoms, arousal and reactivity symptoms, and cognition and mood symptoms. Re-experiencing symptoms include flashbacks, nightmares, and frightening thoughts; Avoidance symptoms include avoiding places that remind an individual of the traumatic event and avoiding thinking about the event; Arousal and reactivity symptoms include being tense, easily startled, having angry outbursts, and having difficulty sleeping; Cognition and mood symptoms include having trouble remembering details of the traumatic event, negative thoughts directed at one's self or the world, feelings of guilt or blame, and loss of interest in previously enjoyed activities (National Institute of Mental Health, 2019b). The presence of adverse childhood events is associated with the development of PTSD. Individuals who experience more types of trauma show less reduction of PTSD symptoms over time, even after specialized trauma therapy (Bosch et al., 2020).

Non-suicidal self-injury is defined as the act of harming one's body outside of cultural norms without the intent to commit suicide and is often linked to the presence of anxiety and depressive disorders (Gratz, 2001; Robinson et al., 2017). Women who have engaged in non-suicidal self-injury reported more childhood adversities than participants who had not self-harmed (Plener et al., 2017). Early childhood maltreatment is also linked to an increased risk in both suicidal ideation and suicide attempts in individuals with mood disorders (Knopf, 2020). Research suggests that this may be due to early adversity's effects on biological, psychiatric, and psychosocial factors that lead to altered neurology, interpersonal deficits and poor coping skills (Sachs-Ericsson, Rushing, Stanley, & Sheffler, 2016).

Socioeconomic Factors and Early Adversity

While not included in the original ACE study, many researchers include low socioeconomic status as a form of early adversity. Researchers have found that growing up in

poverty not only alters early sensory and motor experiences, but also may be more likely to expose children to other adverse experiences found more frequently in lower socio-economic classes, such as substance abuse (Ridout et al., 2018). Children in low socioeconomic status are more likely to be exposed to maltreatment, neglect, sexual abuse, and violence (Kroenke, 2008). Poverty as a stressor may create prolonged, chronic stress that affects individuals similarly to adverse childhood events (Raposa, Hammen, Brennan, O'Callaghan, & Najman, 2014).

Toxic Stress

Many theories exist that help to explain why early adversity leads to negative life outcomes. While some can be explained by psychosocial factors, such as abusing alcohol or other substances as a coping mechanism, others examine the neurobiological effect that prolonged stress has on the brain and body.

Multiple kinds of stress exist, and not all of them are inherently damaging. Positive Stress and Temporary Stress, for example, are short-term, normal experiences necessary for human growth and development. Toxic Stress, however, refers to prolonged or chronic activation of the stress management system (Shonkoff et. al, 2014). This prolonged stress can be caused by many things, such as abuse, poverty, and community violence. When experienced at a young age, it can negatively affect brain architecture, with areas devoted to fear and anxiety producing an excess of neurons, and areas associated with planning and reasoning becoming underdeveloped (Shonkoff et. al, 2014).

The sustained activation of the body's stress management systems particularly affects the pituitary-adrenocortical (HPA) system which produces the stress hormone, cortisol (Shonkoff et. al, 2014). Over time, the HPA may become chronically dysregulated and may begin to

down-regulate (Kalmakis, Meyer, Chiodo, & Leung, 2015). This lowers the threshold it takes to become stressed, and stress management systems may be activated easier and for longer amounts of time than in healthy brains (Shonkoff et. al, 2014). Research also shows that prolonged periods of elevated cortisol levels may suppress the immune response, contribute to metabolic syndrome, and cause bone mineral loss (Shonkoff et. al, 2014).

Long term exposure to toxic stress can also impede the overall development of the brain, leading to a smaller brain size (Middlebrooks & Audage, 2008). The hippocampus, responsible for learning and memory, is another area that is particularly vulnerable when there is an excess amount of cortisol present in the brain. The presence of cortisol may lead to permanent cognitive deficits (Middlebrooks & Audage, 2008). Some researchers have come to believe that many adult diseases and mental illnesses begin as developmental disorders caused by toxic stress, showing that the effects of early adversity have a biological basis and remain in adulthood (Shonkoff et al., 2012).

Rise of Resilience

While early adversity theories have gone far in explaining how and why childhood trauma has so many wide reaching negative effects, one of the biggest criticisms of the ACE study was that it focused solely on deficits and failed to address any protective factors that may mitigate harm for participants (Mcewen & Gregerson, 2019). Resilience as a concept uses a strength-based approach to help identify why and how individuals with adverse backgrounds develop into healthy adults and achieve positive life outcomes (Zolkoski & Bullock, 2012).

Resilient children typically possess social competence, problem-solving skills, critical consciousness, autonomy, and sense of purpose (Zolkoski & Bullock, 2012). The presence of these five attributes are usually developed both by the presence of environmental protective

factors and internal predispositions (National Scientific Council on the Developing Child, 2015).

When discussing interventions for children facing early adversity, it can be particularly helpful to address external protective factors, such as home stability and relationships with parents, in order to develop programs and resources that can encourage change (Zolkoski & Bullock, 2012). While research into resilience is still developing and faces several challenges, most researchers agree that providing multiple protective factors across different domains will likely result in the most positive life outcomes (Zolkoski & Bullock, 2012).

Protective Factors

Parental unemployment is linked to financial instability and disruption of schedule, which can be a very stressful experience for young children. Conversely, when at least one parent in a household is consistently employed, adolescents feel more supportive and have better health outcomes (Bacikova-Sleskova, Geckova, Dijk, Groothoff, & Reijneveld, 2011). In order to maintain a sense of stability and safety, a child's physical and medical needs must also be met. Living in a nurturing, conflict-free home has also been associated with better physical and mental health outcomes (Child Welfare Information Gateway, 2014). Children who were exposed to high levels of early adversity reported better outcomes when an adult in their life made them feel safe and protected (Crouch, Radcliff, Strompolis, & Srivastav, 2018). Even as adults, PTSD and depressive symptoms are seen at lower levels after minor trauma in individuals with high levels of social support from families (McCabe, Watrous, & Galarneau, 2020). Setting household rules may also improve outcomes for individuals, as well as decrease the likelihood they engage in risky behaviors (Bell, Gibbons, & McKay, 2008; Werner, 1993).

Friendship and positive peer relationships are also important protective factors when examining externalizing behavior in children facing early adversity (Criss et al., 2002). Having

social support from friends also lowers risk of depressive symptoms after exposure to trauma (McCabe et al., 2020). Even among individuals with low amounts of early adversity, friendship can help protect against symptoms of depression and anxiety, as well as anger and hostility (Folger & Wright, 2013).

Factors related to school can also serve as important factors. Children that enjoyed school, participated in extracurricular activities, and not being bullied helped build resilience by improving self esteem and wellbeing (Khambati, Mahedy, Heron, & Emond, 2018). This may be because these experiences help build relationships and create social support networks (Bernard, 1991).

Pet ownership has been proposed as a potential protective factor. Owning a pet has found to be associated with positive experiences and fulfillment of social roles, which may be related to higher life satisfaction (Luhmann & Kalitzki, 2018). Companion animals have been found to reduce feelings of loneliness and depressive symptoms after a social loss in comparison to those who did not have a pet (Carr, Taylor, Gee, & Sachs-Ericsson, 2019). Pets may also attract new friends and help individuals meet others that can become part of a social support network (Wood et al., 2015).

Importance of Adversity and Resilience Research

As rates of suicide and mental illness continue to rise in the United States (Hedegaard, Curtin, & Warner, 2020) it is imperative to approach these problems from a public health perspective. This includes not only examining the etiology of psychological problems, but also discovering which factors mitigate the effects of adverse events to build psychological resilience.

Research indicates that early adversity is positively associated with increased morbidity, early mortality, substance abuse, mental illness, suicide, and other negative life outcomes (Felitti et al., 1998). The ACE study examined the lifetime associations with morbidity and mortality, showing that early adversity is not necessarily healed as an individual matures, but becomes a burden carried for the rest of his or her life.

Examining early adversity in different populations is incredibly important: First, to identify which adverse experiences are more or less prevalent in different populations; and second, to identify how different populations may respond to these events. Further research will help discover how generalizable theories of risk are and create a solid base of evidence to best address the needs of communities.

The interplay between risk and resilience cannot be ignored and investigating the relationships between the two is critical to understanding how to mitigate the adverse effects of trauma. More studies in this field will not only help identify the most important protective factors, but also those protective factors that individuals with increased early adversity are most lacking. This research can help guide the development of prevention and intervention programs that promote resilience in vulnerable populations.

Method

Sample

Participants included 342 students at a medium sized, more selective liberal arts university in the Mid-Atlantic region of the United States. Ages ranged from 18-27 ($M = 19.50$, $N = 322$, $SD = 1.481$). Most participants were women (70.2%), with 26.6% identified as men, 0.6% identified as transgender women, 1.2% identified as transgender men, and 1.2% identified as non-binary. The sample was racially diverse with 71.3% identifying as White, 3.5% as Black

or African American, 17% as Asian, 0.6% as Native Hawaiian or Pacific Islander, 2.4% as Hispanic, and 4.6% as other. 35.4% of participants were freshman, 29.8% were sophomores, 17.5% were juniors, 14% were seniors, and 3.2% were graduate students. Tables 1-7 provide additional descriptive statistics for the study sample.

Procedure

Participants were recruited from a university subject pool system and awarded class credit, as well as through social media on a voluntary basis. Participants were given a link that took them to a 94-item online survey created in Qualtrics. Informed consent was integrated into the survey. Participants were provided with a list of crisis numbers and local mental health resources if they found the survey emotionally upsetting.

Measures

Demographic Variables

A demographics questionnaire was given to participants asking about ethnicity/race, gender, sexuality, class year, age, and household income.

Adverse Childhood Experiences

The second-wave Adverse Childhood Experiences (ACE) survey was distributed to each participant, which asked if the participant, before the age of 18, had experienced emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, parental divorce/separation, parental domestic abuse, parental substance abuse, parental mental illness, and parental incarceration. These questions were asked in a yes/no format, and if a participant answered in the affirmative, they were asked to indicate how old they were when the adverse event first occurred. One change was made to the second-wave ACE survey. The domestic

abuse item language was changed to be gender neutral instead of assuming the male was the aggressor. This change was made to ensure all participants who witnessed household violence were accounted for, as well as to be more inclusive of participants with same gendered parents.

Risk Taking and Mental Health

A survey was created to measure risk taking and mental health in young adults. Questions about risk-taking behavior included items about substance abuse, sexual experiences, romantic relationships, and sexual assault. Questions about mental health included items about both perceived and diagnosed psychiatric disorders, as well as self-harm and suicidal behavior. Questions were asked in a yes/no format. Additional questions asked for the ages at which any of these events first occurred. This section was created using the psychometrics from the original ACE study and Bisconer's study on suicidal behavior in an undergraduate population (Bisconer, 2017; Felitti et al., 1998).

Protective Factors

A survey measuring protective factors was created using resilience literature. This study focuses on family and environmental protective factors, as they are easier to measure with the brevity needed to examine a larger range. A list of many protective factors was narrowed down to factors that appeared most frequently: parental education, parental employment, physical needs being met, access to medical care, access to mental health care, school enjoyment, involvement in extracurricular activities, having a supportive friend, having a close relationship with a family member, having a conflict free household, and owning a pet. Each factor was given one item and asked in a yes/no format, except for parental education, which asked for the level of education each parent had completed.

Statistical Analysis

Descriptive statistics were conducted for study variables. Measures of central tendency, dispersion, and shape were run for continuous variables. For descriptive purposes, ACE scores were combined into three groups: Group 0 = score of 0, Group 1 = scores 1-2, Group 2 = scores of 3-5, Group 3 = scores of 6-8. There were 140 subjects in ACE group 0, 131 in ACE group 1, 54 in ACE group 2, and 17 in ACE group 3 (Total N = 342). Full-scale ACE scores were used for all inferential analysis.

The nonparametric Spearman's Rank Order Correlation Coefficients were conducted because of the non-linear shape of the ACE-score distribution and nominal or rank scaled comparison variables. The non-parametric Mann-Whitney U Test allows for the comparison of two groups on an outcome of interest without the underlying assumptions that are expected when using the parametric equivalent t-test for independent samples. The nonparametric Mann-Whitney U Test was conducted to examine the difference between risk factor and protective factor responses (No, Yes) on full-scale ACE scores. The analyses helped determine whether subjects who reported a protective factor (Yes) had a lower mean rank ACE scores compared to subjects who did not report a protective factor (No).

Results

Risk and Protective Factors

ACE scores can range from 0 to 10. Participants in this study reported ACE scores ranging from 0 to 8 ($M = 1.409$, $SD = 1.750$). There were 140 (40.9%) participants who reported no exposure to any of the ACE items, a finding that is consistent with regional studies (Merrick, Ford, Ports, & Guinn, 2018).

Table 7 provides a frequency distribution of ACE items including age when each ACE item first occurred. The ACE item that was most reported was living in a household with someone who was mentally ill or had attempted suicide (31.0%), followed by emotional abuse (26.3%), parental divorce (22.2%), emotional neglect (19.0%), living in a household with someone with substance abuse problems (14.9%), physical abuse (11.1%), sexual abuse (5.3%), witnessing interparental domestic abuse (5.0%), physical neglect (4.1%), and having an incarcerated family member (2.0%). Table 8 provides a frequency distribution of affirmative ACE item responses by ACE group.

Table 9 provides a frequency distribution of Protective Factors. Table 10 reconfigures Protective Factor “No” responses by ACE group (none, mild, moderate, severe). Table 11 summarizes results of the Mann-Whitney U Tests that were conducted to examine the difference between Protective Factor responses (No, Yes) on ACE scores. Except for Pets, there was a statistically significant difference between the two Protective Factor groups. Subjects in the “No” Protective Factor group had significantly higher Total ACE scores compared to subjects in the “Yes” Protector Factor group.

Tables 12 and 13 summarize mother’s and father’s education level by ACE group. Table 14 summarizes Spearman’s Rho correlations that were conducted to assess the relation between ACE total scores and (a) mother’s and father’s education level, (b) each Protective Factor, and a summed Total Protective Factors score. Statistically significant, low to moderate magnitude negative correlation coefficients were found for all variables except for pets. This outcome suggests that higher ACE scores were associated with a lower frequency of reported protective factors. Of note is that income was negatively related to ACE scores, indicating that those with lower incomes were more likely to be exposed to early adversity (Spearman’s $r =$

-0.221, $N = 339$, $p = 0.000$). ACE scores were not significantly related to either High School GPA or College GPA.

Mental Health Variables

Descriptive and inferential analyses were conducted to evaluate mental health variables (Anxiety Disorder, Depressive Disorder, Obsessive-Compulsive Disorder, Trauma Disorder) and their relation to ACE scores. Subjects were asked if they were diagnosed with a specific mental health diagnosis and the age of diagnosis. Subjects were then asked whether they thought they had an undiagnosed mental health diagnosis (perceived diagnosis). Descriptive statistics for each mental health variable, diagnosed and perceived, are summarized in Tables 15-18.

Anxiety Disorder

There was no significant relation between magnitude of ACE score and age at diagnosis of an anxiety disorder (Spearman's $r = -0.173$, $N = 95$, $p = 0.093$). There were 195 (57.0%) subjects who reported either a diagnosed or undiagnosed anxiety disorder. There were 64 (45.7%) in ACE group 0, 78 (59.5%) in ACE group 1, 38 (70.4%) in ACE group 2, 15 (88.2%) in ACE group 3.

Depressive Disorder

Correlation between ACE score and age at diagnosis: Spearman's $r = -0.282$, $N = 66$, $p = 0.022$. Results suggest that subjects with higher ACE scores were diagnosed with a depressive disorder at younger ages compared to their peers with lower ACE scores. There were 124 (36.3%) subjects who reported either a diagnosed or undiagnosed depressive disorder. There were 29 (20.7%) in ACE group 0, 49 (37.4%) in ACE group 1, 34 (63.0%) in ACE group 2, 12 (70.6%) in ACE group 3.

Obsessive-Compulsive Disorder

Correlation between ACE score and age at time of diagnosis: Spearman's $r = 0.424$, $N = 13$, $p = 0.149$. There was no significant relation between magnitude of ACE score and age at diagnosis of an obsessive-compulsive disorder. There were 78 (22.8%) subjects who reported either a diagnosed or undiagnosed obsessive-compulsive disorder. There were 27 (19.3%) in ACE group 0, 30 (22.9%) in ACE group 1, 14 (25.9%) in ACE group 2, 7 (41.2%) in ACE group 3.

Trauma Disorder

Correlation between ACE score and age of diagnosis: Spearman's $r = -0.065$, $N = 25$, $p = 0.757$. There was no significant relation between magnitude of ACE score and age at diagnosis of a trauma disorder. There were 55 (16.1%) subjects who reported either a diagnosed or undiagnosed trauma disorder. There were 7 (5.0%) in ACE group 0, 19 (14.5%) in ACE group 1, 20 (37.0%) in ACE group 2, 9 (52.9%) in ACE group 3.

Subjects with a diagnosed mental health problem and a perceived mental health problem were combined into one group and compared to their peers without a mental health diagnosis on total ACE scores. Except for Obsessive-Compulsive Disorder, subjects reporting mental health problems (diagnosed and perceived) had significantly higher ACE scores compared to their peers without reported mental health problems (see Table 19).

Self-harm Variables

Subjects were asked whether they had engaged in self-injurious and suicidal behavior. Variables included self-harm (e.g., cutting); suicide ideation; suicide attempt; and number of suicide attempts. Tables 20-23 summarize the frequency and percent of subjects reporting behaviors in each ACE group. Self-harm was reported by 28.4% of participants, suicidal

ideation by 37.1%, and suicide attempts by 4.7%. There were 16 subjects reporting at least 1 suicide attempt. Number of attempts ranged from 1 to 4.

Spearman's Rho correlation coefficient was run between ACE scores and age of first incident of self-harming or suicidal behavior. There was a negative and significant correlation between ACE scores and age of self-harm (Spearman's $r = -0.214$, $N = 95$, $p = 0.038$). Results suggest that subjects with higher ACE scores reported a self-harm at younger ages compared to their peers with lower ACE scores. There was a negative and significant correlation between ACE scores and age of first suicide ideation (Spearman's $r = -0.250$, $N = 125$, $p = 0.005$). Results suggest that subjects with higher ACE scores reported suicide ideation at younger ages compared to their peers with lower ACE scores. The correlation between ACE scores and age of first suicide attempt was not statistically significant (Spearman's $r = -0.424$, $N = 17$, $p = 0.090$). The correlation between ACE scores and number of suicide attempts also was not statistically significant (Spearman's $r = 0.141$, $N = 17$, $p = 0.589$).

Table 24 shows Spearman's Rho correlations between total ACE scores and mental health and self-harm variables. Except for Obsessive-Compulsive Disorder, the significant positive correlations suggest that subjects with higher ACE scores were more likely to report a mental health and self-harm problem.

Table 25 shows Mann-Whitney U tests examining the difference between diagnosed mental health and self-harm variables (Yes, No) on total ACE scores. Except for Obsessive-Compulsive Disorder, subjects reporting mental health and self-harm problems had significantly higher ACE scores compared to their peers without mental health diagnoses and self-harm behaviors.

Table 26 shows that mother's education level was negatively and significantly correlated with suicide thoughts and suicide attempts. Self-harm approximated statistical significance. Results suggest that mothers with lower education levels were more likely to have children who have struggled with suicidal behavior. Father's education level was not significantly associated with mental health variables including self-harm, suicidal thoughts, or suicide attempts.

Table 27 shows Mann-Whitney U tests examining the difference between diagnosed mental health and self-harm variables (Yes, No) on number of protective factors. Results suggest that participants who had a higher number of protective factors were less likely to report self-harm behaviors and having a mental health diagnosis.

Sexual Behavior Variables

Tables 28-31 summarize the frequency and percent of subjects reporting sexual behaviors. Results suggested that subjects with higher ACE scores had their first sexual encounter at a younger age compared to their peers with lower ACE scores (Spearman's $r = -0.148$, $N = 194$, $p = 0.039$), and a greater number of sexual partners (Spearman's $r = -0.148$, $N = 194$, $p = 0.039$). Only one subject reported an unplanned pregnancy at age 16 and her ACE score was 4. There was no relation between ACE scores and history of sexually transmitted diseases.

Abusive Relationship and Sexual Assault Variables

Tables 32-39 summarize the frequency and percent of subjects reporting emotional, physical, and sexual abuse in romantic relationships as well as sexual assault. The Mann-Whitney U test was run to evaluate the difference between abuse in romantic relationships and sexual assault groups (Yes, No) on Total ACE scores. Results suggested that subjects with higher ACE scores were more likely to have experienced all types of abusive

romantic relationships (Tables 40). Subjects in ACE groups reporting higher scores were more likely to have been sexually assaulted as adults (Table 40).

Age of first encounter was not significantly correlated with ACE scores for any kind of abuse in romantic relationship or sexual assault. Number of abusive partners and number of sexual assaults were also not significantly correlated with ACE scores.

Table 41 shows Mann-Whitney U tests examining the difference between diagnosed use in romantic relationships and sexual assault groups (Yes, No) on number of protective factors. Results suggest that participants who had a higher number of protective factors were less likely to report engaging in abusive romantic relationships and being sexually assaulted.

Substance Use Variables

Table 42 summarizes frequency of use of substances by ACE group. Table 43 shows a breakdown of substance use by substances including Alcohol, Nicotine, Cannabis, Stimulant, Opioid, Sedative, Psychedelic, and Inhalant. Table 44 shows Spearman's Rho Correlations Between ACE scores and substance use variables (No, Yes). Subjects in ACE groups reporting higher scores were more likely to report Alcohol abuse, daily Nicotine use, routine Cannabis use, Inhalant use, Opioid use, Stimulant use, and Sedative use. ACE groups reporting lower scores were more likely to report Psychedelic use. Age of first use was not significantly correlated with ACE scores for Alcohol, Nicotine, Cannabis, Stimulants, Opioids, or Inhalants, but was positively correlated with Sedative use (Spearman's $r = 0.672$, $N = 10$, $p = 0.023$). This finding suggests that higher ACE scores were associated with Sedative use at younger ages. Table 45 shows The Mann-Whitney U tests were run to evaluate the difference between substance use groups (Yes, No) on Total ACE scores. Except for Psychedelics, the significant positive correlations suggest that subjects with higher ACE scores were most likely to report

substance use. Table 46 shows no significant difference in substance use (Yes, No) and mother's or father's education level. Table 47 examines the difference between substance abuse groups (Yes, No) on number of protective factors. Results suggest that participants who had a higher number of protective factors were less likely to report Alcohol and Nicotine use, but showed no significant difference in Cannabis, Stimulants, Opioids, Sedatives, or Inhalants.

Figures 1 - 11 highlight the key study outcomes in a visually simplified format.

Case Studies

In order to demonstrate how the lives of individuals are affected by exposure to early adversity, four "case studies" have been selected, with one coming from each of the four ACE groups. Some identifying data has been removed to protect the confidentiality of the participants.

Case Study 1- ACE score of 0. Participant A is a white woman in her junior year of college. Both of her parents hold advanced degrees, maintained stable employment and have a household income of \$100,00-\$119,999 per year. Growing up, her home was free from serious conflict, she had fairly enforced household rules, and maintained a stable and loving relationship with at least one parent. She generally enjoyed school, participated in extracurricular activities, and always had at least one friend to confide in. All her physical needs were met, and she had access to both medical and mental health care if needed. She was never exposed to any trauma. In college, she has a 3.7 GPA, and has never experimented with drugs or been exposed to an STI, and none of her romantic relationships have been abusive. Although she has never been diagnosed with any mental health problems, she does feel as though she has an anxiety disorder but has never self-harmed or had suicidal thoughts.

Case Study 2- ACE Score of 2. Participant B is a white woman in her freshman year of college. Both of her parents have advanced degrees, maintained stable employment, and have a household income of \$60,000-\$79,999 a year. Growing up, she had fairly enforced household rules, and maintained a stable and loving relationship with at least one parent, although she reports that there was serious conflict in her home. She did not generally enjoy school, but participated in extracurricular activities, and always had at least one friend to confide in. All of her physical needs were met, and she had access to both medical and mental health care if needed. At the age of 12, she became emotionally neglected and someone in her household developed a mental illness. She has never experimented with drugs or been exposed to a STI, and none of her romantic relationships have been abusive. When she was 15, she was diagnosed with anxiety and depressive disorders. At the age of 16, she began to engage in non-suicidal self-injury, but has never had suicidal thoughts or made a suicide attempt.

Case Study 3- ACE Score of 5. Participant 3 is a white man in his sophomore year of college. His mother graduated college, and his father holds an advanced degree. They make a combined income of approximately \$60,000-\$79,999 per year but did not always have stable employment. Growing up he maintained a stable and loving relationship with at least one parent, but he did not have fairly enforced household rules and he reports that there was serious conflict in his home. He generally enjoyed school and participated in extracurricular activities, but did not always have at least one friend to confide in. He did not always have all of his physical needs met or have access to mental health care but did always have access to medical care if necessary. From the time he was born, someone in his household had substance abuse issues and struggled with a mental illness. He began to be emotionally abused at an unknown age, and at age 10, his parents began emotionally neglecting him. At age 11, his

parents divorced. In college, he has a 2.8 GPA. He began abusing alcohol and using a nicotine product daily at the age of 18. Although he never contracted a STI, at 19 he became involved in an emotionally abusive relationship. He also began using cannabis on a regular basis and used a psychedelic substance at age 19. Although he has not been diagnosed with any psychiatric disorder, he perceives himself to have an anxiety disorder, obsessive compulsive disorder, a depressive disorder, and a trauma disorder. At the age of 14, he began to have suicidal thoughts, but never attempted suicide. At 16, he began to engage in non-suicidal self-injury.

ACE Group 3- ACE Score of 6. Participant D is an Asian man in his freshman year of college. Both of his parents have advanced degrees, maintained stable employment, and have a household income of \$80,000-\$99,999 a year. Growing up he did not have fairly enforced household rules, he did not have a stable and loving relationship with either parent, and he reports that there was serious conflict in his home. He did not generally enjoy school or consistently have friends he felt he could confide in, but he did participate in extracurricular activities. His physical needs were always provided for, and he always had access to medical and mental health care if necessary. Since he was born, he reports someone in his household having a substance abuse problem and mental illness. At the age of 8, he began to be emotionally and physically abused, and at the age of 10, he reports being emotionally neglected. At 16, his parents divorced. He began using nicotine products on a daily basis at 13. When he was 16, he began to abuse alcohol, use cannabis on a daily basis, illegally use opioids, and abuse sedatives. At 17, he abused stimulants. Since the age of 15, he has had 27 sexual partners, but has never had a STI. He has never had an abusive romantic relationship, but he was sexually assaulted at 17. At the age of 13, he was diagnosed with anxiety and depressive disorders and diagnosed with obsessive compulsive disorder at an undisclosed time.

At 13, he also began having suicidal thoughts, engaging in non-suicidal self-injury, and made a suicide attempt.

Discussion

Study Limitations

Subjects self-selected to participate in this study. Students with early adversity may have participated at a higher rate, feeling as though the study was applicable to them. Due to all participants being university students as well as primarily white and upper middle class, the results may not be generalizable to other populations.

This survey depended on participants self-reporting ages, which may be mis-remembered and poses a threat to accuracy of the data. There is also a risk that participants may have not accurately reported items related to illegal or potentially embarrassing activities. Validity and reliability may also be affected by low numbers of participants reporting high ACE scores, substance abuse behaviors, and risky sexual behaviors.

Questions about the ACE items were in a yes/no format instead of a Likert scale, which means the severity of each item could not be assessed. Because this study used the survey from the original ACE study, all forms of early adversity are not addressed, such as community violence, discrimination, poverty, and parental death. This means that some participants may have more early adversity than reported and could affect validity of the results. Items measuring protective factors were not from fully validated surveys, but instead created from relevant literature, which may affect reliability and validity.

The DSM-5 has a category of substances called Sedative-, Hypnotic-, and Anxiolytic-Related Disorders. The item in the online survey only asks about illegal Sedative use, but listed three Anxiolytic medications (Xanax, Valium, and Ativan) that are highly addictive

Benzodiazepines as examples. It is likely that subjects responded to the names of the specific drugs given as examples and not Sedative medications specifically. Also, it is more likely that subjects would have access to an Anxiolytic / Benzodiazepine, either legally or illegally. It is uncertain if participants responded to the term Sedatives or to the three examples given, so these significant results should be viewed with caution.

Summary and Implications of Findings

This study found that the ACE scores from this sample are similar to other reported regional scores (Merrick et al., 2018). However, frequency among ACE items varied drastically in some cases, with this population reporting more household mental illness but less sexual abuse, substance abuse, and physical abuse. This study also had fewer participants reporting extreme high scores, with no individuals reporting ACE scores of 9 or 10. This may indicate that individuals with such extreme early adversity have difficulty making it to the collegiate level.

Participants also reported relatively high frequencies of protective factors. This may indicate that individuals without many protective factors have difficulty reaching the collegiate level, or these protective factors may be very prevalent in the larger population. Most participants reported having supportive homes and families. Most participants reported having parents with stable employment, all physical needs met, and access to medical care, which may be due to the relatively high socioeconomic status of this population.

There was a negative relationship between ACE scores and number of protective factors, indicating that those who had higher ACE scores were also generally not exposed to as many protective factors. This is troubling, as it means individuals who have many negative experiences are also not having many positive ones to help offset and mitigate the damage of early adversity. Perhaps this is to be expected though, as many of the ACE items are in direct

opposition to the reported protective factors. For example, it would be very difficult for a participant to witness domestic abuse as a child while also living in a conflict free household.

ACE scores and protective factors also had opposite relationships to socioeconomic status, with lower incomes associated with higher ACE scores and higher income correlated with lower ACE scores. This supports prior research that suggests financial strain may adversely affect parenting, leading to a higher prevalence of early adversity among those with lower socioeconomic status (Evans & Kim, 2013).

This sample showed a high frequency of mental health issues, especially when considering perceived mental health diagnoses. While 28.1% of subjects reported being actually diagnosed with an anxiety disorder, an additional 28.7% of subjects felt as though they may have the disorder, meaning that 56.8% of participants in total are struggling with feelings of anxiety. These feelings of anxiety only increase as ACE scores increase; ACE Group 3 has over a four-fold increase in the percentage of participants diagnosed with anxiety as compared to Group 0. Diagnosis and perception of anxiety has the opposite relationship with protective factors, as having more protective factors is related to having a lower frequency of anxiety disorder diagnosis. This indicates that it can be exacerbated by early adversity as other research suggests, but also mitigated by positive environments.

Similar results can be seen in participants who are diagnosed or perceived themselves to have a depressive disorder. Almost 20% of subjects had been diagnosed with a depressive disorder and an additional 16.7% reporting feeling as though they may have it. Diagnosis of depressive disorder shows a similar pattern to anxiety, with 4.7 times more participants reporting a diagnosis in ACE Group 3 than in Group 0. The presence of protective factors is again associated with a lower frequency of depressive disorder diagnosis.

Differences within ACE Groups for the diagnosis and perception of trauma disorders is striking, but not surprising. While approximately 1 in every 35 participants with an ACE score of 0 have been diagnosed with a trauma disorder, that number rises to 2 in every 5 when there is an ACE score of 6-8. Because the ACE score measures forms of trauma, it is expected that those exposed to early adversity would experience higher levels of trauma diagnoses related to those incidents. Less expected though, is that a greater number of protective factors is still associated with lower levels of trauma disorder diagnosis. This could be due to the fact that those with many protective factors are less likely to experience trauma, but it could also indicate that having a secure and supportive environment helps prevent the development of a trauma disorder after a traumatic event.

Participants' responses to the obsessive-compulsive disorder (OCD) item reflected also that many more people show symptoms of OCD than those diagnosed. While 4.1% had an actual diagnosis, 18.4% of participants felt they might have OCD. While it is technically possible that almost a fifth of participants had OCD, it is much more likely that students do not fully understand what the actual diagnosis of OCD entails. Interestingly, this is the only disorder out of the four examined that is not significantly related to either ACE scores or the number of protective factors a participant has been exposed to. This may indicate that OCD is caused by factors unrelated to early adversity and the presence of protective factors may not be useful in preventing it.

In total, over one third of participants identified in some way with having a depressive disorder, over half of participants identify with having problems with anxiety, 28.7% have engaged in non-suicidal self-injury, 37.1% have had suicidal thoughts, and 4.7% have attempted suicide. Although much of this may be related to trauma, it still speaks to a mental health crisis

in this population. It may also demonstrate a need to find ways to reach out to this population, as many of them are struggling but not being diagnosed, indicating that they may not be seeking help for their problems.

Participants with higher ACE scores were also more likely to engage in risk-taking behavior in comparison to participants with lower ACE scores. Subjects who had been exposed to more early adversity were more likely to have had a sexual encounter, have more sexual partners, and had their first sexual experience at a younger age. Protective factors were not found to be related to any of these variables.

Additionally, sexual assault and abusive relationships of all kinds (emotional, physical, and sexual) were found to be associated with higher ACE scores. The increased engagement in abusive relationships may be because participants who witnessed or experienced abuse as children have accepted this behavior as normal. However, results showed that participants with a greater number of protective factors were less likely to have abusive partners. This may be because they have a social support system that discourages them from engaging in dangerous relationships and do not perceive abuse to be normal or expected. The number of assaults and abusive partners was not found to be related to either protective factors or ACE scores. This may be because of the young age of participants, who may engage in additional abusive relationships as time goes on.

ACE scores were also found to have a relationship to substance abuse problems, as all substance abuse variables except Psychedelics shown to be associated with higher ACE scores. This may be because Psychedelics do not serve as a coping mechanism in the same way that other substances may be used. Only Sedative use had a significant relationship to age, implying that increased early adversity does not initiate the use of substances at a younger age

in comparison to those without trauma. However, that may also be because individuals may not gain access to illicit substances until a later age, and would have engaged in the behavior earlier if given the chance. A greater number of protective factors was only associated with reduced substance abuse in Alcohol and Nicotine variables, indicating that these protective factors do little to mitigate the abuse of Cannabis, Opioid, Sedative, Psychedelic, Stimulant, and Inhalant abuse.

Future Direction

While research has gone far in identifying that early adversity contributes to later risk-taking behavior, mental illness, and physical health problems, more research is needed to discover what pathways lead to the development of these problems. While the HPA axis theory now has a significant amount of research behind it, more must be done to identify additional mediating variables.

Additionally, more specific associations must be found between individual ACE items (or other early adversity factors) and distinct patterns of risk-taking behavior and mental illness. While some associations have been made, such as those exposed to domestic violence being more likely to engage in abusive relationships as adults, more research is needed to fully flesh out how individual adverse events affect individuals (Stein et al., 2016). Being able to identify which ACEs contribute to particular patterns of behavior or dysfunction may help researchers design intervention or prevention programs catered to a specific population's needs. Researchers may also consider expanding the patterns of behavior and psychological dysfunction examined, such as also examining the relationship between ACEs and eating disorders or personality disorders.

The relationship between early adversity and resilience also needs to be further explored. While plenty of research exists in both areas, further research may help determine how they interact. It is possible that some protective factors are more effective in mitigating the effects of specific early adversity factors, which once again could be important when designing intervention and prevention programs. Certain protective factors may also be better at combating specific patterns of dysfunction, which is another relationship that should be explored.

Another area that may warrant research is how the perception of early adversity affects later risk-taking behavior and psychological dysfunction. While some victims minimize their experiences, denying that it was actually abuse or claiming it “wasn’t that bad,” others may over exaggerate it, and still others accept it for what it is. It would be valuable to explore if the perceived severity of abuse or denial of abuse has significant effects on later life outcomes.

Clinical interventions could also be created based on these findings. Colleges and universities may consider offering their students the opportunity to screen themselves for early adversity in order to identify which students may be the most at risk for developing problematic behavior or developing psychiatric dysfunction. It could also be used as an intervention point to offer additional resources to students who are already struggling due to past adversity. Additionally, college counseling centers may choose to screen for ACEs in order to properly adjust treatment plans for those who have experienced early adversity, especially for those that have not previously addressed these issues in mental health treatment.

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Tables

Table 1*Gender*

Gender	Frequency	Percent
Female	240	70.2
Male	91	26.6
Transgender Female	2	0.6
Transgender Male	4	1.2
Non-binary	4	1.2
Other	1	0.3
Total	342	100.0

Other included: "I prefer not to say."

Table 2*Ethnicity*

Ethnicity	Frequency	Percent
American Indian-Native Alaskan	2	0.6
Asian	58	17.0
African or Black American	12	3.5
Native Hawaiian or Pacific Islander	2	0.6
White	244	71.3
Other	24	7.0
Total	342	100.0

Other included: Hispanic and Biracial or Mixed Ethnicities

Table 3*Year in School*

Year in School	Frequency	Percent
Freshman	121	35.4
Sophomore	102	29.8
Junior	60	17.5
Senior	48	14.0
Graduate Student	11	3.2
Total	342	100.0

Table 4*Grade Point Average*

GPA	Missing Cases	Valid Cases	Mean GPA	Median GPA	Standard Deviation
High School GPA	19	323	4.69	4.15	8.6
College GPA	109	233	3.51	3.60	0.3896

Many Freshmen did not report a GPA because it was their first college semester.

Table 5*Sexual Identity*

Sexual Identity	Frequency	Percent
Heterosexual	256	74.9
Homosexual	17	5.0
Bisexual	56	16.4
Asexual	6	1.8
Other	7	2.0
Total	342	100

Others included: bi-curious, pansexual, queer, I don't know, unsure.

Table 6*Family Income*

Family Income	Frequency	Percent
Less than \$20,000	9	2.6
\$20,000 to \$39,999	13	3.8
\$40,000 to \$59,999	28	8.2
\$60,000 to \$79,999	34	9.9
\$80,000 to \$99,999	38	11.1
\$100,000 to \$119,999	51	14.9
\$120,000 to \$139,999	31	9.1
\$140,000 to \$159,999	23	6.7
\$160,000 or more	112	32.7
Missing	3	0.9
Total	342	100.00

Table 7*Frequency of Affirmative Responses for Each ACE Score*

Ace Scores		Frequency	Percent	Mean Age	Median Age	Standard Deviation
Emotional Abuse	Yes	90	26.3	6.39	6.00	5.513
Physical Abuse	Yes	38	11.1	4.71	5.00	3.873
Sexual Abuse	Yes	18	5.3	8.72	8.00	5.717
Emotional Neglect	Yes	65	19.0	6.57	8.00	5.583
Physical Neglect	Yes	14	4.1	4.87	6.00	4.658
Divorce	Yes	76	22.2	7.67	7.00	4.965
Domestic Abuse	Yes	17	5.0	5.62	5.00	6.152
Substance Abuse	Yes	51	14.9	4.40	.00	6.337
Mental Illness	Yes	106	31.1	7.99	10.00	6.885
Incarceration	Yes	7	2.0	---	---	---

Table 8*Frequency of ACE Items with Affirmative Response by ACE Group*

ACE Item	ACE Group 0 Score=0 N=140	ACE Group 1 Score=1-2 N=131	ACE Group 2 Score=3-5 N=54	ACE Group 3 Score=6-8 N=17
Frequency and Percent (% of subjects in each ACE group responding YES to the item).				
Emotional Abuse	0	37 (28.2)	37 (65.8)	16 (94.1)
Physical Abuse	0	12 (9.2)	16 (29.6)	10 (58.8)
Sexual Abuse	0	6 (4.6)	8 (14.8)	4 (23.5)
Emotional Neglect	0	19 (14.6)	30 (55.6)	16 (94.1)
Physical Neglect	0	1 (0.8)	3 (5.6)	10 (58.8)
Divorce	0	29 (22.3)	34 (62.7)	13 (76.5)
Domestic Abuse	0	1 (0.8)	11 (20.4)	5 (29.4)
Substance Abuse	0	10 (7.7)	25 (46.3)	16 (95.1)
Household Mental Illness	0	58 (44.6)	34 (63.0)	14 (82.4)
Incarceration	0	0	3 (5.6)	4 (23.5)

Table 9*Frequency Distributions: Protective Factors*

Protective Factor	Frequency No	Percent No	Frequency Yes	Percent Yes
Parents employed	4	1.2	338	98.8
Physical needs met	6	1.8	336	98.2
Access to medical care	7	2.0	335	98.0
Access to mental health care	29	8.5	313	91.5
Enjoyed school	81	23.7	261	76.3
Enjoyed extracurricular activity	34	9.9	308	90.1
Friends	59	17.3	283	82.7
Stable relationships in home	20	5.8	321	93.9
Conflict free home	97	28.4	297	71.6
House rules	33	9.6	308	90.1
Pets	81	23.7	260	76.0

Table 10*Protective Factors ("No" Responses) by Grouped ACE Scores*

Protective Factors		ACE Score (0) N=140	ACE Score Mild (1-2) N=131	ACE Score Moderate (3-5) N=54	ACE Score Severe (6-8) N=17
Parents employed	No	0 (0.0%)	2 (1.5%)	1 (1.9%)	1 (5.9%)
Physical needs met	No	0 (0.0%)	2 (1.5%)	3 (5.6%)	1 (5.9%)
Medical care	No	0 (0.0%)	0 (0.0%)	5 (9.3%)	2 (11.8%)
Mental health care	No	2 (1.4%)	9 (6.9%)	14 (25.9%)	4 (23.5%)
Enjoyed school	No	18 (12.9%)	38 (29.0%)	16 (29.6%)	9 (52.9%)
Extracurricular activities	No	6 (4.3%)	13 (9.9%)	13 (2.4%)	2 (11.8%)
Friendships	No	9 (6.4%)	25 (19.1%)	16 (29.6%)	9 (52.9%)
Stable home relations	No	0 (0.0%)	2 (1.5%)	12 (22.2%)	6 (35.3%)
Conflict free home	No	7 (5.0%)	36 (27.5%)	38 (70.4%)	16 (94.1%)
Consistent house rules	No	4 (2.9%)	7 (5.3%)	15 (27.8%)	7 (41.2%)

Table 11

Mann-Whitney U Test Examining the Difference Between Protective Factors Groups (No, Yes) on ACE Scores

Protective Factor		N	Mean Rank	Mann-Whitney U	Significance
Parental Employment	No	4	271.88	274.55	0.032
	Yes	338	170.31		
Physical Needs Met	No	6	289.50	300.00	0.002
	Yes	336	169.39		
Medical Needs Met	No	7	316.79	155.50	0.000
	Yes	335	168.46		
Mental Health Needs Met	No	29	270.43	1669.50	0.000
	Yes	313	162.33		
Enjoyed School	No	81	209.14	7521.50	0.000
	Yes	261	159.82		
Extracurricular Activities	No	34	229.47	3265.00	0.000
	Yes	308	165.10		
Friends	No	59	231.58	4803.50	0.000
	Yes	283	158.97		
Stable Relations in Home	No	20	302.30	584.00	0.000
	Yes	321	162.82		
Conflict Free Home	No	97	257.58	3436.00	0.000
	Yes	244	136.58		
House Rules	No	33	266.32	1936.50	0.000
	Yes	308	160.79		
Pets	No	81	171.97	10451.50	0.915
	Yes	260	170.70		

Table 12

Protective Factors: Mother's Education

Mother's Education	ACE Score (0) N=140	ACE Score Mild (1-2) N=131	ACE Score Moderate (3-5) N=54	ACE Score Severe (6-8) N=17
Less than High School	1 (0.70%)	1 (0.76%)	2 (3.7%)	0 (0.0%)
High School Degree	7 (5.0%)	9 (6.9%)	5 (9.3%)	5 (29.4%)
Some College	7 (5.0%)	6 (4.6%)	5 (9.3%)	2 (11.8)
Associate's Degree	3 (2.1%)	6 (4.6%)	4 (7.4%)	1 (5.9%)
Bachelor's Degree	56 (40.0%)	53 (40.5%)	16 (29.6%)	5 (29.4%)
Advance Degree	66 (47.1%)	55 (42.0%)	22 (40.7%)	3 (17.6%)

Table 13

Protective Factors: Father's Education

Father's Education	ACE Score (0) N=140	ACE Score Mild (1-2) N=131	ACE Score Moderate (3-5) N=54	ACE Score Severe (6-8) N=17
Less than High School	0 (0.0%)	2 (1.5%)	4 (7.4%)	2 (1.4%)
High School Degree	5 (3.6%)	7 (5.3%)	6 (11.1%)	2 (17.6%)
Some College	5 (3.6%)	10(7.6%)	5 (9.3%)	3 (17.6%)
Associate's Degree	4 (2.9%)	6 (4.6%)	1 (1.9%)	1 (5.9%)
Bachelor's Degree	46 (32.9%)	30 (22.9%)	16 (29.6%)	5 (29.4%)
Advance Degree	80 (57.1%)	75 (57.3%)	22 (40.7%)	3 (17.6%)

Table 14*Spearman's Rho Correlations Between ACE Scores and Protective Factors (No, Yes)*

ACE Score	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Mother's Education	-0.163	0.003	342
Father's Education	-0.170	0.002	341
Parental Employment	-0.116	0.032	342
Physical Needs Met	-0.167	0.002	342
Medical Needs Met	-0.223	0.000	342
Mental Health Needs Met	-0.319	0.000	342
Enjoyed School	-0.222	0.000	342
Extracurricular Activities	-0.204	0.000	342
Friends	-0.291	0.000	342
Stable Relations in Home	-0.349	0.000	341
Conflict Free Home	-0.581	0.000	341
House Rules	-0.332	0.000	341
Pets	-0.006	0.961	341
Total Summed Protective Factors Score	-0.50	0.000	342

Table 15

Psychiatric Diagnosis: Anxiety Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Score	Mean Age	Median Age	Standard Deviation
0	140	40.9	21 (6.1)	15.0	15.86	17.00	3.75
1	131	38.8	42 (12.3)	32.3	15.78	16.00	2.69
2	54	15.8	22 (6.4)	40.0	16.23	17.00	2.49
3	17	5.0	12 (3.5)	70.6	13.55	13.00	1.97
Total	342	100.0	97 (28.4)				

Perceived Psychiatric Disorder: Anxiety Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency Perceived	Percent Perceived
0	140	40.9	43	30.7
1	131	38.8	36	27.5
2	54	15.8	16	29.6
3	17	5.0	3	17.6
Total	342	100.0	98	28.7

Table 16

Psychiatric Diagnosis: Depressive Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	10 (2.9)	7.1	17.40	17.50	1.78
1	131	38.3	28 (8.2)	21.5	15.89	16.00	2.79
2	54	15.8	20 (5.8)	36.4	16.30	17.00	1.56
3	17	5.0	9 (2.6)	52.9	13.63	13.00	1.99
Total	342	100.0	67 (19.6)				

Perceived Psychiatric Disorder: Depressive Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency Perceived	Percent Perceived
0	140	40.9	19	13.6
1	131	38.8	21	16.0
2	54	15.8	14	25.9
3	17	5.0	3	17.6
Total	342	100.0	57	16.7

Table 17

Psychiatric Diagnosis: Obsessive Compulsive Disorder (OCD)

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	4 (1.2)	2.9	12.25	12.00	4.03
1	131	38.3	6 (1.8)	4.6	17.00	17.00	1.00
2	54	15.8	3 (0.9)	5.5	17.00	18.00	2.65
3	17	5.0	2 (0.6)	11.8	16.00	16.00	0.00
Total	342	100.0	15 (4.4)				

Perceived Psychiatric Disorder: Obsessive-Compulsive Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency Perceived	Percent Perceived
0	140	40.9	23	16.4
1	131	38.8	24	18.5
2	54	15.8	11	20.0
3	17	5.0	5	29.4
Total	342	100.0	63	58.0

Table 18

Psychiatric Diagnosis: Trauma Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	4 (1.2)	2.9	15.33	18.00	5.52
1	131	38.3	9 (2.6)	6.9	17.11	18.00	2.32
2	54	15.8	6 (1.8)	11.1	18.83	18.00	4.36
3	17	5.0	7 (2.0)	41.2	16.29	17.00	3.25
Total	342	100.0	26 (7.6)				

Perceived Psychiatric Disorder: Trauma Disorder

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency Perceived	Percent Perceived
0	140	40.9	3	2.1
1	131	38.8	10	7.7
2	54	15.8	14	25.5
3	17	5.0	2	11.8
Total	342	100.0	29	8.5

Table 19

Mann-Whitney U Test Examining the Difference Between a Combined Group of Diagnosed and Perceived Mental Health Problems (Yes, No) on Total ACE Scores

Mental Health Problem		N	Mean Rank	Mann-Whitney U	Significance
Anxiety Disorder	No	147	142.43	10059.500	0.000
	Yes	195	193.41		
Depressive Disorder	No	217	145.44	7907.000	0.000
	Yes	124	215.73		
Trauma Disorder	No	287	157.60	3903.000	0.000
	Yes	55	244.04		
Obsessive Compulsive Disorder	No	261	165.02	8879.500	0.073
	Yes	78	186.66		

Table 20

History of Self-Harm

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	15 (4.4)	10.7	14.60	15.00	2.56
1	131	38.3	41 (12.0)	31.3	14.48	14.00	2.01
2	54	15.8	29 (8.5)	52.7	13.66	14.00	2.44
3	17	5.0	12 (3.5)	70.6	13.00	13.00	2.19
Total	342	100.0	97 (28.4)				

Table 21

History of Suicide Ideation

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	26 (7.6)	18.6	15.19	16.00	2.71
1	131	38.3	51 (14.9)	39.2	14.35	14.00	2.90
2	54	15.8	36 (10.5)	65.5	13.72	14.00	2.75
3	17	5.0	14 (4.1)	82.4	12.36	13.00	3.39
Total	342	100.0	127 (37.1)				

Table 22

History of Suicide Attempts

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	1 (0.3)	0.7	17.00	17.00	0.00
1	131	38.3	4 (1.2)	3.1	15.40	16.00	2.30
2	54	15.8	6 (1.8)	10.9	15.50	16.00	2.74
3	17	5.0	5 (1.5)	29.4	12.80	13.00	2.95
Total	342	100.0	16 (4.7)				

Table 23

Number of Suicide Attempts

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	1 (0.3)	0.7	1.00	1.00	0.00
1	131	38.3	4 (1.2)	3.1	1.40	1.00	0.89
2	54	15.8	6 (1.8)	10.9	3.50	2.50	3.39
3	17	5.0	5 (1.5)	29.4	1.40	1.00	0.55
Total	342	100.0	16 (4.7)				

Table 24*Spearman's Rho Correlations Between ACE Scores and Mental Health and Self-Harm Variables**(No, Yes)*

ACE Score	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Anxiety Disorder	.302	.000	341
Obsessive-Compulsive Disorder	.057	.293	342
Trauma Disorder	.229	.000	341
Depressive Disorder	.349	.000	342
Self-Harm	.407	.000	342
Suicidal Thoughts	.407	.000	342
Suicide Attempt(s)	.238	.000	342

Table 25

Mann-Whitney U Test Examining the Difference Between Diagnosed Disorders and Other Mental Health Variables (No, Yes) on ACE Scores

Diagnosed Disorders and Other Mental Health Variables		N	Mean Rank	Mann-Whitney U	Significance
Anxiety Disorder	No	246	153.36	7345.50	0.000
	Yes	95	216.68		
Obsessive-Compulsive Disorder	No	328	170.39	1931.50	0.292
	Yes	14	197.54		
Trauma Disorder	No	316	164.94	2036.00	0.000
	Yes	25	247.56		
Depressive Disorder	No	275	155.26	4747.00	0.000
	Yes	67	238.15		
Self-Harm	No	244	147.20	6026.00	0.000
	Yes	98	232.01		
Suicidal Thoughts	No	215	141.98	7306.00	0.000
	Yes	127	221.47		
Suicide Attempt(s)	No	326	166.54	991.00	0.000
	Yes	16	272.56		

Table 26

Spearman's Rho Correlation Between Mother's and Father's Education and Mental Health

Variables (No, Yes)

Mother's Education	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Anxiety Disorder	-.038	.482	340
Obsessive-Compulsive Disorder	-.027	.622	341
Trauma Disorder	-.004	.947	340
Depressive Disorder	-.029	.598	341
Self-Harm	-.104	.055	341
Suicidal Thoughts	-.117	.030	341
Suicide Attempt(s)	-.135	.013	341

Father's Education	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Anxiety Disorder	-.064	.237	340
Obsessive-Compulsive Disorder	.010	.860	341
Trauma Disorder	-.098	.070	341
Depressive Disorder	-.085	.119	341
Self-Harm	-.069	.203	341
Suicidal Thoughts	-.074	.174	341
Suicide Attempt(s)	-.097	.073	341

Table 27

Mann-Whitney U Test Examining the Difference Between Mental Illness Diagnosis and Self Harm Behaviors (No, Yes) on Number of Protective Factors

Diagnosed and Perceived Mental Illnesses		N	Mean Rank	Mann-Whitney U	Significance
Anxiety Disorder	No	244	184.01	8415.000	0.000
	Yes	96	136.16		
Obsessive Compulsive Disorder	No	327	170.71	2193.500	0.781
	Yes	14	177.82		
Trauma Disorder	No	315	175.51	2674500	0.002
	Yes	26	116.37		
Depressive Disorder	No	274	185.36	5243.000	0.000
	Yes	67	112.25		
Self Harm	No	244	196.34	5651.500	0.000
	Yes	97	107.26		
Suicidal Ideation	No	215	200.13	7281.500	0.000
	Yes	126	121.29		
Suicide Attempt(s)	No	325	175.80	1039.000	0.000
	Yes	16	73.44		

Table 28

Sexuality: Subjects Reporting First Sexual Encounter

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	74 (21.6)	52.9	17.31	17.00	1.67
1	131	38.3	71 (20.8)	54.2	16.99	17.00	1.53
2	54	15.8	42 (12.3)	79.2	16.61	17.00	1.88
3	17	5.0	9 (2.6)	52.9	15.64	15.00	1.75
Total	342	100.0	196 (57.3)				

Table 29

Sexuality: Subjects Reporting a Sexual Encounter – Number of Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	72 (21.1)	1.97	1.00	3.52
1	131	38.3	71 (20.8)	2.57	1.00	4.28
2	54	15.8	42 (12.3)	2.85	1.50	4.04
3	17	5.0	9 (2.6)	8.29	2.00	12.01
Total	342	100.0	194 (57.3)			

Table 30

Sexuality: Subjects Reporting No Sexual Encounter

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	64 (18.7)	45.7	19.05	19.00	1.04
1	131	38.3	51 (14.9)	38.9	19.19	19.00	1.30
2	54	15.8	16 (4.7)	29.1	19.40	19.00	1.06
3	17	5.0	6 (1.8)	35.3	19.50	19.00	1.38
Total	342	100.0	137 (40.1)				

Table 31

Sexuality: Subjects Reporting History of Sexually Transmitted Disease (STD)

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Score	Mean Age	Median Age	Standard Deviation
0	140	40.9	0	0.0	---	---	---
1	131	38.3	4 (1.2)	3.1	18.50	18.00	1.00
2	54	15.8	2 (0.6)	3.6	20.00	20.00	0.00
3	17	5.0	2 (0.6)	11.8	19.50	19.50	3.54
Total	342	100.0	8 (2.3)				

Table 32

History of Emotionally Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	8 (2.3)	5.7	15.63	16.50	1.685
1	131	38.3	19 (5.6)	14.6	16.63	16.00	3.353
2	54	15.8	19 (5.6)	34.5	16.47	17.00	1.679
3	17	5.0	5 (1.5)	29.4	15.80	15.00	2.049
Total	342	100.0	51 (14.9)				

Table 33

Number of Emotionally Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	8 (2.3)	5.7	1.00	1.00	0.000
1	131	38.3	19 (5.6)	14.6	1.21	1.00	3.353
2	54	15.8	19 (5.6)	34.5	1.32	1.00	0.749
3	17	5.0	5 (1.5)	29.4	1.00	1.00	0.000

Total	342	100.0	51 (14.9)
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Table 34

History of Physically Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	1 (0.3)	0.7	17.00	17.00	---
1	131	38.3	3 (0.9)	2.3	16.67	16.00	1.155
2	54	15.8	5 (1.5)	9.1	16.75	16.50	0.957
3	17	5.0	1 (0.3)	5.9	18.00	18.00	---
Total	342	100.0	10 (2.9)				

Table 35

Number of Physically Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	1 (0.3)	0.7	1.00	1.00	---
1	131	38.3	3 (0.9)	2.3	1.00	1.00	0.000
2	54	15.8	5 (1.5)	9.1	1.00	1.00	0.000
3	17	5.0	1 (0.3)	5.9	1.00	1.00	---
Total	342	100.0	10 (2.9)				

Table 36

History of Sexually Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	5 (1.5)	3.6	14.80	14.00	1.643
1	131	38.3	10 (2.9)	7.7	15.45	16.00	3.045
2	54	15.8	10 (2.9)	18.2	16.00	16.00	1.633

3	17	5.0	7 (2.0)	41.2	15.57	15.00	1.813
Total	342	100.0	32 (9.4)				

Table 37

Number of Sexually Abusive Romantic Partners

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	5 (1.5)	3.6	1.00	1.00	0.000
1	131	38.3	10 (2.9)	7.7	1.09	1.00	0.302
2	54	15.8	10 (2.9)	18.2	1.10	1.00	0.316
3	17	5.0	7 (2.0)	41.2	2.17	1.00	2.401
Total	342	100.0	32 (9.4)				

Table 38

History of Adult Sexual Assault

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	3 (0.9)	2.1	17.00	18.00	2.646
1	131	38.3	14 (4.1)	10.8	14.38	15.00	4.273
2	54	15.8	13 (3.8)	23.6	15.23	14.00	3.723
3	17	5.0	6 (1.8)	35.3	15.67	16.50	4.633
Total	342	100.0	36 (10.5)				

Table 39

Number of Adult Sexual Assaults Events

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Number	Median Number	Standard Deviation
0	140	40.9	3 (0.9)	2.1	1.33	1.00	0.577
1	131	38.3	14 (4.1)	10.8	1.36	1.00	0.745

2	54	15.8	13 (3.8)	23.6	1.31	1.00	0.630
3	17	5.0	6 (1.8)	35.3	1.33	1.00	0.516
Total	342	100.0	36 (10.5)				

Table 40

Mann-Whitney U Test Examining the Difference Between Abusive Relationship Groups (No, Yes) on ACE Scores

Substance		N	Mean Rank	Mann-Whitney U	Significance
Emotional Abuse	No	291	160.87	4326.000	0.000
	Yes	51	232.18		
Physical Abuse	No	332	169.22	902.500	0.010
	Yes	10	247.25		
Sexual Abuse	No	309	164.55	2951.000	0.000
	Yes	33	236.58		
Sexual Assault	No	306	162.64	2797.000	0.000
	Yes	36	248.81		

Table 41

Mann-Whitney U Test Examining the Difference Between Abusive Relationship Groups (No, Yes) on Protective Factors

Substance		N	Mean Rank	Mann-Whitney U	Significance
Emotional Abuse	No	290	179.35	4974.500	0.000
	Yes	51	123.54		
Physical Abuse	No	331	173.02	987.500	0.022
	Yes	10	104.25		
Sexual Abuse	No	308	177.68	3024.000	0.000
	Yes	33	108.64		
Sexual Assault	No	305	176.36	3855.500	0.002

PATTERNS OF RELATIONS

	Yes	36	125.60		
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Table 42

Grouped ACE Scores by Substance Use

Substance Use		ACE Score (0) N=140	ACE Score Mild (1-2) N=131	ACE Score Moderate (3-5) N=54	ACE Score Severe (6-8) N=17
Alcohol	No	137 (97.9%)	118 (90.1%)	45 (83.3%)	13 (76.5%)
	Yes	3 (2.1%)	13 (9.9%)	9 (16.7%)	4 (23.5%)
Nicotine	No	134 (95.7%)	117 (89.3%)	45 (83.3%)	12 (70.6%)
	Yes	6 (4.3%)	14 (10.7%)	9 (16.7%)	5 (29.4%)
Cannabis	No	133 (95.0%)	120 (91.6%)	45 (83.3%)	14 (82.4%)
	Yes	7 (5.0%)	11 (8.4%)	9 (16.7%)	3 (17.6%)
Opioid	No	140 (100%)	129 (98.5%)	50 (92.6%)	15 (88.2%)
	Yes	0 (0%)	2 (1.5%)	4 (7.4%)	2 (11.8%)
Sedative	No	137 (97.9%)	130 (99.2%)	50 (92.6%)	14 (82.4%)
	Yes	3 (2.1%)	1 (0.8%)	3 (7.4%)	3 (17.3%)
Psychedelic	No	134 (95.7)	126 (96.2%)	51 (94.4%)	17 (100%)
	Yes	6 (4.3%)	5 (3.8%)	3 (5.6%)	0 (0%)
Stimulant	No	136 (97.1%)	123 (93.9%)	51 (94.4%)	14 (82.4%)
	Yes	4 (2.9%)	8 (6.1%)	3 (5.6%)	3 (17.6%)
Inhalant	No	140 (100%)	125 (95.4%)	50 (92.6%)	16 (94.1%)
	Yes	0 (0%)	5 (3.8%)	4 (7.4%)	1 (5.9%)

Table 43

Substance Use Variables: Alcohol Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	3 (0.9)	2.1	17.40	17.00	1.14
1	131	38.3	13 (3.8)	9.9	18.15	18.00	2.12
2	54	15.8	9 (2.6)	16.7	18.20	18.00	1.69
3	17	5.0	4 (1.2)	23.5			
Total	342	100.0	29 (8.5)				

Substance Use Variables: Nicotine Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	6 (1.8)	4.3	16.67	16.50	0.82
1	131	38.3	14 (4.1)	10.7	17.64	18.00	1.50
2	54	15.8	9 (2.6)	16.7	17.67	18.00	1.32
3	17	5.0	5 (1.5)	29.4			
Total	342	100.0	34 (9.9)				

Substance Use Variables: Cannabis Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	7 (2.1)	5.0	18.13	18.00	2.23
1	131	38.3	11 (3.2)	8.4	15.92	17.00	5.11
2	54	15.8	9 (2.6)	16.7	17.33	18.00	1.80
3	17	5.0	3 (0.9)	17.6			
Total	342	100.0	30 (8.8)				

Table 43 (Continued)

Substance Use Variables: Stimulant Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	4 (1.2)	2.9	18.50	18.50	1.29
1	131	38.3	8 (2.3)	6.1	18.50	18.50	1.53
2	54	15.8	3 (0.9)	5.6	17.33	16.00	3.22
3	17	5.0	3 (0.9)	17.6			
Total	342	100.0	18 (5.3)				

Substance Use Variables: Opioid Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	0 (0)	0.0	18.00	18.00	---
1	131	38.3	2 (0.6)	1.5	18.50	18.50	0.71
2	54	15.8	4 (1.2)	7.4	16.50	15.50	3.11
3	17	5.0	2 (0.6)	11.8			
Total	342	100.0	8 (2.3)				

Substance Use Variables: Sedative Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	3 (0.9)	2.1	18.67	18.00	1.16
1	131	38.3	1 (0.3)	0.8	20.00	20.00	---
2	54	15.8	3 (0.9)	7.4	17.25	17.00	2.06
3	17	5.0	3 (0.9)	17.3			
Total	342	100.0	10 (2.9)				

Table 43 (Continued)

Substance Use Variables: Psychedelic Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	6 (1.8)	4.3	20.00	19.50	2.10
1	131	38.3	5 (1.5)	3.8	18.80	19.00	1.10
2	54	15.8	3 (0.9)	5.6	19.00	19.00	4.00
3	17	5.0	0 (0)	0	---	---	---
Total	342	100.0	14 (4.1)				

Substance use Variables: Inhalant Use

ACE Group	Frequency in ACE Group	Percent in ACE Group	Frequency (Percent) of ACE Group	Percent by ACE Group	Mean Age	Median Age	Standard Deviation
0	140	40.9	0 (0.0)	0	---	---	---
1	131	38.3	5 (1.5)	3.8	18.80	18.00	1.10
2	54	15.8	4 (1.2)	7.4	19.75	19.50	0.96
3	17	5.0	1 (0.3)	5.9	18.00	18.00	0.00
Total	342	100.0	10 (2.9)				

Table 44

Spearman's Rho Correlations Between ACE Scores and Substance Use Variables (No, Yes)

ACE Score	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Alcohol	.220	.000	342
Nicotine	.190	.000	342
Cannabis	.159	.003	342
Opioids	.185	.001	342
Sedatives	.143	.008	342
Psychedelics	.010	.857	342
Stimulants	.118	.029	342
Inhalants	.152	.005	341

Table 45

Mann-Whitney U Test Examining the Difference Between Substance Use Groups (No, Yes) on ACE Scores

Substance		N	Mean Rank	Mann-Whitney U	Significance
Alcohol	No	312	165.19	2562.50	0.000
	Yes	29	239.64		
Nicotine	No	308	165.55	3402.00	0.000
	Yes	34	225.44		
Cannabis	No	312	166.85	3230.50	0.003
	Yes	30	219.82		
Opioids	No	334	168.80	434.50	0.001
	Yes	8	284.19		
Sedative	No	331	169.04	1007.50	0.008
	Yes	11	245.41		
Psychedelic	No	328	171.30	2229.00	0.846
	Yes	14	176.29		
Stimulant	No	324	168.88	2066.00	0.029
	Yes	18	218.72		
Inhalant	No	331	168.52	835.00	0.005
	Yes	10	253.00		

Table 46

Spearman's Rho Correlations Between Mother's and Father's Education and Substance Use

Variables (No, Yes)

Mother's Education Level	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Alcohol	.012	.823	341
Nicotine	-.019	.726	342
Cannabis	-.41	.455	341
Opioids	-.60	.269	341
Sedatives	-.066	.226	341
Psychedelics	-.050	.353	341
Stimulants	-.021	.697	341
Inhalants	.009	.875	340

Father's Education Level	Spearman's Rho Coefficient	Two-tailed Significance	Number Subjects
Alcohol	-.059	.281	341
Nicotine	-.048	.373	341
Cannabis	-.047	.390	341
Opioids	-.085	.390	341
Sedatives	.028	.607	341
Psychedelics	.015	.777	341
Stimulants	.023	.666	341
Inhalants	-.033	.540	341

Education level coded: 1=Less than high school. 2=High school graduate. 3=Some college. 4=two-year college degree. 5=four-year college degree. 6=graduate and professional degrees.

Table 46

Mann-Whitney U Test Examining the Difference Between Substance Use Groups (No, Yes) on Number of Protective Factors

Substance		N	Mean Rank	Mann-Whitney U	Significance
Alcohol	No	313	173.99	3591.500	0.054
	Yes	29	138.84		
Nicotine	No	308	174.62	3968.000	0.030
	Yes	33	137.24		
Cannabis	No	312	172.07	4332.000	0.497
	Yes	30	159.90		
Opioids	No	334	172.05	984.000	0.184
	Yes	8	127.50		
Sedative	No	331	172.23	1407.500	0.183
	Yes	11	133.95		
Psychedelic	No	328	170.83	2233.500	0.872
	Yes	14	174.96		
Stimulant	No	324	173.02	2253.000	0.091
	Yes	18	134.67		
Inhalant	No	331	172.04	1141.000	0.081
	Yes	10	119.60		

Figures

Figure 1

Frequency of ACE Scores

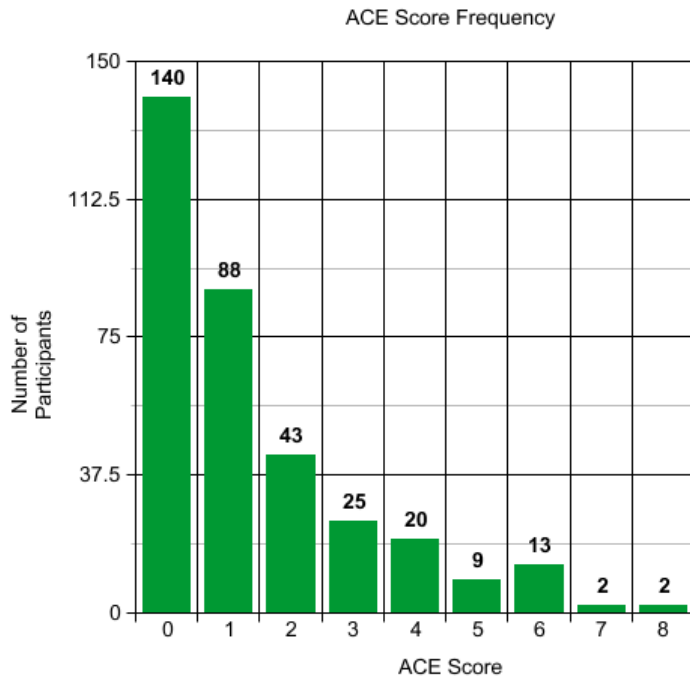


Figure 2

Frequency of ACE Groups

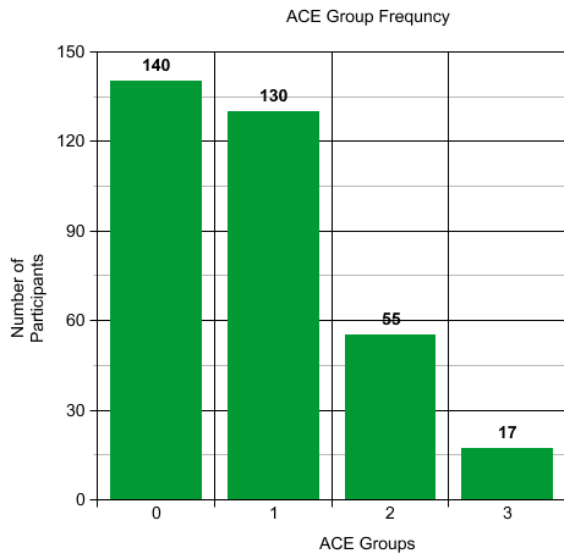


Figure 3

Frequency of Number of Protective Factors

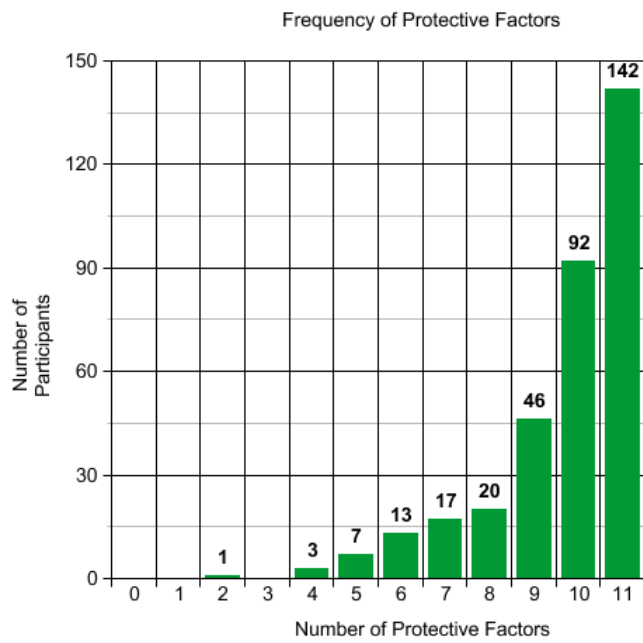


Figure 4

Frequency of Individual Protective Factors

PATTERNS OF RELATIONS

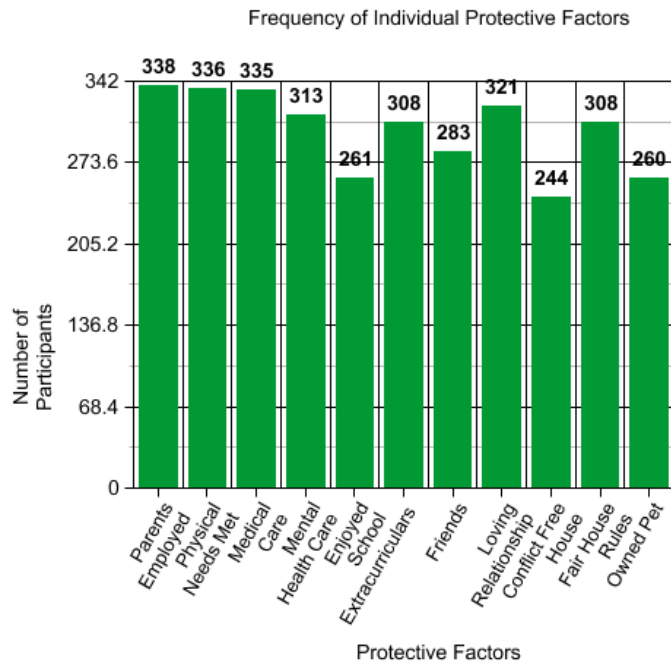
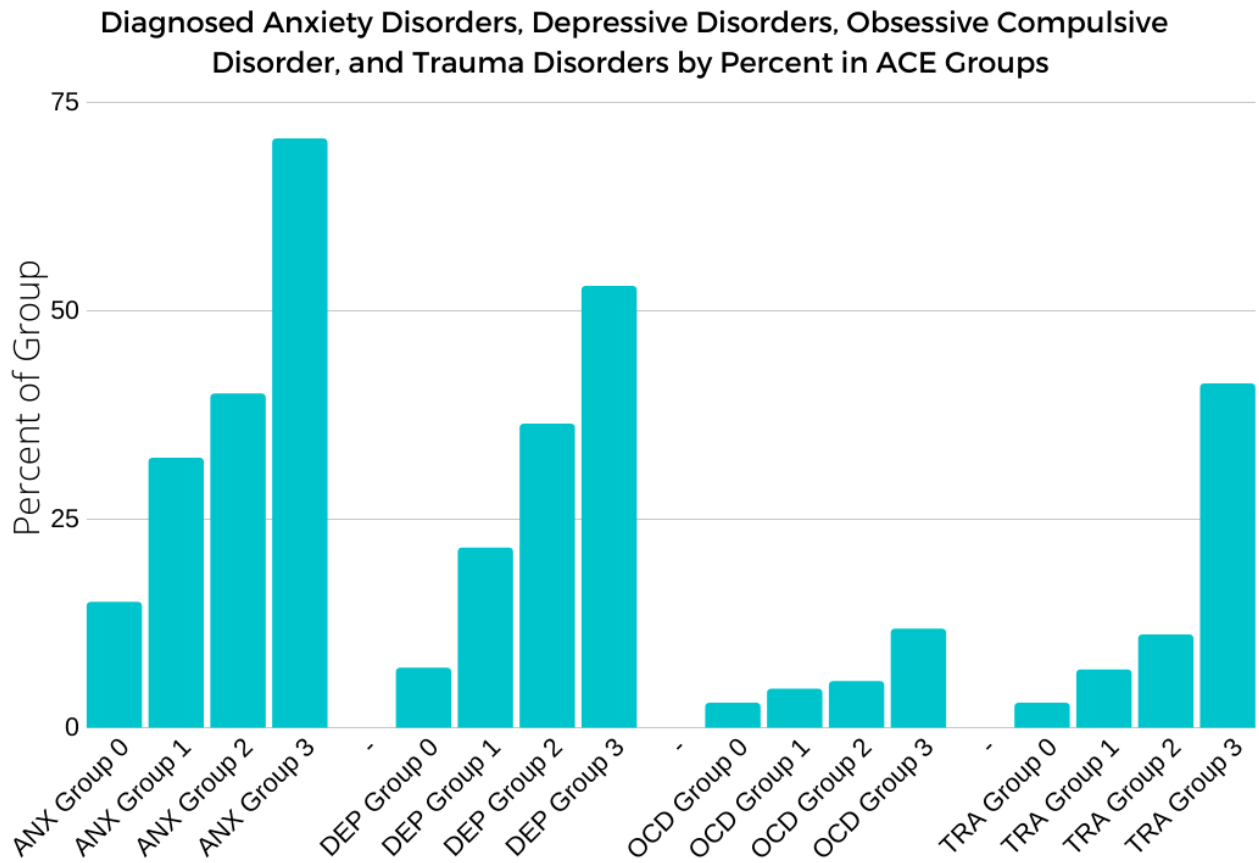


Figure 5

Frequency of Diagnosed Mental Health Disorders By ACE Group

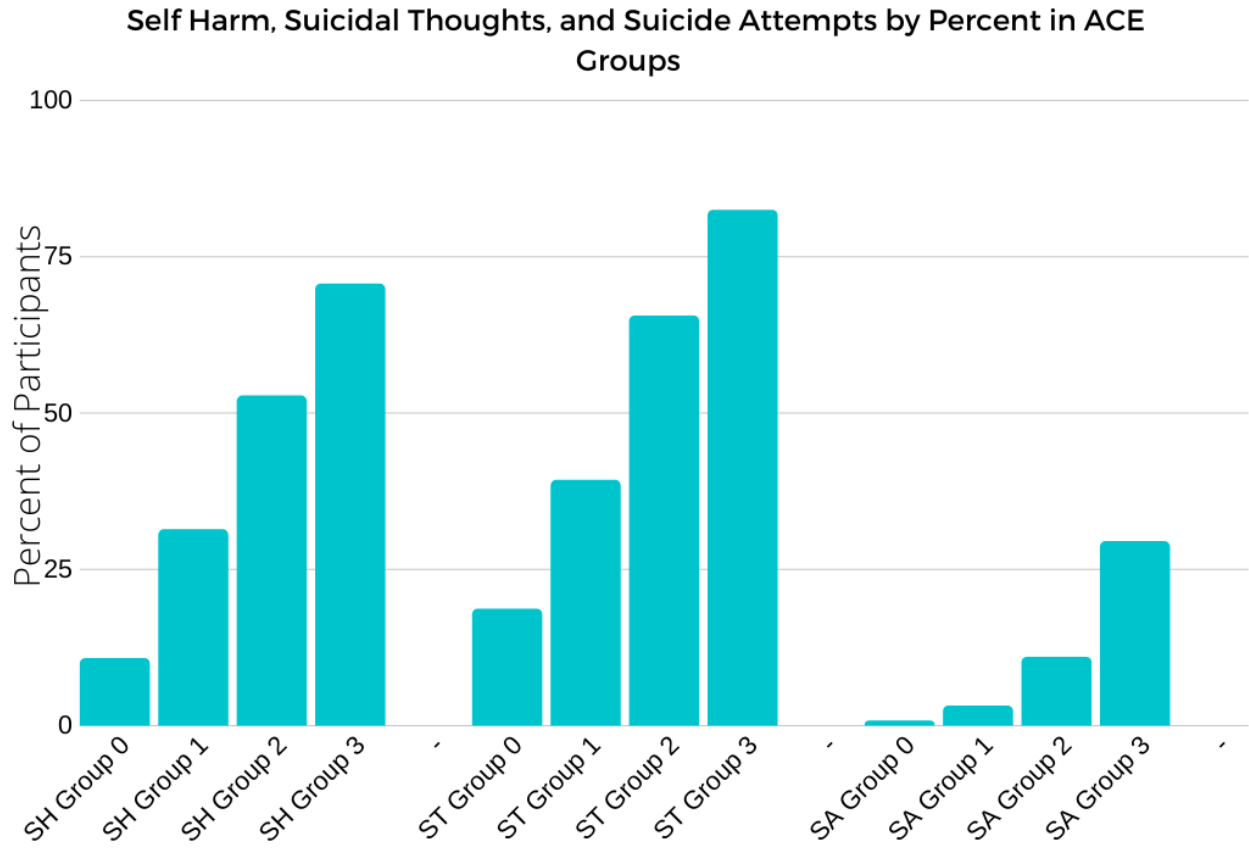


ANX=Anxiety Disorder, DEP=Depressive Disorder, OCD=Obsessive Compulsive Disorder,

TRA=Trauma Disorder

Figure 6

Self Harm Variables by ACE Group



SH=Non-Suicidal Self Harm, ST=Suicidal Thoughts, SA=Suicide Attempt

Figure 7

Mean Age at First Sexual Encounter by ACE Group

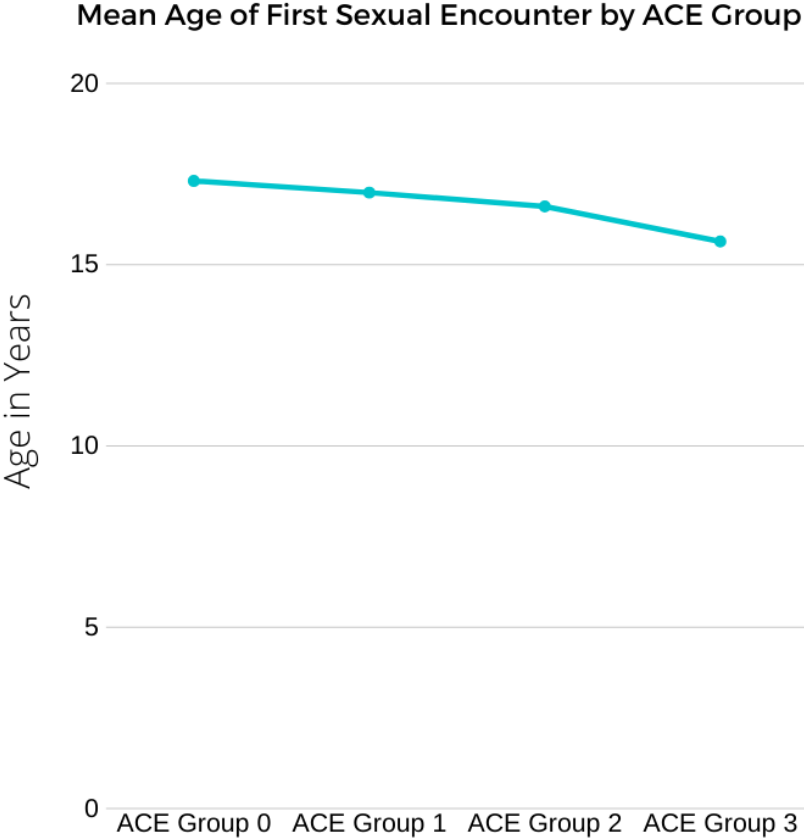


Figure 8

Mean Number of Sexual Partners by ACE Group

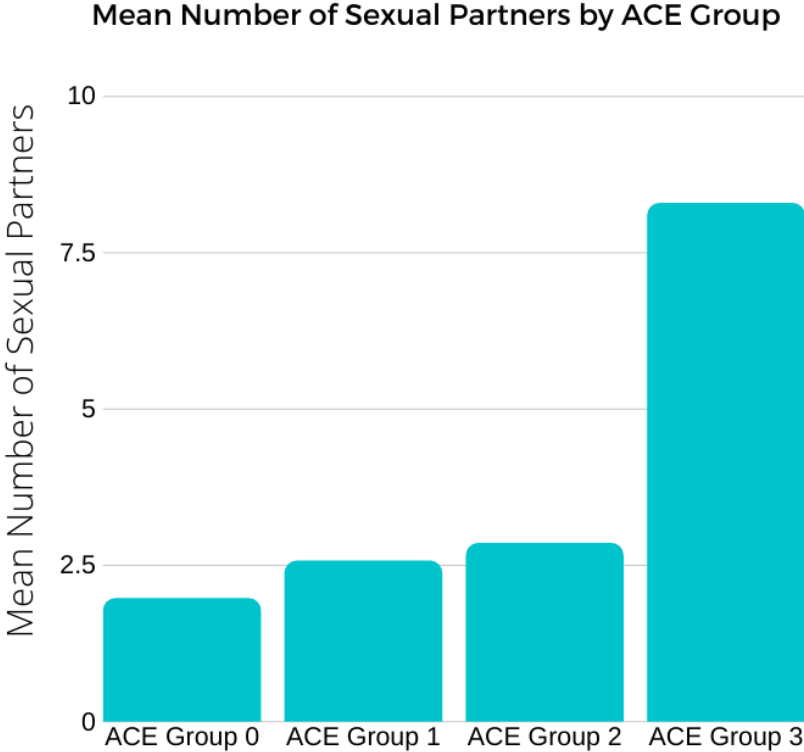
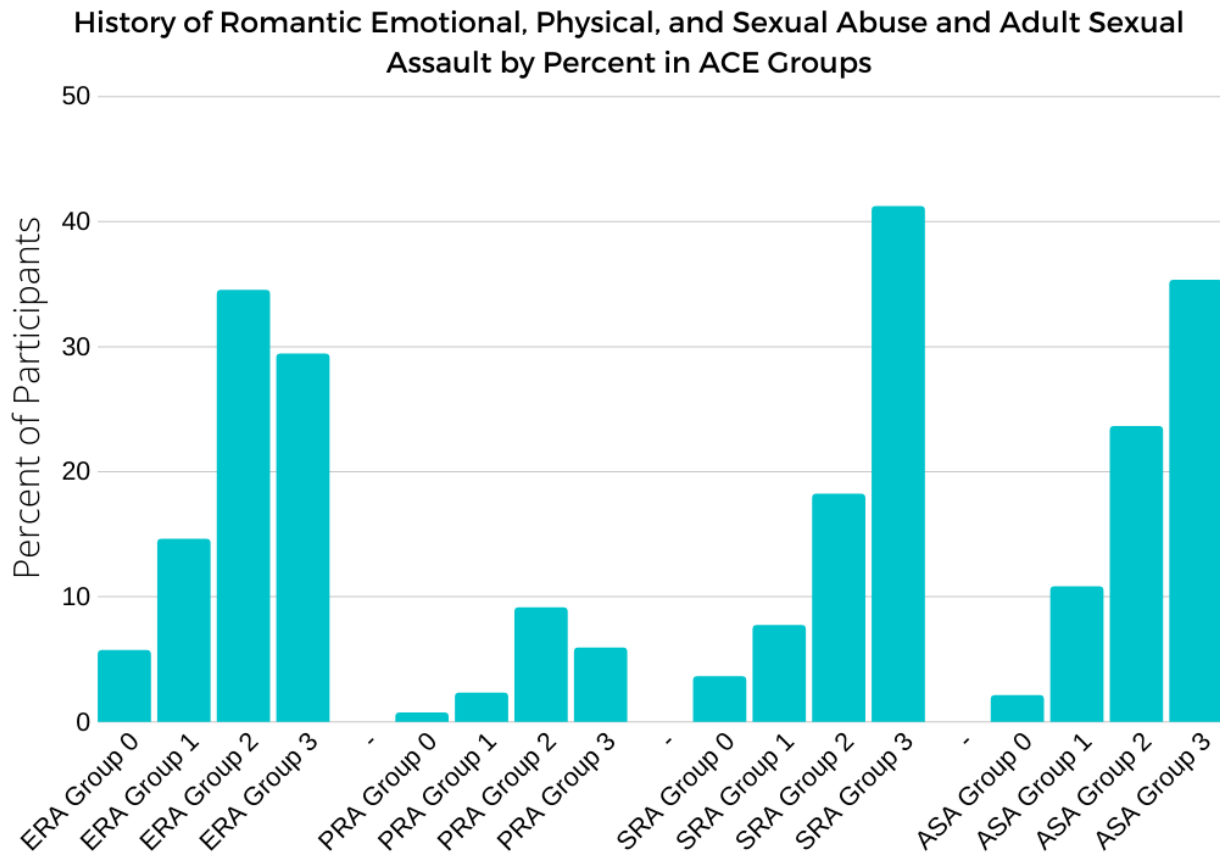


Figure 9

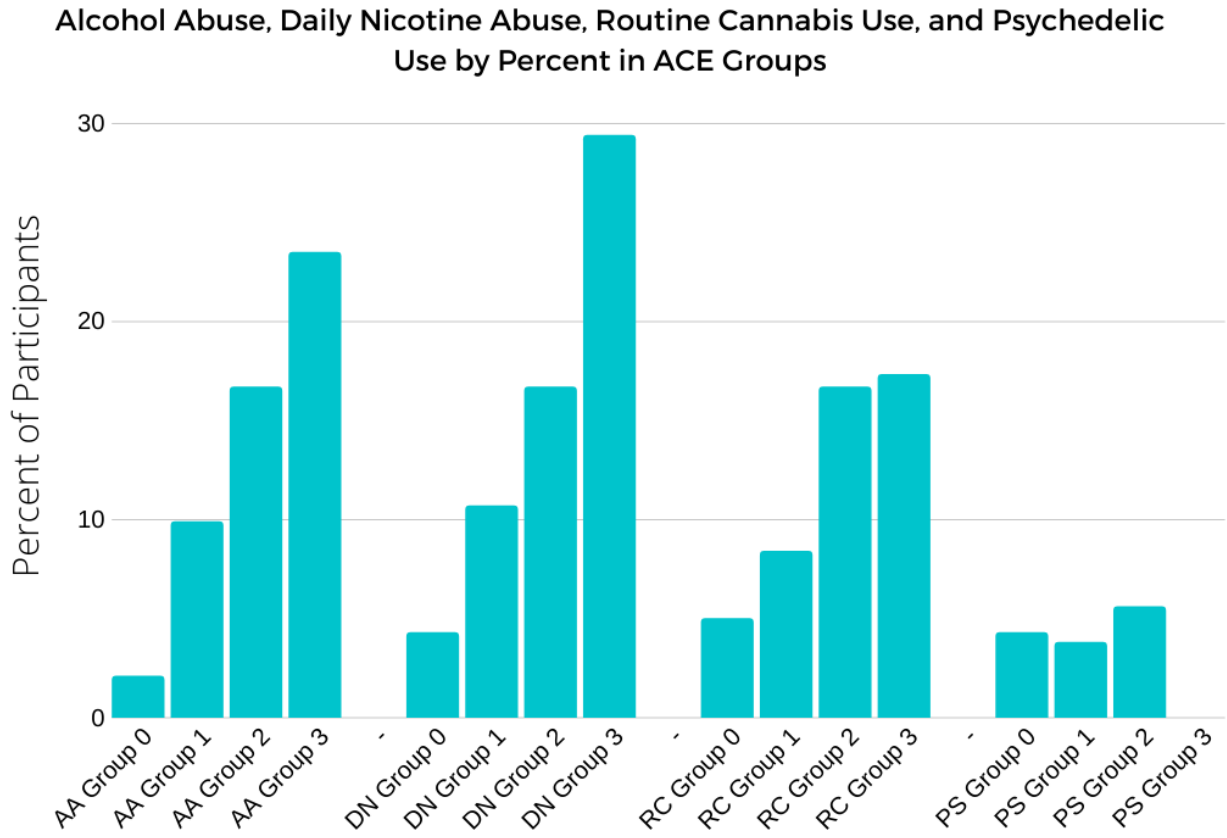
History of Abusive Romantic Relationships and Adult Sexual Assault by ACE Groups



ERA=Emotional Relationship Abuse, PRA=Physical Relationship Abuse, SRA=Sexual Relationship Abuse, ASA=Adult Sexual Assault

Figure 10

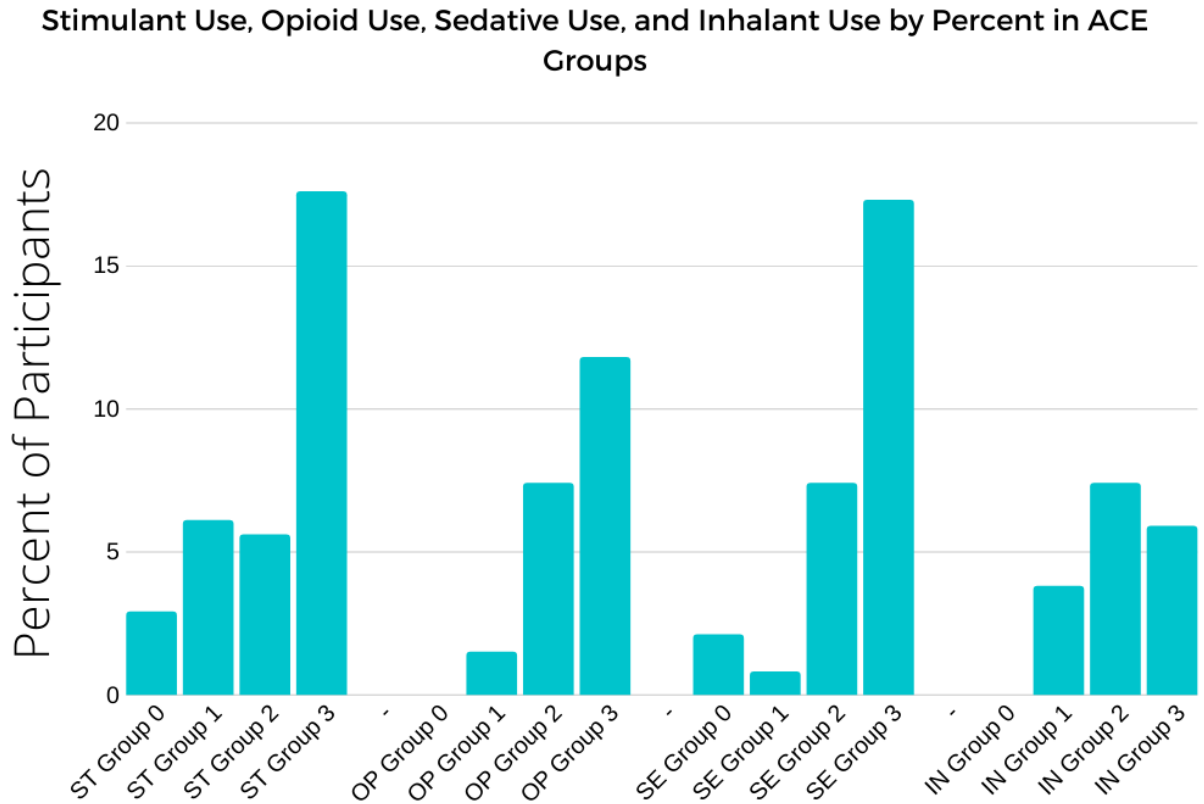
Alcohol Abuse, Daily Nicotine Use, Routine Cannabis Use, and Psychedelic Use by ACE Group



AA=Alcohol Abuse, DN=Daily Nicotine Use, RC=Routine Cannabis Use, PS=Psychedelic Use

Figure 11

Stimulant Use, Opioid Use, Sedative Use, and Inhalant Use by ACE Groups



ST=Stimulant Use, OP=Opioid Use, SE=Sedative Use, and IN=Inhalant Use

Appendix A

Demographics Section

Item	Item Content	Answer Selection
1	Race	White, Black/African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Other (self entry)
2	Gender	Woman, Man, Transgender Woman, Transgender Man, Agender, Non-Binary, Other (self entry)
3	Sexuality	Heterosexual, Homosexual, Bisexual, Asexual, Other (self entry)
4	Social class at William & Mary during 2018-2019 academic year	Freshman, Sophomore, Junior, Senior, Graduate Student
5	Age	Exact Value
6	Growing up, what was the average yearly income for your household?	<\$20,000 \$20,000-\$39,999 \$40,000-\$59,999 \$60,000-\$79,999 \$80,000-\$99,999 \$100,000-\$119,999 \$120,000-\$139,999 \$140,00-\$159,999 >\$160,000

ACE Item Section (Felitti et al., 1998)

Item	Item Content	Answer Selection
7a	Before the age of 18, 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

PATTERNS OF RELATIONS

7b	At what age did this begin (approximately)? Enter 0 if it has been your entire life.	Exact value, Unknown, Not applicable
8a	Before the age of 18, 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
8b	At what age did this begin (approximately)? Enter 0 if it has been your entire life.	Exact value, Unknown, Not applicable
9a	Before the age of 18, 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 or actually have oral, anal, or vaginal sex with you?	Yes, No
9b	At what age did this begin (approximately)? Enter 0 if it has been your entire life.	Exact value, Unknown, Not applicable
10a	Before the age of 18, 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
10b	At what age did this begin (approximately)? Enter 0 if it has been your entire life.	Exact value, Unknown, Not applicable
11a	Before the age of 18, did you often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to	Yes, No

PATTERNS OF RELATIONS

	<p>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?</p>	
11b	<p>At what age did this begin (approximately)? Enter 0 if it has been your entire life.</p>	Exact value, Unknown, Not applicable
12a	<p>Before the age of 18, were your parents ever separated or divorced (include parental abandonment)?</p>	Yes, No
12b	<p>At what age did this begin (approximately)? Enter 0 if it has been your entire life.</p>	Exact value, Unknown, Not applicable
13a	<p>Before the age of 18, was your mother/stepmother or father/stepfather: 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?</p>	Yes, No
13b	<p>At what age did this begin (approximately)? Enter 0 if it has been your entire life.</p>	Exact value, Unknown, Not applicable
14a	<p>Before the age of 18, did you live with anyone who was a problem drinker or alcoholic or who used street drugs?</p>	Yes, No
14b	<p>At what age did this begin (approximately)? Enter 0 if it has been your entire life.</p>	Exact value, Unknown, Not applicable
15a	<p>Before the age of 18, was a household member depressed or mentally ill or did a household member attempt suicide?</p>	Yes, No

15b	At what age did this begin (approximately)? Enter 0 if it has been your entire life.	Exact value, Unknown, Not applicable
16a	Before the age of 18, did a household member go to prison?	Yes, No
16b	At what age did this first occur (approximately)?	Exact value, Unknown, Not applicable

Risk-Taking Behavior and Mental Illness Section

Item	Item Content	Answer
17a	What was your high school GPA (round to nearest tenth)?	Exact value
17b	What is your current college GPA?	Exact value
18a	<p>Have you ever abused alcohol?</p> <p>Alcohol abuse constitutes as fitting three or more of the following criteria:</p> <ol style="list-style-type: none"> 1. Taking the substance in larger amounts or for longer than you're meant to. 2. Wanting to cut down or stop using the substance but not managing to. 3. Spending a lot of time getting, using, or recovering from use of the substance. 4. Cravings and urges to use the substance. 5. Not managing to do what you should at work, home, or school because of substance use. 6. Continuing to use, even when it causes problems in relationships. 7. Giving up important social, occupational, or recreational activities because of substance use. 8. Using substances again and again, even when it puts you in danger. 9. Continuing to use, even when you know you have a physical or psychological 	Yes, No

	<p>problem that could have been caused or made worse by the substance.</p> <p>10. Needing more of the substance to get the effect you want (tolerance).</p> <p>11. Development of withdrawal symptoms, which can be relieved by taking more of the substance.</p>	
18b	If yes, at what age did you begin to abuse alcohol?	Exact value, Not applicable
19a	Have you ever smoked cigarettes or used any other nicotine products everyday or almost everyday (even if you do not now)?	Yes, No
19b	If yes, what age did you start smoking?	Exact value, Not applicable
20a	Have you ever used cannabis everyday or almost everyday (even if you do not now)?	Yes, No
20b	If yes, at what age did you begin using cannabis?	Exact value, Not applicable
21a	Have you ever tried illegal opioids or used legal opioids in a way not prescribed by a doctor (e.g., heroin, fentanyl, codeine, hydrocodone, oxycodone)?	Yes, No
21b	If yes, at what age did you first use them?	Exact value, Not applicable
22a	Have you ever tried psychedelic drugs (e.g., LSD, Shrooms, Ecstasy)?	Yes, No
22b	If yes, at what age did you first use them?	Exact value, Not applicable
23a	Have you ever used a sedative in a way that was not prescribed by a doctor (e.g., Xanax, Valium, Ativan)?	Yes, No
23b	If yes, at what age did this first occur?	Exact value, Not applicable
24a	Have you ever used inhalants to get a high (e.g., glue, nitrous oxide, gasoline, aerosol sprays)	Yes, No
24b	If yes, at what age did you first use them?	Exact value, Not applicable
25a	Have you ever used illegal stimulants or used legal stimulants in a way that was not prescribed by a doctor (cocaine, amphetamines, meth, Ritalin, Adderall)?	Yes, No

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25b	If yes, at what age did this first occur?	Exact value, Not applicable
26a	How many consensual sexual partners have you had (include oral, vaginal, and/or anal intercourse)?	Exact value
26b	At what age did you have your first consensual sexual encounter (include oral, vaginal, and/or anal intercourse)?	Exact value, Not applicable
27a	Have you ever had an unplanned pregnancy from a consensual sexual encounter?	Yes, No
27b	If yes, at what age did this occur?	Exact value, Not applicable
28a	Have you ever contracted a sexually transmitted disease or infection from a consensual sexual encounter?	Yes, No
28b	If yes, at what age did this occur?	Exact value, Not applicable
29a	<p>Have you ever been diagnosed with an anxiety disorder by a professional (doctor, psychologist, counselor, etc.)?</p> <p>Include diagnoses of Generalized Anxiety Disorder, Social Anxiety Disorder, Obsessive Compulsive Disorder, Panic Disorder, Agoraphobia, and/or Post Traumatic Stress Disorder.</p>	Yes, No
29b	If yes, at what age did you first receive this diagnosis?	Exact value, Not applicable
29c	<p>Do you feel as if you may have an anxiety disorder but are undiagnosed by a professional?</p> <p>Symptoms include: worrying that is excessive and challenging to control, restlessness, irritability, difficulty sleeping, muscle tension, impaired concentration, and fatigue.</p>	Yes, No, Already diagnosed
30a	Have you ever been diagnosed with a depressive disorder by a professional (doctor, psychologist, counselor, etc.)?	Yes, No
30b	If yes, at what age were you diagnosed with this disorder?	Exact value, Not applicable
30c	Do you feel as if you may have a depressive disorder	Yes, No, Already diagnosed

	<p>but are undiagnosed by a professional?</p> <p>Criteria includes having 5 or more of the following symptoms over a period of at least two weeks:</p> <ol style="list-style-type: none"> 1. Depressed mood most of the day, nearly every day. 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day. 3. Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day. 4. A slowing down of thought and a reduction of physical movement (observable by others, not merely subjective feelings of restlessness or being slowed down). 5. Fatigue or loss of energy nearly every day. 6. Feelings of worthlessness or excessive or inappropriate guilt nearly every day. 7. Diminished ability to think or concentrate, or indecisiveness, nearly every day. 8. Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. 	
31a	Have you ever purposely harmed yourself to cause pain, in a way that was not in an attempt to commit suicide (e.g., cut yourself, burned yourself, scratching or pinching your skin, purposely bruised your body)	Yes, No
31b	If yes, at what age approximately did you first do this?	Exact value, Not applicable
32a	Have you ever had suicidal thoughts, such as feeling as though life was not worth living, life was too painful to carry on, or that you would be better off dead?	Yes, No
32b	If yes, at what age approximately did these thoughts begin?	Exact value, not applicable
33a	Have you ever attempted suicide?	Yes, No
33b	If yes, how many times have you attempted suicide?	Exact value, Not applicable
33c	If yes, at what age did you first attempt suicide?	Exact value, Not applicable
34a	Have you ever been in a romantic relationship that	Yes, No

	was emotionally abusive (e.g., called you names, socially isolated you, threatened you and/or made you feel worthless)?	
34b	If yes, how many emotionally abusive partners have you had?	Exact value, Not applicable
34c	If yes, at what age approximately did you first experience emotional abuse from a romantic partner?	Exact value, Not applicable
35a	Have you ever been in a romantic relationship that was physically abusive (i.e., he or she hit, choked, cut, or otherwise physically harmed you)?	Yes, No
35b	If yes, how many physically abusive partners have you had?	Exact value, Not applicable
35c	If yes, at what age approximately did you first experience physical abuse from a romantic partner?	Exact value, Not applicable
36a	Have you ever been in a romantic relationship that was sexually abusive (i.e., he or she coerced you into sex, didn't listen to you when you said no to sexual activity, and/or demanded you perform sexual acts that you didn't want to do)?	Yes, No
36b	If yes, how many sexually abusive partners have you had?	Exact value, Not applicable
36c	If yes, at what age approximately did you first experience sexual abuse from a partner?	Exact value, Not applicable
37a	Have you ever been sexually assaulted (forced anal, vaginal, or oral sex by genitals, digits, or foreign objects) by EITHER, someone who was less than five years older than you before the age of 18, OR by someone of any age after the age of 18?	Yes, No
37b	If yes, how many individuals have done this to you?	Exact value, Not applicable
37c	If yes, at what age approximately did this first happen to you?	Exact value, Not applicable

Protective Factor Section

38a	Mother's education level	Less than high school, High school diploma, Associates degree, Some college, College Diploma, Graduate Degree (Masters, PhD), Professional degree (MD, JD)
38b	Father's education level	Less than high school, High school diploma, Associates degree, Some college, College Diploma, Graduate Degree (Masters, PhD), Professional degree (MD, JD)
39	Before the age of 18, at least one of my parents was always or almost always employed	Yes, No
40	Before the age of 18, all my basic physical needs, such as clothes, food, and stable shelter, were always or mostly always met	Yes, No
41	Before the age of 18, I always or almost always had the ability to seek medical care when necessary	Yes, No
42	Before the age of 18, I had access to mental health care	Yes, No, Never needed
43	Before the age of 18, I regularly engaged in extracurricular activities, such as clubs, sports, or art/music groups, at school	Yes, No
44	Before the age of 18, I had a stable, loving relationship with at least one parent or relative	Yes, No
45	Before the age of 18, I always or mostly always had at least one friend I felt I could confide in and turn to for emotional support	Yes, No
46	Before the age of 18, my family owned a pet or pets that I felt close to	Yes, No
47	Before the age of 18, the relationships in my household were always or almost always stable and/or free from serious conflict	Yes, No

PATTERNS OF RELATIONS

48	Before the age of 18, my parents/guardians enforced fair but consistent household rules (e.g., curfew, bedtime, picking up after yourself, hygiene routines)	Yes, No
49	Before the age of 18, I always or almost always enjoyed school	Yes, No