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The Effects of Childhood Trauma on the Development of Substance Abuse and Eating Disorders in College Populations

Elizabeth Hoover
Department of Psychology
University of North Carolina at Asheville
One University Heights
Asheville, North Carolina 28804 USA

Faculty Advisor: Dr. Heather Ulrich

Abstract

College can be a highly stressful part of life, which can result in students being at increased risk for developing high risk health behaviors including substance abuse and eating disorders. Adverse life experiences often play a large role in increasing students' susceptibility to these disorders and behaviors. The Adverse Childhood Experiences (ACE) Survey is a tool used to measure the relationship between childhood trauma and the chronic diseases and social/emotional tribulations that individuals develop as adults. The current study sought to determine the correlation between adverse childhood experiences and both substance abuse and eating disorders in college populations. Fifty-nine UNCA undergraduates completed the ACES questionnaire, the Eating Disorder Examination Questionnaire (EDE-Q), and the Adolescent Alcohol and Drug Involvement Scale (AADIS). Results indicated no significant relationship between ACE scores and later eating disordered behavior or substance use/abuse in this college population. While these results are not consistent with an extensive body of literature indicating a relationship between these variables in later adulthood they do suggest that there are other factors unique to college students that may have negated this relationship in this subset of our population.

1. Introduction

The Adverse Childhood Experiences (ACE) Study is an ongoing, ten question survey supported by Centers for Disease Control and Prevention in Atlanta, GA, and Kaiser Permanente in San Diego, CA., that examines the link between childhood trauma and the chronic diseases individuals develop as adults including heart disease, lung cancer, diabetes and many autoimmune diseases, as well as social and emotional tribulations including, depression, violence, eating disorders, and suicide. The study was created by Dr. Anda, an Epidemiologist for the Centers for Disease Control (CDC) and Dr. Felitti, and internist at Kaiser Permanente, who were both working on similar projects revolving around the psychosocial and clinically observed origins of health-related behaviors and disease such as obesity, drug addiction, alcohol abuse, and so on. They both decided to team up and prepare a large-scale epidemiologic study of the relationship of childhood traumatic events and later health related behaviors[1].

The ACE study was the first of its kind to look at health problems in relation to multiple types of abuse rather than one particular type of abuse as previous research had done. In 2003, Dr. Anda and Dr. Felitti reported that 17% of the participants had an ACE score of 4 or higher and that these participants were twice as likely to be smokers, 12 times more likely to have attempted suicide, 7 times more likely to be alcoholic, and 10 times more likely to have injected street drugs[2]. These findings indicate that trauma experienced during childhood has a significant impact on the development of later risky behavior.

Dr. Anda and Dr. Felitti also later examined the relationship between childhood traumatic stress and the leading causes of morbidity, mortality, and disability in the United States[3]. It was determined that participants with an ACE score of 4 or higher had a significantly higher lifetime struggle with depression and multiple suicide attempts. It was also found that participants with an ACE score of 4 or higher were significantly more likely to have a continued

prescription for antidepressants even fifty years later. A similar relationship was found when comparing participant's ACE scores with later hallucinations. As for health risks, researchers found that as the ACE scores rise so do the chances that the participants will have an addiction to adult smoking, alcoholism and intravenous drug use. For sexual behavior, researchers found that teen sexual behaviors such as teen pregnancy and intercourse increased significantly with a rise in ACE scores. It was also found that high ACE scores predicted higher rates of liver disease, chronic obstructive pulmonary disease, coronary artery disease, and autoimmune disease. Ongoing research will continue to examine the relationship of ACE scores to later health care costs[3].

As these studies have shown, there are numerous benefits from examining the long-term implications of childhood trauma and how it plays a role in our future health and wellbeing. Being able to determine the results of such trauma will help researchers determine ways to provide better preventative care and treatment.

1.1 College and Trauma

College is a very stressful and important time in an individual's life and determining the effects of adverse childhood experiences on the ability to functioning adaptively in college is much needed to help shape preventative healthcare and treatment approaches. Smyth and colleagues[4] researched college populations and more specifically, the prevalence, nature, severity, PTSD, and disclosure of adverse events in a diverse college population of 6,052 participants. Their participants completed a customized survey consisting of multiple questions concerning different adverse events such as the death of a loved one, traumatic sexual experience, as well as the severity of the experience. They found that 56%-85% of participants experienced adverse life events[4]. Although these adverse life events can lead to numerous negative outcomes, this study aimed to examine two specific outcomes that have been found to occur at large rates within college populations, namely, substance abuse and eating disorders.

1.2 College and Substance Abuse

Substance use in college populations is a large problem that has been shown to affect approximately 70% of college students in the US[5]. According to a study completed by Columbia University, during 1993 to 2005 the rates of binge drinking significantly increased to a steady 40%, and the abuse of prescription drugs have sharply increased (343% for opioids, 93% for stimulants, 450% for tranquilizers, and 225% for sedatives). Researchers determined that these increases in substance abuse have lead to a 6% increase in alcohol-related deaths, a 38% increase in alcohol-related injuries, and a 21% increase in alcohol related arrests[5]. In a related study, Gfroerer and his associates[6] determined that the college-aged participants not living with their parents had the highest amount of substance use in comparison with college students living with their parents, high-school students living with their parents, and high-school students not living with their parents[6].

There have been many previous experiments linking adverse childhood experiences to the later onset of adult addictive behavior. For example, Strine and her fellow researchers[7] examined the relationship between adverse childhood experiences and alcohol problems in adults. Researchers surveyed 7,279 Kaiser-Permanente members over the age of eighteen. All participants had previously fulfilled a standardized health appraisal questionnaire and researchers offered a free comprehensive medical exam as a follow up. Following the medical exam, participants were mailed a Family Health History survey. Researchers found that participants who experienced trauma during their childhood were significantly more likely to encounter alcohol problems in their adult life[7].

In addition to this research, Ford and his associates[8] examined the relationship between adverse childhood experiences and smoking in a random sample of adults across five states. The researchers used information from the 2009 Behavioral Risk Factor Surveillance System to compare the adverse childhood experience score to the participant's current smoking habits. It was found that participants who recorded an ACE score of five or higher were significantly more likely to be current smokers[8].

There has also been a copious amount of research linking ACE scores to later health problems such as the study by Chartier et al.[9] in which researchers conducted a two part survey that examined the effects of childhood adverse events on overall adult health as well as the effects of accumulation of many adverse events on overall health. Researchers found that participants with child sexual abuse had a higher risk of developing poor adult health and also found that as adverse childhood events increased, adult health decreased[9]. Overall, there is an extensive body of research supporting the high rate of occurrence of substance use and abuse in college populations, as well as supporting a possible link between these behaviors and early trauma.

1.3 Eating Disorders in College

Eating disorders (EDs) are highly prevalent and rapidly increasing in college populations throughout the United States[10]. These debilitating disorders arise from a variety of factors, including physical, psychological, interpersonal, and social issues[11]. Research has shown that there is a direct link between eating disorders and multiple forms of childhood abuse[12]. The destructive effects of EDs make it vital to research the prevalence and risk factors of diverse populations, such as universities.

Eating disorders, such as anorexia nervosa (AN), bulimia nervosa (BNS), binge eating disorder (BED), and eating disorders not otherwise specified (EDNOS), feature severe emotions, attitudes, and behaviors concerning weight and food issues[11]. Anorexia nervosa is characterized by self-starvation, excessive weight loss, and an extreme fear of being "fat." Bulimia nervosa encompasses a cycle of binge eating and compensatory behaviors such as self-induced vomiting, and misuse of laxatives. Binge eating disorder is characterized by recurrent binge eating without the consistent use of compensatory behaviors to offset the bingeing. Eating disorders not otherwise specified (ED-NOS) are eating disorders that do not meet the exact criteria for anorexia or bulimia but are just as serious and can include a wide variety of signs and symptoms[11].

It is crucial to understand the prevalence of EDs in order to increase awareness and receive funding for prevention and treatment. Although these disorders do not discriminate between gender, women do have a higher risk than men. Twenty million women and ten million men will suffer from an ED at some point in their life[13]. Unfortunately, these rates are only increasing. Since the 1960s, eating disorder incidence rates have doubled[14]. This trend may be attributed to the surge of eating disorders in college students. From 1998 to 2008, the number of students engaging in eating disordered behavior increased in both sexes. These increases are due in part to the number of students meeting the criteria for ED-NOS[15]. Eisenberg et. al screened 56% of students within a college population for ED symptoms and founded that 13.5% of female and 3.6% of male college students tested positive. Only 20% of students with positive screens had received treatment within the past-year[16]. Therefore, despite the high rates of eating disorders within college populations, many students are not receiving the treatment they need.

Although the rates of EDs are high, the are woefully underfunded. Without funding, it is difficult for those with eating disorders to get adequate treatment. In 2011, research dollars spent on eating disorders averaged $.93 per affected individual, compared to $88 for Alzheimer's disease, $81 for Schizophrenia, and $44 for Autism. Meanwhile, eating disorders are six to eight times more prevalent in individuals[17]. EDs have high corresponding rates of hospitalizations, psychiatric comorbidities, and mortality[15]. Anorexia nervosa has the highest mortality rate out of all psychiatric disorders[18]. Fortunately, there are known causes and risk factors that can be addressed before the development of an eating disorder. Young adults may also suffer from past childhood abuse, with one in four (25.3%) having experienced severe maltreatment[19].

Emotional abuse, physical abuse, and sexual abuse are related to the development of an eating disorder[20]. One study found that 29.5% of individuals with eating disorders were sexually abused during childhood[21]. Research also indicates that childhood emotional abuse has the greatest effect on the development of eating disorders[22]. However, outcomes are not the same for all abuse survivors. Several different factors can mediate the relationship between abuse and EDs, such as re-victimization[12] and depression[20]. Other factors include: the child's age when the abuse occurred; the type of maltreatment (physical abuse, neglect, sexual abuse, emotional abuse, etc.); the frequency, severity, and duration of the abuse; and the relationship between the child and the perpetrator[23].

The prevalence and harmfulness of both eating disorders and childhood abuse make the two a lethal combination. The correlation between eating disorders and childhood abuse must be studied in order to offer more effective treatment and prevention programs. The more risk factors that healthcare providers are aware of, the greater the chance they can prevent and treat serious health issues.

The current study sought to determine the correlation between adverse childhood experiences and both substance abuse and eating disorders in college populations.

2. Method

2.1 Participants

Fifty-nine undergraduate students from the University of North Carolina at Asheville (48 females, 10 males, 1 undisclosed) were recruited through the means of receiving class credit for participation. Students were notified of

the experiment through flyers around campus as well as the spread by word of mouth. All participants were between the ages of 18-60 with varying ethnic backgrounds. Some limitations we encountered when attempting to gain participants for this experiment included difficulties finding a large enough male population, obtaining a large sample, as well as providing enough incentive for participants who were not psychology students..

2.2 Measures

The data for this experiment was collected through the means of anonymous surveys. Every participant received a packet including an Adverse Childhood Experiences (ACE) survey, an Adolescent Alcohol and Drug Involvement Scale (AADIS), as well as the Eating Disorder Examination Questionnaire (EDE-Q).

2.2.1 ace questionnaire

The Ace questionnaire is a 10-item scale developed by Anda and Felitti that examines whether an individual experienced 10 different types of adverse life experiences prior to the age of 18. These events include physical abuse, emotional abuse, sexual abuse, neglect, parental separation and divorce, exposure to domestic violence, exposure to substance abuse, exposure to familial mental illness, and familial incarceration. Participants receive a score of 1 for each life event that they experienced, which can be totaled to gain the overall ACE score.

2.2.2 AADIS

The AADIS scale is a screening tool developed to examine adolescent substance use. This scale was chosen because it is the most comprehensive and in depth survey to determine a drug or alcohol addiction in young adults such as college students. Upon searching for an appropriate scale the AADIS scale was determined to be to most commonly used scale to examine substance use in younger populations due to its in depth inquiry and validity. The scale consists of questions regarding the type, frequency, duration, and overall life impacts of substance use.

2.2.3 EDE-Q

The Eating Disorder Examination-Questionnaire is commonly used to determine eating psychopathology. It is considered to be a reliable instrument for assessing eating disorder attitudes in both male and female undergraduate students[24]. The EDE-Q is a self-report version of the EDE. It is has four subscales: restraint, weight concern, shape concern, and eating concern, as well as on overall global score for eating disordered behavior.

2.3 Method

After signing a consent form for research participation each participant was given a packet containing an ACE survey, AADIS scale, and EDE-Q questionnaire. Once the surveys were completed, each participant placed the surveys back into the packet, sealed the envelope, and returned them to the principle investigator. This security allowed for the participants to have full confidentiality and ability to answer the survey questions as honestly as possible. Each package and survey was numbered allowing the researchers to ensure that the individual ACE, AADIS, and EDE-Q surveys remained together. All survey information was coded for additional confidentiality and analyzed with SPSS statistical software. Results were tested for outliers and to ensure that the data met all the requirements for the statistical examination. Pearson's r was calculated to compare ACE scores with substance use and eating disordered behavior.

3. Results

As expected, varying ACE scores were discovered, ranging from 0-9 with the average of the population reporting an ACE score of 1 (Figure 1). The AADIS scale is split into two parts, substance use history and current substance use including frequency, duration, means of obtaining substances, and effects on lifestyle. When comparing total ACE scores to individual tobacco use, alcohol use, marijuana use, and other drug use no significant relationship was found for any of the above listed factors (Table 1). In addition, no significant relationships were found between Ace

scores and any of the scales on the EDE-Q (Table 2). A significance value of .05 was used to determine statistical significance. As can be seen from the results, neither substance use nor eating disorders was significantly related to ACE scores (Tables 1 & 2).

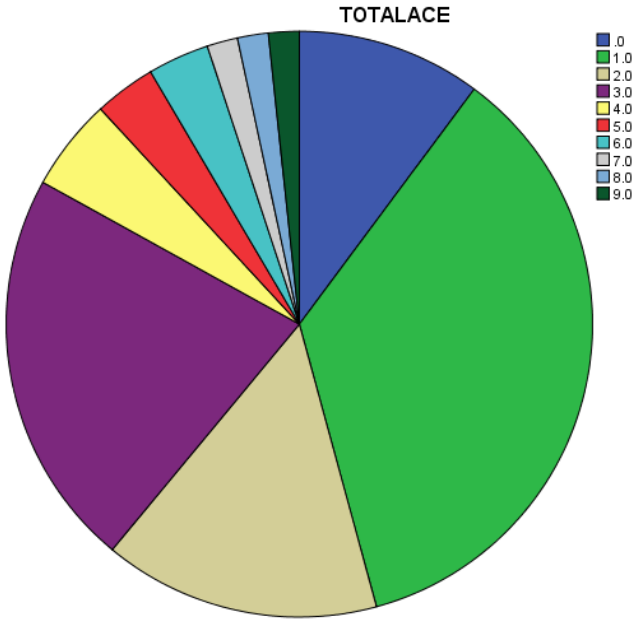

Figure 1. Individual ACE score frequencies within the participant population.

Table 1. ACE scores in comparison to each substance and corresponding Pearson R and significance values.

Substance Use Results

Total Ace Score x Total Substance Abuse Score
Pearson r = .051
Sig (2 tailed) = .699

Total Ace Score x Smoking
Pearson r = .132
Sig (2 tailed) = .32

Total Ace Score x Alcohol Use
Pearson r = .063
Sig (2 tailed) = .636

Total Ace Score x Marijuana Use
Pearson r = .047
Sig (2 tailed) = .723

Total Ace Score x Other drugs
Pearson r = .157
Sig (2 tailed) = .234

Table 2. Ace scores in comparison to each EDE-Q subscale and corresponding Pearson R and significance value.

Eating Disorder Results

Total Ace x Restraint in Eating

Pearson r = .054
Sig (2 tailed) = .685

Total Ace x Eating Concerns

Pearson r = .008
Sig (2 tailed) =.953

Total Ace x Shape Concern

Pearson r = .160
Sig (2 tailed) = .225

Total Ace x Weight Concern

Pearson r = .098
Sig (2 tailed) =.460

Total Ace x Global Eating

Pearson r =.093
Sig (2 tailed) = .481

4. Discussion

For many individuals college is a time for exploration and experimentation in which substance use and eating habits loom large. According to research performed by Anda and Felitti (2009) there is a significant relationship between ACE scores and the development of later risky behavior. The fact that this study determined no such relationship in the college population is somewhat surprising. It begs the question, "What happens between college age and later adulthood that changes the dynamic between these variables resulting in a significant relationship later in life?"

Researchers believe that there are many reasons to explain the difference in relationships in these variables between college years and adulthood. For one, college is a time of exploration and experimentation, which could mean that these behaviors are more dispersed throughout the college population as a whole. For example, it is often viewed as socially acceptable to drink excessively on a regular basis during the college experience but once an individual has reached adulthood, drinking excessively is perceived as a problem. This observation was confirmed in the current study by the fact that over half of the participants reported engaging in frequent use of alcohol (several times a month or more), and approximately 40% percent reported frequent use of marijuana (several times a month to multiple times a day).

In regards to the lack of relationship between eating disorders and ACE scores it is important to highlight that the current study did not find a significant rate of eating disordered behavior within our population. This could be due to the study's small sample size, or to a factor unique to the small liberal arts community in which the study occurred such as, a popular healthy eating initiative.

Another factor to consider when examining these results is the fact that college itself is a selective subgroup of the general population. By only studying college students, researchers are excluding a large population of people at the same age (ca. 18-22 years) who might demonstrate a significant relationship between ACE scores and later risky behavior. It is also important to emphasize the fact that this study did not account for resiliency of the participants. It is possible that some of the individuals that recorded higher ACE scores had participated in some form of therapeutic care, which prevented them from forming later risky behaviors. In addition to these factors, researchers could also account for these results in the fact that college may act as a protective factor in itself, allowing for exploration while in turn, preventing the development of later risky behaviors. Finally, it is important to examine the scales used for data collection themselves. The AADIS scale was built for adolescents and did not account for or differentiate between the commonality of substance use in college populations.

Further research is needed to examine these issues and identify specifically what excludes the college population from showing a significant relationship between childhood trauma and later risky behavior, namely, substance abuse

and eating disorders. It is important to consider that a larger number of participants may be needed in order to achieve adequate statistical power.

This study had a few limitations that may have influenced the results. The major limitation of this method of research was the limited number of participants. Another concern with this method was that attending such a small institution posed the problem of knowing some of the participants and in turn, even with privacy, participants may not be truly honest with their answers because of their relationship with the researchers.

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