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Resiliency As A Moderating Factor For The Impact Of Adverse Childhood Experiences On Substance Use In American Indian And Caucasian College Students

Emily Marge Sargent

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RESILIENCY AS A MODERATING FACTOR FOR THE IMPACT OF ADVERSE
CHILDHOOD EXPERIENCES ON SUBSTANCE USE IN AMERICAN INDIAN AND
CAUCASIAN COLLEGE STUDENTS

by

Emily Sargent
Master of Arts, University of North Dakota, 2017

A Dissertation

Submitted to the Graduate Faculty

of the

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for the degree of

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04/24/2020

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DEDICATION

I would like to dedicate this dissertation project to the Anishinaabe people of the White Earth Band of the Minnesota Chippewa Tribe. This project is also dedicated to one special tribal member and past chairman of White Earth, my late grandfather Marvin Sargent, Senior. His passion was supporting American Indian youth in achieving higher education in order to help their tribal communities. His spirit has guided my doctoral training journey and continues to provide me with strength in offering healing to our people. Miigwech (Thank you).

ABSTRACT

College students engage in frequent substance use behaviors and experience related consequences. Previous research suggests American Indians (AIs) experience higher rates of substance use and related consequences. Further, AIs may experience negative substance use outcomes given higher rates of adverse childhood experiences (ACEs). However, resiliency (i.e., experiencing positive outcomes despite adversity in one's life) may be one factor that moderates the relationship between ACEs and substance use to in order to reduce use and negative consequences. The current study examined alcohol and drug use/consequences, ACEs, and resiliency among AI ($n = 69$) and Caucasian (CA; $n = 91$) university students via paper and online surveys. Results demonstrated no significant differences between alcohol and drug use/consequences between AI and CA students. Further, findings showed AI students had significant higher resiliency and ACE scores. Lastly, CA students ($b = 0.39$, $SE = 0.12$, $t = 3.24$, $p < .01$) participants had greater drug use/related consequences when also high in ACEs; however, AI students did not experience higher drug use/related consequences when also high in ACEs. This study was the first to examine the relationship between alcohol and drug use/consequences, resiliency, and ACEs among AI and CA university students. AI and CA college students are using substances and experiencing related consequences similarly, despite AI students experiencing more adversity in childhood. Examining the relationship between these variables may enhance intervention/prevention efforts among

college students and contribute to research on AI population and current substance use behaviors.

CHAPTER I

INTRODUCTION

Resiliency as a Moderating Factor for Adverse Childhood Experiences and Substance Use in American Indian and Caucasian College Students

Previous research has suggested American Indians (AI) tend to have higher rates of alcohol and drug use and experience more negative related consequences in comparison to Caucasians. Further, previous literature suggests college students report alcohol and illicit drugs at a higher rate and experience more related consequences as a result of use; however, these findings are predominantly with the Caucasian college student sample, thus, not generalizable with other racial/ethnic minority students. More specifically, there is limited research examining the nuances of what variables contribute to rate of substance use and protective factors for AI students. AIs have undergone historical trauma, which is notably limited in the Caucasian population, and experience intergenerational alcohol and drug use at a higher rate. As a result of this, AIs may also endure a higher rate of adverse childhood experiences (ACEs). The adversities and challenges may lead to resiliency and be a protective factor against problematic alcohol and drug use. This relationship may be particularly pronounced in AIs attending college. To date, there is little literature examining resiliency as a protective factor for substance use as a result of ACEs among AI college students.

Alcohol Use among College Students

Substance use among college students is still a top health concern on college campuses, despite efforts to reduce use and substance-related consequences over the past two decades (Johnston, O'Malley, & Bachman, 2002; Ward & Ridolfo, 2011; Messina et al., 2014; Champion et al., 2015). Specifically, the rate of alcohol consumption on college campuses has stayed consistent for the past two decades, notwithstanding previous research and interventions aiming to decrease alcohol use problems (Champion et al., 2015; Wechsler & Nelson, 2006). Past research has demonstrated 44% of college students who attend a four-year university participate in binge drinking behaviors (i.e., 4 or more drinks in one episode for women, and 5 or more drinks in one episode for men; Champion et al., 2015; Wechsler & Nelson, 2006). In addition, according to a national survey conducted in 2012, approximately 40% of full-time enrolled college students (ages 18-22), reported engaging in at least one binge drinking episode in the past month (Substance Abuse and Mental Health Services Administration, 2014). Further, research indicates the prevalence of alcohol use is higher among college students compared to their non-attending peers (Johnston et al., 2000; O'Malley and Johnston, 2002; SUMHSA, 1999). For example, 18% of college students met diagnostic criteria for an alcohol use disorder, where as 15% of non-college attending peers met criteria (Slutske, 2005). Overall, there is a substantial amount of existing research demonstrating high rates of alcohol use among the college student population.

Previous research suggests Caucasian college students have the highest rate of heavy drinking behavior, black college students have the lowest rates of drinking, and Hispanics have intermediate rates (O'Malley and Johnston, 2002). However, a few

researchers have examined AI college student alcohol use. For example, in a Thesis research project, results showed that past month drinking was significantly higher for Caucasian students compared to American Indian college students (Looby, Luger, & Guartos, 2017). There were no differences for the past 6 months when comparing Caucasian and American Indian college students. Similarly, previous researchers have found when comparing AI college students to their Caucasian peers there are no significant differences in level of alcohol use (Sargent, 2017; Ward & Ridolfo, 2011). Nevertheless, more research on AI college students is needed in order to understand impacting factors that contribute to their substance use patterns.

Negative Alcohol-Related Consequences. Previous literature suggests college students who engage in heavy/binge drinking are 10 times more likely to experience the following consequences: have unprotected sex and/or experience unplanned sexual activities, have legal problems, become physically injured, and damage property compared to non-heavy/binge drinkers (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). More so, there is an association between binge drinking and driving under the influence, with high rates of college students reporting drunk driving compared to non-binge drinkers. Additionally, Wechsler (1994) indicated approximately half of college-students experienced the following five out of twelve problems: having a hangover, alcohol poisoning, missing class, engage in unplanned sex, violence and aggression, doing something that is regretful, etc. Messina et al. (2014) showed increased alcohol use/related negative consequences and impulsive behaviors significantly increase the susceptibility of a student engaging in non-medical prescription drug use and use comorbid with alcohol consumption. Overall, previous and current

research examining alcohol related consequences presents a large concern for the high prevalence rate of alcohol use among college students, and negative effects they may experience.

Illicit Drug Use among College Students

The rate of illicit drug use has increased for older grade high school students transitioning into college and college students since the 1990s, despite prevention efforts to reduce use and related-consequences (Johnston, O'Malley, & Bachman, 2002; Kuo et al., 2003). More current research states illicit drug use prevalence for college students in 2014 was 39%, compared to 44% for non-college peers (Johnston et al., 2014). More specifically, a 2014 national survey found the prevalence for Ecstasy (5.0%), hallucinogens other than LSD was 3.2%, Inhalant use was 1.3%, methamphetamine (0.1%), and ketamine (0.1%). Additionally, in 2014, 4.8% of college students reported past year use of non-prescribed narcotics other than heroin and approximately 3-4% were using non-prescribed opiates. marijuana use among college students is an important area of drug use research. Previous research has demonstrated an increase in use of recreational marijuana in the past several years (Hasin et al., 2015, Meich et al., 3015). Hasin and colleagues (2015) examined marijuana use in large, national representative sample, and found the past year marijuana use rate doubles from 4.1% in 2001-2001 to 9.5% in 2012-2013. Lastly, the study found that marijuana use rate among college students is approximately 40% and daily use is 10.8%.

Another important area of study when discussing substance use among college students is non-medical prescription drug use (NMPD). Non-medical prescription drug use is defined as using a psychotherapeutic drug without having a prescription. The rate

of use has alarmingly increased among college students in the past 20 years (Arria, Caldeira, Vincent, O'Grady, & Wish, 2008; Meisel & Goodie, 2015). The rate of NMPD use has increased significantly among younger age groups (i.e., ages 15-19 and 20-24) compared to other age groups (Meich, Bohnert, Heard, & Boardman, 2013). Further, one study indicated lifetime prevalence of NMPD use increases 300% from the first to second year of a 4-year university, which implies the risk for starting use continues substantially beyond the first year (Arria et al., 2008). In relation to NMPD use and ethnicity, a recent study demonstrated among young adults, having a stronger sense of ethnic identity decreased the frequency of NMPD, and was only found to be a protective factor for non-White participants (Carter, 2019).

Examining illicit drug use differences in ethnicity is an imperative area of research, specifically in the college student population. McCabe and colleagues (2007) demonstrated Hispanic and White students were more likely to report drug use and abuse compared to Asian and African American students prior to and during college (McCabe et al., 2007). According to the 2003 NSDUH, 38.2% of White young adults (ages 18 to 25 years) reported illicit drug use in the past year, followed by African-American (30.6%) and Hispanic (27.5%) young adults (SAMHSA, 2004). Similar race/ethnicity patterns were found for the past-year prevalence of marijuana use among individuals who were 18 to 29 years of age (Compton et al., 2004). The past-year prevalence of DSM-IV marijuana use disorders increased significantly between 1991-1992 and 2001-2002, with the highest increase among Hispanic and African-American young adults. However, the prevalence of DSM-IV marijuana use disorders for Caucasian young adults did not change significantly (Compton et al., 2004). Ward & Ridolfo (2011) examined illicit drug

use in the past year among AI college population and demonstrated 32.21% of students had used marijuana, 21.80% used other illicit drug, and 33.39% reported poly-drug use. However, there is still a lack of research examining the nuances of and factors contributing to illicit drug and substance use among American Indian college students, hindering opportunity to develop racially and culturally specific prevention efforts.

Negative Illicit-Drug Related Consequences. Negative consequences from illicit drug use among college students is still a vital health concern on college campuses. Approximately 35% of college students meet DSM criteria (4th ed.; DSM-IV; American Psychological Association, 1994) criteria for an alcohol or substance use disorder (Blanco et al., 2008). Often, college students experience hazardous and negative-related consequences in short-term (i.e., sexually transmitted diseases, physical violence, action they later regret, fail a test, drunk driving, and substance overdose) and long-term (i.e., abuse or dependence) from substance use (Arria, Vincent, & Caldeira, 2009; McCabe, West, & Wechsler, 2007; Presley, 1993)., Teter and colleagues (2003) indicate 3% of college student participants used non-prescribed methylphenidate (prescribed stimulant) in the past year, and were significant more likely to use alcohol and other drugs, and report negative-related consequences than prescribed stimulant users or non-stimulant users who attended college. Additionally, weekly “partying” behavior, which often leads to more adverse outcomes, was significantly associated with past year use of non-prescribed methylphenidate. Shillington & Clapp (2001) found those who used marijuana in addition to alcohol experienced significantly more substance-related problems, even when controlling for heavy drinking. Other studies of college students found cannabis use to be associated with specific health risk behaviors, such as smoking tobacco

(Hammersley & Leon, 2006; Tullis, Dupont, Frost-Pineda, & Gold, 2003), unsafe/risky driving behavior while consuming alcohol (Everett, Lowry, Cohen, & Dellinger, 1999), and concentration problems while driving due to drug use, regardless of meeting DSM-IV criteria (Caldeira, 2008). In conclusion, illicit drug use, with or without co-occurring alcohol use, among college students may result in harmful outcomes.

Substance Use and Related Consequences among American Indians

Earlier research on AI substance use generally suggests higher level of and earlier use in comparison to other racial/ethnic groups (Beauvais, 1992; Oetting, Edwards, Goldstein, & Garcia-Mason, 1980; Beauvais, Oetting, & Edwards 1985; Plunkett & Mitchell, 2000; Beauvais et al., 1985). However, current literature provides mixed findings on AI substance use patterns. Previous research suggests AI adolescents have higher rates of substance use in comparison to CA sample (Beauvais et al., 1985; Prince, et al., 2017; Stanley et al., 2014), and experience more alcohol-related negative consequences (e.g., legal issues and conflict in interpersonal relationships,) compared to CA peers (Plunkett & Mitchell, 2000). Stress exposure in recent life events, poorer school resources, and peer substance use, were major predictors of tobacco and marijuana use for AI youth (Eitle & Eitle, 2017) and perception of general substance use and stimulant use among peers, were associated with frequency of past NMPD use (Spillane and colleagues, 2017). In contrast, previous research has found AIs to have lower or similar substance use consumption rates (Kanny et al., 2013; CDC, 2014; SAMHSA, 2014; Plunkett & Mitchell, 2000). Specifically, Certain intervention programs utilizing motivation interview and psycho-educational techniques (Gilder et al., 2017) and culturally tailor substance use programs (Kulis and colleagues, 2017) found positive

outcomes for decrease in substance use behaviors among AI youth. Additionally, positive family factors (e.g., healthy family structure, parental monitoring, low family conflict, and family sanctions) were associated with lower marijuana use for AI and CA youth residing near an Indian Reservation (Swaim & Stanley, 2016). Similarly related to mixed findings of substance use for AI youth, there are mixed findings for AI adult population. Previous research suggests substance abuse among the AI population is a substantial health problem and they experience higher rates of use (NSDUH, 2009; Yuan, Eaves, & Koss, 2010). More specifically, over the past several years, high rates of methamphetamine use among AIs is a significant health and substance use concern. AI (12 years of age and older) reported using methamphetamine approximately 3 times more in the past year compared to the general population between 2006-2008 (1.4% vs. 0.54%; Bureau of Indian Affairs. Indian Services Connector Summary 2007) and have earlier onset for illicit drug and alcohol use (Dickerson and colleagues., 2012). In contrast, previous research suggest AIs have lower or similar substance use rates compared to white sample (Birnbaum et al., 2011; Cunningham, Solomon, and Muramoto, 2015). Specific to alcohol use, majority of AIs (57.5-59.9%) abstained from alcohol use in the past month, in comparison to 43.2-42.6% of Whites abstaining. More so, approximately 33% of Whites and 14.5% of AIs were identified as light/moderate drinkers, and their excessive drinking patterns were similar (8.3% and 7.5%, respectively), as well as binge drinking estimates (17.3% and 16.7%, respectively).

In terms of AI college students specifically, few studies have focused on this population's substance consumption and related consequences. However, some findings suggest AI college students experience greater alcohol-related consequences (Skewes &

Blume, 2015) and illicit drug use (Fish et al., 2017), and perceive their use as barriers to successful academic achievement. Further, Gonzalez & Skewes (2016; 2018) examined the influence of belief in a AI's biological vulnerability (BV) to high alcohol use on the use and effectiveness of harm reduction and abstinence-based strategies on abstaining from alcohol problems and attitudes toward strategies; results demonstrated belief in a BV was associated with moderating attitudes and abstinence-based strategies, in non-helpful ways. Similarly related, Gonzalez and colleagues (2019) most recent study revealed AI student's beliefs regarding the Fire Water Myth (AI people are more vulnerable to the effects of alcohol use and related problems because of biological/genetic differences; Leland, 1976) negatively impacted the use of protect behavioral strategies, leading to rapid drinking which contribute to alcohol related consequences. These authors suggest given their findings, AI/AN students experiencing low self-efficacy in resisting to drink heavily, alcohol-related consequences may benefit from cultural adapted interventions specifically addressing BV myths, and facilitating self-efficacy in change, and options for harm reduction management for alcohol use. In contrast, recent research (Greenfield et al., 2018) demonstrated cultural involvement had a relationship with decreased past-month substance use for AI college students in the southwest region. Nonetheless, more current research among the AI/AN college student population is needed to better assess for rate and risk of alcohol and illicit drug use/related consequences and factors contributing to reduction of use/risk.

Adverse Childhood Experiences

Felitti and colleagues (1998b) conducted the original Adverse Childhood Experiences (ACE) Study, in which they collected data from 17,337 participants to

examine adverse and/or traumatic experiences in childhood. Adverse Childhood Experiences have 2 main sections: abuse and household dysfunction. There are 3 categories of abuse, which include psychological, physical and sexual. There are 4 categories of household dysfunction which are substance abuse, mental illness, mother treated violently, and criminal behavior in the household. Women indicated experiencing more sexual abuse (25%) and emotional abuse (13%) in comparison to men (16% and 8%, respectively). In addition, 13% of participants reported witnessing domestic violence in the home, 19% had a parent who was depressed, mentally ill, or had attempted suicide, 27% experienced parental substance abuse, and 23% came from homes in which the parents were separated or divorced. Further, 5% of individuals reported one of their family members had previously gone to prison (CDC, 2013). The outcomes of this original study lead to the development of the ACE questionnaire, with expansion of more research and literature utilizing this measure (Felitti et al., 1998a).

It is important to understand the mental and physical health outcomes among individuals who have experienced ACEs. Hughes et al. (2017) conducted a systematic review and meta-analysis and found individuals with 4 or more ACEs were at increased risk for all negative health outcomes in comparison to individuals with no ACEs. Also, the relationships between ACEs (odd ratios or less than 2) and negative health outcomes for physical inactivity, overweight or obese, and diabetes; moderate for smoking, heavy alcohol use, poor-self-rated health, heart disease, cancer, and respiratory disease (odd ratios of 2 or 3), and a strong relationship for problematic drug use and interpersonal violence (odds ratio of more than 7). The authors concluded having multiple ACEs, specifically 4 or more, is a major risk factor for multiple negative health outcomes and/or

conditions, and outcomes that had the strongest relationships with ACEs represent risk for the next generation to experience ACEs (e.g., interpersonal violence, mental illness, and substance use) as well. Further, Hoppen & Chalder's (2018) systematic review showed biological (i.e., heightened amygdala responses and neurological change), psychological (i.e., emotional dysregulation, attachment anxiety, anxious arousal, cognitive distortions, dissociation, maladaptive personality traits, anxious arousal, low resilience, low self esteem and trauma-related guilt), and social (i.e., re-traumatizing events, chronic interpersonal difficulty, low social support) variables were mediators between childhood aversive experiences and adult mood disorders. Felitti et al. (1998b) found a significant positive relationship between adverse childhood experiences and several health risk factors. As childhood adverse experiences increased for participants, prevalence and risk for smoking, severe obesity, physical inactivity, depressed mood, and suicide attempts also increased. Further, individuals who reported 4 categories were compared to those with 0, the odds ratio ranged from 1.3 to 12.20 for suicide attempts. When comparing individuals who reported 4 or more ACEs the prevalence and risk for alcoholism, use and injection of illicit drugs, 50 or more intercourse partners, and history of a sexually transmitted disease increased, and odds ratios for sexual transmitted diseases were 2.5, 7.5 for alcoholism, and 10.30 for injection drug use. There was a strong positive relationship between number of ACE and number of health problems leading to cause of death. In relation, when individuals with 4 or more categories of ACE were compared to zero, the odds ratios were 1.6 for diabetes, 3.9 for chronic bronchitis or 1.6 for skeletal fractures, 2.3 for hepatitis or jaundice, and 2.2 for poor self-rated health.

ACEs and Substance Use. When discussing physical and mental health outcomes from ACEs, it is central to examine the relationship between ACE's and its effect on substance use. A large amount of research has suggested ACEs are associated with early age onset of marijuana and alcohol use (Blum et al., 2000; Dick, Rose, Viken, & Kaprio, 2000; Dube et al., 2003; Dube et al., 2006; Forster, Gower, Borowsky, & McMorris, 2017). Further, extended activation of the body's stress response (due to ACE exposure), can hinder normal brain structure development, therefore, increasing the vulnerability for stress induced health behaviors, such as substance use (American Psychological Association, 2014; Center on the Developing Child, 2015). Empirical studies investigating the association Between ACEs and health have found the likelihood of poor health outcomes increases as the number of ACEs increases (Anda et al., 2006; Shonkoff & Garner, 2011), and with one additional ACE increasing the chance of early age onset of illicit drug and alcohol use. Lastly, previous studies found greater exposure to ACEs (especially emotional and physical abuse), significantly increased experiencing substance use/related problems in adulthood (Berzenski & Yates, 2011; Messman-Moore & Bhuptani, 2017; LeTendre & Reed, 2017).

ACEs and College Students. Forster et al. (2018) collected data from the 2015 American College Health Association's Nation College Health Assessment II evaluating the association between number of ACEs college students experienced and past 30-day alcohol, tobacco, marijuana, and illicit drug use, and past month prescription medication misuse and polysubstance use. Results indicated between 50-75% of students using substances were ACE exposed. More so, approximately 50% of college students reported having a family history of ACEs, one in four reported using illicit drugs or using

prescription medication, and 25% reported polysubstance use within the last year. The strong relationship between individuals with multiple ACEs and substance use is similar to the results found in other studies examining ACE exposed and its impact on physical, mental, and behavioral health problems in non-college adult populations (Anda et al., 2006). Further, their results found a substantial ethnic and racial variability in the associations between ACE and substance use. More recently, Merians and colleagues (2018) examined the relationship of latent classes and cumulative scores of ACES on health and substance use outcomes among college students. Results showed 4 classes were good fit (High ACEs, Moderate Risk of Non-Violent Household Dysfunction, Emotional and Physical Child Abuse, and Low ACEs). In regards to alcohol use consequence outcomes, there were significant differences between the High ACEs and Low ACEs classes, and between the Non-Violent Dysfunction class and the Low ACEs class, with higher alcohol consequences in the High ACEs and the Non-Violent Dysfunction classes. Additionally, results showed a small significance in more alcohol consequences for the Emotional and Physical Child Abuse class compared to the Low ACES. However, there were no significant differences between the Non-Violent Dysfunction class and the High ACEs or Emotional and Physical Child Abuse classes, and overall, latent class and cumulative risk analyses revealed similar results for predicting health outcomes. Forster et al. (2019) study among college students revealed an increase in ACEs were associated with higher odds of using alcohol and illicit drugs/tobacco, with specific ethnic variations in substance use patterns and relationship between ACE and use. Research should aim to expand on the literature on college

students who have experienced ACEs and it's related-health outcomes, specifically, substance use and racial/ethnic minority college students.

ACEs and Ethnic Minorities. Racial/ethnic minorities have faced historical and current adversities and discrimination, which has increased the risk of exposure to social and economic disadvantages (Darity, 2005). Further, given poverty is highly correlated with child abuse and neglect (Su et al., 2015), it is reasonable to expect research which demonstrates racial/ethnic minorities experience higher ACE consequences in comparison to other groups. It may be important to further examine population sub-group differences in ACEs by race/ethnicity and its effects on mental and physical health outcomes (Lee and Chen, 2017). Previous literature on racial/ethnic differences in ACEs is mixed. The few studies examining differences have steadily indicated non-Hispanic blacks and Hispanics more often report multiple ACEs compared to non-Hispanic whites (CDC, 2010; Gilbert et al., 2015). However, Lee and Chen (2017) examined ACEs and its relationship with mental health and alcohol use among different race/ethnicity and found no differences in race/ethnic subgroups for ACEs and its effect on depression and binge drinking, though, the impact of ACEs on heavy drinking among certain racial/ethnic minority. their findings also indicated the odds ratio for Hispanics who reported both child abuse and household challenges was significantly higher compared to non-Hispanic whites. In contrast, one study found non-Hispanic blacks had the lowest prevalence on most ACEs in comparison to non-Hispanic whites (CDC, 2010). In contrast, a study investigated exposure to several types of ACEs in racial/ethnic minorities and found non-Hispanic Blacks and Hispanics were significantly less depressed than non-Hispanic white men and women (Roxburgh & MacArthur, 2014).

Similarly, another study examined the relationship between parental alcohol or drug use and cumulative ACEs amongst ethnic/racial minorities (i.e., experiencing five or more) and found depression among non-Hispanic whites but not non-Hispanic blacks or Hispanics (Schilling et al., 2007). Overall, given the mixed research of differences in ACEs in racial/ethnic minorities, continued examination of these differences is important in order to better understand ACEs in racially diverse communities.

ACEs among American Indians

Previous research suggests AI population have a high proportion of ACEs (Brockie et al., 2015; DeRavello et al. 2008; Koss et al. 2003). Koss and colleagues (2003) conducted a study among seven tribes ($N = 1660$), and found approximately 74–100 % of men and 83–93 % of women reported being exposed to ACEs, and physical abuse, sexual abuse, and boarding school attendance were strongly correlated to alcohol use/dependence. Similarly, in a small study of incarcerated Native American women, De Ravello et al. (2008) studied ACEs in incarcerated women and results showed 75% of participants were exposed to ACEs and 83% reported attempting suicide in their lifespan, and more so, women who reported being exposed to 4–5 ACEs were seven times more likely to attempt suicide compared to women who reported 0–3 ACEs. Further, another small sampled study examined ACEs and their relationship with risky behaviors/mental health conditions among AI youth and found 87 percent reported undergoing at least one ACE and 40 % reported at least two, and the cumulative effect of ACEs were significantly ($p < .001$) associated with PTSD, Depression, Poly-Drug Use, and Suicide Attempts, with each added ACE increasing the odds of experiencing a suicide attempt (37 %), poly-drug use (51 %), PTSD symptoms (55 %), and depressive symptoms (57 %). In

relation to sexual abuse, Robins and colleagues (1997) examined childhood sexual abuse with a small sample size ($N = 375$) in southwest AI tribes and results indicated the prevalence rate for female child sexual abuse was 49% and for males was 29%. Additionally, the study found childhood sexual abuse was significantly correlated with a higher prevalence rate of early behavioral problems (i.e., school related issues, legal problems, heavy alcohol use, running away from home, and engaging in sex at an early age) and various psychological disorders (i.e., personality disorders, substance use disorders, Anxiety Disorder, and Post-Traumatic Stress Disorder). ACEs may be more prevalent in the AI population due to complex factors such as historical/ intergenerational trauma, leading to increased low socio-economic status, poor health outcomes, and increased risk to experience adverse environmental factors. However, there currently is a lack of research examining ACE among the AI population, specifically, AI college students.

Historical Trauma and American Indians

American Indians have faced numerous psychological hardships, such as adverse child and life experiences and substance use, however, these adversities cannot be examined without understanding the historical trauma endured by indigenous people. In relation to AIs, historical trauma is defined as the collective experience of violence committed against Indigenous Peoples, in order to colonize the United States, resulting in 'unsolved crisis' and forced confinement on reservation communities (Brockie et al., 2013). Previous and current research has taken interest in the psychosocial effects and trauma experiences by AIs as a result of historical genocide, forced acculturation and relocation, loss of traditions, and forced removal of children and placed in boarding

schoolings (Duran, 2006; Ehlers, Gizer, Gilder, Ellingson, & Yehuda, 2013). Among AIs, the impact of historical trauma and discrimination (Freedenthal and Stiffman, 2004; Whiteback et al., 2001, 2002, 2004a) have been associated with negative health outcomes. Further, Indigenous people report re-experiencing traumatic events at a higher rate in comparison to the general population, which impact their present and ongoing lives (Beals et al., 2005; Whitbeck et al., 2004a; Whitbeck et al., 2004b). Factors such as historical and intergenerational trauma may be critical risk factors that lead to AI's experiencing and experiencing traumatic events. It is important to note, historical trauma may be a causative factor to past and current substance use, which can increase related traumatic risks (Ehler et al., 2013). Likewise, alcohol use has harmful effects on the health of AIs, stemming from internalized oppression, aggression, unresolved grief, and trauma (Brave Heart & DeBruyn, 1998). Further, one study findings showed residential school attendance among AIs was linked to alcohol problems and childhood physical/sexual abuse was related to drug use problems (Ross et al., 2015). In relation to historical trauma and negative health outcomes, Whitebeck and colleagues (2009) examined perception of historical loss and depression, in which results indicated perceived historical loss of cultural and tradition had independent effects on depression symptoms among AI adolescents. However, AI sharing stories collectively of their healing and resilience regarding traumatic events to the next generations of people, may aid in the process of recognition of their past, thus, fostering strength for their future to overcome adversity (Fast & Collin-Vézina, 2010). Further, processing traumatic stories and associated emotions in a collectivistic fashion (e.g, engaging ceremonies with community members) has been/is a traditional healing mechanism among many tribal

communities. Thus, this event in itself is a valued technique in promoting resiliency in a population where historical trauma is immensely present from generation to generation.

Resiliency

Resiliency is defined as an individual who develops a positive mindset or experiences positive outcomes, despite enduring serious threats or negative events throughout their lifetime (Masten, 2001). Previous research has aimed to understand the fundamental aspects of resiliency that foster positive outcomes or a positive mindset. Masten and Coatsworth (1998) and Masten (1999) discovered two importance facets that construct the development of resiliency. The first facet examines the threat factor of the interfering event: people who have not experienced a significant threat or adverse event cannot be acknowledged having resilience, because there must be an apparent biological or environmental risk is a predictor of unwanted consequences. The second facet of resilience is the principles of adaptation or development outcomes which can be interpreted as “positive outcomes”. However, it is important to consider there is still a debate regarding who and what defines resiliency and by what criterion (Luthar, Cicchetti, & Becker, 2000; Masten, 1999). Taken together, resiliency is an established protective factor may mitigate against negative outcomes (Masten & Cicchetti, 2010; Masten, 2013).

Resiliency among College Students. Resiliency among college students, specifically minority college students, is an important area of research, given adversities some may endure in order to attend and persist through college. Hartley (2011) examined the relationship between psychological and academic outcomes and resiliency among Midwestern undergraduate college students ($N= 605$) and found intrapersonal resilience

factors assisted in explaining variance in cumulative GPA and achievement, and demonstrated a strong relationship between psychological outcomes (e.g., tenacity, tolerance, acceptance, control, spirituality) and inter/intrapersonal resilience factors. Further, Tinto (1993) developed a model of educational persistence of minority students, in which he recognized factors such as family background, academic preparation and performance, and interactions with faculty as predictors of resiliency traits. Similarly, a qualitative study of 11 Latina/o college students conducted by Cavazos and colleagues (2010) indicated there are 5 factors that created the concept of resiliency and are important factors in high college academic achievement: high educational goals, internal locus of control, intrinsic motivation, support and encouragement from parents, and high self-efficacy. Lastly, literature examining building resiliency amongst students who experienced ACEs suggests integrating trauma-informed strategies into daily teaching practice via through expanding focus on specific areas (e.g., suicidal tendencies, cyberbullying, and drugs) and teaching behavioral skills to build resilience through a read, reflect, and respond model will help foster students towards educational and career choice growth (Romero, Robertson, & Warner, 2018).

In relation to AI college students, Bowker (1993) conducted a study investigating factors that support AI students in an educational setting, and established four main areas of educational persistence for AI students persevering in education: (1) a supportive adult role model/mentor who assists in fostering a sense of purpose; (2) the degree to which the school and teachers focus on the student; (3) a robust tie to spirituality and strong morality; and (4) little family stress/dysfunction. Further, the study's results indicated a strong positive relationship between high identification with ethnic identity (e.g., White

or AI) and academic performance. Montgomery et al. (2000) qualitative study indicated AI college students expressed strong importance of AI traditions in order to develop resiliency traits, knowing “ways of learning”, developing an academic identity, and perception of social support. Similarly, a dissertation study led by Hill (2013) demonstrated an association between depressive symptoms and resilience in Northern Plains AI college students and community members, in which resiliency traits were a moderating variable by mitigating risk of hopelessness. Thus, resiliency may alleviate negative outcomes of adverse experiences and generate positive psychological adjustment. However, in relation to AI college students, it is important to consider the drop out statistics (Bowker, 1992) and low enrollment statistics (Sandefuer, 1998) are a reality many AI students face, given the drastic difference between the two cultures of college and AI communities. Importantly, cultural factors may be relevant to specific diverse college students and can be integrated into interventions and preventative programs which aim to continue fostering resiliency in academic performance and psychological well-being (Filbert & Flynn, 2010; Forster et al., 2017). Thus, there is a need for more current research on the concept of resilience and its relationship to academic persistence and positive health outcome among AI college students.

Resiliency and American Indians. Resiliency may moderate the risk of developing adverse physical and mental health outcomes, however, there is lack of current research of resiliency traits among indigenous people. However, one small sample study ($N=212$) examined protective factors that fostered pro-social behaviors for AI adolescents living in moderate-high adversity households included family, community, and culture (LaFromboise et al., 2006). A previous study findings showed

higher levels of resilience among AI elders were associated lower levels of depressive symptomology and higher levels of mental and physical health (Schure, Odden, & Goins, 2013). Lastly, FitzGerald and colleagues (2017) examined protective factors including relationships with adults at home, academic setting, and the community help foster resiliency, in order to reduce suicide attempts. Results indicated positive relationships with adults in all settings were negatively associated with the rate of past-year suicide attempts. In regards to gender differences, among AI girls, relationships with adults at home, at school, and in the community were independently related with a lower rate of suicide-attempts, and among boys, only relationships with adults at home showed a significant relationship. Further, previous qualitative research examining AI students attending a predominately white high school, showed AI students faced adversity related to identity formulation, racism, and difficulty in home and school life; however, they reported great social and academic support (e.g., family, friends, caring teachers), high engagement in learning, and perceived connectedness to AI culture/traditions (Stotts & Olson, 2012). Lastly, a thesis study found AI Midwestern university students to have higher scores of perceived resiliency traits compared to their Caucasian peers and tribal college peers (Sargent, 2017). Overall, there is a need for more current literature examining resiliency in AIs, in order to develop better prevention efforts for adverse psychological outcomes.

Resiliency and Substance Use among American Indians. In regards to resiliency and substance use among AIs, specifically AI college students, there is lack of previous and current research. However, a few studies have examined intervention efforts that are AI culturally centered, in relation to substance use. A small qualitative study

findings indicated a complex interaction of both risk and protective factors in relation to alcohol and drug use. Specifically, participants reported their family members were protective factors that helped foster resiliency against drug and alcohol use, but also could, at times, be risk factors to engage in use (Waller et al., 2003). Further, Myhra, Wieling, and Grant (2015) indicate within intergenerational exposure to alcohol and drug use, there is still perceived resiliency among AI, and suggests there is a need for more culturally specific AI substance use prevention that focuses on resiliency, pre-colonization practices, and customs because resiliency traits can encourage substance use recovery. This is consistent with Mohatt et al. (2008) research, which generated a model of recovery from alcohol abuse for Alaska Natives (AN). The model suggests AN individuals are resilient in their alcohol use recovery by utilizing a reflective style of thinking about their experiences, therefore, implying successful interventions with AI/ANs should focus more on flexibility in cognitive styles and personal insight of substance use recovery and less focused on formulized and structured interventions. Further, Currie and colleagues (2013) examined traditional culture as a resiliency/protective factor against illicit drug use for urban Aboriginal adults, in which results demonstrated enculturation was a protective factor in reducing 12-month illicit drug use/problems. In relation, Dickerson et al. (2016) study examined a culturally enhanced motivation interviewing intervention in urban AI youth for substance use and found implementation of cultural practices (e.g., medicine wheel, traditional stories of healing, beading, ceremony, using traditional food and medicines) fostered safer environment to discuss motivation to change substance use. In contrary, Sargent (2017) thesis study results found no significant relationship between ethnicity and resiliency on

rate of alcohol use consumption. Overall, despite the research done among AIs, resiliency, and substance use, there is still a lack of current research in this area, especially for AI college students and theorized prevention efforts.

Resiliency and ACEs

Previous research has demonstrated ACEs can cause negative health outcomes in individuals, however, it is possible for these individuals to succeed in life despite early life adversity. ACE researchers have demonstrated three interconnected “core protective systems” associated with positive adjustment despite adversity: the person’s individual capacities, attachment to a nurturing caregiver and sense of belonging with healthy individuals, and being a part of a protective community, including spirituality and cultural practices. These three core protective systems assist in reducing ACEs and related problems in future generations (Masten et al. 2009). More specifically, important adult role models, such as early child educators, can play a crucial role in mitigating short-term negative effects of ACEs and enhance development of resilience (Mortensen & Barnett 2016; Sciaraffa, Zeanah, & Zeanah, 2018). Further, Greene and colleagues (2014) results indicated three resilience resources (social/emotional support, life satisfaction, and sleep quality) tend to moderate ACEs and poor health outcomes. A study (Brogden & Gregory, 2018) examining ACEs and resiliency in community college students suggest building resilience in this sample is effective via finding social connection and a sense of belongingness, in addition to fostering personal traits such as perseverance, time-management, goal setting, self care, college navigation, and studying skills. In relation to ACEs and resilience traits among diverse population, there is still currently a lack of research. However, one study examined racial differences in ACEs

with depression and role of resilience and results showed Caucasians and African Americans young adults who reported severe ACEs but also high levels of resilience, demonstrated less depressive symptoms in comparison to those with low resilience (Youssef et al., 2017). However, there is still little to no research examining the direct relationship between resilience and ACE among American Indians, specifically AI college students.

Resiliency, ACEs, and Substance use

Resiliency traits are likely to mitigate risks of developing substance use problems and/or disorders, perhaps through effective emotional regulation skills, tolerance of negative emotion, or engaging in pro-social behaviors (e.g., seeking supportive or nurturing relationships; Wingo, Ressler, & Bradley, 2014). To date, there are a very limited amount of studies examining the interaction between resiliency traits and exposure to childhood abuse on substance use. One study conducted by Wingo and colleagues (2014) examined resiliency traits as a mitigating factor for harmful alcohol and illicit drug use in inner-city adults with a history of childhood abuse. Their results demonstrated resiliency traits mitigated likelihood for lifetime alcohol use problems as a main effect and an interaction with severity of childhood abuse. Correspondingly, resilience traits tended to reduced lifetime illicit drug use both as a main effect and as an interaction with severity of childhood abuse. There findings are similarly consistent with a prior study examining resiliency and alcohol use in combat veterans, in which higher resiliency scores were associated with lower AUDIT scores (Green et al., 2010). Overall, there is a lack of research in the area of resiliency, ACEs, and substance use, and to date, there is no literature on these variables among the AI population. It may beneficial for

future research to examine resiliency as a mitigating factor of ACEs and substance use among AIs, given previous research suggests AI experience higher rates of trauma and substance use. However, AIs have demonstrated resilience despite traumatic experiences and historical trauma, which may be a crucial factor in intervention and prevention efforts for poor mental and physical health outcomes.

Current Study

The current study examined the relationship between alcohol and drug use, adverse childhood experiences (ACEs), and resiliency traits among AI and Caucasian college students. To better evaluate these relationships, a multifaceted approach was conducted. The current study had three aims.

The first aim of the study was to examine the association between ACEs and alcohol and drug use/consequences among AI and Caucasian college students. It was hypothesized there will be an interaction between ethnicity and ACEs on alcohol and drug use/consequences. Specifically, AI university students will report higher scores of alcohol and drug use/consequences when also experiencing significantly more ACEs in comparison to Caucasian college students.

The second aim of the study examined the relationship between level of resiliency and alcohol and drug use/consequences among AI and Caucasian college students. Specifically, slope of interaction of resiliency and ethnicity will be different on scores of alcohol and drug use/consequences. Given limited research this was an exploratory hypothesis.

The third and final aim of the study was to examine whether self-perceived resiliency moderates the effect of ACEs on level of alcohol and drug use/consequences

among AI and CA participants. It was hypothesized there will be a significant 3-way interaction between ethnicity, ACES, and resiliency on level of alcohol and drug use/consequences. Specifically, there will be group differences when level of resiliency is high, regardless of number of ACES, which will lead to lower alcohol and drug use/consequences scores.

The time period during college for students may put them at an increased risk for experiencing problematic substance use and related behaviors (Lee, & Wechsler, 2003; Ward & Ridolfo, 2011). Prevention and intervention efforts focusing on this high risk population may assist in decreasing problematic substance use on college campuses. More so, substance use among AI college students may have its own unique risks, yet, there is a lack of previous and current research examining substance use prevention/interventions among AI college students. However, among AI students, previous literature has demonstrated there is relationship between resiliency traits and positive outcomes in the educational setting (Bowker, 1993; Tinto, 1993). Previous research has also suggested the importance of utilizing self-perceived and cultural resiliency among AIs in substance use treatment (Myhra et al., 2015). Overall, there is a lack of research examining the relationship between ACEs, substance use, and resiliency as protective factor, which limits culturally adaptive prevention and intervention efforts among AI college students.

CHAPTER II

METHODOLOGY

Participants

Participants were recruited from the University of North Dakota (UND) and were divided into two groups: 1) UND CA students ($n=91$); 2) UND AI students ($n=69$) with a total sample size of 160. Participants were required to be an UND student and be of 18 years of age. The college student population was the targeted sample because this population is most likely to report alcohol consumption (Wechsler & Nelson, 2006; O'Malley and Johnston, 2002) and drug use (Johnston, O'Malley, & Bachman, 2002). The SONA systems through UND were utilized to recruit college students enrolled in undergraduate psychology classes. Furthermore, recruitment occurred via flyers and booths at different university buildings around campus, social media sites, and word of mouth.

Measures

Demographics. Participants complete an initial demographics questions measuring: age, gender, ethnicity, living status, college status, cumulative GPA, number of credits completed, specific illicit drug use in the past 12 months, and institutional support. Furthermore, the American Indian Bicultural Inventory was utilized to assess participants in the following two questions: 1) How often do you attend American Indian traditional ceremonies? and 2) How strongly do you identify with American Indian

culture? (McDonald et al., 2015). Additionally, Participants were asked if they have ever lived on an Indian Reservation (See Appendix A).

The Connor-Davidson Resilience Scale (CD-RISC). Resiliency was assessed by utilizing the 25-item CD-RISC (Connor & Davidson, 2003). The scale is evaluating self-perceived resiliency traits (e.g., “Having to cope with stress can make me stronger”) in the month by the participant. Each item is rated on a scale of 0 (*Not true at all*) to 4 (*Always true*) (See Appendix E). Total scores for the CD-RISC range from 0-100, with higher scores indicating higher perceived resiliency traits. The CD-RISC has acceptable internal consistency ($\alpha = .89$) in the general population as well as among AI sample ($\alpha = .912$).

The Adverse Childhood Experiences (ACE) Questionnaire. The ACE Questionnaire (Felitti et al., 1998b) was utilized to assess adverse childhood experiences experienced before the age of 18 among participants. Participants answered 10 items in the following 9 categories: psychological abuse, physical abuse, sexual abuse, neglect, family substance abuse, parental separation/divorce, violent treatment of mother, family mental illness/suicide, and family member in prison. This questionnaire is scored dichotomously (i.e., “Yes” or “No”) from a range of 0 (*no exposure*) to 10 (*exposure in all categories*).

The Alcohol Use Disorders Identification Test (AUDIT). The AUDIT is a 10-item self-report measure of alcohol use created by the World Health Organization to screen for hazardous alcohol use and related-consequences (Saunders et al., 1993). The measure assessed participants’ alcohol use and related behaviors/consequences in the past year and each item used a 5 Point-Likert scale (i.e., 0-4). A total score of 8 or greater

suggests the person may be engaging in “Hazardous Drinking Behavior”. The AUDIT has a reliability correlation coefficient of 0.83 and test-retest reliability of 0.87-0.95. A study (Leonardson et al., 2005) examining the validity and reliability of AUDIT with the American Indian population demonstrated high internal consistency reliability ($r = .97$) and sufficient concurrent validity.

The Drug Abuse Screening Test (DAST). The DAST is a 28-item self-report measure of past year drug use and related consequences (Skinner, 1982; Yudko et al., 2007). Participant’s reported dichotomously (i.e., “Yes” or “No”) to questions such as “Have you used drugs other than those required for medical reasons?” and “Have you ever been in trouble at work because of drug use?” A total score of 12 or greater indicates a definite substance use problem. The DAST has internal consistency of 0.92 and test-retest of 0.78 (Yudko et al., 2007).

Procedure

University of North Dakota students were qualified to participate in the current study if they identify as CA or AI. Data collection occurred at UND. Participants were recruited in one of two ways. In the first option, participants were recruited through the UND SONA research participant pools (i.e., SONA system); those recruited through SONA completed the online Qualtrics survey, including: the demographic questionnaire, the AUDIT, DAST, ACE questionnaire, and CD-RISC. Two questions in the demographics questionnaire were used to assess eligibility for the current study: 1) Indicate below which college you attend: University of North Dakota or Other. 2) Do you identify as Caucasian or American Indian? Individuals were not able to participate in the remainder of the study if they did not meet eligibility criteria. Additionally, the survey

was administered in person via a paper copy. Recruitment strategies included advertising through SONA, social media, flyers and booths around the campus/campus events, and word-of-mouth.

All participants were required to provide consent and read the consent form preceding participation. Participants were then asked to fill out a series of five questionnaires (i.e., demographics, AUDIT, DAST, ACE questionnaire, and CD-RISC). The total accumulation of questionnaires took approximately 30-45 minutes to complete. Participants were instructed to ask any questions they may have before the study begins. Participants took the survey in the following order: a demographics questionnaire, the AUDIT, DAST, ACE questionnaire, and CD-RISC. Lastly, participants were compensated for their participation in one of two ways: 1) \$5.00 or 2) 1 credit for SONA.

Data Analysis Plan

A multiple regression data analysis was used for the current study. For aim 1, a multiple regression was performed, treating ACEs and groups as the independent variable and using alcohol and drug use as the dependent variables. All continuous variables were centered and their product term were formed to test the interaction of the two independent variables. If the interaction was significant, it would suggest a conditional association between ACE and ethnicity on alcohol and drug consequences. For aim 2, a multiple regression was performed, treating resiliency traits and groups as the independent variable and alcohol and drug use/consequences as the dependent variables. All continuous variables were centered and their product term was formed to test the interaction of the two independent variables. If the interaction was significant, it would determine whether resiliency traits will moderate the impact of ethnic group on alcohol

and drug use/consequences. For aim 3, a multiple regression was performed, treating ACEs, resiliency traits, and groups as the independent variables and alcohol and drug use/consequences as the dependent variable. After categorizing the ACEs by frequency and type, chi-square analyses were conducted to examine group differences. Continuous variables were centered and all two-way interactions and three-way interactions were tested using the appropriate product terms.

CHAPTER III

RESULTS

Demographics

Of the total participants ($N = 160$), 74.40% were female. Results indicated significant differences in age between AI and CA college students ($t_{(1,159)} = -6.06, p < .01$; see Table 1), with UND AI participants being significantly older compared to UND CA participants. Results also revealed a significant difference in education level between groups ($t_{(1,159)} = -8.79, p < .01$; see Table 1), with UND AI participants having significantly higher education levels compared to UND CA participants. Results indicated no significant effect of group on cumulative GPA ($t_{(1,159)} = -1.18, p > .05$; see Table 1). Results indicated there are statistically significant differences between groups on cultural institutional support ($t_{(1,159)} = -2.37, p < .05$; see Table 1), with UND AI participants having significantly lower institutional support scores compared to UND CA. Lastly, see Table 2 for poly-substance use frequencies by ethnic group in the past 12 months.

Table 1. Descriptive statistics for UND American Indian and Caucasian participants

	UND Caucasians			UND American Indians		
	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%
Age	20.60	4.07		26.33	7.70	
Education Level	1.81	0.97		3.58	1.57	
Freshman			49.50			18.80
Sophomore			26.40			10.10
Junior			18.70			7.20
Senior			4.40			21.70
Graduate			1.10			42.00

Table 1 cont.

	UND Caucasians			UND American Indians		
	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%
Cumulative GPA	3.34	0.57		3.45	0.53	
Cumulative Credits	44.71	31.13		90.21	70.70	
Institution Support			93.30			81.20
AIBI 1	1.26	0.53		2.54	0.93	
AIBI 2	1.33	0.56		3.35	0.82	
Reside on Reservation			2.20			62.30

Note. Institutional Cultural Support was coded as “1 = yes, 2 = no”. Education level was coded as “1 = freshman, 2 = sophomore, 3 = junior, 4 = senior, 5 = graduate”. “UND = University of North Dakota”,. AIBI 1 = “How often do you attend American Indian traditional ceremonies?”, AIBI 2 = “How strongly do you identify with American Indian culture?”

Table 2. Descriptive statistics for UND American Indian and Caucasian participants’ Illicit Drug Use in the Past 12 Months

	UND Caucasians		UND American Indians	
	<i>YES (%)</i>	<i>NO (%)</i>	<i>YES (%)</i>	<i>NO (%)</i>
Illicit Drugs (non-medical reasons)	28.60	71.40	23.20	76.80
Cannabis/Marijuana	27.50	72.50	20.30	79.70
Non-prescribed Opioid Medication	3.30	96.70	7.20	92.80
Non-prescribed Stimulant Medication	7.70	92.30	5.80	94.20
Amphetamine	2.20	97.80	1.40	98.60
Methamphetamine	1.10	98.90	2.90	97.10
MDMA	7.70	92.30	2.90	97.10
Hallucinogens	6.60	93.40	1.40	98.60
Heroin	0.00	100.00	1.40	98.60
Other	1.10	98.90	2.90	97.10

Main Effects

Results from an independent t-test indicated suggested there was a non-significant, albeit trending, difference between UND AI and UND CA on alcohol

use/related consequences ($t_{(1,159)} = 1.76, p = .08$; see Table 3; however, the data trended towards more alcohol use/related consequences for UND CA students. Additionally, results indicated there were no statistically significant differences between UND AI and UND CA on drug use/related consequences ($t_{(1,159)} = 0.67, p = 0.48$; see Table 3).

Table 3. Independent and Dependent Variables Differences Between UND American Indian and UND Caucasian Participants

	UND Caucasians (<i>n</i> = 91)		UND American Indians (<i>n</i> = 69)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ACEs *	1.57	2.31	3.10	2.43
Resiliency*	71.02	11.88	78.71	12.44
AUDIT	5.08	4.08	3.93	4.13
DAST	1.69	2.80	1.43	1.80

Note. “AUDIT = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year”. “DAST= average score of past year drug use behaviors and related consequences”. “UND = University of North Dakota”. “ACEs= adverse childhood experiences”.

* $p < .05$

University of North Dakota AI participants reported significantly higher resiliency scores than UND CA participants ($t_{(1,159)} = -3.97, p < .05$; see Table 3). There are statistically significant differences between groups on ACES ($t_{(1,159)} = -3.93, p < .05$; see Table 3), with UND AI participants having significantly higher ACES scores compared to UND CA. see Table 4 for the frequency of ACES endorsed by ethnic group. Further, results from a chi-square test revealed group differences among categories of ACES. Specifically, the UND AI group had significantly experienced more emotional abuse, physical abuse, sexual abuse, parental divorce, domestic violence, and having a family member with substance use problem living in the home than UND CA group (Please see Table 5). Results from an independent samples T-test indicate experiencing emotional abuse ($t_{(1,159)} = -2.76, p < .01$), physical abuse ($t_{(1,159)} = -3.91, p < .01$), sexual

abuse ($t_{(1,159)} = -3.52, p < .01$), and having mental ill family member living in the home ($t_{(1,159)} = -2.65, p < .01$) significantly increases drug use/related consequences.

Table 4. Descriptive statistics for UND American Indian and Caucasian participants' ACEs

Number of Reported ACEs	UND Caucasians	UND American Indians
	YES (%)	YES(%)
0	51.60	14.50
1	16.50	20.30
2	5.50	13.00
3	8.80	13.00
4+	17.60	39.20

“ACEs= adverse childhood experiences”.

Table 5. Descriptive statistics for UND American Indian and Caucasian participants types of ACEs

Type of ACEs	UND Caucasians	UND American Indians
	YES (%)	YES(%)
Emotional Abuse*	22.00	46.40
Physical Abuse*	14.40	30.40
Sexual Abuse *	7.70	18.80
Emotional Neglect	14.30	21.70
Physical Neglect	5.50	11.60
Parental Divorce*	29.70	52.90
Mother Domestic Violence*	5.50	24.60
Household Member Substance Use Problem *	25.30	49.30
Household Member Mentally Ill	26.40	37.70
Household Member go to Prison	6.60	15.90

“ACEs= adverse childhood experiences”.

* $p < .05$

Interactions

A series of simultaneous multiple regressions were computed, with the continuous variables mean centered for all analyses and interaction terms. Models included main predictors of group, ACES, and resiliency as well as 2-way and 3-way interactions of these independent variables. Group was dummy coded (Jaccard & Turrisi, 2003).

The current study examined the impact of ethnicity, ACES, and resiliency on alcohol use/related and drug use/related consequences. Results revealed a significant interaction effect of ACES on drug use/consequences for UND CA group, but not UND AI group (see Table 7; $b=0.35$). Specifically, UND CA ($b=0.39$, $SE=0.12$, $t=3.24$, $p < .01$) participants experienced higher drug use/related consequences when also high in ACES; however, UND AI ($b=0.05$, $SE=0.09$, $t=0.51$, $p = 0.61$) participants did not experience higher drug use/related consequences when also high in ACES. There were no other significant 2-way and 3-way interactions on illicit drug use/related or alcohol use/related consequences. (see Table 6 & 7).

Table 6. Moderating Effect of ACEs and Resiliency on the impact of Ethnicity on Alcohol Use/Consequences

Factors	b	β	t	Correlation part 2
ACEs	0.27	0.16	1.30	0.10
Resiliency	0.02	0.05	0.36	0.03
Ethnicity	1.30	0.16	1.77	0.14
ACEs * Ethnicity	-0.16	-0.07	-0.58	-0.05
Resiliency * Ethnicity	-0.07	-0.15	-1.09	-0.09
ACEs * Resiliency	-0.00	-0.02	-0.17	-0.01
ACEs * Resiliency * Ethnicity	0.02	0.10	0.80	0.06

Note. "Alcohol use/consequences = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year". "UND = University of North Dakota". "ACEs= adverse childhood experiences".

* $p < .05$

Table 7. Moderating Effect of ACEs and Resiliency on the impact of Ethnicity on Drug Use/Consequences

Factors	b	β	t	Correlation part 2
ACE	0.05	0.05	0.41	0.03
Resiliency	0.01	0.03	0.18	0.01
Ethnicity	0.50	0.10	1.21	0.09
ACE * Ethnicity	0.35	0.25	2.18*	0.16
Resiliency * Ethnicity	-0.05	-0.19	-1.48	-0.11
ACE * Resiliency	0.00	0.04	0.34	0.03
ACE * Resiliency * Ethnicity	-0.02	-0.20	-1.68	-0.13

Note. "Drug use/consequences = average score of past year drug use behaviors and related consequences". "UND = University of North Dakota". "ACEs= adverse childhood experiences".

* $p < .05$

CHAPTER IV

DISCUSSION

The current study examined the relationship between alcohol and drug use/related consequences, adverse childhood experiences (ACEs), and resiliency traits among AI and CA college students. Substance use findings from this study revealed no statistically significant differences in level of alcohol and drug use/related consequences between UND AI and CA college students. However, UND AI students had slightly lower alcohol use/related consequences. This is consistent with existing alcohol use research suggesting AI have comparable or lower alcohol use rates than CA (Cunningham, 2015; Sargent, 2017; Ward & Ridolfo, 2011; Fish et al., 2017), in contrary to previous research suggested AI have higher alcohol use compared to other races (Plunkett & Mitchell, 2000). Further, the current study's results suggest alcohol and illicit drug use/related consequences are occurring at a lower rate for AI students, consistent with Greenfield et al., (2018) recent findings of AI southwest college students having lower alcohol and drug use. In terms of drug use specifically, the current findings were consistent with Fish et al. (2017) when comparing illicit drug use among Caucasian and AI students, in which the two groups had similar rates of past 30-day illicit drug use. Further, the current findings found approximately a quarter of AI students used illicit drugs in the past year, which is comparable to Ward & Ridolfo (2011) findings among AI college student

reported poly-substance use. However, in regards to the general college population, previous research (Johnston et al., 2014; SAMSHA, 2004) suggest slightly higher illicit drug use prevalence for college students compared to the the current study's sample's rates. AI students may be using substance use at lower rates due to strong identity to ethnicity which can serve as a protective factor. For example, a recent study by Carter and colleagues (2019) found a stronger sense of ethnic identity reduced the frequency of non-medical prescription drug use among young racially diverse adults, and ethnic identity demonstrated to be a protective factor for only non-CA participants only. A strong tie to ethnic/racial identity may mitigate the high use and consequences of alcohol and illicit drugs, and be a clinically helpful factor in intervention strategies.

The first aim of this study was to examine the relationship between ACEs and alcohol and drug use/consequences among AI and Caucasian college students. Specifically, it was hypothesized AI university students will report higher scores of alcohol and drug use/consequences when also experiencing significantly more ACEs in comparison to CA college students. Contrary to the current study's hypotheses, findings showed for UND CA students, when they have higher ACEs, there is also higher drug use/related consequences. This interaction was not found for AI college students, despite AI students having significant higher ACEs compared to CA students. Previous research supports the current study's findings examining the relationship between ACEs and substance use among the general college student population whereby the number of ACEs increases poorer health outcomes (including substance use) increases. More specifically, with every additional ACE, early onset of illicit drug/alcohol use increased (Anda et al., 2006; Shonkoff & Garner, 2011) and recent research by Forster et al. (2018) found over half of

their student sample using substances were ACE exposed. Additionally, one in four students exposed reported using poly-substances within the last year. Forster et al. (2019) supports the current study's findings that an increase in ACEs among college students are associated with higher odds of using alcohol and illicit drugs/tobacco. Specifically, their results showed CA students had more binge drinking episodes as their ACE score increased, and among Hispanic students (who had similar alcohol use patterns to White students), higher ACE scores were associated with increased odds of high-risk drinking behavior compared to similar ACE exposed white students. However, contrary to the current study's findings regarding race/ethnicity, Wingo (2014) using a predominantly African American sample found as childhood trauma increased, AUDIT and DAST scores increased. However, they administered a different childhood adversity questionnaire than this study's measure, and categorized childhood trauma into emotional, physical, and sexual abuse, and severity of abuse. This resulted in a significant positive relationship between childhood trauma and substance within a minority population, whereas the current study did not. Finally, their study had no control sample to compare ethnic differences. Although the current study found AI students had significantly higher ACEs than CA students, only CA students had greater drug use/related consequences. Perhaps AI students are less sensitive to effects of drug use in college due to other protective factors not measured such as culture and/or they have had to overcome greater adversity to attend and sustain in a university setting compared to their CA peers. Thus, academic activities may be a more prominent value in their college experience and substance use is less. However, no research to date has examined this area within AI students and more broadly ethnic minority college students. Research should

aim to expand on the literature on minority college students who have experienced ACEs, related-health outcomes, and contributing cultural protective factors against substance use and related consequences. Additionally, future studies may need to explore how past established protective factors (Masten & Cicchetti, 2010; Masten, 2013) and cultural assets (Filbert & Flynn, 2010; Forster et al., 2017) in college students can be integrated into culturally relevant and trauma-focused interventions/programs that target ACEs among diverse student populations.

The second aim of the current study was to assess the association between resiliency and alcohol and drug use/related consequences among the two ethnic groups. Our findings revealed UND AI students had higher resiliency scores than UND CA students, which is consistent with Sargent (2017) thesis research examining resiliency differences between CA and AI college students. However, previous research has not examined what factors contribute to AI university students to have higher self-perceived resiliency qualities compared to their CA college peers. AI university students may self report higher scores of resiliency given relocating to a city/state outside of the reservation, where there are drastic differences in cultural factors. More so, AIs are the most underrepresented racial group among college students (Executive Office of the President, 2014) and have the lowest retention rates, due to the collegiate systemic barriers and racism confronted at universities (Brayboy, 2005). Therefore, our sample may have had to overcome several adversities to attend and stay enrolled at the university, and as a result, perceive themselves as more resilient individuals. Lastly, indigenous people have endured historical/intergenerational trauma, which have created significant difficulties and disparities, but at the same time, have fostered protective

factors by their ability to survive cultural genocide, producing strength and resilience (Fast & Collin-Vézina, 2010). AI students may perceive themselves as more resilient people compared to their CA college peers, given themselves and their indigenous community have endured and survived historical trauma and cultural genocide.

The current study hypothesized slope of interaction of resiliency and ethnicity would be different on AUDIT and DAST scores. However, the current findings revealed no significant interaction on of ethnicity and resiliency on alcohol and drug use/related consequences. The current findings are consistent with Sargent (2017) results showing no interaction of group (AI and CA students) and resiliency and its effect on alcohol use. In contrast with the current study's findings, the only study to date examining self-perceived resiliency and AUDIT/DAST outcomes in an ethnic minority population (Wingo, Ressler, & Bradley, 2014) found African Americans who were high in resiliency (measured by the CD-RISC) was associated with lower alcohol and drug use. To date, no other research has study racial differences in resiliency and alcohol and drug use among college student population. However, previous literature (Currie et al., 2013; Dickerson et al. 2016) has found using AI traditions/culture as a means to foster resiliency and protect against high substance use for AI population. It may be possible the current study's form of measuring resiliency isn't capturing how AI students view themselves as being resilient, such as acknowledging tradition/culture, historical trauma, and leaving their native community for higher education, and/or examining their community resilience. Previous research suggests AI students attending college have found methods to become more resilient and determined in completing their college degree (Jackson et al., 2003). AI students who leave their reservation and/or native community for college

often experience feel conflicted about leaving their families and collectivist environment on the reservation however, they learn to cope with these stressors, naturally fostering resiliency (Jackson et al.,2003). Similarly, AI students are at more risk to experience institutional racism and other barriers, putting them at risk for negative college experiences, such as substance use (Whitbeck, Chen, Hoyt, & Adams, 2004); However, those who choose not to engage in substance use, may possible be developing adaptive and healthy coping mechanisms to endure instructional barriers to persist in academics. Despite the current findings and previous research, there is still a need for research to examine resiliency in different contexts as a protective factor against alcohol use among AI college students.

The third aim examined whether resiliency moderated the effect of ACEs on level of alcohol and drug use/related consequences among the two groups. Specifically, it was hypothesized when level of resiliency is high, regardless of number of ACEs, there will be lower alcohol and drug use/consequences scores. Among both AI and CA students, there was no relationship between self-perceived resiliency and ACEs on alcohol and drug use. Little research to date, has examined how the interaction of resiliency and ACES affect alcohol and drug use/related consequences, specifically among AIs. However, Wingo (2014) revealed inner city adults, who predominately identified as African American and low SES, with greater resilience scores were associated with lower lifetime risky alcohol and illicit drug use even if they endorsed a history of childhood abuse. However, their study examined specifically emotional, physical, and sexual child abuse and expanded alcohol and drug use to lifetime criteria instead of past 12 months; thus, creating higher likelihood for participants to have higher AUDIT and DAST scores.

Also, there was no control group for race to be able to examine racial differences in variables among group. The current study's findings may be due to no differences in substance use/consequences among AI and CA students. Additionally, the mean of DAST and AUDIT scores for both AI and CA groups were not significant of hazardous substance use behavior. Lastly, attending college in itself may be a protective factor for both groups, especially AI students, despite experiencing adversities in childhood and before entering college. Therefore, our population may be unique in itself compared to Wingo's (2014) sample.

The current study revealed several clinical implications. First, the current findings support current research demonstrating AI population are using alcohol at similar rates as CA population. This finding supports the concept of separating AIs from the longstanding stereotype of drinking at prominently high rates from previous literature over several decades. The current study aligned with more current research trends, and supports the notion of AI college students are not engaging in risky substance use behaviors. The current study was the first to date to examine drug use and related consequences utilizing the DAST measure among the AI general and college student population, which also revealed no significant differences compared to CA peers. Current research has been examining drug use and intervention and prevention efforts among Indigenous people, given some evidence of high rates. However, the current study suggests for the AI college student population, they are not being affected by high use and behavioral consequences of alcohol and illicit drugs. Given the lack of research examining illicit drug use among the AI college student population, this finding is potentially key in establishing a trend regarding drug use on college campuses,

specifically for minority students. Thus, providing guidance for areas of prevention versus intervention substance use programs for specific college populations. Additionally, the current study was the first to examine ACEs in the American Indian college student population, and demonstrated significantly higher ACEs than their CA peers; however, it did significantly affect substance use rates and consequences. Understanding substance use patterns among college students, especially students where certain vulnerability factors have impacted academic outcomes, such as race/ethnicity and ACEs, will better aid in creating culturally tailored interventions/prevention efforts in the collegiate setting. College campuses have an opportunity to be a key part in identifying elements to help intervene with the negative consequences of childhood adversity during the life transition from late adolescence to early adulthood. Campuses help in efforts to decrease mental and physical health disparities, opportunity gaps, and create an environment to develop and implement culturally informed trauma-related interventions (Foster et al., 2019).

The present study has several limitations acknowledged. First, demographic limitations were differences in age and education level among the two sample groups. The mean age of UND AI was approximately 6 years older than UND CA group. Given the large age difference between groups, this may have affected substance use variables. A majority of the UND AI sample were undergraduate senior or graduate level at the university, while a majority of CA students were freshman in college, with statistically significant differences in education level. Perhaps AI students who are at the senior or graduate level in collegiate education may have more goal oriented behaviors and abstain from “partying” or substance use activities, lessening negative impact on academic outcomes. Relatedly, a possible limitation to our study was given the AI sample was

older, it may be possible this group did experience high use of alcohol and illicit drugs/related consequences earlier in adolescence/young adulthood. A second demographic limitation is given a majority of AI students had experienced high ACEs, and they were possibly able to overcome adversities and attended a university despite the lower odds, they are less likely to engage in risky health behaviors. Therefore, indicating AI college student population may be a specialized group compared to general AI population. A third demographic limitation was the CA student sample was solely recruited from SONA (research recruiting website) for psychology undergraduate students, therefore, the CA college sample was limited in recruitment on campus and prominently recruited from classes that held younger students. In contrast, UND AI students were recruited at the American Indian Center, via the American Indian Center Listserv, and via social media sites.

Another limitation relates to the independent and dependent variables. Although the AUDIT measure's validity and reliability were examined for the general American Indian population (Leonardson et al., 2005), it is not normed on the AI college student population. Further, the DAST measure has not been normed on the AI general and college-specific population. Also, there was no extend assessment of the DAST and AUDIT to lifetime use, compared to Wingo et al., (2014) study. Their results found inverse relationships between resiliency as a moderator for substance use for individuals who experience childhood abuse. Perhaps if the current study assessed lifetime substance use, there could have been significant findings. Another limitation pertains to our assessment of the childhood adversity variable. Additionally, there was no direct assessment of childhood trauma/PTSD symptoms, as Wing et al. (2014) did. The current

findings may have been different is there was assessment of trauma symptoms directly, as it related to resiliency and substance use. Further, the current study did not assess ACEs on a categorical level in the regression analysis. Findings demonstrated when comparing categories of ACEs among AI and CA groups there was significant differences in types of ACEs experienced, with AI students significantly experiencing higher categories of ACEs (e.g., emotional, physical, sexual abuse). Given this finding, there may have been significant differences on types of ACEs on substance use among the two different groups. Another limitation was the DAST and AUDIT mean scores for both groups were in the low range, showing no to low indication of a substance use problem or diagnostic relevance. It may be possible given the average substance use scores were in the lower range, it would be difficult to find a relationship between ACEs and resiliency variable as a 3-way interaction.

Future research should examine differences among CA and AI/other ethnic minority college student differences in substance use. Ideal conditions for future studies should include balanced age, sample size, and education level in order to have accurate comparisons across groups. The current study's findings showed AI students did not differ from CA college students in substance use/related consequences. However, future studies should continue to examine variables that contribute to or protective against substance use among AI and other minorities students. Examining different types of substances used and consequences associated with each illicit drug may be helpful at identifying common use and specific consequences of particular drugs for college students. Examining ACEs on a categorical level may be useful at determining certain severity levels of abuse college students endure, which may affect health risk behaviors

in college. Additionally, future research should aim to examine the concept of resiliency in a culturally appropriate manner for the AI population. Quantitative methods may not fully assess resiliency attributes in the AI population, whereas qualitative methods may better assess concepts of AI culture and how it relates to overcoming adversity and building strength/resiliency in their community and themselves. It may also be beneficial for future research to examine these variables in non-college AI population, given lack of overall research. Lastly, future studies may want to assess ACEs, resiliency, and substance use, and college performance outcomes in a pre-post format, where they examine culturally adapted interventions serving the AI college student populations.

Substance use has found to be prevalent among both college students and AI populations. However, previous literature research is limited in studying differences in alcohol and illicit drug use among AI and CA college students. The current study was able to examine the relationship between alcohol and illicit drug use/related consequences and ACEs among AI and CA college students, as well as resiliency as a potential protective factor against substance use and related consequences. The findings contribute to consistent trends with current research examining substance use with the AI population, which aids in providing accurate needs of intervention/prevention for marginalized populations in a university setting. This study provides support for examining culturally relevant interventions to effectively continue decrease risky substance use among college students, and specifically to continue promoting low use among AI college students. Further, using interventions targeting ACEs and its potentially negative health outcomes may lower risk of developing a substance use disorder and experiencing negatively related outcomes in social and academic

functioning for college students. Specifically, utilizing culturally adapted interventions that target ACE outcomes among AI/other minority students may be essential in future directions in order to support students with healthy psychological well-being and academics success.

APPENDIX A

Demographics Questionnaire

1. Circle below which college you attend:

University of North Dakota
Other

2. Circle the *one* ethnicity with which you *primarily* identify:

American Indian Caucasian Other

3. Age: _____

4. Circle your sex:

Male Female

5. Circle YES or NO if you have ever lived on an American Indian Reservation or are currently living on an American Indian Reservation?

YES NO

6. a) If YES, which one? (If you have lived on multiple Reservations, please enter which reservation you spent most of your time on.)

6. Circle your current year in college:

Freshman Sophomore Junior Senior Graduate

7. How many college credits have you completed?

8. What is your current cumulative GPA?

9. In the past 12 months, have you ever used illicit drugs (for non-medical reasons)?

YES NO

9a) If YES, please CIRCLE the following you have used in the past 12 months:

Cannabis/Marijuana

Heroin

Non- prescribed opioid medication (e.g., Hydrocodone, Oxycodone, etc.)

Non-prescribed stimulant medication (e.g., Adderall, etc.)

Amphetamine

Methamphetamine

MDMA (e.g., Ecstasy, Molly, etc.)

Hallucinogens (e.g., LSD, Shrooms, etc.)

Other (please describe): _____

10. How often do you attend American Indian traditional ceremonies?

1(Never)

2(Rarely)

3(Sometimes)

4 (Often)

11. How strongly do you identify with American Indian culture?

1(Not at all)

2(A little)

3(Moderate)

4(Very much)

12. Do you feel that your college institution supports your identified culture and traditions?

YES

NO

APPENDIX B

(AUDIT)

DIRECTIONS: Below are questions related to your alcohol use. Your answers will remain confidential so please be honest. Circle the box that best describes your answer to each question.

One standard drink = 12 oz. can/bottle of beer, 8-9oz of malt liquor, 4 oz. glass of wine, 1.5 oz. hard liquor.

	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly	2-4 times a month	2-3 times a week	4 or more times a week
2. How many standard drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How often do you have 6 or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
6. How often during the last year have you needed a drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year

APPENDIX C

(DAST)

DIRECTIONS: The following questions concern information about your involvement with drugs. Drug abuse refers to (1) the use of prescribed or “over-the-counter” drugs in excess of the directions, and (2) any non-medical use of drugs. Consider the past year (12 months) and carefully read each statement. Then decide whether your answer is YES or NO and check the appropriate space. Please be sure to answer every question.

	YES	NO
1. Have you used drugs other than those required for medical reasons?	YES	NO
2. Have you abused prescription drugs?	YES	NO
3. Do you abuse more than one drug at a time?	YES	NO
4. Can you get through the week without using drugs (other than those required for medical reasons)?	YES	NO
5. Are you always able to stop using drugs when you want to?	YES	NO
6. Do you abuse drugs on a continuous basis?	YES	NO
7. Do you try to limit your drug use to certain situations?	YES	NO
8. Have you had “blackouts” or “flashbacks” as a result of drug use?	YES	NO
9. Do you ever feel bad about your drug abuse?	YES	NO
10. Does your spouse (or parents) ever complain about your involvement with drugs?	YES	NO
11. Do your friends or relatives know or suspect you abuse drugs?	YES	NO
12. Has drug abuse ever created problems between you and your spouse?	YES	NO
13. Has any family member ever sought help for problems related to your drug use?	YES	NO
14. Have you ever lost friends because of your use of drugs?	YES	NO

15. Have you ever neglected your family or missed work because of your use of drugs?	YES	NO
16. Have you ever been in trouble at work because of drug abuse?	YES	NO
17. Have you ever lost a job because of drug abuse?	YES	NO
18. Have you gotten into fights when under the influence of drugs?	YES	NO
19. Have you ever been arrested because of unusual behavior while under the influence of drugs?	YES	NO
20. Have you ever been arrested for driving while under the influence of drugs?	YES	NO
21. Have you engaged in illegal activities in order to obtain drug?	YES	NO
22. Have you ever been arrested for possession of illegal drugs?	YES	NO
23. Have you ever experienced withdrawal symptoms as a result of heavy drug intake?	YES	NO
24. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	YES	NO
25. Have you ever gone to anyone for help for a drug problem?	YES	NO
26. Have you ever been in a hospital for medical problems related to your drug use?	YES	NO
27. Have you ever been involved in a treatment program specifically related to drug use?	YES	NO
28. Have you been treated as an outpatient for problems related to drug abuse?	YES	NO

APPENDIX D

(ACE Questionnaire)

DIRECTIONS: Please answer the following questions relating to you growing up, during the first 18 years of life:

	YES	NO
1. Did a parent or other adult in the household often or very often ... Swear at you, insult you, put you down, or humiliate you? OR Act in a way that made you afraid that you might be physically hurt?	YES	NO
2. Did a parent or other adult in the household often or very often ... Push, grab, slap, or throw something at you? OR Ever hit you so hard that you had marks or were injured?	YES	NO
3. Did an adult or person at least 5 years older than you ever ... Touch or fondle you or have you touch their body in a sexual way? OR Attempt or actually have oral, anal, or vaginal intercourse with you?	YES	NO
4. Did you often or very often feel that... No one in your family loved you or thought you were important or special? OR Your family didn't look out for each other, feel close to each other, or support each other?	YES	NO
5. Did you often or very often feel that... You didn't have enough good to eat, had to wear dirty clothes, and had no one to protect you? OR Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?	YES	NO
6. Were you parents ever separated or divorce?	YES	NO

<p>7. Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her?</p> <p style="text-align: center;">OR</p> <p>Sometimes, often, very often kicked, bitten, hit with a fist, or hit with something hard?</p> <p style="text-align: center;">OR</p> <p>Ever repeatedly hit at least a few minutes or threatened with a gun or knife?</p>	YES	NO
<p>8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?</p>	YES	NO
<p>9. Was a household member depressed or mentally ill, or did a household member attempt suicide?</p>	YES	NO
<p>10. Did a household member go to prison?</p>	YES	NO

Appendix E (Copyrighted- Do not duplicate)

(CD-RISC)

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