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# Examining Cultural Identification And Substance Use Among American Indian And Caucasian Adults

Lynn Ruth Martell

# EXAMINING CULTURAL IDENTIFICATION AND SUBSTANCE USE AMONG AMERICAN INDIAN AND CAUCASIAN ADULTS

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Lynn Ruth Martell
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Name: Lynn Martell

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This document, submitted in partial fulfillment of the requirements for the degree from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

DocuSigned by:
Doug McDonald
1204AB3B3EA2441...
Justin Douglas McDonald, Ph.D.

DocuSigned by:
alan king
FEB3F7715EAD449...
Alan King, Ph.D.

DocuSigned by:
F. RICHARD FERRARO
1F0DCCE89ECF416...
Thomas Petros, Ph.D.

DocuSigned by:
Thomas Petros
C4A022288E24476...
F. Richard Ferraro, Ph.D.

DocuSigned by:
Dr. Hans
EE958B2E8F784D8...
Birgit Hans, Ph.D.

This document is being submitted by the appointed advisory committee as having met all the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

DocuSigned by:
Chris Nelson
2E0AF088C733403...
Chris Nelson
Dean of the School of Graduate Studies

5/14/2021
Date

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Department Clinical Psychology

Degree Doctor of Philosophy

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Lynn Ruth Martell
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ABSTRACT

Previous research suggests American Indians (AIs) demonstrate higher levels of substance use and related consequences. AIs have experienced historical trauma through colonization which has created shifts in the way AIs conceptualize their identity. However, the literature on cultural identification as an influencing factor of substance use among AIs is inconsistent. The current study examined alcohol and drug use/related consequences, collective self-esteem, and cultural identification among 213 AI ($n$ = 44) and Caucasian (CA; $n$ = 169) adults via online surveys. Results indicated higher scores on the American Indian Cultural Identification (AICI) scale was a predictor for increased alcohol and drug use/related consequences, whereas, scores on the European American Cultural Identification (EACI) scale did not predict alcohol and drug use. Findings demonstrated identity exploration and commitment was not correlated with AI and CA alcohol and drug use/related consequences. Furthermore, results indicated EACI scores decrease in alcohol and drug use was mediated by increased membership self-esteem, private collective self-esteem, and public collective self-esteem. Results indicated AICI scores increase in alcohol and drug use was mediated by decreased private and public collective self-esteem, whereas, AICI scores decrease in alcohol and drug use was mediated by increased importance to identity. This study was the first to examine the mediating effects of collective self-esteem between cultural identification and substance use among AI adults. Understanding the relationship

between these variables may enhance assessment and intervention/prevention efforts among AI and CA adults.

*Keywords: Cultural identification, substance use, collective self-esteem*

# CHAPTER I

# INTRODUCTION

## Examining Cultural Identification and Substance Use Among American Indian and Caucasian Adults

According to the World Health Organization (2014), substance use is a problem affecting approximately 5.4% of the population worldwide. Previous research (Whitesell, Beals, Big Crow, Mitchell, & Novins, 2012) has suggested American Indians (AIs) tend to have higher rates of alcohol and drug use in comparison to Caucasians (CAs). Research on AIs and substance use has mainly focused on adolescent or college student samples; therefore, literature is currently lacking examining non-college attending AI adults. Furthermore, previous research (Bates et al., 1997; Herman-Stahl, Spencer, & Duncan, 2003; Oetting & Beauvais, 1990-1991; Westermeyer & Nieder, 1985) has shown inconsistencies in findings related to cultural identification and substance use among AIs. However, traditionalism and cultural identity tends to be incorporated in prevention and treatment programs of substance abuse for AIs (Gone & Calf Looking, 2015; Legha & Novins, 2012; McDonald & Gonzales, 2006; McDonald, Morton, & Stewar, 1992). Therefore, the current study was needed in order to better understand the link between cultural identification and substance use among AI adults. Further, the protective effects of cultural identification against substance use may be strengthened for those with higher collective self-esteem. To date, no research has investigated the potentially mediating effects of collective self-esteem between cultural identification and substance use among AI adults.

## Alcohol Use Among Adults

Alcohol use is still a worldwide health concern and is the leading risk factor for early death and disability (World Health Organization, 2011). According to the 2018 National Survey on Drug Use and Health (NSDUH, 2019), approximately 55.1% of the population in the United States ages 18 to 25 have consumed alcohol within the past month, with similar rates among adults 26 and older. Alcohol use is defined as any use of alcohol (NIAAA, 2019). On average, males tend to use alcohol at higher rates than females within a given month (NSDUH, 2019). Binge drinking for males is defined as five or more drinks on the same occasion, whereas for females it is defined as drinking four or more drinks on the same occasion. According to a national survey conducted in 2018, approximately 34.9% of young adults ages 18 to 25 reported engaging in at least one binge drinking episode in the past month (NSDUH, 2019). Heavy alcohol is defined as binge drinking on 5 or more days in the past month, and approximately 1 out of every 11 (9.0%) adults ages 18 to 25 were a current heavy alcohol drinker (NIAAA, 2019). Research has found alcohol use differs among young adults, with college students being more likely to engage in heavy and binge drinking compared to non-college students (Patrick et al., 2016). Furthermore, research has found young adults who work full-time are associated with greater alcohol use and negative consequences compared to unemployed young adults regardless of educational status, which may be due to increased disposable income (Lee et al., 2018). Additionally, research indicates alcohol consumption varies as a function of time of the year such as special events, holidays, and weekday versus weekend (Knudsen & Skogen, 2015; Kushnir & Cunningham, 2014; Tremblay et al., 2010; Baumann et al., 2017). Overall, the existing literature suggest high rates of alcohol use among adults.

Examining alcohol use differences in age and ethnicity is an important area of research. Research has found alcohol use has age-related trends of peaking in emerging adulthood ages 18 to 25 followed by a decline in adulthood around age 30 (Chassin et al., 2002). Previous research accounts for the age-related trend due to individuals not taking on normative adult obligations (e.g., marriage, owning a home, children) until they reach age 30 (Arnett, 2000). Additionally, research has found alcohol to be the most commonly used substance by older adults (typically ≥65) and was related to social engagement, social isolation, illness, bereavement, and maintaining identity (Moore et al., 2009; Kelly et al., 2018). According to the National Survey on Drug Use and Health (SAMHSA, 2017), CAs had highest (56.3%) rates of alcohol consumption, Hispanics or Latinos have second highest (42.5%) rates, followed by African Americans (41.2%), and Asian had lowest (35.5%) rates. Furthermore, research has found Asian foreign-born were less likely to have past-month alcohol use than their corresponding U.S. born Asian (Lee, Han, & Gfroerer, 2012). Research has found individuals who identify as both African American and CA tend to surpass drinking rates of CAs in adulthood and are more likely to report heavy drinking (Clark, Corneille, & Coman, 2013). Additionally, research has found individuals who identified as both African American and AI were most likely to be non-drinkers up to age 25 then tended to increase in alcohol consumption rates similar to CA (Clark, Corneille, & Coman, 2013). However, there is still a lack of research examining alcohol use among AI adults.

**Negative Alcohol-Related Consequences**

Although alcohol use is common among adults, it may also result in negative alcohol-related consequences such as in the categories of social, medical, physiological, and physical. In addition, research has found emerging adults are at the highest risk for experiencing alcohol-

related consequences (Hingson et al., 2009). Negative alcohol-related consequences include: breakdown of relationships and families, violence, child abuse/neglect, reduced individual or community productivity, brain impairment, accidents, and unsafe sexual behavior (Babor et al., 2010; White & Rabiner, 2012). Research has found alcohol use during pregnancy to be associated with fetal alcohol syndrome or effects (i.e., growth retardation, facial deformity, central nervous system abnormalities) and alcohol disorders for baby in adulthood (Chiriboga, 2003; Alati et al., 2006). Previous research found heavy drinking during emerging adulthood increases the likelihood to report early heavy drinking, have parents with greater alcohol use or alcoholism, and not live with both parents (Caswell, Pledger, & Pratap, 2002; Chassin et al., 2002; Hill et al., 2000; White, Johnson, & Buyske, 2000). Furthermore, research has found binge drinking was associated with increased risk for liver disease, sexually transmitted diseases, illicit drug use, and alcohol-related traffic deaths (Hingson, Zha, & Weitzman, 2009). Interestingly, research has found weekend drinkers were more likely to experience sickness and feelings of guilt as a result of alcohol use compared to daily drinkers who were more likely to get into fights, drive while intoxicated, and miss work (Cleveland et al., 2013). Overall, research suggests alcohol-related consequences and rate of alcohol use is an area of concern particularly among emerging adults.

**Illicit Drug Use Among Adults**

Illicit drug use is another major health concern that has remained prevalent with approximately 67% of adults having used an illicit drug by age 25 (Johnston et al., 2012). Research has found emerging adults to be at high risk for initiation and current use of illicit drugs along with experiencing negative consequences associated with use (Arnett, 2000). Approximately 38.7% of the population aged 18 to 25 in the United States used an illicit drug in

the past year, with marijuana (34.8%) being the most commonly used illicit drug (NSDUH, 2019). Furthermore, the 2018 National Survey on Drug use and Health (NSDUH) indicated the prevalence among adults aged 18 to 25 of specific illicit drugs to be the following: hallucinogens (6.9%), stimulant misuse (6.5%), cocaine (5.8%), opioid (5.6%), misuse of pain relievers (5.5%), misuse of tranquilizers or sedatives (4.9%), benzodiazepines (4.5%), inhalants (1.5%), methamphetamines (0.8%), and heroin (0.5%). Previous research has found risk factors associated with illicit drugs use to include: younger age, being male, having low income, family/friends who use drugs, greater feelings of hostility or risk taking, and low self-esteem (Moore & Li, 2010). In addition, research has found parental alcoholism to be associated with early onset drinking and increases in alcohol and illicit drug use (Flora & Chassin, 2005).

Examining illicit drug use differences in gender and ethnicity is an imperative area of research. On average, males tend to use drugs at higher rates than females within a month (NSDUH, 2017). Furthermore, research has found women who experience gender discrimination and had less than a high school education was associated with higher probability for past year illicit drug use (Carliner et al., 2017). According to NSDUH (2017), 12.5% of African American adults reported illicit drug use in the past year, followed by CA (10.8%), then Native Hawaiian/Other Pacific Islander (9.8%), next Hispanics or Latinos (9.2%), and lastly Asians (4.1%) with the lowest rates (NSDUH, 2017). Furthermore, research has found individuals that identify as mixed-race (i.e., having more than one racial identity) demonstrate the highest rate (20.2%) of illicit drug use (Wu et al., 2013; NSDUH, 2017). Research has found African Americans that are in government assistance programs, educational attainment, and disadvantaged neighborhoods were associated with illicit drug use, specifically prescription opioid misuse (Nicholson & Ford, 2018). Research has suggested Hispanic immigrants are less

likely to use illicit drugs or alcohol compared to U.S. born Hispanics (Mancini, Salas-Wright, & Vaughn, 2015). However, there is still a lack of research examining illicit drug use among AI adults.

**Negative Illicit-Drug Related Consequences**

Research suggests numerous adverse health effects related to illicit drug use such as drug poisoning, injury, suicide, infectious diseases (i.e., hepatitis B & CC, HIV) from injecting drugs, and cardiovascular disease (Muhuri & Gfroerer, 2011). According to Hedegaard, Minino, and Warner (2018), there was approximately seventy thousand drug overdose deaths, specifically, adults ages 25-34, 35-44, and 45-54 had higher rates of overdose deaths than other age groups. Previous research suggests illicit drug use and alcohol was associated with increase in emergency room visits due to illness or injury (Vitale & Mheen, 2006). Additionally, research has found an increase in drug dependence and psychiatric dysfunction as a result of drug use. For example, individuals who engaged in non-medial opioid use were found to be at increased risk for onset and recurrence of mood or anxiety disorders (Schepis & Hakes, 2011). Furthermore, previous research has found illicit drug use to be positively associated with sexual risk behaviors (e.g., multiple partners, inconsistent condom use, substance use before sex) and lifetime sexually transmitted infections (Bonar et al., 2014). Research has found illicit drug use during pregnancy to be associated with increased risk of placental abruption, intrauterine growth restrictions, premature births, and low birth weight (Oyelese & Aanth, 2006; Bada et al., 2002; Bennett, 1999). In addition, research has found approximately 23% of emerging adults rode in a vehicle with a peer who was under the influence of marijuana and drivers under the influence of marijuana has been associated with the perpetration of road-rage behavior (i.e., intentionally/attempt to damage or injury another driver) as well as experiencing road rage

victimization (Li et al., 2018; Fierro, Morales, & Alvarez, 2011). Previous research has found non-medical use of prescription drugs to be a risk factor for future drug dependence, binge drinking, and substance use disorders (Schepis & Krishnan-Sarin, 2008; Schepis & Hakes, 2011). According to the 2018 National Survey on Drug use and Health (NSDUH), approximately 15.0% of adults age 18 to 25 have had a substance use disorder in the past year, based on the criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; DSM-IV; American Psychological Association, 1994), with about 1 in 7 adults needing substance use treatment. Overall, illicit drug use among adults has the potential to result in harmful consequences.

**Protective Factors Against Substance Use**

Protective factors may combat against substance use rates among adults. Protective factors are defined as something that aids to prevent, limit, reduce, counter, or buffer against alcohol and illicit drug use rates (Newcomb & Felix-Ortiz, 1992). Previous research has shown high levels of religious attendance, prayer, and importance of religion were a protective factor against illicit drug use, particularly marijuana and cocaine, but protective effects diminished when exposed to users (Palamar, Kiang, & Halkitis, 2014). Research has found emerging adults who are in a committed relationship or married, compared to those who are single, report lower rates of alcohol consumption and illicit drug use (Braithwaite et al., 2010; Flora & Chassin, 2005; Simon & Barrett, 2010; Whitton et al., 2018). Additionally, research has found substance use rates decline when individuals enter dating or nonmarital cohabiting relationships (Duncan et al., 2006; Furman & Collibee, 2014; Staff et al., 2010). Furthermore, previous research has found parental monitoring during high school and fewer substance using peers to be associated with lower substance use rates in emerging adulthood (White et al., 2006). Research has also found

parenthood and entrance into workforce to be associated with decline in substance use (Bachman et al., 2002). In addition, non-college attending adults were less likely to mature out of substance use compared to their college attending peers suggesting college status may be a protective factor long term (White, Labouvie, & Papadaratsakis, 2005). Thus, the existing literature examining protective factors against substance use is an important area of research.

**Substance Use and Related Consequences among American Indians**

Substance use is a significant health concern, particularly among AIs (Chartier & Caetano, 2010). Existing literature on substance use among AIs tends to generalize findings that may be limited by cross-sectional designs, small sample size, or examining only a single tribe which can result in misleading conclusions due to not taking into consideration cultural variations (Szlemko, Wood, & Thurman, 2006; Beauvais, 1998). It is important to note there is over 562 federally recognized tribes with each its own history, customs, language, and beliefs (Dickerson, Brown, Johnson, Schweigman, & D'Amico, 2016).

Previous research on AI substance use suggests higher levels of use, increased prevalence for substance use disorders, and higher rates of mortality related to use compared to other ethnic groups (Beauvais, 1992; Center for Disease Control and Prevention, 2011; Chartier & Caetano, 2010; Oetting & Edwards, 1985). However, most of the research has predominantly utilized an AI adolescent sample. Specifically, research suggests AI adolescents are more likely to initiate substance use earlier and have the highest prevalence of lifetime and current use of substances compared to CA adolescents (Stanley & Swaim, 2015; Subica & Wu, 2018). Furthermore, AI adolescents living on reservations tend to have higher substance use rates compared to AIs among living off the reservations (Beauvais, 1992). In addition, AI adolescents are more likely to use multiple substances and be at an increased risk for experiencing negative

consequences (i.e., unwanted pregnancies, cognitive deficits, violence, accidents, dropping out of school) related to use compared to their peers (Boyd-Ball, Veronneau, Dishion, & Kavanagh, 2014; Sarche & Spicer, 2008).

In current research related to AI adults, the National Survey on Drug Use and Health (SAMHSA, 2017) indicated AIs had lower alcohol consumptions rates (34.4%) compared to other ethnic groups. Additionally, AIs had lower binge drinking (21.6%) and heavy alcohol use (5.7%) compared to CAs with binge drinking rates of 25.4% and heavy alcohol use rates of 7.2% (Cunningham, Solomon, & Muramoto, 2015; SAMHSA, 2017). Previous research suggests AIs (59.9%) abstained from alcohol use in the past month compared to CA (43.1%) abstaining (Cunningham, Solomon, & Muramoto, 2015). In addition, approximately 14.5% of AIs were identified as light/moderate drinkers compared to 32.7% of CAs. Overall, the current research suggests AI alcohol use rates are lower or similar compared to CA, therefore, providing evidence contrary to previous literature suggesting AIs had significantly higher rates of alcohol use.

According to the National Survey on Drug Use and Health (SAMHSA, 2017), AIs had the highest illicit drug use rates (15.7%) compared to other ethnic groups. Specifically, AIs had higher rates of marijuana use (13.6%), but lower rates of misuse of prescription psychotherapeutic drugs (1.9%) compared to CAs (SAMHSA, 2017). In recent years, research has found high rates of methamphetamine use among AIs (1.4%) compared to the general population (0.6%) and younger age of onset for marijuana and methamphetamine, but similar age of onset for cocaine and heroin (Bureau of Indian Affairs. Indian Services Connector Summary, 2007; Dickerson et al., 2012; Forcehimes et al., 2011; Spear, Crevecoeur, Rawson, & Clark, 2007). In addition, AIs aged 12 or older were found to have the highest rate of injection drug use (0.24%) compared to other ethnic groups along with high HIV/AID infection rates

(Abuse, 2009; Dickerson et al., 2012). Research suggests AIs have high rates of prescription opioid misuse compared to other ethnic groups (De Nadai et al., 2019). Previous research suggests AI drug users were more likely to be young, have lower education levels, and be unemployed (Reynolds et al., 2000).

The existing literature suggests substance use among AIs differs by age, gender, and tribe (Novins et al., 2001; O'Connell et al., 2007; Whitesell et al., 2007). Research suggests AIs over 40-years-old to have a high rate of abstinence from alcohol use compared to younger AIs (May & Gossage, 2001). Previous research has found AI men to have higher rates of substance use compared to females (Mitchell et al., 2003). Research has found low interest from AI men's father and substance abuse of their father to be associated with increased risk for substance use (Neault et al., 2012). In addition, research has found AI men who are involved in childrearing, present at the child's birth, employed, and educated to report lower rates of substance use (Neault et al., 2012). Research has found AI female substance users tend to be unemployed, homeless, have a high number of pregnancies or stillbirths, and have children under the custody of child protective services (Stevens, 2001). Research suggests parental history of substance use and childhood traumatic events was associated with higher substance use in adulthood for AIs (O'Connell et al., 2007). Previous research has found a lack of family communication, lack of social support, and low self-esteem to be risk factors for substance use among AIs (Hurdle, Okamoto, & Miles, 2003; LaFromboise, Hoyt, Oliver, Whitbeck, 2006). Additionally, research compared two culturally distinct AI tribes and found the drinking rates among adults were significantly lower for Southwest AIs compared to Northern Plains AIs with males having higher alcohol rates than females within both tribes (May & Gossage, 2001). Furthermore, research has

found Southwest AIs to report lower rates of parental history of substance use, trauma, and childhood conduct problems compared to Northern Plains AIs (O'Connell et al., 2007).

Research suggests AIs experienced multiple negative consequences related to substance use such as accidents, lower education attainment, poor health, legal issues, suicide, trauma, and homicide (O'Connell et al., 2006; Rocky Mountain Tribal Epidemiology Center, 2017). In addition, research has found higher rates of morbidity and mortality among AI substance users (May & Phillip, 2001). Additionally, research has found AIs have a higher rate of accidental overdose (15.7%) compared to CAs (Paulozzi et al., 2011). Research suggests AIs are more likely to experience violence victimization (e.g., intimate partner violence, rape, robbery, and assault) related to substance use compared to other ethnic groups (Greenfeld & Smith, 1999; Yuan, Koss, Polacca, & Goldman, 2006). Previous research suggests AI substance users are at risk for developing Substance Use Disorder and having other related mental health disorders (e.g., anxiety, depression, conduct) with rates being 2-5 times higher compared to the general population (Robin et al., 1998). Overall, the literature is lacking among AI adults and is needed in order to better understand substance use rates, risks, negative consequences, and prevention.

**Historical Trauma and AIs**

It is important to take into consideration the association between historical trauma and substance use among AIs. Historical trauma is described as unresolved grief resulting from changes in spiritual, social, and economic structures that is passed down from one generation to another of Indigenous people in the process of colonizing America (Brockie et al., 2013; Duran et al., 1998; Oetzel & Duran, 2004). Previous research suggests the following have had lasting psychological effects on AIs: forced removal from tribal lands, placement on reservations, placement of AI children in boarding school, broken treaties, acculturation, and historical

genocide (Duran, 2006; McDonald & Chaney, 2003; McDonald & Gonzales, 2006). For example, AIs who had a family member attend boarding school were found to be associated with a history of abuse and suicide (Elias et al., 2012). Historical trauma has negatively impacted the ability to participate in traditional practices, decreased the level of cultural awareness, and contributed to loss of language among AIs (Dickerson et al., 2016; McDonald & Chaney, 2003; McDonald & Gonzalez 2006). Research suggests AIs who identify as traditional was a factor that influenced their level of emotional response to thoughts of historical loss (Ehlers et al., 2013).

Historical trauma has been suggested of being a causing factor to substance use rates and may contribute or increase current trauma among AIs (Brave Heart & DeBruyn, 1998; Ehlers et al., 2013). For example, AIs with substance use experience an increase in distress related to historical loss compared to AIs who do not use substances (Ehlers et al., 2013). Specifically, AIs who report high rates of historical loss have been found to be at an increased risk of depression, anxiety, anger, poly-drug use, and Posttraumatic Stress Disorder (Brockie et al., 2015; Whitbeck, Adams, Hoyt, & Chen, 2004). Further, AIs report experiencing traumatic events at a higher rate (94%) compared to the general population which are not limited to a single event, but rather multiple events that impact their current lives (Beals et al., 2005; Ehlers et al., 2013; Whitbeck et al., 2004a; Whitbeck et al., 2004b). Similarly, studies on discrimination have found a large majority of AI adults to report experiencing daily discrimination which was also associated with increased psychological stress (Gonzales et al., 2016). In addition, AIs who report experiencing discrimination had an increased risk of substance use (Brockie et al., 2015). Overall, historical trauma has impacted AIs identity and substance use.

## Cultural Identification among AIs

Cultural identification is defined as a personal trait impacted by the degree to which an individual associates with or views themselves as a member of a specific group as well as their investment in that culture (Oetting & Beauvais, 1991). Cultural identification involves the ongoing social learning process in addition to that individuals' interactions within the culture (Oetting et al., 1998). Cultural identification has been suggested to evolve as a result of developmental changes such as cognitive ability (Bernal et al., 1993, Phinney, 2003). Minorities that reside in an environment that is strongly influenced by the majority culture may experience conflicting beliefs, attitudes, values, and differences in traditions (Oetting & Beauvais, 1991). The theoretical model of acculturation states cultural and psychological changes by colonization result in changes in values or characteristics of minority cultures to match those of the dominant culture and are difficult for minorities to adapt to which prompts negative coping mechanisms such as substance use (Beauvais, 1992; Clark 2006; Flynn et al., 2014). As a result, multiple factors have been suggested to contribute to AI identification such as biological, legal, cultural, geographic, and historical considerations (Gone, 2006; Mihesuah, 1998; Peroff & Wildcat, 2002).

There have been multiple models for assessing cultural identification throughout the literature (Berry & Annis, 1974; Oetting & Beauvais, 1991). Multidimensional models conceptualize cultural identification across various dimensions allowing for a dichotomous perception (e.g., high in AI identification, then low in CA) (Phinney, 1992). In contrast, the Orthogonal Cultural Identification Model views identification with one culture to be independent with another culture which allows for four cultural orientation categories including: bicultural (identifies with both cultures), assimilated (identifies with dominant culture), traditional

(identifies with minority culture), and marginal (low identification in both cultures) (Oetting & Beauvais, 1991).

The existing literature on cultural identification has primarily utilized an AI adolescent sample. Specifically, research on AI adolescents have found self-esteem, self-confidence, sense of purpose in life, social connections, and sense of belonging to be correlated with a higher level of cultural identity (Garrett et al., 2014; Kenyon & Carter, 2011; Martinez & Dukes, 1997; Schwigman, Soto, Wright, & Unger, 2011). In addition, AI adolescents who lived off the reservation placed greater importance on participating in cultural activities (i.e., ceremonies, pow wows, dance, sweat lodges) which was associated with higher levels of cultural identity (Schweigman et al., 2011). Additionally, higher levels of cultural identity predicted lower levels of depression among AI adolescents (Rieckmann et al., 2004). Interestingly, research has found AI adolescent females to report higher levels of traditional cultural identification than males (Phinney, 1990; Whitesell et al., 2006).

The literature on bicultural identification is inconsistent in findings and lacking. For example, research suggests AIs with high traditional identification can utilize their identity as a foundation to balance between two cultures at the same time, thus, being more likely to succeed in multicultural environments (Huffman, 2001; LaFromboise, Coleman, & Gerton, 1993; Lamsam, 2014). However, those who identify as bicultural have been suggested to comprise feelings of attachment and desires to fit in which may create feelings of alienation or internal conflict that may influence negative behavior (Berry, Poortinga, Segall, & Dasen, 2002; LaFromboise et al., 2010).

Recent literature suggests AI cultural identity acts as a coping mechanism and is a contributing factor for resiliency (Struthers & Lowe, 2003; Stone et al., 2006). In research related

to AI adults, it has been suggested urban AIs go through different stages of cultural identity, beginning with rejection of AI identity and ending with full embrace of traditional AI identity (Lucero, 2010). In addition, higher AI identification has been associated with a higher sense of self-efficacy whereas higher levels of CA affiliation were associated with higher levels of learned helplessness and lower self-efficacy (Schiefer & Krahe, 2014). Higher AI identification has also been associated with increased microaggression experiences, especially among males (Jones & Galliher, 2015). Furthermore, research suggests pride in culture and historical trauma influenced how AI conceptualized their identity (House et al., 2006).

Another aspect of cultural identity to consider is one's exploration and commitment to that identity. For example, research suggests commitment is a critical dimension of identity and includes feelings of belonging and attachment to a group (Phinney, 1992; Phinney & Ong, 2007). Identity exploration consists of current or past efforts to learn about the history, practice, and beliefs of one's culture or ethnic group (Phinney & Ong, 2007). Based on Tajfel and Turner's social identity theory, Phinney (2003) suggested those with strong attachment or sense of belonging to a group and some exploration about that group will result in a strong sense of cultural identity. A study utilizing an AI sample found those who reported stronger cultural identification also had high levels of commitment compared to exploration (Jones & Galliher, 2015). Research has suggested identity exploration can be triggered after experiences of discrimination, especially among minority populations (Pahl & Way, 2006). Identity exploration has been found to be associated with greater substance use behaviors among AI males than females (Jones & Galliher, 2007). In contrast, research on minority populations suggests individuals with higher identity commitment reported a lower likelihood of engaging in drug and

alcohol use (Heads et al., 2018). Overall, the existing literature is lacking for cultural identification among AI adults.

**Cultural Identification and Substance Use among AIs**

Research suggests being more connected to one's culture reduces negative behaviors (e.g., substance use) by enhancing focus on prosocial behaviors (Jones & Galliher, 2015). Historical trauma has resulted in AIs perceived detachment from their traditional culture and it has been suggested that AIs use substances to form a new identity and fulfill a sense of belonging (Beauvais, 1998; May 1982; Skewes & Blume, 2019). However, the literature on cultural identification and substance use among AIs remains inconsistent in results. For example, AIs living on reservations who identify as bicultural or assimilated were more likely to use multiple substances (i.e., alcohol, illicit drugs, poly-drugs) than those who identify as traditional (Herman-Stahl, Spencer, Duncan, 2003). Furthermore, AIs who identified as bicultural or assimilated were correlated with heavy drinking and alcohol abuse after controlling for age, gender, education, and employment. In contrast, previous research has suggested AIs who identify as bicultural to have the lowest level of substance use (Ferguson, 1976; Herring, 1994; Moran et al., 1999; Oetting & Beauvais, 1991).

Next, AIs who identified as assimilated have been associated with lower antidrug personal norms and have poor prognosis in substance abuse treatment (Ferguson, 1976; Kulis, Napoli, & Marsiglia, 2002). Previous research has found those who identify as being traditional AI were associated with being a protective factor against substance use (Skewes & Blume, 2019; Whitbeck, 2004). However, other research has not found a direct effect of cultural identity on substance use among AIs (Beauvais, 1998; Stone et al., 2006). Instead, research suggests the specific mechanisms that protected against substance use among AIs include: peer involvement,

family sanctions, participation in traditional activities, and traditional spirituality (Bates et al., 1997; Urbaeva, Booth, & Wei, 2017). Overall, these contradictory findings make it difficult to draw conclusions about the association between cultural identification and substance use among AI.

**Cultural Identification, Substance Use, and Collective Self-Esteem among AIs**

Research has suggested the relationship between cultural identification and substance use is mediated through self-esteem (Lorenzo-Hernandez & Ouellette, 1998; Phinney, 1990; Umana-Taylor, 2004). Specifically, if an individual evaluates their group positively it will result in enhanced self-esteem which in turn aids as a protective factor in lowering substance use. Regarding AIs, higher AI identification has been found to have a negative relationship with self-esteem. For example, self-esteem was found to have a mediating effect between AI identification and marijuana use with AI identification increasing marijuana use (Swaim & Stanley, 2019). However, research on self-esteem has shown its protective effects in lowering depressive symptoms, anxiety symptoms, and externalizing behavior (Derdikman-Eiron et al., 2011; Moksnes & Espnes, 2012; Ybrandt & Armelius, 2010).

In addition, AIs have different worldviews compared to other ethnic groups; which may influence the way AI communities perceive substance use (Brown et al., 2009). AI culture has been found to function primarily from a collectivistic perspective (i.e., achieves sense of self through their contribution towards the overall success of the group) thus family or community support may be more important in reducing substance use (Earley, Gibson, & Chen, 1999; Matamonasa-Bennett, 2017). Self-esteem has been suggested to differ among AIs who tend to be collectivistic rather than individualistic (Crocker, 2002). Specifically, those who tend to lean

towards being collectivist their self-esteem may be linked to the strength of that individual's connection to the in-group (i.e., family, community) (Oyserman et al., 2002).

Collective self-esteem refers to the evaluation of the social group to which one belongs (Downie, Mageau, Koestner, & Liodeen, 2006). Private collective self-esteem refers to self-esteem that is linked to one's own evaluation of one's own in-group, whereas, public collective self-esteem refers to one's appraisal of outgroup members' evaluation of the ingroup (Luhtanen & Crocker, 1992). Membership self-esteem is defined as the estimation of an individual's worth as a member of that group, whereas, importance to identity is how important being a member of a certain group is to one's self-concept (Luhtanen & Crocker, 1992). Research on minority populations has found collective self-esteem relates to greater well-being, whereas lower collective self-esteem relates to negative health outcomes. In addition, lower levels of public collective self-esteem have been found to associated with greater acculturative stress which was suggested to be a predictor of negative health outcomes (Kim & Omizo, 2005). Furthermore, research suggests individuals with low collective self-esteem tend to view their group negatively and who display low levels of cultural identification are more likely to experience substance use (Pedersen et al., 2013). Overall, the research on collective self-esteem in AI populations is limited and lacking.

## Current Study

The current study examined the relationship between alcohol and drug use, collective self-esteem, and cultural identity among AI and CA adults. Specifically, the first aim of the study was to examine the relationship between cultural identification and alcohol and drug use among AI adults. Specifically, it was hypothesized that AI adults will report having higher scores of alcohol and drug use/consequences when they identify as marginal (i.e., low identification in

minority and dominant culture) and assimilated (i.e., high identification with dominant culture) in comparison to those AI adults who identify as traditional (i.e., high identification in minority) and bicultural (i.e., equal identification in minority and dominant culture). In addition, it was hypothesized that CA adults will report having higher scores of alcohol and drug use/consequences in comparison to AI adults who identify as traditional or bicultural.

The second aim of the study was to examine the relationship between alcohol and drug use among AI and CA adults. Specifically, it was hypothesized that AI adults will have lower alcohol and drug use/consequences in comparison to CA adults.

The third aim of the study was to examine the identity exploration and commitment and substance use. Specifically, it was hypothesized that AIs will endorse higher levels of identity exploration and commitment than CAs and those AIs with higher levels of identity commitment will report low levels of alcohol and drug use/consequences in comparison to CAs.

The final aim of the study was to examine whether collective self-esteem mediates the effects of cultural identification on levels of alcohol and drug use/consequences. Specifically, it was hypothesized that measures of cultural identification will be negatively related to alcohol and drug use/consequences through the mediating effects of collective self-esteem. The protective effects of cultural identification against alcohol and drug use/consequences were hypothesized to be strengthened for AIs with higher collective self-esteem. In addition, it was hypothesized that there will be no mediating effect of collective self-esteem among CA adults. To date, no research has investigated the potentially mediating effects of collective self-esteem between cultural identification and substance use among AI adults. These factors were investigated on an exploratory basis.

Emerging adulthood is a transitional period characterized by identity exploration, change, instability, and experimentation in substance use is more prevalent than any other age group (Arnett, 2000; Center for Behavioral Health Statistics and Quality, 2015). Previous research has found substance use among emerging adults varies by ethnicity (Center for Behavioral Health Statistics and Quality, 2015). Overall, there is a lack of research examining the relationship between cultural identification, substance use, and collective self-esteem which limits the understanding of culturally adaptive prevention and intervention efforts among AI adults.

# CHAPTER II

# METHODOLOGY

## Participants

Participants were recruited through Amazon's Mechanical Turk (MTurk), an online sourcing marketplace. Data collection through MTurk has been shown to be diverse and of good quality (Paolacci and Chandler, 2014). Access to the current survey was restricted to respondents who were U.S. residents over the age of 18 that identified as AI or CA. Online proxy/VPN detection software (https://iphub.info) was relied upon to identify and exclude initial respondents who attempt to disguise their international origin (Burleigh, Kennedy, & Clifford, 2018). A prescreen survey was used to determine if inclusion criteria was met and those who met inclusion criteria could access the main survey. Also, respondents were excluded who failed an English language reading verification, missed an attention check item, or completed the survey from a duplicated computer IP address or geolocation. Participants were provided informed consent before completing a battery of questionnaires via a secure online program.

## Measures

**Demographics.** Participants completed an initial demographics questionnaire assessing the following: age, gender, ethnicity, living status, college status, marital status, employment, specific illicit drug use in the past 12 months, and alcohol use in the past 12 months. In addition, participants were asked if they have ever lived on an AI reservation. Also, participants were asked if they were ever admitted to an addiction treatment center (see Appendix A).

**The Alcohol Use Disorder Identification Test (AUDIT).** The AUDIT is a 10-item self-report measure developed by the World Health Organization (WHO) to assess alcohol consumption, drinking behaviors, and alcohol related-consequences (Saunders et al., 1993). The AUDIT has been validated across genders and in a wide range of ethnic grounds. The measure asks participant's relating to their alcohol use and related behaviors in the past year with each item using a 5 point-Likert Scale (i.e., 0-4) to items such as, "How often do you have a drink containing alcohol" and "How often during the last year have you had a feeling of guilt or remorse after drinking." The AUDIT has a reliability correlation coefficient of 0.83 and test-retest reliability of 0.87-0.95.

**The Drug Abuse Screening Test (DAST).** The DAST is a 28-item self-report measure of past year drug use and related consequences. Participant's report dichotomously (i.e., "Yes" or "No") to questions such as, "Do you abuse more than one drug at a time" and "Have you neglected your family because of your use of drugs." The DAST has internal consistency of 0.92 and test-retest of 0.78 (Yudko et al., 2007).

**The Multigroup Ethnic Identity Questionnaire-Revised (MEIM-R).** The MEIM-R is a 6-item measure of ethnic identity that is not specific to any one ethnicity (Phinney & Ong, 2007). Sample items include, "I have a strong sense of belonging to my own ethnic group" and "I feel a strong attachment towards my own ethnic group." The items then assess exploration of (items 1, 4, and 5) and commitment to (items 2, 3, and 6) one's ethnic identity on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Prior research has indicated a good internal consistency ranging from .76 to .91 for the two subscales and .81 to .89 for the overall scale (Phinney & Ong, 2007; Yoon, 2011).

### American Indian Biculturalism Inventory-Northern Plains (AIBI-NP)

Cultural identification of AIs and CAs were measured via the AIBI-NP (McDonald et al., 2015). The AIBI-NP was a revised version of the NPBI developed by Alan and French (1992). The AIBI-NP has two subscales: American Indian cultural identification (AICI) and European American cultural identification (EACI). It consists of four levels of cultural orientation including: traditional, assimilated, bicultural, and marginalized. Individuals who identify as traditional have a high level of AICI and low level of EACI. Those who identify as assimilated have a low level of AICI and high level of EACI. Bicultural individuals have a high level of both AICI and EACI. Marginalized individuals have a low level of both AICI and EACI. The AIBI-NP is a 23-item questionnaire on a scale 1 (*no comfort*) to 4 (*complete comfort*) (See Appendix C). Previous research supports the AIBI-NP as a measure of cultural identification among diverse populations of AIs beyond those that reside in the NP region (McDonald et al., 2015).

### Collective Self-Esteem Scale-Race (CSE-R)

The CSE-R was used to assess the value participants placed on being a member of their ethnic group (Luhtanen & Crocker, 1992). The measure contains four subscales: membership self-esteem (e.g., "I am a worthy member of my race/ethnic group"), private collective self-esteem (e.g., "I feel good about the race/ethnicity I belong to"), public collective self-esteem (e.g., "Overall, my racial/ethnic group is considered good by others"), and importance to identity (e.g., "The racial/ethnic group I belong to is an important reflection of who I am") (Luhtanen & Crocker, 1992). Participants are asked to consider their own race/ethnicity when rating 16 items from 1 (strongly disagree) to 7 (strongly agree). Each subscale contains four items, and the mean of these four items yields a score for that subscale. The CSE-R has demonstrated adequate construct validity in both predominantly White samples (Luhtanen & Crocker, 1992) and

ethnically diverse samples (Crocker et al., 1994). Prior research yielded a reliability estimates for the four subscales of $\alpha$ = .78, .85, .78, and .79, respectively (Pedersen et al., 2013).

**Procedure**

The survey was administered online through Amazon Mechanical Turk (MTurk). Participants received a research packet including: informed consent, demographics, the Alcohol Use Disorder Identification Test (AUDIT), the Drug Abuse Screening Test (DAST), the Multigroup Ethnic Identity Measure-Revised (MIEM-R), the American Indian Biculturalism Inventory-Northern Plains (AIBI-NP), and the Collective Self-Esteem-Race (CSE-R). The informed consent forms were developed according to the guidelines of the University of North Dakota Institutional Review Board (IRB). Due to the research being conducted online, a box was provided for the participant to indicate whether they wish to consent to participate in the online survey. Completion of the survey required 20-30 minutes per participant. Upon completion of survey, participants were compensated for their time with 0.40 cents. All participant's information will remain anonymous and confidential.

**Data Analysis Plan**

The SPSS statistical analytical software program was utilized for the data analysis. For aim one, a one-way Analyses of Variance (ANOVA) was performed, treating cultural identification as the independent variable and using alcohol and drug use as the dependent variables. For aim two, a one-way ANOVA was performed, treating ethnicity as the independent variable and using alcohol and drug use as the dependent variables. However, due to unequal sample sizes, a multiple regression analyses was performed on AICI scale, EACI scale, and ethnicity as the predictor variables and alcohol and drug use as the dependent variables. For aim three, a correlation analysis was performed between identity exploration, identity commitment,

and ethnicity alcohol and drug use/related consequences. Lastly, a mediation analysis was conducted to assess if collective self-esteem variables (i.e., membership self-esteem, private collective self-esteem, public collective self-esteem, and importance to identity) mediated the relationship between cultural identification and alcohol and drug use/consequences. To assess for mediation, three regressions were conducted. The first regression had cultural identification as the independent variable predicting alcohol and drug use as the dependent variables. The second regression had cultural identification as the independent variable predicting collective self-esteem variables as the mediator. The third regression had collective self-esteem variables as the mediator, controlling for cultural identification, predicting alcohol and drug use as the dependent variables. The Preacher & Hayes (2008) bootstrapping approach through PROCESS was used to calculate the indirect effects of cultural identification subscales on alcohol and drug use/related consequences through (mediated by) collective self-esteem variables.

**Power Analysis**

A power analysis for ANOVA using G-Power, with a medium effect size (0.25), alpha = .05, and power = .80, yielded a recommendation of 256 participants.

# CHAPTER III

# RESULTS

## Demographics

The current study recruited a total of N=216 participants. However, 3 either did not primarily identify as either CA or AI and were thus removed from the sample. The final sample included N=213 participants among the 2 groups: AI adults (*n*=44) and CA adults (*n*=169). Among the total participants, 52.2% were female. Participants identified as 78.2% CA and 20.4% AI with 14.8% identifying as urban AI and 1.4% identifying as reservation AI (see Table 1). Lastly, see Table 2 for poly-substance use and binge drinking frequencies by ethnic group in the past 12 months.

Table 1

*Descriptive Statistics for American Indian (AI) and Caucasian (CA) Participants*

| Characteristic | AI | | CA | | Full sample | |
|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % |
| Ethnicity | | | | | | |
| AI | 44 | 20.4 | | | 44 | 20.4 |
| CA | | | 169 | 78.2 | 169 | 78.2 |
| Gender | | | | | | |
| Male | 22 | 50 | 88 | 54 | 97 | 47.8 |
| Female | 18 | 40.9 | 75 | 46 | 106 | 52.2 |
| Age | | | | | | |
| 18-24 | 7 | 17.1 | 18 | 10.7 | 25 | 12 |
| 25-34 | 18 | 43.9 | 56 | 33.3 | 74 | 35.4 |
| 35-44 | 13 | 31.7 | 60 | 35.7 | 73 | 34.9 |
| 45-54 | 2 | 4.9 | 16 | 9.5 | 18 | 8.6 |
| 55-64 | 1 | 2.4 | 14 | 8.3 | 15 | 6.9 |
| 65+ | 0 | 0 | 4 | 2.4 | 4 | 1.9 |

Table 1 continued

| Characteristic | AI | | CA | | Full sample | |
|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % |
| Marital status | | | | | | |
| Single | 16 | 39 | 52 | 31.1 | 68 | 32.7 |
| Single parent | 3 | 7.3 | 9 | 5.4 | 12 | 5.8 |
| Married/living with another | 20 | 48.8 | 90 | 53.9 | 110 | 52.9 |
| Divorced/widowed | 1 | 2.4 | 14 | 8.4 | 15 | 7 |
| Other | 1 | 2.4 | 2 | 1.2 | 3 | 1.4 |
| Highest educational level | | | | | | |
| High school/GED | 2 | 5 | 15 | 9 | 17 | 8.2 |
| Some college | 5 | 12.5 | 36 | 21.6 | 41 | 19.8 |
| University or postgraduate degree | 33 | 82.5 | 116 | 69.5 | 149 | 72 |
| Employment | | | | | | |
| Unemployed | 2 | 4.5 | 9 | 5.3 | 11 | 5.1 |
| Student | 3 | 6.8 | 15 | 8.9 | 18 | 8.3 |
| Employed | 31 | 70.5 | 121 | 71.6 | 152 | 70.2 |
| Self-employed | 3 | 6.8 | 20 | 11.8 | 23 | 10.6 |
| Retired | 1 | 2.3 | 3 | 1.8 | 4 | 1.9 |
| Homemaker | 2 | 4.5 | 5 | 3 | 7 | 3.2 |
| [a]Lived on AI reservation | 24 | 58.5 | 19 | 11.4 | 43 | 20.8 |
| Urban AI | 32 | 78 | | | 32 | 78 |
| Reservation AI | 3 | 7.3 | | | 3 | 7.3 |
| Admitted to addiction treatment center | 12 | 29.3 | 23 | 14.1 | 35 | 17.2 |
| [a]Alcohol | 4 | 9.2 | 9 | 5.4 | 10 | 3.5 |
| [a]Drugs | 4 | 9.2 | 3 | 1.8 | 8 | 4.4 |

*Note.* $N = 213$.

[a] Reflects the number and percentage of participants answering "yes" to this question.

Table 2

*Descriptive Statistics for American Indian and Caucasian Participants' Substance Use in the Past 12 Months*

| | Caucasians | | American Indians | |
|---|---|---|---|---|
| | *YES (%)* | *NO (%)* | *YES (%)* | *NO (%)* |
| Illicit Drugs (non-medical reasons) | 42.7 | 57.3 | 48.8 | 51.2 |
| Cannabis/Marijuana | 34.9 | 65.1 | 31.8 | 68.2 |
| Amphetamine | 1.8 | 98.2 | 9.1 | 90.9 |
| Methamphetamine | 3 | 97 | 6.8 | 93.2 |
| MDMA | 3 | 97 | 2.3 | 97.7 |
| Hallucinogens | 5.9 | 94.1 | 6.8 | 93.2 |
| Heroin | 3 | 97 | 11.4 | 88.6 |
| Other | 0 | 100 | 0 | 100 |
| Alcohol | 82.4 | 17.6 | 79.5 | 13.6 |
| *Binge drink: | | | | |
| Every Day | .7 | 99.3 | 2.9 | 97.1 |
| 5-6 days/week | 5.9 | 94.1 | 14.3 | 85.7 |
| 3-4 days/week | 14.8 | 85.2 | 22.9 | 77.1 |
| 2 days/week | 12.6 | 87.4 | 22.9 | 77.1 |
| 1 day/week | 6.7 | 93.3 | 8.6 | 91.4 |
| 2-3 days/month | 8.1 | 91.9 | 8.6 | 91.4 |
| 1 day/month | 8.9 | 91.1 | 2.9 | 97.1 |
| 3-11 days in the past year | 9.6 | 90.4 | 0 | 100 |
| 1 or 2 days in the past year | 10.4 | 89.6 | 0 | 100 |
| None | 22.2 | 77.8 | 17.1 | 82.9 |

*Note*. Binge drink = 5 or more for males or 4 or more for females' drinks containing alcohol within a two-hour period.

Although four groups (i.e., assimilated, traditional, marginal, bicultural) of cultural identification are typically used based on the AIBI-NP (McDonald et al., 2015) measure, there were too few (*n*=1) CA participants in the traditional group to include. Thus, cultural identification contained three groups (i.e., assimilated, marginal, bicultural) in the analyses as an

independent variable. Ethnicity was another independent variable and is defined as the participants claiming identification as either Caucasian (CA) or American Indian (AI). A series of 2 (ethnicity) X 3 (cultural identification) between subjects' analyses of variance (ANOVA) was computed on annual household income as the dependent variable and ethnicity and cultural identification group as the independent variable (see Table 3). No significant main effects or interactions were observed, $p > .05$.

A series of 2 (ethnicity) X 3 (cultural identification) analyses of variance (ANOVA) was computed on education level as the dependent variable and ethnicity and cultural identification group as the independent variables (see Table 3). The main effects and the interactions failed to reach statistical significance, $p > .05$.

Table 3

*Means and Standard Deviations in Education Level and Household Income by Cultural Identification and Ethnicity*

| Variable | *n* | Mean | *SD* |
|---|---|---|---|
| Education Level | | | |
| Marginal | 20 | 6.35 | 1.56 |
| Bicultural | 6 | 6.67 | 1.86 |
| Assimilated | 11 | 6.64 | 1.36 |
| Caucasian | 156 | 5.99 | 1.65 |
| Household Income | | | |
| Marginal | 20 | 2.45 | 1.05 |
| Bicultural | 6 | 2.17 | 0.75 |
| Assimilated | 11 | 2.82 | 1.32 |
| Caucasian | 156 | 2.63 | 1.06 |

**Main Effects**

A one-way analysis of variance (ANOVA) was computed on substance use; with illicit drug use/related consequences measure (i.e., DAST) and alcohol use/related consequences measure (i.e., AUDIT) as the dependent variables and ethnicity being the independent variable. Results indicated significant differences in total alcohol use/related consequences $F(1, 196) =$

11.44, $p$ <.05 and illicit drug use/related consequences $F(1, 196) = 10.27$, $p$ <.05 between ethnicities; with AIs ($M$=13.85, $SD$= 10.94) having higher alcohol use/related consequences then CAs ($M$=8.21, $SD$= 9.17). Additionally, AIs ($M$=8.61, $SD$= 7.42) had higher illicit drug use/related consequences then CAs ($M$=4.87, $SD$= 6.29).

Table 4

*Means and Standard Deviations in Substance Use/Related Consequences for Ethnicity*

| Variable | *n* | Mean | *SD* |
|---|---|---|---|
| Alcohol Use | | | |
| American Indian | 41 | 13.85 | 10.94 |
| Caucasian | 163 | 8.21 | 9.17 |
| Illicit Drug Use | | | |
| American Indian | 39 | 8.61 | 7.42 |
| Caucasian | 159 | 4.87 | 6.29 |

*Note.* "Alcohol use = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year on the AUDIT". "Illicit drug use = average score of past year drug use behaviors and related consequences on the DAST".

A series of one-way analysis of variance (ANOVA) was computed on the total score on the AUDIT (i.e., measurement of alcohol use/related consequences) as well as the three subscale scores (i.e., alcohol consumption, alcohol dependence, alcohol problems) as the dependent variables and AI cultural identification groups being the independent variable. Results indicated non-significant differences in total alcohol use/related consequences between groups for AI adults $F(3, 37) = .287$, $p$ >.05. Results indicated non-significant differences in alcohol consumption $F(3, 37) = .123$, $p$ >.05, alcohol dependence $F(3, 37) = .212$, $p$ >.05, and alcohol problems $F(3, 37) = .640$, $p$ >.05 between groups for AI adults (See Table 5).

A one-way analysis of variance (ANOVA) was computed on the total score on the DAST (i.e., measurement of illicit drug use/related consequences) as the dependent variable and AI cultural identification groups being the independent variable. Results indicated non-significant

differences in illicit drug use/related consequences between groups for AI adults $F(3, 35) = 1.165$, $p > .05$ (See Table 5).

Table 5

*Means and Standard Deviations in Substance Use/Related Consequences for American Indian Cultural Identification Groups*

| Variable | *n* | Mean | *SD* |
|---|---|---|---|
| Alcohol Use | | | |
| Marginal | 20 | 12.95 | 10.63 |
| Variable | *n* | Mean | *SD* |
| Bicultural | 6 | 16.33 | 9.56 |
| Assimilated | 11 | 12.91 | 12.59 |
| Traditional | 4 | 17.25 | 12.84 |
| Illicit Drug Use | | | |
| Marginal | 19 | 10.36 | 7.40 |
| Bicultural | 6 | 9.16 | 5.91 |
| Assimilated | 11 | 6.81 | 8.63 |
| Traditional | 3 | 3.00 | 0 |

*Note.* "Alcohol use = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year on the AUDIT". "Illicit drug use = average score of past year drug use behaviors and related consequences on the DAST".

**Multiple Regression Analyses**

Multiple regression analyses were conducted to investigate whether AICI scale, EACI scale, and ethnicity could significantly predict participant's total alcohol use/related consequences (i.e., AUDIT). European American (i.e., EACI) and American Indian (i.e., AICI) cultural identification based on the two AIBI-NP (McDonald et al., 2015) measurement subscales were used as predictor variables. Ethnicity was another predictor variable and was defined as the participants claiming identification as either Caucasian (CA) or American Indian (AI). A significant regression equation was found with AICI scale, EACI scale, and ethnicity was found ($F(3,194) = 17.379$, $p < .05$), with an $R^2$ of .212. The analysis indicated EACI identification ($\beta = -.007$, $p = .916$) and ethnicity ($\beta = .018$, $p = .817$) did not significantly predict alcohol use/related consequences. However, AICI was a significant predictor ($\beta = .471$, $p < .05$) of

participant's total alcohol use/related consequences (see Table 6). Specifically, as participant's AICI increased by one-unit total alcohol use/related consequences increased by .463 for general alcohol use/related consequences.

A multiple linear regression was calculated to investigate whether AICI, EACI, and ethnicity could significantly predict participant's illicit drug use/related consequences (i.e., DAST). A significant regression equation was found ($F(3,190) = 10.401$, $p < .05$), with an $R^2$ of .141. The analysis indicated EACI (β= -.090, p = .214) and ethnicity (β= -.025, p = .750) did not significantly predict illicit drug use/related consequences. AICI was a significant predictor (β= .379, p <.05) of participant's illicit drug use/related consequences (see Table 6). Specifically, as participant's AICI increased by one-unit total illicit drug use/related consequences increased by .255 for general illicit drug use/related consequences.

Table 6

*Results of the Multiple Regression Analyses for Substance Use/Related Consequences*

| Factor | b | SE | *β* |
|---|---|---|---|
| Alcohol Use | | | |
| AICI* | .463 | 5.06 | .471 |
| EACI | -.016 | .153 | -.007 |
| Ethnicity | .427 | 1.83 | .018 |
| Illicit Drug Use | | | |
| AICI* | .255 | .056 | .379 |
| EACI | -.138 | .111 | -.090 |
| Ethnicity | -.424 | 1.33 | -.025 |

*Note.* "Alcohol use = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year on AUDIT". "Illicit drug use= average score of past year drug use behaviors and related consequences on DAST". "AICI = American Indian cultural identification scale." "EACI = European American cultural identification scale."

*p< .05

**Correlations**

A correlation analysis was utilized to examine whether identity exploration and identity commitment based on the subscales of the MEIM-R measure (Phinney & Ong, 2007) was

correlated with AI and CA alcohol use/related consequences (see Table 7). Identity exploration was not correlated with AI alcohol use/related consequences $r(39) = -.053$, $p = .741$. Identity commitment was not correlated with AI alcohol use/related consequences $r(39) = .258$, $p = .104$. Identity exploration was not correlated with CA alcohol use/related consequences $r(159) = .052$, $p = .514$. However, identity commitment was positively correlated with CA alcohol use/related consequences $r(159) = .313$, $p < .01$.

A correlation analysis was utilized to examine whether identity exploration and identity commitment was correlated with AI and CA illicit drug use/related consequences (see Table 7). Identity exploration ($r(37) = -.143$, $p = .384$) and identity commitment ($r(37) = .068$, $p = .679$) were not correlated with AI illicit drug use/related consequences. Similarly, identity exploration ($r(157) = -.053$, $p = .741$) and identity commitment ($r(157) = .147$, $p = .203$) were not correlated with CA illicit drug use/related consequences.

Table 7

*Pearson R Correlations for Identity Commitment and Identity Exploration Predicting Substance Use/Related Consequences*

| | AI | | | | | CA | | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 |
| 1. Commitment | — | | | | | — | | | |
| 2. Exploration | .504* | — | | | | .599* | — | | |
| 3. Alcohol use | .258 | −.053 | — | — | | .313* | .052 | - | |
| 4. Illicit drug use | .068 | -.143 | — | — | | .147 | -.053 | — | — |

*Note.* "Alcohol use = average amount of alcohol consumption, drinking behaviors, and alcohol-related problems in the past year on AUDIT". "Illicit drug use= average score of past year drug use behaviors and related consequences on DAST".
*p<.05

**Mediation**

To investigate whether cultural identification (i.e., EACI, AICI) or variable X would affect substance use (i.e., variable Y) through (mediated by) collective self-esteem variables (i.e., membership self-esteem, private collective self-esteem, public collective self-esteem, and importance to identity), a series of simple mediation analyses were performed using PROCESS (Hayes, 2013). Specifically, the Preacher & Hayes (2008) bootstrapping approach to mediation was utilized which simultaneously calculates the indirect path coefficient (i.e., the product of the regression coefficient for variable X multiplied by the regression coefficient for variable Y) ten thousand times to reduce irregular sample distribution. The bootstrapping approach uses 95$^{th}$ percentile confidence intervals for the indirect path coefficients with specific lower and upper bounds of the interval (Hayes, 2013). When the upper and lower confidence intervals contain zero, then the indirect effect is not statistically significant (Hayes, 2013).

A series of sixteen mediation analyses were conducted and the results are presented in Figures 1 through 16. The different predictor variables that were used incorporated cultural identification measures of European American (i.e., EACI) and American Indian (i.e., AICI) based on the two AIBI-NP (McDonald et al., 2015) measurement subscales. The predictor variables EACI and AICI were correlated, $r(196) = .284$, $p < .01$. The dependent variables included a measure of alcohol use/related consequences (i.e., AUDIT) and a measure of illicit drug use/consequences (i.e., DAST). Lastly, the mediator variables were the four subscales of the collective self-esteem measure which included: membership self-esteem, private collective self-esteem, public collective self-esteem, and importance to identity.

A visual depiction of the first analysis in Figure 1 demonstrates the regression of EACI scores on illicit drug use/related consequences, ignoring the mediator, was not significant, $b$ =

.042, *t*(192) = .378, *p* =.706. EACI scores on the mediator, membership self-esteem, was significant *b* = .312, *t*(196) = 4.723, *p* < .05. The mediator variable membership self-esteem, controlling for the EACI scores, was a significant predictor of illicit drug use/related consequences, *b* = -.500, *t*(192) = -4.384, *p* < .05. EACI influence on illicit drug use/related consequences were significantly mediated through membership self-esteem β = -.1638, bootstrap 95% confidence interval (CI) = -.29, -.07.

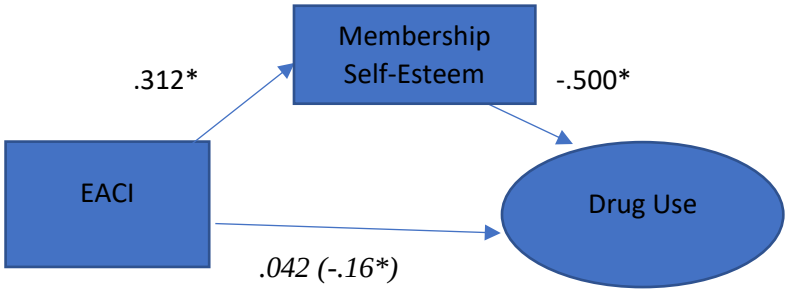


*Figure 1*. Mediation of membership self-esteem on EACI and Illicit drug use/related consequences.

*Note*. Parentheses indicates indirect coefficient of EACI on drug use through membership self-esteem.
**p* < .05

Next, Figure 2 depicts the regression of AICI scores direct effect on illicit drug use/related consequences, ignoring the mediator, was significant, *b* = .244, *t*(192) = 5.42, *p* < .05. AICI scores direct effect on the mediator, membership self-esteem, was not significant *b* = -.029, *t*(196) = -.958, *p* =.339. The mediator variable membership self-esteem, controlling for the AICI scores, was a significant predictor of illicit drug use/related consequences, *b* = -.387, *t*(192) = -3.812, *p* < .05. AICI and illicit drug use/related consequences was not mediated through membership self-esteem (β = .0133, bootstrap CI = -.01, .04, see Figure 2).

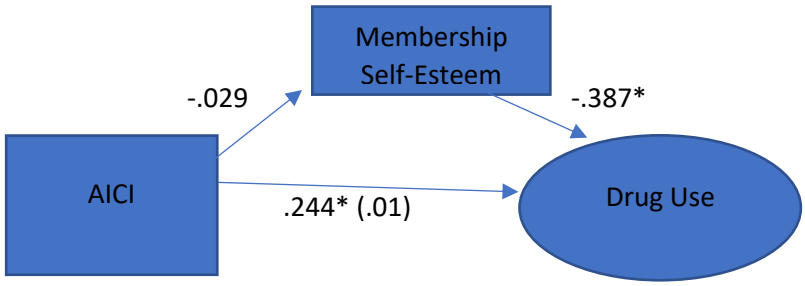


*Figure 2.* Mediation of membership self-esteem on AICI and Illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on drug use through membership self-esteem.
*$p < .05$

The regression of EACI scores direct effect on alcohol use/related consequences, ignoring the mediator, was not significant, $b = .285$, $t(192) = 1.793$, $p=.075$ (refer to Figure 3). EACI scores on the mediator, membership self-esteem, was significant $b = .312$, $t(196) = 4.723$, $p < .05$. The mediator variable membership self-esteem, controlling for the EACI scores, was a significant predictor of alcohol use/related consequences, $b = -.975$, $t(192) = -6.190$, $p < .05$. EACI influence on alcohol use/related consequences was mediated through membership self-esteem (β = -.3044, bootstrap CI = -.48, -.15).

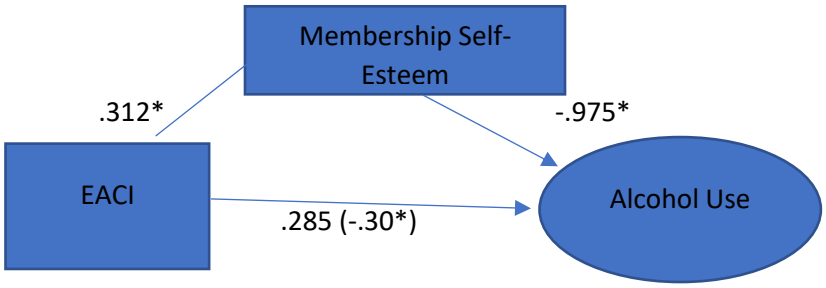


*Figure 3.* Mediation of membership self-esteem on EACI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of EACI on alcohol use through membership self-esteem.
*$p < .05$

Figure 4 demonstrates the regression for the predictor variable AICI score and the dependent variable alcohol use/related consequences. AICI scores direct effect on alcohol use/related consequences, ignoring the mediator, was significant, $b$ = .452, $t$(196) = 7.253, $p$ < .05. AICI scores direct effect on the mediator, membership self-esteem, was not significant $b$ = -.029, $t$(196) = -.958, $p$ =.339. AICI and alcohol use/related consequences was not mediated through membership self-esteem (β = .0208, bootstrap CI = -.02, .06, see Figure 4).

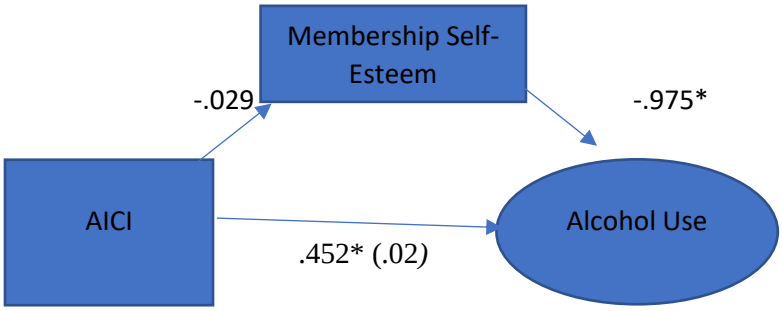


*Figure 4.* Mediation of membership self-esteem on AICI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on alcohol use through membership self-esteem. *$p$ < .05

The regression of EACI scores on illicit drug use/related consequences, ignoring the mediator, was not significant, $b$ = .042, $t$(192) = .378, $p$ =.706 (refer to Figure 5). The regression of EACI scores on the mediator, private collective self-esteem, was significant $b$ = .366, $t$(196) = 4.468, $p$ < .05. The mediator variable private collective self-esteem, controlling for the EACI scores, was a significant predictor of illicit drug use/related consequences, $b$ = -.362 $t$(192) = -3.924, $p$ < .05. EACI influences illicit drug use/related consequences through private self-esteem (β = -.1334, bootstrap CI = -.23, -.06).

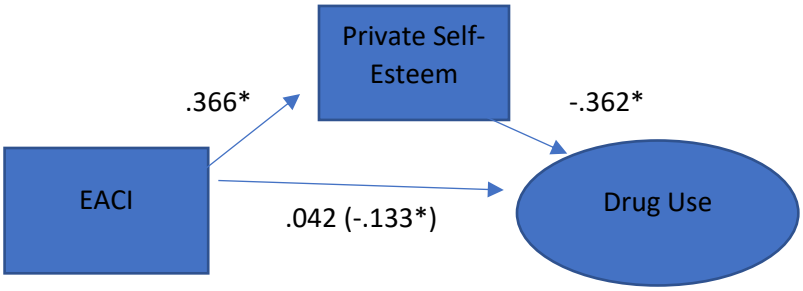


*Figure 5.* Mediation of private collective self-esteem on EACI and Illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of EACI on drug use through private self-esteem.
*$p < .05$

Next, AICI scores direct effect on illicit drug use/related consequences, ignoring the mediator, was significant, $b = .244$, $t(192) = 5.42$, $p < .05$ (refer to Figure 6). The regression of AICI scores on the mediator, private collective self-esteem, was significant $b = -.093$, $t(196) = -2.518$, $p < .05$. The mediator variable private collective self-esteem, controlling for the AICI scores, was a significant predictor of illicit drug use/related consequences, $b = -.245$, $t(192) = -2.894$, $p < .05$. AICI influence on illicit drug use/related consequences was mediated through private self-esteem (β = .0229, bootstrap CI = .01, .04).

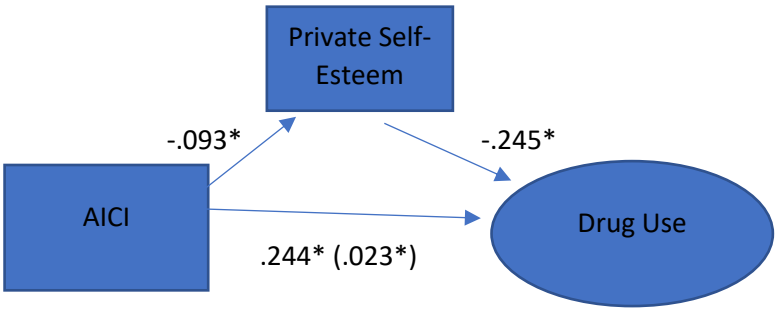


*Figure 6.* Mediation of private collective self-esteem on AICI and illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on drug use through private self-esteem.
*$p < .05$

In Figure 7, EACI scores on alcohol use/related consequences, ignoring the mediator, was not significant, $b$ = .285, $t$(192) = 1.793, $p$=.075. The regression of EACI scores on the mediator, private collective self-esteem, was significant $b$ = .366, $t$(196) = 4.468, $p$ < .05. The mediator variable private collective self-esteem, controlling for the EACI scores, was a significant predictor of alcohol use/related consequences, $b$ = -.721, $t$(196) = -5.582, $p$ < .05. EACI influence on alcohol use/related consequences was mediated through private self-esteem (β = -.2638, bootstrap CI = -.43, -.13, see Figure 7).

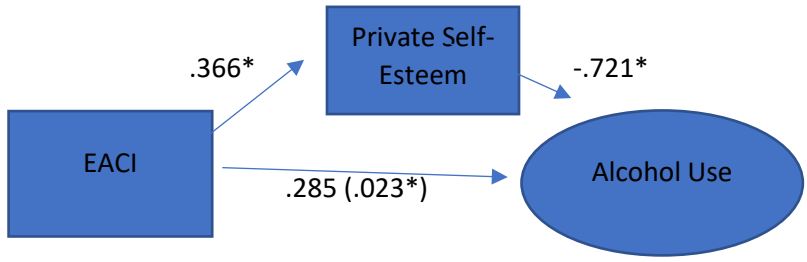


*Figure 7*. Mediation of private collective self-esteem on EACI and alcohol use/related consequences.

*Note*. Parentheses indicates indirect coefficient of EACI on alcohol use through private self-esteem.
*$p$ < .05

AICI scores direct effect on alcohol use/related consequences, ignoring the mediator, was significant, $b$ = .452, $t$(196) = 7.253, $p$ < .05 (refer to Figure 8). AICI scores on the mediator, private collective self-esteem, was significant $b$ = -.093, $t$(196) = -2.518, $p$ < .05. The mediator variable private collective self-esteem, controlling for the AICI scores, was a significant predictor of alcohol use/related consequences, $b$ = -.445, $t$(196) = -3.822, $p$ < .05. AICI influence on alcohol use/related consequences was mediated through private self-esteem (β = .0414, bootstrap CI = -.01, .08, see Figure 8).

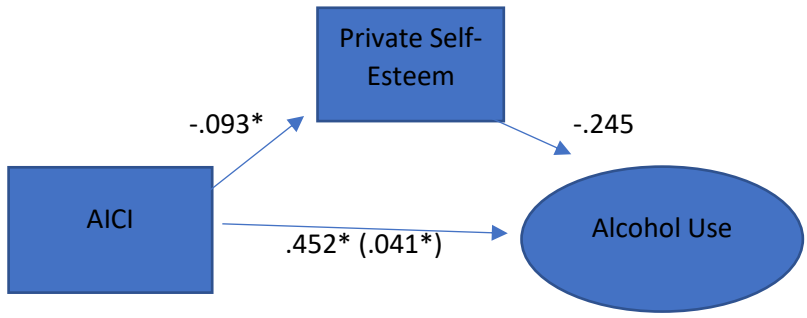


*Figure 8.* Mediation of private collective self-esteem on AICI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on alcohol use through private self-esteem.
*$p < .05$

In Figure 9, EACI scores on illicit drug use/related consequences, ignoring the mediator, was not significant, $b = .042$, $t(192) = .378$, $p = .706$. EACI scores on the mediator, public collective self-esteem, was significant $b = .206$, $t(196) = 3.056$, $p < .05$. The mediator variable public collective self-esteem, controlling for the EACI scores, was a significant predictor of illicit drug use/related consequences, $b = -.306$, $t(192) = -2.656$, $p < .05$. EACI influence on illicit drug use/related consequences were mediated through public self-esteem (β = -.0617, bootstrap CI = -.12, -.02, see Figure 9).

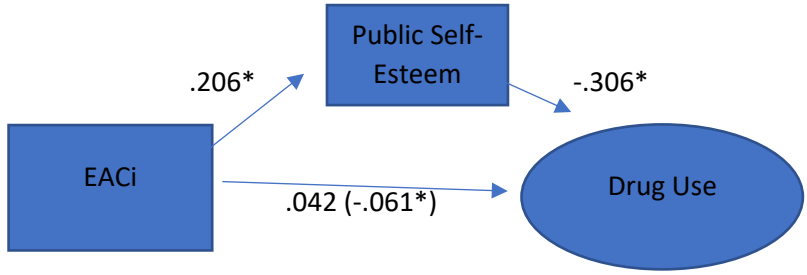


*Figure 9. M*ediation of public collective self-esteem on EACI and illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of EACI on drug use through public self-esteem.
*$p < .05$

In Figure 10, AICI scores direct effect on illicit drug use/related consequences, ignoring the mediator, was significant, $b$ = .244, $t$(192) = 5.42, $p$ < .05. AICI scores on the mediator, public collective self-esteem, was significant $b$ = -.064, $t$(196) = -2.165, $p$ < .05. The mediator variable public collective self-esteem, controlling for the AICI scores, was not a significant predictor of illicit drug use/related consequences, $b$ = -.207, $t$(192) = -1.940, $p$ > .05. AICI influences illicit drug use/related consequences was not mediated through public self-esteem (β = .0122, bootstrap CI = -.01, .03).

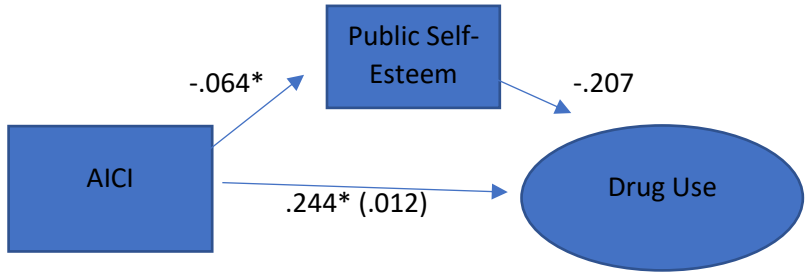


*Figure 10.* Mediation of public collective self-esteem on AICI and illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on drug use through public self-esteem.
*$p$ < .05

The regression of EACI scores on alcohol use/related consequences was not significant, $b$ = .285, $t$(192) = 1.793, $p$=.075 (refer to Figure 11). EACI scores on the mediator, public collective self-esteem, was significant $b$ = .206, $t$(196) = 3.056, $p$ < .05. The mediator variable public collective self-esteem, controlling for the EACI scores, was a significant predictor of alcohol use/related consequences, $b$ = -.680, $t$(196) = -4.196, $p$ < .05. EACI influence on alcohol use/related consequences was mediated through public self-esteem (β = -.1399, bootstrap CI = -.26, -.04).

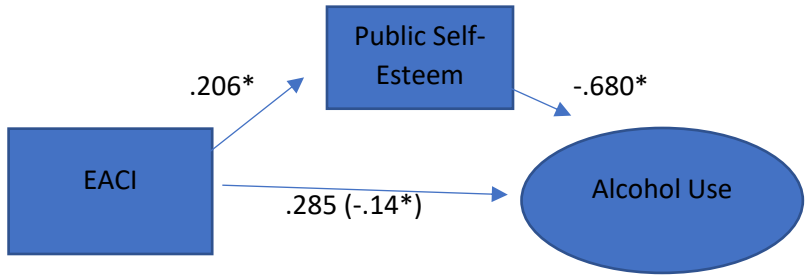


*Figure 11.* Mediation of public collective self-esteem on EACI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of EACI on alcohol use through public self-esteem.
*$p < .05$

AICI scores direct effect on alcohol use/related consequences, ignoring the mediator, was significant, $b = .452$, $t(196) = 7.253$, $p < .05$ (refer to Figure 12). AICI scores on the mediator, public collective self-esteem, was significant $b = -.064$, $t(196) = -2.165$, $p < .05$. The mediator variable public collective self-esteem, controlling for the AICI scores, was a significant predictor of alcohol use/related consequences, $b = -.433$, $t(196) = -2.951$, $p < .05$. AICI influence on alcohol use/related consequences was mediated through public self-esteem (β = .0279, bootstrap CI = .002, .06).

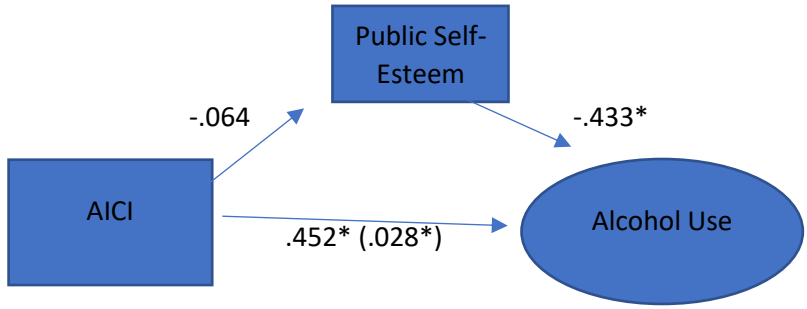


*Figure 12.* Mediation of public collective self-esteem on AICI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on alcohol use through public self-esteem.
*$p < .05$

EACI scores on illicit drug use/related consequences, ignoring the mediator, was not significant, $b$ = .042, $t$(192) = .378, $p$ =.706 (refer to Figure 13). EACI scores on the mediator, importance to identity, was significant $b$ = .503, $t$(196) = 6.009, $p$ < .05. The mediator variable importance to identity, controlling for the EACI scores, was not a significant predictor of illicit drug use/related consequences, $b$ = -.043, $t$(192) = -.453, $p$ = .651. EACI influence on illicit drug use/related consequences was not mediated through importance to identity (β = -.0226, bootstrap CI = -.11, .06).

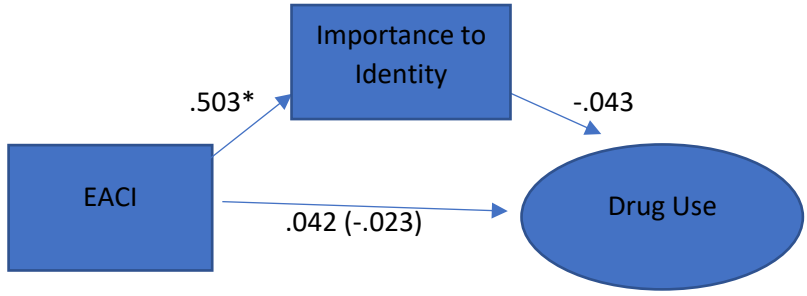


*Figure 13*. Mediation of importance to identity on EACI and illicit drug use/related consequences.

*Note*. Parentheses indicates indirect coefficient of EACI on drug use through importance to identity.
*$p$ < .05

In Figure 14, AICI scores direct effect on illicit drug use/related consequences, ignoring the mediator, was significant, $b$ = .244, $t$(192) = 5.42, $p$ < .05. AICI scores on the mediator, importance to identity, was significant $b$ = .159, $t$(196) = 4.150, $p$ < .05. The mediator variable importance to identity, controlling for the AICI scores, was not a significant predictor of illicit drug use/related consequences, $b$ = -.153, $t$(192) = -1.829, $p$ = .069. AICI influence on illicit drug use/related consequences was mediated through importance to identity (β = -.0232, bootstrap CI = -.05, -.001).

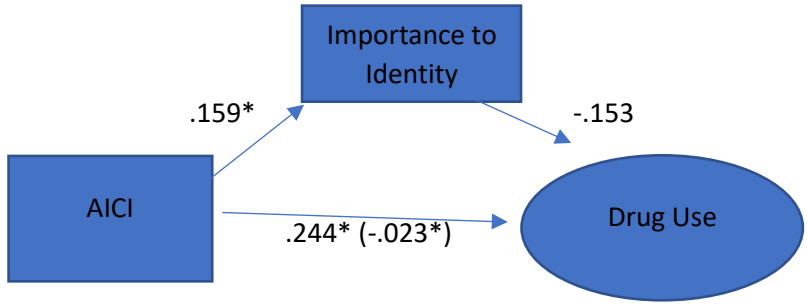


*Figure 14.* Mediation of importance to identity on AICI and illicit drug use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on drug use through importance to identity. *$p < .05$

In Figure 15, EACI scores on alcohol use/related consequences was not significant, $b$ = .285, $t(192) = 1.793$, $p$=.075. The regression of EACI scores on the mediator, importance to identity, was significant $b = .503$, $t(196) = 6.009$, $p < .05$. The mediator variable importance to identity, controlling for the EACI scores, was not a significant predictor of alcohol use/related consequences, $b = -.088$, $t(196) = -.651$, $p = .516$. EACI influence on alcohol use/related consequences was not mediated through importance to identity (β = -.0445, bootstrap CI = -.19, .08).

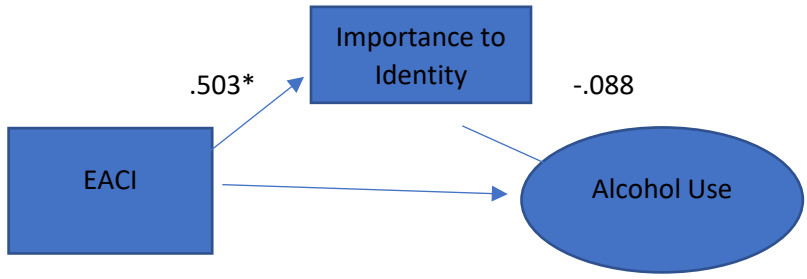


*Figure 15.* Mediation of importance to identity on EACI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of EACI on alcohol use through importance to identity. *$p < .05$

Lastly, AICI scores direct effect on alcohol use/related consequences, ignoring the mediator, was significant, $b = .452$, $t(196) = 7.253$, $p < .05$ (refer to Figure 16). AICI scores on

the mediator, importance to identity, was significant $b = .159$, $t(196) = 4.150$, $p < .05$. The mediator variable importance to identity, controlling for the AICI scores, was a significant predictor of alcohol use/related consequences, $b = -.236$, $t(196) = -2.041$, $p < .05$. AICI influence on alcohol use/related consequences was mediated through importance to identity (β = -.0374, bootstrap CI = -.08, -.002).

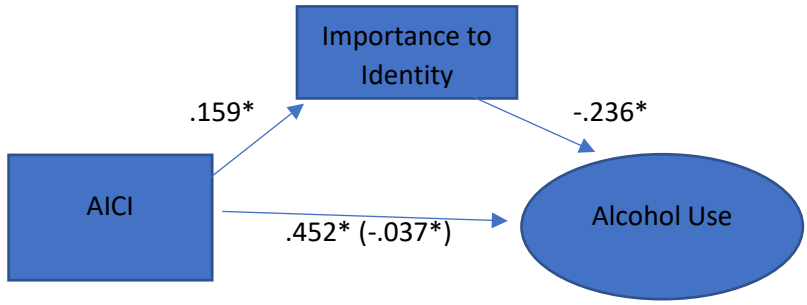


*Figure 16.* Mediation of importance to identity on AICI and alcohol use/related consequences.

*Note.* Parentheses indicates indirect coefficient of AICI on alcohol use through importance to identity.
*$p < .05$

# CHAPTER IV

# DISCUSSION

The current study examined the relationship between cultural identification, alcohol and drug use/related consequences, and collective self-esteem among AI and CA adults. The first aim of the study was to examine the relationship between four cultural identification groups (e.g., marginal, assimilated, traditional, bicultural) and alcohol and drug use among AI adults. Specifically, it was hypothesized that AI adults will report having higher scores of alcohol and drug use/consequences when they identify as marginal and assimilated in comparison to those AI adults who identify as traditional and bicultural. Contrary to the current study's hypotheses, results indicated no differences between cultural identification groups and alcohol and drug use/related consequences. This may be due to the AI group having a smaller sample size which may have limited the power to detect differences between groups.

The current study also examined the AICI (i.e., American Indian Cultural Identification) and EACI (i.e., European American Cultural Identification) subscales on the AIBI-NP measurement and alcohol and drug use/related consequences. Findings indicated the AICI and EACI were correlated which is consistent with previous research on the subscales (Venner et al., 2006). In addition, findings revealed EACI did not predict alcohol and drug use/related consequences contrary to past research which indicated higher scores on EACI were associated with higher likelihood of using multiple substances and having lower antidrug personal norms (Ferguson, 1976; Herman-Stahl, Spencer, Duncan, 2003). These results may be due to lower alcohol and drug use rates reported by CAs in the sample compared to higher rates (56.3%)

found in a national survey (SAMHSA, 2017). Findings from the current study suggest AICI was a predictor of alcohol and drug use/related consequences. Specifically, as participant's AICI score increased by one-unit, then the alcohol and drug use/related consequences rate also increased. This is inconsistent with previous research which suggested higher AICI scores were associated as being a protective factor against substance use (Skewes & Blume, 2019; Whitbeck, 2004). However, past research has predominantly utilized an AI adolescent sample, whereas the current study did not.

The second aim of the current study was to examine the relationship between drug and alcohol use among AI and CA adults. Findings revealed AI identification was a predictor of higher illicit drug use/related consequences compared to CA identification, which is similar to results from a national survey that indicated AIs had the highest illicit drug use rates compared to other ethnicities (SAMHSA, 2017). Further, the current study's results suggested AI identification predicted higher alcohol use/related consequences compared to CA identification contrary with recent alcohol use research suggesting AIs have lower or similar alcohol use rates compared to CA (Cunningham, 2015; Fish et al., 2017; Martell et al., 2020). However, a majority (14.8%) of the current study's AI sample identified as urban AI which past research has suggested have higher rates of substance use due to increased acculturation stress (Brown, Dickerson, & D'Amico, 2016; Lucero, 2010).

The third aim of the study was to examine the identity exploration and commitment and substance use among AIs and CAs. Findings revealed identity exploration and commitment was not correlated with AI and CA alcohol and drug use/related consequences. Contrary to previous literature which suggested minority populations with higher identity commitment was associated with lower substance use and higher identity exploration was associated with higher substance

use (Heads et al., 2018; Pahl & Way, 2006). However, previous research has utilized primarily an African American or college student sample, whereas the current study did not.

The final aim of the study was to examine whether collective self-esteem variables (i.e., membership self-esteem, private collective self-esteem, public collective self-esteem, and importance to identity) mediated the effects of cultural identification on levels of alcohol and drug use/consequences. Findings revealed EACI scores increased membership self-esteem, private collective self-esteem, and public collective self-esteem, which significantly predicted decreased illicit drug and alcohol use/related consequences. These results are consistent with past research suggesting CA identification to be associated with higher levels of overall self-esteem and for self-esteem to be a mediating factor between identity and substance use (Lorenzo-Hernandez & Ouellette, 1998; Markstrom et al., 2011; Phinney, 1990; Umana-Taylor, 2004). Findings from the current study also reveal AICI scores on illicit drug and alcohol use/related consequences were not mediated through membership self-esteem. Similarly, findings revealed AICI's influence on illicit drug use/related consequences was not mediated through public collective self-esteem. Past research suggests self-esteem constructs may differ across groups of AIs depending if they identify as more individualistic than collectivistic (Twenge & Crocker, 2002). Results indicated AICI scores decreased public collective self-esteem which predicted increased alcohol use/related consequences. These findings are consistent with past research on other ethnic minorities that found low public collective self-esteem predicted greater alcohol use and related consequences. It has been suggested minorities with low public collective self-esteem use alcohol as a coping strategy to reduce feelings of being marginalized by the dominant cultural group (Giang & Wittig, 2006). Past research has indicated minorities exposed to more negative media (e.g., movies, magazines, radio) about their ethnic group resulted in increased

negative perceptions about their group which decreased public and private collective self-esteem (Sullivan & Platenburg, 2017). Additionally, results revealed AICI scores decreased private self-esteem, which predicted increased illicit drug and alcohol use/related consequences. Previous research has suggested discrimination and racism experienced by ethnic minorities by dominant racial outgroups decreases private self-esteem which predicts negative health related outcomes such as substance use (Pedersen et al., 2013; Jones, 1999). Next, the current study's findings suggested AICI increased importance to identity (i.e., racial group is important to one's self-concept), which predicted decreased illicit drug and alcohol use/related consequences. This is consistent with past research that found ethnic minorities whose racial identity was central to their self-concept was positively associated with psychological well-being (Twenge & Crocker, 2002). Lastly, findings indicated EACI's influence on alcohol and drug use was not mediated through importance of self-esteem to identity, however, EACI did have a direct effect on increased importance to identity. This is consistent with previous research that suggests European American cultures tend to be associated with viewing racial identity as a central and stable self-concept (Twenge & Crocker, 2002).

The current study has several clinical implications. First, the current findings support the notion that different forms of self-esteem have varying positive and negative effects on substance use (Swaim et al., 2019). Specifically, lower public and private collective self-esteem predicted increased illicit drug and alcohol use. Those individuals may benefit from substance use treatment that includes services aimed at increasing public and private collective self-esteem and reducing negative stereotypic racial beliefs about one's group. Furthermore, the findings indicate cultural identification influences substance use. Thus, substance use programs that utilize culturally tailored interventions may by beneficial at reducing substance use rates for minorities

and enhancing collective self-esteem, especially for AI adults. Contrary with recent alcohol use research suggesting AIs have lower or similar alcohol use rates compared to CA (Cunningham, 2015; Fish et al., 2017; Martell et al., 2020), the current findings demonstrated AI identification being associated with higher substance use rates. However, the AI sample was predominantly urban AI. This finding may indicate differing trends in substance use among AI adults depending upon geographic location. Thus, informing and aiding in the creation of prevention and intervention substance use programs for specific urban locations of AI populations.

Several study limitations are acknowledged. First, the G-power recommended sample size for AI participants was not obtained and the AI sample size was small. A larger AI sample size may have been able to yield more power to detect significance and may make it possible to fully examine the effects of cultural identification and substance use. Second, the AI sample obtained primarily identified as urban AI. According to the National Center for Health Statistics (2020), approximately 40% of AI populations reside in rural areas. Thus, the results may differ from those obtained from populations of AIs that live in rural areas. Third, the sample was solely recruited from MTurk (i.e., research recruiting website), therefore, the sample was limited in recruitment to individuals who had access to a computer or smartphone. According to the American Community Survey (2017), less than 55% of AI households have broadband internet access in the Southwest, Northern Plains, and Intermountain West regions. The results from the current study may not generalize to AIs or CAs with limited internet access. Fourth, the study utilized self-report measures for collecting data. Therefore, participants responses may have been impacted by response biases such as social desirability (i.e., wanting to be viewed favorably by others). Next, the project was advertised as a substance use study which may have attracted

adults who were concerned with their substance use. Thus, the findings may not generalize to individuals who are not concerned with their substance use.

Another limitation is related to the independent and dependent variables utilized in the study. Specifically, the MEIM-R measure's validity and reliability has not been examined using general populations of AIs, however, it has been shown to be reliable among specific tribal groups (Oxendine, 2016). In addition, the DAST measure has not been normed for general populations of AIs (Yudko et al., 2007). Similarly, the CSE-R's validity has not been examined on samples of AIs, however, past research has supported the construct validity with other diverse minority groups (Crocker et al., 1994). Next, the DAST and AUDIT did not assess for lifetime use which may have limited the results of the current study. Lastly, the AIBI-NP measure has been used in previous research (Martell et al., 2020) and has been shown to be a valid measure for diverse AI populations (McDonald et al., 2015). However, other cultural identification measurements may encompass different components that could relate differently to substance use.

Future research should examine differences between CA and AI (or other ethnic minorities) adults in cultural identification, substance use, and self-esteem among individuals that live in both rural and urban areas. This would allow for examination of differences in cultural identification and substance use between urban and rural AIs. Additionally, future research should utilize different dimensions of self-esteem such as a global construct of self-esteem. A follow-up study using different dimensions (e.g., self-confidence, feeling of belonging) of self-esteem may produce differing findings for the mediating relationship between cultural identification and substance use. In addition, future studies should examine different types of illicit and non-illicit drugs as well as specific consequences associated with drug use.

This may be helpful in identifying specific drug use and related consequence treads between ethnic groups. Similarly, future studies may also want to include additional measures for different types of alcohol use such as abstaining, low, heavy, and binge drinking which may be helpful in identifying the impact cultural identification has on varying levels of alcohol use. Lastly, future studies may want to assess cultural identification, self-esteem, and substance use outcomes in addiction treatment centers. Specifically, future studies could examine the impact of incorporating culturally tailored treatment interventions has on cultural identification, self-esteem, and substance use rates at pretreatment and posttreatment compared to a control group (i.e., no culturally tailored interventions used). That would be an important area for future research considering cultural identity and cultural practices are commonly incorporated in prevention and treatment programs of substance abuse for AIs (Gone & Calf Looking, 2015; Legha & Novins, 2012; McDonald & Gonzales, 2006; McDonald, Morton, & Stewar, 1992).

In conclusion, substance use is a major problem and has serious negative consequences. Previous research on substance use has focused on adolescent and college samples. However, little research has examined the differences in substance use and AI and CA general adult populations. The current study was able to investigate the mediating effects of collective self-esteem variables between cultural identification and substance use among AI and CA general adult populations. The findings contributed to the limited body of literature on cultural identification and substance use among AIs. The study provides support for interventions that build upon cultural identity and collective self-esteem which may reduce substance use among AI/other minorities.

# APPENDICES

## APPENDIX A
## Demographics Questionnaire

1. Please specify which ethnicity you primarily identify as:

American Indian Caucasian Other

2. What is your age:
   - 12-17 years old
   - 18-24 years old
   - 25-34 years old
   - 35-44 years old
   - 45-54 years old
   - 55-64 years old
   - 65 years or older
3. What is your highest degree or level of school you have completed?
   - No schooling completed
   - Some high school, no diploma
   - High school graduate, diploma or the equivalent (e.g., GED)
   - Some college credit, no degree
   - Trade/technical/vocational training
   - Associate Degree
   - Bachelor's Degree
   - Master's or beyond degree
4. Circle your sex:

Male Female

5. Are you currently…?
   - Full or part time employed for wages
   - Self-employed
   - A homemaker
   - Student
   - Military
   - Retired
   - Unable to work
   - Unemployed
6. What is your marital status?
   - Single, never married
   - Single parent
   - Married
   - Widowed
   - Divorced
   - SeparatedLiving with significant other

7. Circle your total estimated household income:
    - <$20,000
    - $20,000-49,999
    - $50,000-74,999
    - $75,000+

8. 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

    7a) If YES, which one? (If you have lived on multiple Reservations, please enter which reservation you spent most of your time on.)

    _____

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:
    - o Cannabis/Marijuana
    - o Heroin
    - o Non- prescribed opioid medication (e.g., Hydrocodone, Oxycodone, etc.)
    - o Non-prescribed stimulant medication (e.g., Adderall, etc.)
    - o Amphetamine
    - o Methamphetamine
    - o MDMA (e.g., Ecstasy, Molly, etc.)
    - o Hallucinogens (e.g., LSD, Shrooms, etc.)
    - o Other (please describe): _____

10. In the past 12 months, have you had an alcoholic drink?

    YES NO

    10a) If YES, how often did you have 5 or more (males) or 4 or more (females) drinks containing any kind of alcohol within a two-hour period? [That would be the equivalent of at least 5 (4) 12-ounce cans or glasses of beer, 5 (4) five-ounce glasses of wine, or 5 (4) drinks each containing one shot of liquor or spirits.] Choose only one below:
    - o Every day
    - o 5 to 6 days a week
    - o 3 to 4 days a week
    - o Two days a week
    - o One day a week
    - o 2 to 3 days a month
    - o One day a month
    - o 3 to 11 days in the past year
    - o 1 or 2 days in the past year

11. Have you ever been admitted to an addiction treatment center?

    YES NO

    11a) If YES, what did you go to treatment for?

## APPENDIX B
## (AUDIT)

**DIRECTIONS:** Below are questions related to your alcohol use. Your answers will remain confidential so please be honest. Mark 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
## (MEIM-R)

**DIRECTIONS:** Below are questions related to your ethnic identity. Mark the box that best describes your answer to each statement.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs. | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
| 2. I have a strong sense of belonging to my own ethnic group. | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
| 3. I understand pretty well what my ethnic group membership means to me. | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
| 4. I have often done things that will help me understand my ethnic background better. | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
| 5. I have often talked to other people to learn more about my ethnic group | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
| 6. How often during the last year have you needed a drink in the morning to get yourself going after a heavy drinking session? | Strongly disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |

**APPENDIX E**
**(AIBI-NP)**

**DIRECTIONS:** These questions ask you to describe your attitudes, feelings, and participation in American Indian and non-Indian culture. Some of the questions may not seem to apply to you. In these cases, please mark the answer that you feel is the closest to your own personal feeling or attitude. In the case of attitudes and feelings, your first impression is usually correct. There are no right or wrong answers, please share your honest opinions and experiences.

**Read each question. Then circle the number above the answer that seems most accurate for you, as in the example below:**

**How comfortable do you feel taking paper and pencil questionnaires?**

| **1** | **2** | **3** | **4** |
|---|---|---|---|
| **No Comfort** | **Some** | **Moderate** | **Complete Comfort** |

1. In general, how comfortable are you around White people?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No comfort | | | Complete comfort |

2. How comfortable are you in encouraging your (or related) children to learn and practice American Indian ways?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No comfort | | | Complete comfort |

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

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No Identification | | | Greatly Identify |

4. How strongly do you identify with White culture?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No Identification | | | Greatly Identify |

5. How often do you think in an American Indian language?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I rarely or never think in an Indian language | | | Very often or always think in an Indian language |

6. How confident are you in White/Western (doctors in hospitals) medicine?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No confidence In White medical doctors | | | Have complete confidence in White medical doctors |

7. How confident are you in traditional Native/American Indian medicine and ceremonies?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| No confidence In Native medicine | | | Have very strong faith in Native medicine |

8. How much is your way of thinking of "Family" American Indian (cousins same as brothers and sisters, aunts/uncles as parents, everyone is related)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| My idea of "Family" is mostly "White", relatives/friends are just what they are | | | My idea of "Family" is very strongly Indian: we are ALL relatives |

9. How often do you attend traditional American Indian ceremonies (i.e Sweat lodge, Pipe Ceremonies, Sundance, Shaky Tent, Vision Quest)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never attend Indian ceremonies | | | I attend Indian ceremonies frequently |

10. How often do you attend more White, Christian religious ceremonies (Christenings, Baptisms, Church services)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never attend Christian ceremonies | | | I attend Christian ceremonies frequently |

11. How often do you participate in Indian dancing (Grass, Fancy, Jingle-Dress,Round, etc.)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never participate in Indian dances | | | I participate in Indian dances frequently |

12. To how many social organizations do you belong where most of the members are Indian?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I belong to no Indian organizations | | | Most of the organizations I belong to are Indian organizations |

13. How often do you attend White celebrations (i.e. White ethnic festivals, parades, etc)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never attend White celebrations | | | I attend White celebrations frequently |

14. How often do you attend Indian celebrations (i.e. Pow-Wows, Wacipis, Hand-games)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never attend Indian celebrations | | | I attend Indian celebrations frequently |

15. How many of <u>your family</u> speak an American Indian language?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| None of my family speak Indian | | | Most of my family speak Indian |

16. How much do <u>you</u> speak an American Indian language?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I rarely or never speak Indian | | | I often or always speak Indian |

17. To what extent do members of your family have Indian first or last names (like “Wambli” or “Kills-in-Water”)?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| None have Indian names | | | Most or all have Indian names |

18. How often do you talk about White news and culture in your daily conversation?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never engage in topics of conversation about Whites and their culture | | | I engage in topics of conversation about Whites and their culture frequently |

19. How often do you talk about Indian topics, news and culture in your daily conversations?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I never discuss Indian news or cultural issues | | | I discuss Indian news or cultural issues daily |

20. How much do you believe in any Indian Creation Stories (how Earth/People/Animals were made?)

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I don't believe in any of those stories | | | I very strongly believe in those stories |

21. How much do you believe in any non-Indian Creation Stories (Adam/Eve, Garden of Eden, etc?)

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I don't believe In any of those stories | | | I very strongly believe in those stories |

22. In general, much do you believe *"Success"* best means when an **individual** wins or achieves something?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| I totally believe success is best achieved by individuals | | | I totally believe success is best achieved by groups (i.e.families teams, tribes, etc.) |

23. How important is your European or White American heritage and history to you?

| 1. ___ | 2. ___ | 3. ___ | 4. ___ |
|---|---|---|---|
| Not at all Important | | | Very important |

**APPENDIX F**
**(CSE-R)**

**DIRECTIONS**: We are all members of different social groups or social categories. We would like you to consider **your race or ethnicity** (e.g., American Indian, European-American) in responding to the following statements. There are no right or wrong answers to any of these statements; we are interested in your honest reactions and opinions. Please read each statement carefully, and respond by using the following scale from 1 to 7:

| | **Strongly Disagree** | **Disagree** | **Disagree Somewhat** | **Neutral** | **Agree Somewhat** | **Agree** | **Strongly Agree** |
|---|---|---|---|---|---|---|---|
| 1. I am a worthy member of my race/ethnic group | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I often regret that I belong to my racial/ethnic group | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Overall, my racial/ethnic group is considered good by others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Overall, my race/ethnicity has very little to do with how I feel about myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I feel I don't have much to offer to my racial/ethnic group. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6. In general, I'm glad to be a member of my racial/ethnic group | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Most people consider my racial/ethnic group, on the average, top be more ineffective than other groups | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. The racial/ ethnic group I belong to is an important reflection of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I am a cooperative participant in the activities of my racial/ethnic group. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Overall, I often feel that my racial/ethnic group is not worthwhile. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. In general, others respect my race/ethnicity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. My race/ ethnicity is unimportant to my sense of what kind of a person I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. I often feel I'm a useless member of my racial/ethnic group. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. I feel good about the race/ethnicity I belong to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15. In general, others think that my racial/ethnic group is unworthy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. In general, belonging to my race/ethnicity is an important part of my self-image. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

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