Native Women, Intimate Partner Violence, and Drug Use and Consequences: Prevalence and Associations among Tribal College and University Students

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A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2016

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School of Social Work

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Abstract

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Background: Research has demonstrated high rates of problematic substance use in college and American Indian and Alaska Native (AIAN) samples and disproportionately high rates of intimate partner violence (IPV) among Native women. Epidemiological data on drug use and comorbidities in AIAN populations are scarce and the identification of tribally-specific protective factors that might buffer the effect of IPV on subsequent drug use lacks adequate empirical research in this population. This study investigates prevalence estimates and relationships between drug use and IPV and the potential for ethnic identity to buffer the effect of IPV on drug outcomes among Native women at Tribal Colleges and Universities (TCUs). **Methods:** This study used cross-sectional data from a sample of Native women at TCUs (n = 1,810). Prevalence of drug use and IPV were estimated using descriptive statistics. Bivariate analyses of demographic, IPV, and drug outcomes assessed for significant relationships. Regression analyses tested the potential moderating role of ethnic identity. **Results:** Most women had used drugs at least once in their lifetime (62%), with almost a third (29%) reporting use in the past three months. Among women who had ever had a partner (n = 1,553), 49% had experienced IPV in their lifetime and 15% in the past year. Experiencing any IPV and multiple types of IPV were significant predictors of lifetime, but not current drug use. Lifetime IPV and

sexual IPV were significant predictors of negative drug use consequences. Ethnic identity did not moderate relationships between IPV and drug outcomes. **Implications**: Findings from this study suggest that early initiation of drug use and experiencing IPV as an adolescent were common among this sample, highlighting a need for strategic prevention efforts among TCU students and AIAN adolescents. Results also indicate a need for trauma-informed substance abuse treatment specific to the unique dynamics of IPV. Finally, this investigation demonstrated that the Revised Multi-Group Ethnic Identity Measure was not effective in assessing the buffering effect of identity in this sample. A measure of identity specific to Native worldviews and life experiences should be used to test the potential protective effect of identity in tribal communities.

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ACKNOWLEDGMENTS

I would like to acknowledge and thank my committee members, Drs. Karina Walters, Tessa Evans-Campbell, Taryn Lindhorst, and Bonnie Duran for the wisdom, support, mentorship, and opportunities that they have offered over the years. Drs. Selina Mohammed and Dian Million generously offered their time, support, and knowledge in their role as the Graduate Student Representative. I would also like to acknowledge the assistance I have received from the "TCU Team": Maya Magarati, Myra Parker, Tess Abrahamson-Richards and Leo Egashira. A special thank you to Anita Rocha for her statistical expertise and patient help with these analyses. I also extend my gratitude to Sherry Hamby for her encouragement and generosity in sharing her immense knowledge of interpersonal violence and measurement development.

Support from the Indigenous Wellness Research Institute – including knowledge sharing, training and networking opportunities, financial assistance, and invaluable friendships have provided the foundation for this endeavor. Nancy Hooyman's writing reminders, career support and guidance are deeply appreciated. Drs. Gunnar Almgren, Diane Morrison, and Susan Kemp have provided stellar support in their roles as Program Director as did Kath Wilham and Chanira Reang Sperry as Assistant Directors of the PhD program. Support from the Council on Social Work Education's Minority Fellowship Program provided the opportunity to focus solely on this work over the last three years.

I am filled with gratitude for my family and friends who were patient with me, laughed with me, and provided support and encouragement throughout my time in the doctoral program. Finally, I would like to acknowledge the advocates and activists that led the way in addressing violence against Native women and those who continue to work toward a better, safer world for Native women and their families.

DEDICATION

I dedicate this work to my Mom, Ann Schultz, and my Dad, Neil Schultz. Without their support this would not have been possible. I also dedicate this to Native women who continue to shine in spite of, and in company with, historical and contemporary violence.

CHAPTER 1: INTRODUCTION

> *I grew up with a sense of women's responsibility for all the people. It's not just women's responsibility to the children – we have a responsibility to all of the people. We have to. We are the lifegivers. We are the life force of the nation. Our responsibility is to everyone; male and female, young or old, because we are that place from which life itself emanates. And there is nothing greater than that.*
>
> Ivy Chaske, Dakota (Anderson, 2000, p. 169)

The importance of women's roles in the health and wellbeing of tribal communities are well documented (see for example Anderson, 2000; Mihesuah, 2003; Pesantubbee, 1999; Weaver, 2009). In pre-colonial and contemporary times, Native women have sustained health practices and cultural knowledge in their roles as sacred givers of life, teachers of children, healers, political leaders and warriors. Contemporary Native scholars have stated that the health of tribal communities as well as the survival of Native cultures depends upon the health of their women (Walters, Beltran, Evans-Campbell, & Simoni, 2011; Walters & Simoni, 2002). Thus, the health and wellbeing of Native women is imperative in addressing the health and wellbeing of Native peoples. Moreover, the majority of research has focused on identifying negative health behaviors and risk factors at the expense of identifying positive aspects of Native cultures and communities that could inform prevention and intervention efforts to address health inequities.

Mortality statistics and epidemiological data demonstrate that American Indian and Alaska Native (AIAN; also referred to as Native) women are at higher risk than non-Native women for substance use, need for treatment, and drug- and alcohol-related death (Mitchell, Beals, Novins, Spicer, & AI-SUPERPFP, 2003; Substance Abuse and Mental Health Services Administration, 2012; Young & Joe, 2009). Among Native women and men, patterns of substance use and abuse vary greatly across tribal communities, with some reporting much lower prevalence estimates and higher rates of abstinence compared to the general population (Mitchell

et al., 2003; Whitesell, Beals, Crow, Mitchell, & Novins, 2012). However, when AIAN people use substances they are at risk of more severe use and consequences: Natives are more likely to be diagnosed and need treatment for substance use disorders (SUDs) and suffer worse health consequences, including death, from illicit drug use (Hasin, Stinson, Ogburn, & Grant, 2007; M. Walls, Sittner Hartshorn, K. J., & Whitbeck, L. B., 2013; Warner, Chen, Makuc, Anderson, & Miniño, 2011; Whitesell et al., 2012).

Although data on drug use in the U.S. population is widely available, epidemiological data on drug use and common comorbidities in AIAN populations have not been collected. The literature has examined relationships between substance use and abuse and intimate partner violence (IPV) among AIANs, but much of it has focused on alcohol use without an examination of the impact of drug use independent of alcohol. Furthermore, the identification of tribally-specific protective factors that might buffer the effect of IPV and other comorbid conditions on subsequent drug use and consequences lacks adequate empirical research in this population.

A unique intersection – Native and in college. American Indian and Alaska Native populations and college students have long been identified as groups at particular risk of substance use and abuse. Until recently, the intersection of these two groups has not been examined. One investigation of the College Alcohol Study data found that Native students at *non-tribal* colleges and universities reported similar rates of alcohol use when compared with non-Native students, but higher odds of illicit drug use (other than marijuana) in the past year (Ward & Ridolfo, 2011), suggesting unique use patterns among Native college students at non-tribal institutions. To my knowledge, no epidemiological investigation of drug use among Native students at Tribal Colleges and Universities (TCUs) has been conducted. This study offers new knowledge on this population that may be at particular risk and is timely given that enrollment at

TCUs increased by nearly a third in the last decade. Not only is there a gap in the literature on substance use and other health behaviors among this growing population, increasing enrollment and presence of TCUs in tribal communities make them an exciting community institution to partner with in health promotion, prevention, and intervention efforts for Native people.

The undue burden on Native women. While findings on causal relationships between substance use and IPV remain unclear, researchers have established that substance use commonly co-occurs with IPV among Native women (Bohn, 2002, 2003) and in general population studies (Macy, Ferron, & Crosby, 2009; Macy, Renz, & Pelino, 2013; Sullivan, Ashare, Jaquier, & Tennen, 2012; Temple, Weston, Stuart, & Marshall, 2008). Moreover, AIAN women bear an undue burden of IPV when compared to other populations. In the most recent and largest national survey on IPV among Native women, researchers found that Native women were 1.6 times as likely to have experienced physical violence and 1.3 times as likely to have experienced psychological aggression by an intimate partner in their lifetimes when compared to non-Hispanic White women (Rosay, 2016). Research among AIAN women have reported lifetime IPV prevalence estimates ranging from 40% among urban women in New York City (Evans-Campbell, Lindhorst, Huang, & Walters, 2006) to 87% among women in a prenatal clinic (Bohn, 2003).

Identifying strengths and resiliency in Native women. Native communities have called for research examining protective factors unique to AIAN identity, community strengths, and cultural practices to identify strengths that exist within tribal communities that can address prevention and healing from substance use and violence. A common narrative in Indian Country[1]

[1] The legal definition of Indian country includes: 1. All land within the limits of an Indian reservation under the jurisdiction of the United States government; 2. All dependent Indian communities; and 3. All Indian allotments still in trust, whether they are located within reservations or not. Today however, it is used in colloquial speech to refer to rural areas, towns and cities where Native people live.

is the notion that "culture is medicine" (Mehl-Madrona & Mainguy, 2014). Connection to culture is often measured as the strength of one's Native identity as demonstrated in individuals' reported behaviors and/or attitudes. Decreased likelihood for substance abuse has been linked to strong cultural identity in studies among AIAN samples (Baldwin, Brown, Wayment, Nez, & Brelsford, 2011; Walters & Simoni, 2002; Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002) and a lack of connection to cultural traditions has been associated with increased substance use (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; King, Beals, Manson, & Trimble, 1992; Walters, Simoni, & Evans-Campbell, 2002). However, findings on the influence of identity on substance use with AIAN samples are mixed with some showing protective effects (Kulis, Napoli, & Marsiglia, 2001; Skewes & Blume, 2015), no effects (Bates, Beauvais, & Trimble, 1997) and negative effects (Oetting & Beauvais, 1991), demonstrating the need for more work in this area.

Contemporary American Indian and Alaska Native Populations

American Indians and Alaska Natives are a small, but diverse segment of the U.S. population. In the 2010 Census, 5.2 million people identified as AIAN either alone or in combination with one or more races, accounting for 1.7% of all people in the Unites States (Norris, Vines, & Hoeffel, 2012). The population is approximately 50.5% female and 49.5% male (U.S. Census Bureau, n.d.-a) and is growing at a rate almost twice as fast as the overall U.S. population, increasing by 18% between the 2000 and 2010 Census (Norris, et al., 2012). This estimate represents over 566 federally recognized tribes, ranging from very large tribes such as Cherokees and Navajos to tribes with only a couple of hundred members. Natives live across the continental United States and Alaska in urban areas, rural communities, and in 325 federally

recognized reservations. Generalizations of an overall AIAN population should be made with caution given the diversity of languages, geographies, cultures and practices among tribes.

In comparison to other Americans, AIANs live predominantly in the West and South (Norris, et al., 2012). Native populations tend to have lower household incomes (Bishaw & Semega, 2008), are less likely to be married, have lower levels of educational attainment (U.S. Census Bureau, 2004) and are on average younger than the U.S. population as a whole, with a median age of 31.4 compared to 37.7 (U.S. Census Bureau, n.d.-a). Although AIANs are more likely than other Americans to live in rural areas, among AIANs the majority (79%) now live in urban areas (U.S. Census Bureau, n.d.-b).

The Importance of Tribal Colleges and Universities as a Site of Study

Not only do TCUs serve a population at heightened risk of substance use and abuse because of their age and racial/ethnic background, they also offer a diverse national sample of the AIAN population in the United States. There are currently 37 TCUs at 75 sites in 15 states. These institutions offer higher education to over 80% of Indian Country with more than half of federally recognized tribes (250) represented in student enrollment. Moreover, in a 2012 report the American Indian Higher Education Consortium (AIHEC) estimated that TCUs reached nearly 47,000 community members not enrolled as students through community-based education and support programs (American Indian Higher Education Consortium, 2012).

The first tribally controlled college opened in 1968. Founders of this College and leaders in the movement to develop TCUs were responding to low success rates at traditional colleges. Leaders also recognized the need to create institutions that valued and strengthened cultural knowledges. Boyer (2003) describes the missions of TCUs as two-fold. On the one hand they are tasked with providing training for employment and preparing students for further education at

mainstream institutions, while on the other hand they are expected to address social and economic needs of tribal communities through the use of a cultural framework. Not only do TCUs often function as a community gathering place, the role of TCUs in promoting cultural values and knowledges make them a particularly interesting site for health prevention and intervention efforts in tribal communities. Health promotion efforts drawing on cultural values, teachings and worldviews may complement existing programs related to the schools' missions to maintain and revive Native history and culture.

Enrollment at TCUs increased by 23% from 2001 to 2006 (U.S. Department of Education, 2007) and 11% between 2004 and 2010 (AIHEC, 2012). In the fall of 2010, 19,070 full- and part-time students were enrolled at a TCU. While TCUs continue to serve nontraditional college students, recent enrollment indicates that first time students are beginning to resemble more "traditional" college students[2]. In 1997 the average age of a TCU student was 32, over half were single parents, half were attending part-time, and 64% were female (American Indian Higher Education Consortium, 1999). As of 2010, the majority of students were between 16 and 24, with only a third between the ages of 25 and 49. Among first-time entering students in 2009, 69% had a high school diploma and 64% were single with no dependents. However, enrollment at TCUs continues to have a unique demographic profile: 62% of entering students were first generation college students, 75% resided on a reservation, 80% percent received financial aid and the average annual income among first-time entering students was $17,774 (AIHEC, 2012). Over 80% of students at TCUs are AIAN, 43% of which were Native women during the 2009 – 2010 academic year.

[2] According to a 2012 American Indian Higher Education Consortium [AIHEC] report, a "traditional" college student was typically non-married, a recent high school graduate, attending full-time, and between 16 and 24 years old.

Study Purpose

To address the urgent need for deeper understanding of the health risks and protective factor among this unique population at high risk for substance abuse and IPV, this dissertation explores the potential buffering effect of ethnic identity on current drug use and consequences among Native women at TCUs who have experienced IPV. The primary aims of this work are to answer the following questions: (1) What are the prevalence estimates of drug use (excluding alcohol) and IPV among Native women attending TCUs? (2) Are there significant relationships between IPV and drug use and consequences in this population? and (3) Does ethnic identity buffer the effect of IPV on drug use and consequences in this sample? My hypothesis was that women who scored higher on the identity measure would show lower drug use and consequences than women with lower scores on identity, where the relationships between IPV and drug outcomes would hold.

This is the first study to examine relationships between drug use and IPV and to test the buffering effect of ethnic identity on these relationships in this population, offering new knowledge on potential risk and protective factors among TCU students and AIAN women. The ultimate goal is to offer useful epidemiological data that can guide policy development, practice, and future research to address issues of substance use and IPV at TCUs and in their tribal communities. Tribal Colleges and Universities offer a unique population-based sample and one which may be at particular risk for substance use and misuse. They are also community-based institutions that are promising sites for health promotion rooted in cultural values and knowledges. Community partners state that substance use and IPV are problems affecting TCU students and that faculty and staff commonly provide support to students regarding these issues. This support is informal and often outside the professional scope and expertise of faculty and staff. Findings from this study could provide evidence of the need for culturally-adapted services

at TCUs and be used to secure funding for education, training, prevention efforts, or intervention development.

CHAPTER 2: LITERATURE REVIEW

In this review, I begin with the conceptual frameworks guiding this work in order to highlight the importance of a sociohistorical context in interpreting epidemiological data from AIAN populations. The following sections provide an empirical evidence base for the three major components of this work: prevalence of drug use, comorbidity of substance use and IPV, and research examining IPV among Native women. In each of these sections I present national and community-based prevalence estimates specific to AIAN communities and in comparison to non-Native populations. I describe methodological issues in these studies and comparisons and include a brief section on estimates of drug use among college samples. Because the focus of this work is on the relationships between drug use and IPV, I also explore theoretical mechanisms for understanding the comorbidity of substance use and IPV. Lastly, I examine the literature on ethnic identity as a protective factor. This includes a discussion on the complexities of conceptualizing and defining identity, mixed evidence of its impact on health, and research examining its effect on substance use among Native peoples, almost all of which is focused on AIAN adolescents.

A Conceptual Framework for Health Inequities and Native Women

The conceptual framework guiding this research is informed by the sociohistorical context of tribal communities in the United States, drawing specifically on historical trauma (Evans-Campbell, 2008), social determinants of health (Solar & Irwin, 2010), and structural violence (Chenault, 2011) theories. Failure to account for a sociohistorical context in the examination of health inequities in Native communities can lead to pathologization of Natives and reinforce power inequities. Theoretical and empirical work on historical trauma and its

relationship to health has grown increasingly common as scholars have attempted to understand health inequities in AIAN communities. Briefly, historical trauma can be defined as a collective and cumulative intergenerational wounding resulting from traumatic events targeting a community (e.g., massacres, forced removal from homelands, boarding schools) and has been posited to have harmful effects that can persist across generations (Chae & Walters, 2009; Evans-Campbell, 2008; Walters, Beltran, et al., 2011; Walters, Mohammed, et al., 2011). Researchers have examined how historically traumatic events affect the magnitude and distribution of health inequities (Evans-Campbell, 2008; M. L. Walls & Whitbeck, 2012; Walters, Mohammed, et al., 2011); focusing on events as causal agents for health disparities or as mechanisms for transmitting trauma, and historical trauma responses as health outcomes (Walters, Mohammed, et al., 2011).

Many Native communities have explained problematic substance use as a response to these traumas (Evans-Campbell, Walters, Pearson, & Campbell, 2012; Morgan & Freeman, 2009; Segal, 1999). Research has provided evidence of relationships between historical trauma and substance dependence and abuse (Brave Heart, 2003; Ehlers, Gizer, Gilder, Ellingson, & Yehuda, 2013; Whitbeck, Chen, Hoyt, & Adams, 2004); Wiechelt, Gryczynski, Johnson, & Caldwell, 2012). For example, Yellow Horse Brave Heart (2011) describes historical trauma response as "the constellation of features" in reaction to historical trauma (p. 7). She draws on a self-medication hypothesis in describing substance abuse as a historical trauma response insofar as substance abuse is an attempt to numb or avoid painful feelings that result from these traumas.

Relatedly, a social determinants of health approach suggests that social, economic and political mechanisms stratify populations by income, education, occupation, gender, race/ethnicity and other factors and these socioeconomic positions shape the health outcomes of

individuals (Solar & Irwin, 2010). Thus, these inequities are systemic and structural. This approach has driven research attempting to explain disproportionate rates of violence against Native women. Settlers of what is now North America specifically targeted Native women because of their esteemed roles in the social functioning of vibrant, healthy Indigenous nations (Chenault, 2011; Smith, 2005). Consequently, scholars have examined disproportionate rates of violence against Native women from within historical traumas, contemporary political and economic systems, and structural frameworks. For example, Chenault (2011) positions her work on violence against Indigenous women within a structural approach, which she defines as one that "expands the analysis to consider the multilayered and interlocking effects of structural disruption on social systems, organizations, and functioning throughout the civilizations of Indigenous Peoples" (p. xv). Drawing on Indigenous histories, she approaches violence against Indigenous women as "a manifestation of the collapse and disruption of structures and cultural systems valuing women" (Chenault, 2011, p. xv). In a similar vein, Pedersen, Myers, Browne, and Norman (2014) used a structural violence approach to emphasize the importance of historical and social contexts in their examination of Aboriginal/non-Aboriginal inequity in post-separation IPV. Much like a social determinants of health approach, a structural violence approach includes social arrangements that contribute to violence. Briefly – the arrangements are structural in the sense that they are embedded in political and economic systems and violent because they cause harm to people. In their article, Pedersen, Malcoe, and Pulkingham explain that they used this approach because it "challenges explanations of violence against Aboriginal women that implicitly or explicitly blame Aboriginal culture or Aboriginal women for the high rates of 'victimization' they experience" (2013, p. 1035). This approach can also be used to contextualize substance abuse in tribal communities.

Historical trauma, social determinants of health, and structural violence all have compelling bodies of work that are beyond the scope of this dissertation. The point of including these conceptual frameworks briefly is to ensure that this work is situated within them in its examination of Native women's health to avoid potentially pathologizing interpretations of the data. Additionally, research that neglects the history, culture and political context of tribal communities risks missing innovative prevention and intervention opportunities and effective collaborations with Native communities. Incorporating social, historical, and structural contexts in the interpretation of epidemiological evidence of Native women's health inequities drove the development of the indigenist stress-coping model that will be tested in this dissertation. Developers of the model explicitly state that Native women's behavioral health problems such as substance abuse "are directly connected to their colonized status and associated forms of environmental, institutional, and interpersonal discrimination" (Walters & Simoni, 2002, p. 522).

Indigenist Stress-Coping Model

There is a long history of research on relationships between stress, coping, and health outcomes in the general population (e.g. Brown, Brolchain, & Harris, 1975; Cobb, 1974; Gore, 1978; Sandler & Lakey, 1982). In Dinges and Joos (1988) review of this work, the authors examine pathways between stress, coping and health using a vulnerability hypothesis that suggests that relationships between life stressors and negative health outcomes are mediated or moderated by internal and external factors. They also outlined theoretical and methodological issues related to conceptual and definitional issues that have made this work difficult to apply effectively, in general, and particularly in Native communities. These issues include a "wide and bewildering array" of depictions of the relationships between stressors and potentially mediating coping processes (Dinges & Joos, 1988, p. 13), lack of attention to individual and cultural variability in stress reactions to similar stressors, lack of consistency in the definition of human

stress, varying definitions of support and failure to acknowledge the multidimensional aspects of social support – often conflating social support with social networks, and overall a lack of attention to validity and reliability in measures. Although they cited work among Native populations (e.g. S.M. Manson, 1984; Trimble & Richardson, 1982), they issued a call for researchers to develop AIAN-specific theoretical and empirical models.

Drawing on this earlier work, Walters and Simoni (2002) developed a stress-coping model specific to Native women, which has since been expanded to be used in multiple AIAN populations. As in earlier work, the indigenist stress-coping model suggests that social experiences and health-related outcomes are moderated by cultural and personal factors that act as buffers to mitigate the effects of traumatic stressors (Walters et al., 2002). It is informed by the work of Dinges and Joos (1988) in outlining ways that environmental context and other internal and external factors act to potentially moderate or mediate the effect of stress on health outcomes. They also draw on Krieger's (1999) work on the importance of identity and expression of self in moderating the effect of discrimination on health outcomes. Nancy Krieger is well known for her work on health consequences of discrimination and the embodiment of social inequalities. She suggests including questions assessing identity formation and related personal factors (e.g. political consciousness or internal oppression) in large scale surveys to examine if these expressions of self-identity modify associations between health and experiences of discrimination. Walters and colleagues (2002) apply this in the indigenist stress-coping model to outline pathways between social experiences and their expressions in substance use and other health outcomes.

Research has often focused on personality or individual attributes to explain different stress-coping responses (Duran & Walters, 2004). This neglects ongoing effects of colonization

and can lead to "blaming the victim" or [mis]placing explanations for Indigenous health inequities solely within tribal communities or individuals. The indigenist stress-coping model conceptualizes negative health outcomes within a context of colonization and its effects on modern AIAN communities. It also compels researchers to identify AIAN-specific cultural strengths, including AIAN attitudes towards identity, as moderators of the relationships between historical and contemporary traumas and negative health outcomes (Walters et al., 2002).

Drug Abuse in American Indian and Alaska Native Communities

As noted in the introduction, while demonstrating higher abstinence and lower prevalence rates than non-Native populations in some cases, research also indicate disproportionately high rates of problematic substance use and associated negative health consequences among AIAN populations and unique patterns of substance use (Barlow et al., 2012; Compton, Thomas, Stinson, & Grant, 2007; Substance Abuse and Mental Health Services Administration [SAMHSA], 2014; Whitesell et al., 2012). Like other racial and ethnic groups, alcohol is the most commonly reported substance used among AIAN populations (Rieckmann et al., 2012) and marijuana the most commonly used illicit drug (Center for Behavioral Health Statistics and Quality, 2015; SAMHSA, 2014). Higher rates of use and earlier initiation of drug use are reported among AIAN youth compared to other adolescents, with earlier initiation a hallmark of increased risk for later problematic and long-term use (Whitesell et al., 2012). Research also indicates significant tribal variability in substance use rates[3] (Beals, Spicer, Mitchell, Novins, & Manson, 2003; Hasin et al., 2007; Mitchell et al., 2003).

[3] Because of the importance of considering the diversity of tribal communities in interpreting research findings, I include brief descriptions of the sample when possible and when it does not make the review too cumbersome.

In general, risk factors for drug use disorders among AIAN populations are similar to those among the general population (Mitchell, et al., 2003; SAMHSA, 2014), including marital status, education, gender and age. However, when AIAN adults engage in substance use, they often experience more severe consequences and higher abuse rates (Walls et al., 2013; Whitesell et al., 2012). National estimates of substance use and consequences among AIAN populations include data from the National Survey on Drug Use and Health (NSDUH) and data published by Indian Health Service (IHS). The following section will review annual reports from these agencies and examine mortality reports related to drug abuse with community samples from AIAN populations.

Because few studies differentiate illicit or non-medical use of drugs from alcohol and tobacco use in their data collection or findings, this literature review includes alcohol use and disorder rates when appropriate. The term *substance* is used when referring to combined alcohol and drug use and abuse, and *drug* is used when referring only to illegal drugs and non-medical use of prescription drugs, excluding alcohol. The National Institute on Drug Abuse defines drug abuse as the use of illegal drugs or using legal drugs inappropriately. Because most cited research does not report a diagnosis of substance use disorder, unless specified in the cited literature, *drug abuse* will be used throughout this paper as a general term to indicate problematic drug use that may encompass aspects of addiction, dependence and disorders as defined by DSM diagnoses of specific SUDs.

National Estimates

National Survey on Drug Use and Health. The NSDUH is an annual national sample of randomly selected individuals ages 12 or older from households and non-institutional group quarters (e.g. college dorms or shelters) across the United States. It uses an address based sampling strategy and as a result excludes people with no fixed address, active duty military, and

individuals residing in settings such as jails, nursing homes, or mental institutions. The interviews take place face-to-face at participants' place of residence using audio computer-assisted self-interviewing. Addresses included in the sampling frame are based on census tracts (not tribal census tracts) and states with the largest populations are oversampled (California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas). Because of the oversampling of these states and the fact that addresses are selected according to census tract, not tribal census tract, this sample may over-represent an urban sample. Researchers have noted that address-based sampling is known for inadequate representation of certain populations, including those in rural communities (Morton, McMichael, Ridenhour, & Bose, 2010). In addition to these and other commonly cited reasons for underreporting that will be described later, prevalence data for AIAN populations may also be underestimated in the NSDUH because of its organization of racial categories. Respondents can choose more than one racial group and if a Native person reported more than one category they are included in the category "two or more races", not "American Indian or Alaska Native". In spite of these methodological shortcomings, the NSDUH remains the primary source for national drug use prevalence estimates and comparisons between AIAN and other racial and ethnic populations.

The latest report to include AIAN findings is from the 2013 NSDUH (Table 1). In this survey, 12% of the AIAN sample (n = 865) reported current drug use. This falls somewhere in the middle of estimates for other groups: Asians (3%), Hispanics (9%), Whites (10%), Blacks (11%), Native Hawaiians or Other Pacific Islanders (14%) and persons reporting two or more races (17%; SAMHSA, 2014). The authors note that there were no statistically significant differences in rates of current illicit drug use between 2012 and 2013 for any of the groups (SAMHSA, 2014). Although AIAN populations do not demonstrate the highest rates of drug use

among all groups, combined data from 2003 to 2011 indicate that AIANs were more likely than persons from any other racial or ethnic group to have received treatment (15% compared to 10% other races/ethnicities) and needed substance use treatment based on reported substance use (18% versus 9% other races/ethnicities) in the past year, suggesting more severe consequences when they do use (SAMHSA, 2012). In the 2013 NSDUH, the rate of SUDs (substances include alcohol and illicit drugs) was highest among AIANs (15%) compared to all other groups (Asians 5%, Blacks 7%, Whites 8%, Hispanics 9%, persons reporting two or more races 11%, and Native Hawaiians or Other Pacific Islanders 11%; SAMHSA, 2014).

Table 1.

Drug Use Prevalence in the National Survey on Drug Use and Health

First author year	Population	Sample	Measure	Prevalence
SAMHSA 2014	U.S. civilian, noninstitutionalized population aged 12 or older	865 AIAN men and women	Current drug use	12%
			Substance dependence or abuse	15%
		169,985 White men and women	Current drug use	10%[a]
			Substance dependence or abuse	8%[b]

Notes. [a] Asians (3%), Hispanics (9%), Blacks (11%), Native Hawaiians or Other Pacific Islanders (14%) and persons reporting two or more races (17%). [b] Asians (5%), Blacks (7%), Hispanics (9%), Native Hawaiians or Other Pacific Islanders (11%) and persons reporting two or more races (11%).

Indian Health Service and mortality reports. Indian Health Service publishes current and trend health information that includes comparisons to non-Native populations. These publications report on AIAN people residing in the IHS service area (counties on or near federal Indian reservations) and include data from the U.S. Census Bureau, National Center for Health Statistics, and Centers for Disease Control and Prevention (CDC). Because these data report on patient care delivery services within IHS service areas, they are one illustration of the consequences of substance use in AIAN communities. No information is available on

epidemiological trends, nor for urban centers, where over half of AIANs reside. For communities with limited epidemiological data available – particularly national epidemiological data – administrative data such as hospital visits, inpatient admissions, or arrests rates can offer insight on the magnitude of the issue. These data can be misleading though, because one individual can generate numerous counts. Prevalence rates, or counts of individuals affected, not incidence rates are more useful for epidemiological purposes (May, 1994).

On the other hand, mortality rates are a conservative estimate of prevalence, but can be a useful estimate of consequences for communities with limited national data. According to IHS reports, the leading cause of death from 2007-2009 for AIANs ages 15 to 24 and 25 to 44 was unintentional injury (UI; IHS, 2015), which includes motor vehicle fatalities, drowning, fires – many of which involved drugs or alcohol as well as overdoses. Analyses from these same data showed UI mortality rates for Native people approximately 2.4 times higher than all other races combined (IHS, 2015). Unlike alcohol-related death rates which decreased over time, drug-related deaths were on the rise increasing from 4.1 (1979-1981) to 22.7 per 100,000 (2007-2009) – an increase of 454% and 1.8 times higher than the rate for all other races (IHS, 2015). The primary driver of this increase is not reported. Young and Joe (2009), analyzing IHS reports from the 1980s to 1990s, report that AIAN drug-related mortality rates demonstrated a three-fold increase over 19 years (1979-1998). Drug use mortality rates by AIAN and non-AIAN were relatively comparable in the 1980s and 1990s. While drug-related mortality began to increase at greater rates among all groups beginning in 1994-1995, the increase was greatest among AIANs. Drug-related mortality per 100,000 increased from 3.4 in 1979 to 10.3 in 1996–1998 among Natives, while rates among all other races showed an increase from 3.0 to 5.6 during the same time period. From 1997-1999, age adjusted rates of AIAN mortality associated with drug use

were 1.8 times greater than all races combined, a rate that held steady through 2008 (Young & Joe, 2009). The authors do not specify the type of drug(s) involved in these drug related deaths. Consequently, we do not know if these rates were driven by the types of drugs being used in those years. Data from IHS also suggests gender differences in drug-related deaths; 2014 AIAN male death rates peaked in ages 35 to 44, but females' highest rate occurred in the 45 to 54 age group (IHS 2015). Although the peak male rate was 18% greater than the peak female rate, AIAN female drug use mortality rates remain higher than other US female rates. From 1996-1998, Native women ages 15 to 24 had 2.5 times the drug-related mortality rates of all races combined in the same age group (Young & Joe, 2009).

Murphy and colleagues (2014) analyzed UI deaths among AIAN populations using National Death Index records with IHS records to identity AIAN deaths misclassified as non-AIAN deaths. The leading causes of AIAN UI deaths were motor vehicle traffic crashes, followed by unintentional poisoning. In their review, they cited evidence that AIANs demonstrate high prevalence of alcohol-impaired driving and the highest rates of alcohol-related motor vehicle deaths. Based on evidence of poly-substance use it is not unreasonable to suspect that these crashes also involved drug use, but this analysis did not specify the particular substances involved. The analyses of death rates from poisoning included accidental drug overdose, which rose among both AIAN and Whites from 1990-2009 (Murphy et al., 2014). From 2005-2009, poisoning death rates were two times higher among AIAN than among Whites (23.3 and 12.1 per 100,000 respectively) and death rates from unintentional poisoning increased significantly among the AIAN population at a rate of 15% per year (Murphy et al., 2014). Analyzing data from the National Vital Statistics System Mortality File, Warner et al. (2011) reported that 2008 drug poisoning death rates per 100,000 were higher among AIANs (15.6) and

Whites (14.7), than other racial or ethnic groups (with 8.5 among Black people the next closest in the sample). Age-adjusted AIAN poisoning death rates using IHS data were 118% higher than all other races from 2007-2009 (IHS, 2015). In a Morbidity and Mortality Weekly Report, the CDC (2011) reported that deaths involving opioid pain relievers among non-Hispanic Whites and AIANs were three times greater than rates for Black and Hispanic populations. In another CDC report (2013), drug-induced death rates in 2010 were highest among AIANs (17.1 per 100,000), followed closely by non-Hispanic Whites (16.6) and of those, the rate was 15.3 per 100,000 for AIAN women – higher than any other group of women. In light of these sobering statistics, it is important to remember that the *majority* of Native peoples (88%) in 2013 were not currently using drugs, that AIAN peoples do not report the highest rates of current drug use when compared to other racial and ethnic groups, and that there were no statistically significant increases in current rates of illicit drug use among AIANs between 2012 and 2013 (SAMHSA, 2014).

Community Samples

While national datasets offer the opportunity to examine AIAN use in comparison with other racial and ethnic groups, studies using AIAN community samples provide some insight into variance among tribes (see Table 2 for combined community-based prevalence estimates). An oft-cited survey in the literature on AIAN substance use and associated health outcomes is the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP). This psychiatric epidemiological survey of two large tribal groups – Northern Plains (NP) and Southwest (SW) – collected data between 1997 and 1999 from tribal members 15 to 54 years old living on or near their reservations (N = 3,084; Beals, Manson, Mitchell, & Spicer, 2003). Analyzing drug use data from this survey, Mitchell et al. (2003) reported lifetime use of drugs for nonmedical purposes ranging from 41% (SW) to 52% (NP)

among women, with a 60% prevalence rates for men in both communities. Lifetime disorder rates ranged from 5% (SW) to 11% (NP) among women and 14% (SW) to 15% (NP) among men. Lifetime polydrug use (two or more substances, excluding alcohol) across the sample ranged from 11% (SW women) to 36% (NP men). Lifetime polydrug use disorders ranged from 1% (SW women) to 5% (SW men). As in the general population, marijuana was the most commonly used drug, with significant group differences for all substances except heroin (one of the least commonly used substances). In general, the SW population had lower non-medical drug use than the NP population and the authors reported significant tribal variability among the women – SW women generally had the lowest rates of drug use across all groups. These tribal groupings were chosen because they represented different tribal traditions including linguistic families, histories of migration, different practices regarding kinship and residence (e.g. patrilineal or matrilineal; bilocal or matrilocal), and historically different subsistence practices (Mitchell et al., 2003). These differences in addition to the possibility that the two groups had distinct community norms around substance use, access to substances, and available economic and educational opportunities may explain the differences between NP and SW women.

Across both groups older age groups had significantly lower rates of lifetime drug use than 15 to 23 year olds (Mitchell et al., 2003). One would expect more lifetime drug use prevalence among older groups because their period of risk is longer. The authors speculate that this finding could be related to a cohort effect or cultural diffusing – suggesting that younger people have had more exposure to a drug culture – or differential mortality among the older age groups. This suggests a need to examine patterns among adolescents and those in early adulthood, the group with the highest use and disorders. Higher education was significantly related to more drug use in both groups. This is an interesting finding – in a primary care sample

of Native women and in general population samples, higher educational levels are generally associated with lower risk of substance use and disorders (Duran et al., 2009; SAMHSA, 2014). Living with a partner, but unmarried was associated with drug use disorders for both groups and increased likelihood of having used drugs among the NP sample. Among the SW sample those never married had higher drug use disorders than married participants and poverty was significantly, negatively related to drug use (Mitchell et al., 2003). Notably, the relationship with poverty was only found in the SW sample. Overall findings of use and disorder patterns are consistent with general population studies – marijuana use being most common, women having lower prevalence rates than men, and associated demographic correlates. It is not possible to compare prevalence rates of the women in this sample to non-Native women in other national samples because most of these studies only report 12-month prevalence and SUDs (e.g. the NSDUH and the National Epidemiologic Survey on Alcohol and Related Conditions) and the AI-SUPERPFP used lifetime rates. An important aspect of the findings is the group differences within this Native sample, reminding us of the importance of considering tribal variability in epidemiological work with Native peoples, which is highlighted in other research as well (e.g. Rieckmann, et al., 2012).

Among a sample of Native women in outpatient and urgent care IHS clinics in an urban setting (N = 234), past year drug abuse or dependence among the sample was 4%, with marijuana accounting for 80% of abuse or dependence (Duran, et al., 2004). Similar to general population findings, of women who reported any lifetime drug use disorders (32%), marijuana was the most commonly used drug (89%). Drug use disorders were also overwhelmingly associated with alcohol use and abuse – only 7% of women who reported a drug problem reported drug abuse or dependence without alcohol abuse or dependence, compared to 51% reporting alcohol abuse or

dependence without a drug disorder (Duran, et al., 2009). Another study in the Navajo Nation IHS service areas reported lifetime prevalence for non-alcoholic substance use among women in the population (*n* =203) at 36% with the majority (57%) under the age of 24 (Kunitz, 2008).

Table 2

Drug Use Prevalence Across AIAN Community-based Samples

First author year	Population	Sample	Measure	Prevalence
Mitchell et al. 2003	Southwest (SW) and Northern Plains (NP) tribes	829 AIAN women in SW	Lifetime drug use	41%
			Lifetime drug use disorder	5%
		848 AIAN women in NP	Lifetime drug use	52%
			Lifetime disorder	11%
Kunitz 2008	Navajo Nation IHS area	203 Navajo women	Lifetime drug use	36%
Duran et al. 2009	Urban outpatient and urgent care IHD clinics	234 AIAN women	Lifetime drug abuse or dependence	32%
			Past year drug abuse or dependence	4%

Notes. [a] Asians (3%), Hispanics (9%), Blacks (11%), Native Hawaiians or Other Pacific Islanders (14%) and persons reporting two or more races (17%). [b] Asians (5%), Blacks (7%), Hispanics (9%), Native Hawaiians or Other Pacific Islanders (11%) and persons reporting two or more races (11%).

Established correlates in these samples included: early initiation of alcohol use, family histories of alcohol use, poly-substance use (including alcohol and drugs or more than one type of drug), low educational level, unemployment, and age (Akins, Lanfear, Cline, & Mosher, 2013; Duran et al., 2004; Kunitz, 2008; Momper, Delva, Tauiliili, Mueller-Williams, & Goral, 2013; O'Connell et al., 2011). In the Navajo Nation sample, the type of community participants grew up in was significant; people from agency towns or off reservation were more likely to have used substances than those raised in rural reservation areas (Kunitz, 2008).

Drug Abuse among College Students

Comparisons between women at TCUs and women in other 2– or 4–year colleges may be difficult given differences in their sociodemographic profiles. Examples of these sociodemographic differences include age, first generation status, financial resources, or geographies (e.g. reservation-based), all of which can affect substance use. However, a brief description of drug use at non-tribal colleges and universities follows (Table 3). Data from the large, national Monitoring the Future survey estimated 51% lifetime and 38% past year use of any illicit drug among all female college students (n = 590; sample sizes were too small to report on Native college students). Marijuana was the most commonly used drug with 46% lifetime and 32% past year use among women in the sample (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2015). The finding that marijuana was the most commonly used drug is supported in other studies as well. Another large national study estimated that 14% of women in the sample had used marijuana within the past 30 days (American College Health Association [ACHA], 2016). Examining drug use among all college students using data from the Harvard School of Public Health College Alcohol Study, Mohler-Kuo, Lee, and Wechsler (2003) reported 47% lifetime and 30% past year marijuana use (N = 54,568). In that study, 16% of students reported past year use of other drugs. Combined NSDUH data from 2011-2014 demonstrated that close to a quarter (22-23%) of full- and part-time college students (N = 25,400) had used an illicit drug in the past month (Lipari & Jean-Francois, 2016).

Non-medical use of prescription drugs is also often a key finding in studies of college students' drug use. One study reported that 42% of students reported non-medical use of prescription drugs at least once in their lifetime and 30% at least once in the past year (Silvestri, Knight, Britt, & Correia, 2015). Using data from the NSDUH, Martins et al. (2015) indicated that 11% of college students reported past-year nonmedical use of prescription opioids and 5%

past-year nonmedical stimulant use. In the National College Health Assessment (*n* = 10,976), 11% of women had used prescription drugs that were not prescribed to them within the last 12 months (ACHA, 2016). As is true in the general population, college students often report poly-substance drug use. Mohler-Kuo et al. (2003) reported that 98% of drug users concurrently used other substances, including binge drinking and other drugs.

Table 3.

Drug Use Prevalence Across College Samples

First author year	Population	Sample	Measure	Prevalence
Mohler-Kuo et al. 2003	Harvard Alcohol Studies, 1993-2001	54,568 college students	Past year marijuana use	30%
			Past year drug use (not marijuana)	16%
Johnston et al. 2015	Monitoring the Future	590 female college students	Lifetime drug use	51%
			Past year drug use	38%
Lipari et al. 2015	NSDUH	25,400 college students	Past month drug use	22-23%

Notes. [a] Asians (3%), Hispanics (9%), Blacks (11%), Native Hawaiians or Other Pacific Islanders (14%) and persons reporting two or more races (17%). [b] Asians (5%), Blacks (7%), Hispanics (9%), Native Hawaiians or Other Pacific Islanders (11%) and persons reporting two or more races (11%).

Summary of Findings

Research using community or reservation-based datasets indicate that researchers need to be cognizant and intentional in recognizing and reporting variability of prevalence and patterns of use among tribal communities. Both bodies of work demonstrate the lack of research focused on drug use and consequences in tribal communities. The alarming data from IHS showing a rise in drug use and related consequences including death, suggest a growing problem in the AIAN population. However, NSDUH data showed no significant increase in current drug use between 2012 and 2013, however this is a short window of time and these changes usually take years. It is difficult to make comparisons among the studies because of inconsistency in reporting: they vary

by drug types and time bounding. For example, the NSDUH measures past year prevalence, or the number of individuals that reported drug use. This is not a meaningful comparison to incidence rates, or the number of times something occurred, as measured in CDC mortality rates. As noted previously with regard to demographic profiles, comparing drug use and consequences between a full-time 19 or 20 year old college student who is a recent high school graduate with financial support from their family and a part-time 30 year old woman who is a first generation student starting college on the reservation and relying on financial aid is likely not a very telling comparison. Regardless, findings indicate a clear need for more work on estimating the prevalence of use and consequences in this population and for research examining tribally-specific risk and protective factors related to drug use. The remainder of this chapter will explore the literature related to IPV and other personal traumas as possible risk factors and the potentially buffering effect of ethnic identity on drug use and consequences.

Comorbid Intimate Partner Violence and Substance Use

This section will give a brief review of what is known about relationships between IPV and substance use in the general population before presenting research that has examined these relationships among AIAN women. Because I am interested in examining ethnic identity as a potential buffer that lessens the burden of stress after having experienced IPV, I present evidence of the bidirectional relationship between IPV and substance use, but focus primarily on the mechanisms that may underlie the effects of victimization on subsequent substance use. As previously noted, alcohol and drugs are commonly used together with other co-occurring comorbid disorders in AIAN and general population samples (Hasin et al., 2007; Mitchell et al, 2003; SAMHSA, 2014). The literature overwhelmingly focuses primarily on alcohol use and alcohol disorders likely in part because it is the most commonly used substance across

populations. In order to fully understand the existing literature on these relationships one must include research that includes a focus on alcohol and IPV, as will be demonstrated in this literature review. What remains underexplored is a focused examination of the relationships between drug use and abuse and IPV. I seek to highlight those relationships in this dissertation.

Research has documented evidence of the association between various types of personal trauma and substance use. Among women, research has demonstrated significant relationships between childhood abuse and adult SUDs (Felitti et al., 1998; Kendler et al., 2000; Dean G. Kilpatrick et al., 1997; Miller, Maguin, & Downs, 1997; Skinner, Kristman-Valente, & Herrenkohl, 2015; Widom & Hiller-Sturmhofel, 2001). There is also evidence of significant relationships between adult sexual assault and alcohol abuse (M. Bedard-Gilligan, Cronce, Lehavot, Blayney, & Kaysen, 2014; Michele Bedard-Gilligan, Kaysen, Desai, & Lee, 2011; Gilmore, Stappenbeck, Lewis, Granato, & Kaysen, 2015). Comorbidity of IPV and substance abuse has been demonstrated in multiple studies (Macy et al., 2009; Macy et al., 2013; Sullivan et al., 2012; Temple et al., 2008). However, research examining the temporal ordering of IPV and substance use is varied.

In one systematic review of IPV victimization and alcohol consumption among women, alcohol use was both a cause and consequence of IPV (Devries et al., 2014). Some studies indicate substance use as a risk factor for experiencing IPV (Capaldi, Knoble, Shortt, & Kim, 2012; Schumacher, Feldbau-Kohn, Smith Slep, & Heyman, 2001). Other research has shown increased substance use following IPV – one national study found that intimate partner abuse was significantly associated with increased involvement in illicit substance abuse among female adolescents (Roberts, Klein, & Fisher, 2003) and in a study of sexual or physical assault

including, but not limited to IPV, experienced and observed violence elevated risk of past-year problem substance use among adolescents (Kilpatrick et al., 2000).

In addition to differences in temporal ordering, research has reported differences among types of substances (Daigre et al., 2015). In an oft cited longitudinal analysis of violent assaults (not specific to IPV) and substance use in women, Kilpatrick et al. (1997) found that the use of drugs, but not alcohol abuse, increased odds of a new assault and that a new assault within a 2 year period significantly increased odds of alcohol abuse and drug use, regardless of previous use or assault history. Findings from another study demonstrated increased odds of victimization as a result of "hard" drug use (excluded marijuana), but not heavy drinking, and no direct relationship between victimization and subsequent substance use (Testa, Livingston, & Leonard, 2003). Another longitudinal study among young adult women demonstrated that IPV victimization increased risk for heavy alcohol use, but not drug use, and no association between substance use and subsequent victimization (Martino, Collins, & Ellickson, 2005).

The inclusion of ethnic differences adds further complexity to research findings on relationships between trauma and substance use. Using longitudinal data to examine temporal ordering and racial and ethnic differences in the relationship of IPV victimization to substance use, Nowotny and Graves (2013) found that among White and Latina, but not African American women, all forms of IPV (minor violence, major violence, rape/sexual coercion, and injury) were significantly associated with later marijuana use. Among White, Latina, and African American women, no significant relationships were found for any IPV with binge drinking or drug use with the exception of a significant association between major violence and later drug use among Latinas. What is clear from all of these studies is that although researchers have demonstrated

relationships between violence and substance abuse, findings are mixed and warrant further investigation.

Comorbid Intimate Partner Violence and Substance Use among American Indian and Alaska Native Women

In samples of Native women in substance abuse treatment, high rates of physical and sexual abuse are reported. In one study that included a sample of primarily Native women in substance abuse treatment (*N*= 334; 85% of which were AIAN), 84% of Native women had been physically abused in their lifetime; 67% reported lifetime sexual abuse and 75% reported physical violence as an adult (Saylors & Daliparthy, 2006). Of those who experienced physical violence as an adult, 67% reported that the violence was perpetrated by a current or ex boyfriend, husband or partner and 74% of the incidents involved alcohol or drugs. Findings from a study at an urban (*n* = 74) and a reservation based (*n* = 121) American Indian (AI) substance abuse treatment program also indicate high rates of abuse: 72% of the total sample reported a lifetime history of emotional abuse, with nearly half (45%) reporting physical and/or sexual abuse (Rieckmann, et al., 2012). As in the general population, there are mixed results on findings regarding these relationships. In contrast with previous research, Duran et al. (2009) found no relationship between IPV and substance abuse in a sample of 234 AIAN female primary care patients. However, the authors suggest that substance use may have been underreported in the sample. Using an urban community-based sample of Native women, Simoni, Sehgal, and Walters (2004) found that sexual and physical partner violence was statistically significantly associated with greater lifetime injection drug use.

Although we encounter mixed results on temporal ordering and differences between victimization and substance use, many of the differences in findings can be adequately explained by differences in research aims, samples, and methodological approaches (see review in Capaldi

et al., 2012). The evidence cited does suggest significant relationships between IPV and substance use for Native and non-Native women; including substance use elevating the risk of victimization, substance use as a consequence of victimization, and the potential for complex cycles among substance use and victimization.

Methodological Issues in the Literature

There are many limitations in the research that have contributed to variation in findings. Researchers working with AIAN populations must address many of the same limitations and methodological challenges we see in the literature among non-Native samples. Similar to research on substance use in this population, findings vary according to tribal variability and sampling strategies. It is also not uncommon for authors investigating IPV to report on substance use in general without differentiating between alcohol and other drug use.

There is limited research that specifically examines relationships between IPV and substance use among AIAN women, and when these relationships are investigated, researchers tend to rely on convenience samples of women in primary care clinics, seeking services for IPV, or in substance abuse treatment. When samples are drawn from substance abuse treatment populations, findings potentially miss those individuals who experienced abuse but have not developed or sought treatment for problematic substance use behaviors. When samples are drawn from individuals seeking services related to IPV, we may find individuals who have experienced violence and substance use, but not those with substance use and no violence – limiting these comparisons to larger national population samples.

There is a concern about recall bias in cross-sectional surveys that ask adults to retrospectively report traumatic events or substance use. Relatedly, the prominence of cross-sectional studies limits our ability to draw valid directional claims. As with work in many areas of research, many studies lack adequate inclusion of potentially confounding variables (Devries

et al., 2014; Stewart & Israeli, 2002). For example, Testa, Livingston, and Leonard (2003) point out that the demonstrated relationship between drug use and violence in new relationships may be due to the fact that drug using women are involved in a subculture that requires them to choose from a "riskier" pool of partners which may be a confounding factor. And finally, comparisons among studies are weakened by a lack of consistency in the measures used to estimate prevalence and consequences of these concepts (including childhood trauma, adult trauma, intimate partner violence, and substance use and abuse).

Theoretical Mechanisms for Understanding Comorbid Intimate Partner Violence and Substance Use

Three commonly understood temporal orderings exist for the relationships between any trauma victimization and substance use: (1) substance use leading to victimization; (2) victimization leading to substance use; and (3) a reciprocal/cyclical relationship. Given the evidence for the first and second orderings, a cyclical relationship between substance use and victimization is more than plausible. Research findings have supported the temporal ordering that substance use increases likelihood of victimization (Fullilove, Lown, & Fullilove, 1992; Pihl, Peterson, & Lau, 1993). Increased vulnerability may be a result of cognitive effects that impair the ability to resist predatory behavior, disinhibition that places victims in more threatening environments, increased exposure to potential assaults based on the environments in which the substance use occurs, and the fact that women with substance use problems may be targeted precisely because of this increased vulnerability (Kilpatrick et al., 1997).

Given the focus of this dissertation, this review examines the second temporal ordering – that which proposes that substance use follows a traumatic experience. Many examinations of this ordering suggest that the relationship between trauma and subsequent substance abuse may

be explained by the development of Post-Traumatic Stress Disorder (PTSD) or other mental health or psychiatric disorders such as depression or anxiety (see McCauley, Killeen, Gros, Brady, & Back, 2012; Roberts, Moore, & Beckham, 2007; Stewart, 1996; Stewart & Isreal, 2002). Researchers have demonstrated that the relationship between trauma and subsequent substance use is mediated by related PTSD or other psychiatric and mental health disorders (LaFlair et al., 2012; Widom & Hiller-Sturmhofel, 2001; Yeater, Austin, Green, & Smith, 2010). Notably, some models suggest that PTSD and SUDs co-occur because of shared environmental or biological factors (Roberts, Moore, & Beckham, 2007), but that is beyond the scope of this literature review.

The most prominent theoretical explanation for substance use following victimization is the self-medication hypothesis (Khantzian, 1997; Stewart, 1996). Self-medication models suggest that PTSD precedes the development of SUDs, which are a maladaptive coping strategy for managing PTSD symptoms (Roberts, Moore, & Beckham, 2007). Stewart and colleagues used a self-medication model to explain the comorbidity of PTSD and substance-related disorders related to traumas and found that when applied to childhood abuse or adult partner violence, traumatic experiences increased the likelihood of developing PTSD symptoms, which in turn increased the likelihood of developing SUDs (Stewart, 1996; Stewart, 1997; Stewart, Conrod, Pihl, & Dongier, 1999; Stewart, Pihl, Conrad, & Dongier, 1999). However, as is the case with temporal orderings between trauma and substance abuse, the causal pathways of PTSD and substance abuse are not mutually exclusive. For example, substance use might induce a hyper-aroused state making individuals more vulnerable to developing PTSD after a traumatic event and might maintain PTSD by impairing psychological processes of dealing with or "working through" the trauma (Stewart, 1996). Thus, comorbidity of the two disorders may be

explained by similar physiological, behavioral, affective and cognitive etiological mechanisms that account as much for overlap as they do causality.

In self-medication models, substances are generally used to reduce or control PTSD symptoms. Common explanations for why people experiencing PTSD symptoms drink or use drugs are for tension-reduction (Conger, 1956) or memory-dampening effects (Sher, 1987). This type of substance use is often described as "negatively reinforcing"; substance use decreases anxiety or tension and in turn these effects increase substance use. Some work draws on the self-medication hypothesis in describing substance use as a conditional response to negative events or emotions (Coffey et al., 2010; Siegel, 1983) or as a result of positive or negative alcohol expectancies – beliefs about how alcohol affects behavior (Pedersen et al., 2014; Peters, Khondkaryan, & Sullivan, 2012). For example, an individual with positive alcohol expectancies might believe that alcohol will ease social interactions or relieve tension and be more likely to drink while someone with negative expectations may avoid drinking because they believe it will make them awkward or depressed. Relevant to this work, women with positive expectancies who believe that drinking will make them feel better may be more likely to drink after a traumatic event than someone with negative expectancies.

Other uses of the self-medication hypothesis include Miller and Downs' (1995) theory suggesting that childhood abuse leads to self-devaluation and low self-esteem, leading to depressive symptoms or disorders. This is another version of the model, whereby substance use becomes a way of coping with resulting depression. Similarly, Janoff-Bulman (1979) developed a theory using self-blame to explain comorbidity of depression and substance abuse among individuals who experience IPV. For example, *behavioral* self-blame attributes blame to a modifiable behavior, and is seen as an adaptive response. Alternately, *characterological* self-

blame attributes blame to a non-modifiable quality of the self and is seen as a maladaptive response leading to loss of self-esteem and consequently symptoms of depression and substance-related disorders (Janoff-Bulman, 1979). Physiological explanations for substance use following trauma also rely on variations of the self-medication hypothesis. For example, endorphin-compensation theory suggests that alcohol compensates for deficiencies in endorphin activity following a traumatic event and thus relieves emotional distress (Volpicelli, 1987).

While behavioral and physiological explanations draw on the self-medication hypothesis to explain this temporal ordering, work remains to be done to determine if PTSD is a necessary sequela on the path to developing an SUD after experiencing trauma. For example, do women who experience IPV and develop an SUD all develop PTSD symptomology, or might some develop SUDs without PTSD or other mental health disorders? Kaysen et al. (2007) demonstrated that drinking to cope mediated the relationship between trauma symptoms generally and heavy episodic drinking among recently battered women. But the authors note that they were unable to rule out the potential role of PTSD or other comorbid psychiatric disorders. Additionally, more work could be done to identify differences in experiencing a single traumatic event or multiple events over a prolonged time. This would be particularly useful in understanding substance abuse as a coping mechanism in relation to IPV, which often has patterns of prolonged, repeated abuse. More work on the differences between alcohol and other drugs would also strengthen the literature.

Intimate Partner Violence among American Indian and Alaska Native Women

This section is a review of the literature on prevalence and socio-demographic characteristics associated with IPV among Native women in national and community-based samples. I begin with estimates from national datasets before examining community samples that

are primarily reservation or clinic-based. I then provide a brief description of prevalence rates among college students not attending TCUs and conclude with a call for more research examining different types of IPV.

In a report outlining suggested uniform definitions of IPV for research, the CDC defines IPV as physical violence, sexual violence, stalking, and psychological aggression by a current or former intimate partner – defined as a spouse, boyfriend/girlfriend, dating or ongoing sexual partner (Breiding, Basile, Smith, Black, & Mahendra, 2015). In the measure of IPV used in this study, partner was defined as "any boyfriend, girlfriend, husband, wife or partner you have had, including exes." Although stalking is a demonstrated component of IPV (Krebs, Breiding, Browne, & Warner, 2011), it was not included in the measure used in this work and thus, is not included in the literature review unless part of a constellation of violence.

National Estimates

Although national research on intimate partner and family violence has been ongoing since the 1975 National Family Violence Survey, there have been only three nationally representative surveys within the past 20 years that include estimates of IPV among Native women: the National Violence Against Women Survey (1995-1996), the ongoing National Crime Victimization Surveys and National Intimate Partner Violence Surveys. It is difficult to make direct comparisons between Native and non-Native women in these samples because many statistics for AIAN women are not reported due to small sample sizes. One exception is the recent report on the AIAN oversample included in the 2010 National Intimate Partner Violence Survey (NISVS) that will be discussed later in this section. Because this oversample used 2010 survey data, I included the 2010 general population prevalence as well as the most recent published reports from 2011 NISVS. See Table 4 at the end of this section for combined national prevalence estimates.

National Violence Against Women Survey (NVAWS). The NVAWS conducted telephone interviews with a nationally representative sample of 8,000 U.S. women, including 88 AIAN women. The sample was generated through random-digit dialing of households with telephones. Due to the small sample size, prevalence estimates for lifetime, but not past year victimization by an intimate partner are reported for AIAN women. Sixteen percent of Native women reported rape, 31% physical assault, 10% stalking, and 38% all three combined by an intimate partner in their lifetime (Tjaden & Thoennes, 2000). These rates were higher across all types when compared to White, African American, Asian/Pacific Islander, and mixed race women – ranging from 15% total victimization among Asian/Pacific Islander to 30% among mixed race women. The only statistically significant comparison was rape by an intimate partner, which was significantly higher for AIAN women (16%) than White (8%) or African American (7%) women. Risk factors associated with IPV for all women in the survey were a history of child maltreatment, education levels greater than their partner, and cohabitating, but unmarried couples. Additionally, having a partner who was verbally abusive, jealous or possessive, or controlling were all associated with risk of IPV victimization as defined in this survey (rape, physical assault, and stalking), supporting theoretical perspectives suggesting that violence perpetrated by men against women is part of a systemic pattern of dominance and control.

The National Crime Victimization Survey (NCVS). The NCVS collects annual information on nonfatal victimizations (reported to law enforcement and non-reported) against people 12 or older from a nationally representative sample of U.S. households. Although not specific to IPV, NCVS data from 1992 to 2001 demonstrate a per capita rate of violence for AIs twice that of the U.S. population and violent victimization among AI women more than double the rate for all U.S. women (Perry, 2004). There have been critiques of the NCVS asserting that

it produces low estimates of IPV due to methodological issues (e.g. screener questions) as well as its focus on "crime" (Heimer, 2008). Additionally, the small sample sizes of AIAN have meant that NCVS reports on violence against women generally omit Native women in their analyses (Catalano, 2015; Heimer, 2008). In one of the few analyses to include Native women using NCVS data from 2001 to 2005, Catalano (2007) reported that the average annual rate of nonfatal IPV was generally higher for AIAN women than for other races. Risk factors related to IPV for the general population in the NCVS include being female, between 18 and 34 years of age, and being a single female with a child (Catalano, 2015).

National Intimate Partner Violence Surveys. The NISVS is a national random telephone survey of the U.S. population 18 or older. The 2010 NISVS included an oversample of AIAN participants and provides lifetime and past year prevalence of interpersonal and sexual violence with a large sample of Native women. The report combines results from AIAN in the general population sample and the AIAN oversample and includes those who identified as AIAN alone or in combination with another racial group for a combined sample size of 2,473 Native women. On average, AIAN women in the NISVS sample were 46 years old, half of the women (50%) reported having more than a high school degree, 74% reported an annual household income below $35,000 and more than half (54%) had lived on reservations or in an Alaska Native village in the past year (Rosay, 2016). Although the NISVS asked women about sexual violence, it was not possible to know with certainty if the violence was committed by an intimate partner. For this reason, only physical violence and psychological aggression within intimate partner relationships are reported. Fifty-six percent of Native women reported lifetime physical violence and 66% reported psychological aggression by an intimate partner in their lifetime (Rosay, 2016). In the past year, 9% reported physical violence and 26% of women reported

psychological aggression by an intimate partner. Relative to non-Hispanic White women, AIAN women were 1.6 times as likely to experience physical violence and 1.3 times as likely to have experienced psychological aggression by intimate partners in their lifetime, and 1.6 times as likely to have experienced psychological aggression in the last year (all statistically significant at the .05 level).

Data from the 2011 NISVS (*n* = 7,258 all women) estimated prevalence by race and ethnicity, but no formal statistical comparisons between these subgroups were completed. An estimated 52% of AIAN women experienced lifetime physical violence, 64% psychological aggression, and 42% all types (including sexual violence and stalking) by an intimate partner (Breiding et al., 2014). Case counts of AIAN women for sexual violence or stalking by an intimate partner were too small to report individually. These prevalence estimates were higher across all forms of violence and across all racial/ethnic groups except sexual violence where multiracial women were slightly higher with 43% estimated prevalence. Among all women, an estimated 71% had their first IPV experience before 25 years of age, with 23% reporting IPV before age 18.

Methodological Critiques of National Estimates

There are a number of methodological critiques of these national estimates of IPV for Native women. It is difficult to make comparisons among them due to sampling strategies, differences in the measures used, and temporal bounding of the questions. For example, NCVS data are reports of incidence (i.e. the number of victimizations), not prevalence (i.e. the number of victims) and reports on past year only, while the NVAWS provides estimates on incidence and prevalence of lifetime victimization. Furthermore, because of the national sampling strategies both studies rely on very small samples of AIAN women in their analyses, making comparisons and estimates unreliable. Given the potential for low reporting rates of IPV because of lack of

Table 4

Prevalence of Intimate Partner Violence Across National Samples

First author year	Population	Sample	Measure	Prevalence
Tjaden et al. 2000	National Violence against Women Survey [a]	88 AIAN women	Lifetime physical IPV	31%
			Lifetime rape (by a partner)	16%
			Lifetime physical, rape, and stalking	38%
		7,921 non-AIAN women	Lifetime physical IPV	22%
			Past year physical IPV	1%
			Lifetime rape (by a partner)	8%
			Past year rape (by a partner)	0.2%
Catalano 2015	National Crime Victimization Survey [b]	9,086 women [c]	Past year non-fatal IPV	3.6 per 1,000
Rosay 2015	National Intimate Partner and Sexual Violence Survey [d]	2.473 AIAN women	Lifetime psychological IPV	66%
			Past year psychological IPV	26%
			Lifetime physical IPV	56%
			Past year physical IPV	9%
Black et al. 2011	National Intimate Partner and Sexual Violence Survey [d]	9,970 women	Lifetime rape (by a partner)	9%
			Past year rape (by a partner)	0.6%
			Lifetime physical IPV	33%
			Past year physical IPV	4%
			Lifetime rape, physical, and/or stalking	36%
			Past year rape, physical violence and/or stalking	6%
Breiding, et al. 2014	National Intimate Partner and Sexual Violence Survey [e]	AIAN women [f]	Lifetime psychological IPV	64%
			Lifetime physical IPV	52%
			Lifetime sexual IPV, physical IPV, or stalking	42%
		7,258 women	Lifetime psychological IPV	47%
			Past year psychological IPV	14%
			Lifetime physical IPV	32%
			Past year physical IPV	4%
			Lifetime rape (by a partner)	9%
			Past year rape (by a partner)	0.8%
			Lifetime other sexual IPV	16%
			Past year other sexual IPV	2%

Notes. [a] 1996 Survey. [b] 2010 Report. [c] Sample size and rate for AIAN women not reported. [d] 2010 Survey. [e] 2011 Survey. [f] Sample size not reported.

availability or distrust of criminal legal systems or lack of coordination in tribal, state and federal criminal reporting practices, incidence rates like those reported in the NCVS likely result in low estimates of the extent of IPV in tribal communities. Rosay (2016) points out that because of the small sample sizes, many researchers have pooled NCVS data for victimization estimates in the AIAN population. Sapra, Jubinski, Tanaka, and Gershon (2014) state the issue with small sample sizes simply: reliable prevalence estimates depend on accurate numerators (number of cases) and denominators (population), the artificially low numerators in these samples will result in inaccurate prevalence estimates. Additionally, they note that sampling strategies may introduce selection bias because of reliance on data that by its nature require that women had to have reported the incident to a legal or medical professional. Crossland, Palmer, and Brooks (2013) remind us that sampling strategies likely over represent Native women from urban, not reservation communities. See Bachman (2000) for more details on these issues in her review of NVAWS and NCVS data.

Community Samples

Lifetime prevalence rates of IPV are consistently high across studies relying on community or reservation-based samples (see Table 5 for combined community-based prevalence estimates). Many of these have utilized convenience samples from among those accessing services at IHS clinics. Among studies relying on clinic-based samples conducted in the past 15 years, lifetime rates of any IPV range from 59% in a WIC clinic in Oklahoma to 87% in a prenatal clinic a Midwestern city (Bohn, 2003; Duran et al., 2009; Malcoe, Duran, & Montgomery, 2004). In a sample of pregnant Native women in an urban Indian clinic (N = 38), 83% reported physical abuse by a current or past partner – half by both past and current partners, 27% reported emotional abuse by a current or past partner, and 17% reported sexual abuse by a current partner (Bohn, 2003). Non-clinical samples also report high rates of IPV. In a random

sample of enrolled tribal members from six tribes, Yuan, Koss, Polacca, and Goldman (2006) found that 36% of women reported lifetime physical assault by a romantic partner. In the same study, 6% of women reported lifetime sexual assault by a romantic partner. In a sample of 91 Athabascan women in interior Alaska, 64% reported experiencing IPV at some point in their lives and 18% reported having been physically assaulted by an intimate partner in the past year (Wood & Magen, 2009). The AI-SUPERPFP data reported slightly lower rates, 29% of women in the SW and 31% in the NP reported lifetime physical abuse by a partner (Manson, Beals, Klein, & Croy, 2005). Finally, researchers using an urban sample of AIAN women in New York City found that 20% reported sexual trauma and 31% physical trauma by a partner (Simoni, Sehgal, & Walters, 2004). Using the same sample, researchers found that 40% of the women had experienced any type of assault from a spouse or romantic partner (Evans-Campbell et al., 2006)

Although limited in number, research examining risk factors for interpersonal violence in AIAN population are consistent with those found in other populations and include age, marital status, income, educational attainment, unemployment, childhood abuse, and substance use (Sapra et al., 2014; Wood & Magen, 2009). In the study with six tribes, predictors of physical assault among women were cohabitating, being single or divorced, prior sexual or physcial abuse, an alcoholic parent, childhood maltreatment, and lifetime alcohol dependence (Yuan et al., 2006). Although comparisons among research using community samples invariably suffer many of the same limitations as national surveys, these findings demonstrate high rates of IPV in self-report surveys among women in tribal communities. What is notable is the glaring omission of emotional abuse or psychological aggression in most of these studies. Omission of this type of IPV may result in lower prevalence estimates of IPV in these findings, in addition to neglecting an important component of IPV which may lead to different health behaviors and outcomes.

Table 5

Prevalence of Intimate Partner Violence Across AIAN Community-based Samples

First author year	Population	Sample	Measure	Prevalence
Bohn 2003	Prenatal clinic	30 AIAN women	Lifetime IPV	87%
			Current IPV	70%
			Current physical IPV	60%
			Current sexual IPV	17%
Malcoe et al. 2004	WIC clinic in Oklahoma	312 AIAN women	Lifetime IPV	59%
			Lifetime sexual IPV	12%
			Past year IPV	30%
			Past year sexual IPV	3%
Simoni et al. 2004	New York City community center	155 AIAN women	Lifetime sexual IPV	20%
			Lifetime physical IPV	31%
Manson et al. 2005	Southwest (SW) and Northern Plains (NP) tribes	829 AIAN women in SW	Lifetime physical IPV	29%
		848 AIAN women in NP	Lifetime physical IPV	31%
Evans-Campbell et al. 2006	New York City	112 AIAN women	Lifetime IPV	40%
Yuan et al. 2006	Six tribes – Southwest, Northwest, Northern Plains, and Northeast	744 AIAN women	Lifetime physical IPV	36%
Duran et al. 2009	IHS clinic in Albuquerque	324 AIAN women	Lifetime IPV	80%
Wood et al. 2009	Athabaskan (Alaska)	91 AIAN women	Lifetime IPV	64%
			Past year physical IPV	18%

Notes. [a] 1996 Survey. [b] 2010 Report. [c] Sample size and rate for AIAN women not reported. [d] 2010 Survey. [e] 2011 Survey. [f] Sample size not reported.

Intimate Partner Violence in College Samples

In the only study estimating the prevalence of IPV among Native women at a TCU, Chenault (2004) examined a sample of 112 Indigenous female students attending a small tribal college in the central plains. Among these women, 86% reported lifetime violence or abuse and 30% reported violence or abuse in the past year. Of these incidences of violence, 60% were perpetrated by a boyfriend, 18% by an ex-spouse, and 5% by a current spouse (Chenault, 2004).

The National College Health Assessment examined data from 16,760 undergraduate students at 40 schools. Eleven percent of women (*n* = 11,062) in this sample reported an emotionally abusive intimate relationship in the past year, with 2% reporting physically abusive and 3% sexually abusive relationships in the past year (ACHA, 2016). In a national survey of sexual violence among a sample of college women attending 2- or 4- year institutions (*n* = 4,446), 15% reported attempted and 24% reported completed rape by a current or ex-boyfriend within the past year (Fisher, Cullen, & Turner, 2000). As noted in Amar and Gennaro (2005), most of the dating violence literature among college students has focused on physical violence; limited data is available on other forms of dating violence. Notably, given the recent rise in attention to sexual assault on campuses, this may give way to more attention to dating and relationship violence in this population.

Manifestations of Intimate Partner Violence

Although not specific to AIAN women, a number of researchers have pointed out the need for more investigation of different manifestations of violence within intimate partnerships, while reporting that these forms of IPV overwhelmingly overlap within intimate relationships. Krebs et al. (2011) point to evidence that suggests experiencing more types of violence can result in higher symptomology and call for more research examining poly-victimization among adults. For example, a study using AI-SUPERPFP data demonstrated that trauma (including interpersonal trauma) significantly increased the odds of alcohol use disorders with a dose-dependent effect as the number of severe traumatic events increased (Boyd-Ball, Manson, Noonan, & Beals, 2006). It is detrimental to the field to "rank" or attempt to quantify the effect of one type of IPV over another, creating a siloed understanding and response to overlapping forms of violence, inhibiting effective prevention and intervention development. However, a

deeper exploration of particular consequences associated with various forms could be beneficial. In one such effort, Logan, Walker, and Cole (2015) note the need for better understandings of partner sexual violence including the scope and nature of partner sexual violence, the determination of consent within intimate partnerships, and the role sexual violence may play within the context of coercive control.

Salom, Williams, Najman, and Alati (2015) examined substance use and mental health disorders related to different forms of IPV in a large study of mothers and their children (N = 7,223). While noting that the different forms had significant overlap in the sample, they found psychological IPV to be associated with alcohol, but not illicit SUDs; physical IPV with illicit, but not alcohol disorders; and severe combined IPV associated with mental health, but not SUDs. The authors suggest linking different disorders with specific forms of IPV to identify more effective treatment and intervention efforts. For these reasons, this dissertation tests correlations among different types of IPV experiences within the context of drug use and consequences, but with caution against ranking types of IPV in terms of their overall impact.

Ethnic Identity as a Protective Factor

In the literature on substance abuse in AIAN communities, there has been a long standing call for strengths-based research drawing on cultural and tribal connectedness to inform prevention and intervention efforts (Coyhis & Simonello, 2008; Dickerson, Robichaud, Teruya, Nagaran, & Hser, 2012; Etz, Arroyo, Crump, Rosa, & Scott, 2012). Despite anecdotal evidence and widespread belief within Native communities that connection to culture and community serve as protective factors, little research has empirically examined these connections as stress buffers – particularly ethnic identity as a potential buffer, on the relationship between IPV and drug use in Native communities. I was limited by available data in examining culturally-specific

stress buffers in these analyses. Because of that limitation and the lack of research on identity as a potential buffer among this population, this dissertation explores the possibility of ethnic identity as one such buffer. This final section evaluates the ways in which ethnic identity has been conceptualized and defined in the literature, and whether ethnic identity serves as a protective factor in substance use.

A review of the literature on ethnic identity among AIAN populations reveals that there has been very little work done in this area. Markstrom and colleagues (2011) note that of the work that has been done, the majority of it does not adequately consider and compare inter- and intra-tribal variability. Some studies focus on individual tribes while others combine or compare across tribal communities, and still others include urban populations. In this small body of literature, the majority of work focuses on AIAN adolescents. Of the articles reviewed for this section that empirically examined ethnic identity with AIAN populations, two-thirds were conducted with adolescents. This is also common in the study of ethnic identity with other racial or ethnic groups. One reason for this is because most of the models of identity focus on the development of identity and outcomes of identity development, which often occur during adolescence and young adulthood. Researchers have chosen to study ethnic identity under a developmental framework because many have assumed that issues related to ethnicity are of particular importance during adolescence when identity development is particularly salient (e.g. Phinney & Chavira, 1992).

Conceptualizing and Defining Ethnic Identity

One of the major difficulties in evaluating the body of work on ethnic identity is the lack of consistency in terminology. Much of the research that tests the potential buffering effect of identity does so without clearly defining what is meant by the term, using terms such as ethnic identity, culture, cultural identity, bicultural identity, acculturation, and enculturation

interchangeably or without specifying what the constructs mean (Croff, Rieckmann, & Spence, 2014). (For a good review of the various terms and of the confusion that accompany these inconsistencies see Trimble, 2007.) While acknowledging the importance of clarity in this respect, due to limited available data I do include some studies that use the label cultural identity. Intrinsically linked to this definitional issue is the subsequent result that the mechanisms whereby ethnic identity might act in relationship to behavioral health remain underexplored. This is particularly true of research on identity within AIAN populations who share a particularly unique sociohistorical context and contemporary identity in the American landscape. For many tribal communities these constructs also encompass unique Indigenous knowledges and spiritual practices.

Ethnic identity is a complex and multidimensional construct. For this reason, it can be difficult to identity, define, measure and explain. A key feature of most definitions of ethnic identity among social scientists is that it involves being affiliated with a particular group (Galliher, Jones, & Dahl, 2011). Many researchers point to Erikson's ego identity model as the foundation of the modern study of ethnic identity (Markstrom et al., 2011; Phinney & Ong, 2007). As described by Markstrom and colleagues (2011), scholars have focused on two aspects of Erikson's ego identity model: personal and social identity which are distinguished by the degree of choice involved. Personal identity is chosen (e.g. occupation) while social identity is generally assigned or prescribed (Markstrom et al., 2011). For this reason, ethnic identities are considered social (i.e. prescribed identities).

Phinney (1992) described the core components of ethnic identity across all ethnic groups as a sense of attachment or belonging, an achieved identity, and involvement in ethnic practices. Phinney's model of ethnic identity focuses primarily on the process of adolescent development

of an identity as a member of a particular ethnic group and encompasses exploration and commitment to the group and its practices. She developed the Multigroup Ethnic Identity Measure (MEIM), which has been revised to measure dimensions of exploration of and commitment to identity. The MEIM is one of the most commonly used measures of ethnic identity across multiple populations and was designed to not be specific to any particular racial or ethnic group. It has been used in some studies with AIAN adolescents (Galliher, Jones, & Dahl, 2011; Jones & Galliher, 2007; Skewes & Blume, 2015; Smokowski, Evans, Cotter, & Webber, 2014; Soto, Baezconde-Garbanati, Schwartz, & Unger, 2015).

In contrast to Phinney's model, Oetting, Donnermeyer, Trimble, and Beauvais (1998) explicitly acknowledge membership in a particular ethnic group by drawing on primary socialization theory which asserts that behaviors are learned and reinforced through social interactions. Perceived membership and identification with a cultural group influence interactions and are primary socialization sources (Oetting, et al., 1998). Of relevance to this dissertation, the authors describe how cultural norms for substance use are part of those interactions with Native youth. If almost all human behaviors are learned, as posited in the primary socialization theory, drug use is a learned behavior and interacts with cultural norms that originate in part from identification with and membership in particular ethnic groups (Oetting et al., 1998). In the prevention literature for substance abuse among AIAN youth, internalization of social norms and cultural involvement and availability of community resources were considered universal protective factors (Hawkins, Cummins, & Marlatt, 2004).

Oetting and Beauvais (1991) attempted to address issues of biculturalism in the development of the orthogonal cultural identification theory. Rather than assuming that Native or Latino adolescents identified strongly with only minority or only majority culture, this theory

asserts that adolescents can exhibit any combination of cultural identification – high or low identification in minority or majority culture, in both, or any combination thereof. The crux of this theory is that it is not high identification with a *particular* culture, but high identification with *any* culture that is protective and that it is not *mixed* cultural identification, but *low* cultural identification that puts adolescents at risk (Oetting & Beauvais, 1991).

This work grew out of research on the effect of identity on drug use that demonstrated mixed effects –high identification with Latino or Native communities was protective or showed no effect while in in some cases identification with "Anglo" culture showed negative effects in some and protective effects in others (see Oetting & Beauvais, 1991 for a review of this research). While an important step in addressing the multidimensionality of cultural identity, Oetting and Beauvais (1991) do not include analyses of race and systemic and structural inequalities that influence individual beliefs and the resulting adoption or lack of acceptance of bicultural, minority, or majority group identity attitudes and behaviors. In perhaps an attempt to acknowledge systemic influences, the authors describe the "true practical barriers" (p. 679) to an equitable multicultural society as economic, but then suggest the possibility that if economic conditions improve minority cultural identification will cease to exist and "rich minority cultures will disappear" (p. 680) – effectively simplifying the Latino and Native experiences to proxies for economic status and ignoring values, behaviors, and traditions that drive identification and meaning from that cultural affiliation as well as resistance to majority culture that occur daily within these communities.

Walters (1999) suggests that Native peoples have survived because they have integrated aspects of Native and non-Native groups into a dynamic Native culture that both maintains and creates new cultural systems that buffer against a colonizing process through internalizing

positive identities and externalizing negative group attitudes. Walters (1999) is careful to distinguish between acculturation and identity, noting that the failure to do so may explain some of the mixed findings on identity and she cites empirical evidence differentiating between the two constructs. For example, she points out that acculturation was based on assimilationist policies and assumes that Native people have replaced traditions and values with those of the dominant culture. In contrast, she developed a model specific to development and attitudinal components of Native identity. In the creation of the Urban American Indian Identity Attitude model, Walters (1999) identified four domains of AI identity development: (1) internalization – which includes devaluing self and tribal identities and overvaluing the dominant culture, (2) marginalization or feeling alienated in AI and non-AI worlds, (3) externalization when one rids one's self of internalized stereotypes and colonizing attitudes, and (4) actualization through achievement of integrated identity attitudes and development of psychological buffers against colonizing attitudes. She also included five dimensions of identity attitudes specific to AIAN populations: political, ethnic, racial, cultural, and spiritual (for more detail, see Walters, 1999). Walters' work suggests that the historical context of AIAN communities plays an important role in identity development among Native people and demonstrates the importance of including AI-specific dimensions in the measurement of identity in this population.

Although not specific to ethnic identity, O'Nell and Mitchell (1996) conducted an ethnographic investigation of the role of culture in pathological drinking among AI adolescents and found that teen drinking was judged by interference with the development of cultural values such as courage, modesty, humor, generosity, and family honor. The researchers reviewed models and research that attempt to explain the ways in which drinking patterns are culturally patterned rather than biologically produced. Similar to primary socialization theory, they drew on

Bandura's social learning theory that posits that behaviors are modeled by social agents – friends and families – and in turn produce cultural norms that influence behaviors. In this sense, attachment and engagement with an ethnic group resulting in stronger ethnic identity may affect drug use prevalence and patterns among Native women. This can reasonably be extended to a hypothesis that these norms, reinforced by ethnic identity, also influence responses to trauma. Following this reasoning, it is not a far cry to imagine that stronger attachment to a tribal community resulting in higher measures of ethnic identity might play a role in women's behaviors following personal violence.

Research Examining Ethnic Identity as a Protective Factor

A primary area of research on the potentially protective aspect of ethnic identity has been in research on racial discrimination. Researchers in this field have theorized that strong identification with one's ethnic group buffers the effect of other groups' negative perceptions of that group. The insulation hypothesis posits that strong membership within a group can protect against outside discrimination (Rowley, Sellers, Chavous, & Smith, 1998). Other theories for understanding how ethnic identity might operate as a protective factor include the notion that engagement in community and knowledge of social practices within a particular community may promote individual self-efficacy and self-esteem. However, the ways in which this gets operationalized are under-examined and unclear.

In Galliher et al.'s (2011) review of ethnic identity as a resiliency factor among Navajo adolescents, they demonstrated that engagement in community and participation in traditional activities acted as a buffer against substance use and other psychosocial functioning, but also included outcomes suggesting the effect of ethnic identity is mixed. For example, they found that while Navajo identity was protective against substance use and psychosocial functioning for male and female adolescents at younger ages, young men demonstrated decreasing effects of

ethnic identification as they aged and those reporting the highest level of engagement with Navajo culture actually reported worse longitudinal effects of discrimination. Young women however demonstrated a protective effect from higher levels of White identification over time. The authors call for additional research to examine the relationship between ethnic identification and substance use and suggest that the use of a multidimensional assessment of ethnic and cultural identification within a single study may provide additional clarity. Identity, behavior and individual beliefs or attitudes are part of a complex picture of an individual's self in relation to their community. As research attempts to investigate the potential protective buffers of ethnic identity or cultural mechanisms, the responses of these complex interactions of behaviors, beliefs, and attitudes necessitate more exploration.

Other research has focused on the development of psychosocial attributes with mixed results. Using a measure of American Indian cultural identity, Tyser and colleagues (2014) found that higher cultural identity predicted fewer depressive symptoms among AI youth in a tribal community. Although assessing the effect of cultural identity, another study demonstrated no relationship between cultural identity and self-esteem or academic success in a sample of AI high school students (Whitesell, Mitchell, & Spicer, 2009). A different study of ethnic identity and mental health in AI youth demonstrated a significant relationship between ethnic identity and self-esteem, but self-esteem mediated any relationships between ethnic identity and mental health outcomes (Smokowski et al., 2014). Finally, in a study of 332 urban AI men and women, Walters (1995) demonstrated that identity attitudes significantly predicted all of the hypothesized mental health outcomes and accounted for 10-21% of the variance (self-esteem, hostility, depression, paranoid-ideation, interpersonal-sensitivity, and anxiety).

Research on Ethnic Identity and Substance Use

While the role of ethnic identity and drug use among AIAN populations is understudied, research does provide some evidence of a protective effect. In a study examining how ethnic identity influenced drug use norms of an urban sample of AI middle school students, Kulis and colleagues (2001) found that "students with a stronger sense of ethnic pride adhered more strongly to antidrug norms for alcohol, cigarettes, and marijuana" (p. 8). Other researchers studying the buffering effect of ethnic identity related to alcohol and drug use could demonstrate no direct effects of cultural identity on depressed mood, substance use, and risky behavior using a sample of students from off-reservation dormitories between 15 and 24 years of age (Baldwin et al., 2011). In a study that tested the effect of ethnic identity on drinking motives and alcohol use among Alaska Native college students, researchers found separate results for two aspects of ethnic identity – exploration and commitment. Their findings suggest that ethnic identity related to exploration was not associated, but commitment was significantly associated with alcohol problems and consequences (Skewes & Blume, 2015). In other words, the exploration subscale did not predict alcohol consequences, but the commitment subscale appeared protective. Findings in research examining cultural identity and substance use have been inconsistent; some indicate protective effects, while others show no effect or even increased risk associated with stronger tribal identity (Whitesell et al., 2012). In fact, identification with traditional ways or cultural participation has also been linked to increased AOD use in some studies (Hawkins & Blume, 2002; Hawkins et al., 2004; Petoskey, Van Stelle, & De Jong, 1998). In one such example, Petoskey and colleagues (1998) reported a positive correlation between attendance at cultural events and participation in ceremonies, and marijuana use in a sample of Native students in grades 9-12. Among students who ranked the importance of Indian identity highly, male students were more likely to use marijuana while female students were less likely to use alcohol.

While findings are mixed, research has yet to adequately examine how identity (as currently measured in those studies) might actually be a proxy for exposure to discrimination or other effects that may affect substance use. However, findings are suggestive of the potential for ethnic identity to buffer the effect of a stressor such as IPV on negative drug outcomes. Of the research reviewed, there were as many positive associations as there were negative or mixed results. And while many of the models related to research on ethnic identity focus on the *development* of ethnic identity, I am more interested in the *effect* of IPV on substance use outcomes. This dissertation is well positioned to further the literature on ethnic identity and AIAN populations.

CHAPTER 3: METHODS

Creating Campus Change: Epidemiological Surveys at Tribal Colleges and Universities

Secondary data analysis was conducted on cross-sectional pooled data (*N*= 3,217) from the Tribal Colleges and Universities Alcohol, Drugs and Mental Health epidemiological survey (TCU-ADME; P60MD006909; Bonnie Duran, PI) and the Tribal Colleges and Universities Brief Alcohol Screening and Intervention for College Students baseline survey (TCU-BASICS ; R01AA022068; Bonnie Duran, PI). Both studies surveyed students at 22 tribal colleges and universities (TCUs) across the US, including one in Canada. This is the first nationwide epidemiological dataset to include measures of drug use and IPV among students at TCUs and the TCU-ADME survey is now the largest psychological epidemiology survey of prevalence and risk and protective factors on alcohol, drug and psychiatric disorders in Indian Country. Although not a representative sample of reservation communities, given the location of TCUs this is also the largest subsample of reservation-based Native women. Furthermore, TCUs are primarily located in the Midwest and West, but are represented from all four directions of the United States.

For the TCU-ADME sample, researchers used a stratified sampling design, grouping schools by size and randomly sampling students within each group. The TCU-BASICS baseline survey contacted all eligible students from the six TCUs included in the intervention. The survey launch coincided with the end of the academic year in the majority of the TCUs, resulting in a low response rate and prompting the research team to invite additional participants in the fall of 2016. Thus, recruitment and data collection were conducted in two waves over the course of 11 months from March 2015 to February 2016, with a final response rate of 31 percent.

Tribal Colleges and Universities emailed lists of student names who agreed to release their contact information to the University of Washington (UW) team from registrars' records of students enrolled in fall and winter terms of the 2015 academic year. Many of the registrars' offices worked closely with technology departments to access student emails and financial aid offices for current emails and phone numbers. Students must have had valid contact information to have been included in the recruitment process. Other inclusion criteria included: (1) 18 or older, (2) enrolled full or part time in the TCU at the time of obtaining student lists, and (3) consent to participate. The original sampling plan called for students who self-identified as AIAN, but TCU partners wanted the survey to include all of their students so the inclusion criteria was changed to also include non-AIAN students. Invited participants received an initial letter and e-mail inviting their participation, in addition to a unique PIN to enable them to login to the secure server to complete the online survey. Non-responders received a series of reminder contacts designed to increase recruitment. All participants who completed the survey were given $40 incentive upon completion. A Certificate of Confidenceiality was obtained from the NIH and human subjects approval from the UW, TCU and tribal Institutional Review Boards (IRB).

The survey was designed using DatStat Illume V.1.1, a secure, comprehensive survey and data management package used for online survey construction and implementation. The survey and the recruitment processes were beta- and pilot-tested and modified as necessary based on cognitive debriefing from pilot participants. A paper and pencil survey was also offered, but the majority of surveys were administered online (89% online compared to 11% on paper). Participants took an average of 60 minutes to complete the survey.

Community Engagement and Institutional Review Boards

I began collaborating with the UW team in the spring of 2014, prior to drafting and finalizing my dissertation prospectus. This early engagement involved discussions about an appropriate scale for measuring IPV in the epidemiological survey. I suggested the Partner Victimization Scale (PVS) and assisted in editing the scale for the final version of the survey. In the fall of 2014 I began actively participating at the TCU Science Committee weekly meetings. Collaborations during this time included constructing the final variable matrix, beta testing iterations of the survey, and reviewing and finalizing skip patterns in the online programming. I attended these weekly meetings until winter 2016 after which I went only when agenda items were related to my dissertation progress. I presented my dissertation prospectus to the TCU Science Committee in August 2015 and again in March 2016 following modifications to the aims and analyses.

In June, 2015, Dr. Billie Jo Kipp, president of Blackfeet Community College and Chair of the AIHEC Research Committee, presented an overview of my dissertation to the Committee at the AIHEC Summer Board of Directors Meeting. The Committee endorsed the dissertation, with the recommendation that I seek approval from individual TCUs. Between July and December of 2015 I sought and received approval from 14 IRBs. I was able to include the dissertation as part of a modification for the TCU-ADME parent application in 10 of these applications. Nine other TCUs had named the UW IRB as the IRB of record and I included the dissertation in a modification to the parent application. I also submitted individual applications to three tribal IRBs. I received approval in all but one of these applications – one tribal IRB did not review my application because the Data Sharing Agreement had not been finalized between the TCU and UW at the time of my analysis. Collectively, I received IRB approval to use data from

21 TCUs. Additionally, I followed protocols outlined by the Indigenous Wellness Research Institute (IWRI) for accessing data from projects housed in IWRI that included an application outlining the data request and secondary data analysis plan to be approved by the PI (Duran) and managed by the IWRI Research Core. This application was submitted in October 2015 and modified in February 2016.

Sample

The population of interest for these analyses was Native women at TCUs. The dataset included students who identified as female at birth and self-reported to be (1) AIAN alone or (2) AIAN and another race (*N* = 1,836). This included nine individuals that identified as male, four as transgender, and 13 with missing data for self-reported gender. Male gender-identified participants were removed as well as the 13 individuals missing data. Because I was unable to determine gender identity of the transgender participants, and because it was a low number, they were also removed from the sample. Final analyses were run using a dataset that included participants who self-reported being Native and female gender (*N* = 1,810).

Sample Size and Power Analysis

A power analysis was done to estimate the smallest number of cases needed to complete analyses and answer the main research questions. To calculate an adequate sample size (*n*) to estimate the population prevalence with good precision, the following formula was used (Daniel, 1999):

$$n = \frac{\mathrm{Z}^2 P(1-P)}{d^2}$$

For a confidence level of 95%, which is conventional, a Z value of 1.96 was used and following recommendations in Naing, Winn, and Rusli (2006), precision (*d*) was estimated at 0.05. Based

on limited prevalence estimates of non-medical use of drugs (not including alcohol) in Native communities, two equations were run; one with an expected prevalence of 12% ($P = 0.12$) and one with 41% expected prevalence ($P=0.41$). The lower prevalence rate is based on reported past year use by Native men and women in the 2013 NSDUH (SAMHSA, 2014) and the higher prevalence rate comes from lifetime rates among Native women in a tribally-based sample (Mitchell et al., 2003). These calculations yielded an estimated sample size ranging from 162 (12% prevalence) to 372 (41% prevalence). Based on these calculations, at least 375 AIAN female respondents were needed as the sample frame for these analyses.

Measures

Demographics

Sociodemographic variables included: age, sexual orientation, level of education, household family income, employment status, relationship status, the type of community respondents reported growing up in (e.g. reservation, rural, or urban), who respondents were living with and dependents being supported and living with participants at the time of the survey. These variables were continuous (e.g. age) and categorical (e.g. education) and chosen based on established and hypothesized correlates of IPV and drug use. See Appendix for specific items.

Post-Traumatic Stress Disorder

Post-traumatic stress disorder was measured using the *PTSD Checklist – Civilian Version* (PCL-C). In order to receive these questions, participants must have screened in via the Primary Care PTSD Screen, a brief, dichotomous, 4-item screen for PTSD in primary care settings. The PCL-C (Weathers, Litz, Huska, & Keane, 1994) is a 17-item self-report measure based on DSM-IV symptoms of PTSD. The PCL-C asks participants to endorse on a five point scale (from *not at all* to *extremely*) the level of distress related to DSM-IV PTSD symptoms experienced in the past

30 days (e.g. “Repeated, disturbing memories, thoughts, or images of a stressful experience from the past.”). There are three versions of this measure. This survey used the civilian version designed to be used with any population without attributing endorsements to specific events (Veterans Administration National Center for PTSD, 2012). In a sample of college students, Ruggiero, Ben, Scotti, and Rabalais (2003) report high internal consistency with Cronbach’s alpha coefficients of .94, .85, .85, and .87 for the PCL total, re-experiencing, avoidance, and hyperarousal scores, respectively. In the sample used in these analyses, internal reliability (Cronbach’s alpha) was high at .95 for the PCL total. For use in civilian primary care or general population samples, the Veterans Affairs National Center for PTSD (2012) recommends a cut-point score of 30-35 (15% or below estimated prevalence). Using this recommended cutoff score, I created a dichotomous variable that indicated meeting or exceeding the threshold for PTSD symptoms.

Intimate Partner Violence

Lifetime and past year IPV was assessed using the *Partner Victimization Scale* (PVS). Participants had to report having had at least one romantic partner to receive these questions (no partner $n = 132$; partner $n = 1{,}553$). One item addressed psychological aggression, three focused on physical violence, and one asked about sexual violence. To assess overall victimization, dichotomous responses to these five items were summed for an IPV poly-victimization score: a sum of the number of different types of assaults reported (also known as mode scores; Sherry Hamby, 2016b). Although less common than frequency scores in violence research, in a recent study poly-victimization scores demonstrated better internal consistency and similar validity to frequency scores (Shorey, Brasfield, Febres, Cornelius, & Stuart, 2012) and have been used in other measures of victimization (Finkelhor, Ormrod, & Turner, 2007; Sherry Hamby, Finkelhor, & Turner, 2012; Turner, Finkelhor, & Ormrod, 2010). Intimate partner violence according to

type was assessed categorically (psychological, physical, and sexual). Analyses used to report prevalence and test for differences in age at first experience were conducted with continuous and categorical variables. Age categories were based on the *LifePaths Measurement Packet* (Hamby, Grych, & Banyard, 2013). Dichotomous responses to lifetime and past year IPV were used in univariate descriptive tables. In a rural, community sample, internal reliability using the PVS was high ($\alpha = .85$; Hamby, 2016). In this sample, internal reliability of the PVS was comparable ($\alpha = .88$).

Current Drug Use and Consequences

The *Alcohol, Smoking and Substance Involvement Screening Test* (ASSIST) was used to measure non-medical drug use and consequences. The surveys used in this study modified the standard ASSIST (10 substances, including alcohol, tobacco and "other") for a total of 12 substances. This dissertation examines nine of those: cannabis, cocaine, prescription stimulants, methamphetamine, inhalants, sedatives or sleeping pills, hallucinogens, street opioids, and prescription opioids. Alcohol and tobacco were excluded as well as the open-ended "other" response option. The first item was a screening question about lifetime use of any of the substances. If the respondent reported no lifetime use, they were not asked the remaining questions in this measure. If a respondent endorsed lifetime use of one or more substances, the remaining questions were asked only for those substances. Question 2 asked about frequency of use in the past three months (five-point Likert scale ranging from *never* to *daily or almost daily*). Dichotomous responses to lifetime and past three month (i.e. current) drug use were calculated.

If participants endorsed any drug use in the past three months, they were asked three questions measuring consequences of use bounded by "in the last three months" (e.g. "In the past three months, how often has your use of the drugs listed below led to health, social, legal or financial problems?"; response options ranging from *never* to *daily or almost daily*) and three

questions about lifetime and current consequences (e.g. “Have you ever tried and failed to control, cut down or stop using…”). If participants reported lifetime use of a substance, but not in the past three months, they were asked only the last three questions. Response items included *No, never* (0); *Yes, but not in the last 3 months* (1); and *Yes, in the past 3 months* (2). Because the focus of these analyses was on current drug use consequences, response items were recoded: *No, never* and *Yes, but not in the last 3 months* (0) and *Yes, in the past 3 months* (1).

The ASSIST was created by the World Health Organization with the purpose of detecting substance use and related problems among primary care patients to identify the need for treatment. It has been tested in multiple countries with strong overall reliability and validity and is considered reliable for males, females and cross-cultural use, and as a valid measure of risk and substance involvement (World Health Organization ASSIST Working Group, 2002). When used for its original purpose, the ASSIST calculates a specific substance involvement score to assess treatment need. For the purpose of this dissertation, I altered the scoring to treat each substance identically and scores were combined for overall current use and consequences. In these analyses, internal reliability (Cronbach’s alpha) of the measure of lifetime drug use was .82.

Due to the limited scope of this study, I was unable to report on individual drug use and consequences. I chose to treat substance types and consequences equally as follows. I began by creating dichotomous scores for each substance within a question (i.e. any consequence was present [1] or absent [0] for each substance). These dichotomous responses were summed within each question (up to nine substances in each question for a range of 0 – 9). I then summed those scores for a composite score ranging from 0 – 54 (six questions with nine possible positive

endorsements). If a substance was not endorsed and was thus scored as missing within that question, it was treated as zero and included in the sum.

Ethnic Identity

The six-item *Revised Multi-Group Ethnic Identity Measure* (MEIM-R) included three items that assess exploration (e.g. "I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.") and three assessing commitment (e.g. "I have a strong sense of connectedness to my own ethnic group."). Response items were on a 5-point scale from *strongly disagree* to *strongly agree*. The score can be calculated as the mean of items in the two subscales (exploration and commitment) or the scale as a whole. I ran bivariate analyses between the three means (exploration, commitment, and as a whole) and IPV and drug outcomes. There were no significant differences in the relationships between the three means. Based on those results, and because I was interested in overall strength of ethnic identity, the two scales were combined and I used the mean of the scale as a whole in analyses. Results from a sample of predominately minority, urban, public university students reported Cronbach's alphas of .83 for exploration and .89 for commitment (Phinney & Ong, 2007). Internal reliability of the scale as a whole was high ($\alpha = .96$) as were the subscales of exploration and commitment ($\alpha = .91$ and $\alpha = .93$ respectively).

Data Analyses

First stage analysis included visual inspection of the characteristics of the sample and univariate distributions for demographic, predictor and outcome variables. Initial descriptive analyses included frequency distributions, measures of central tendency, and variation. All analyses were conducted using Stata v. 14 (StataCorp, 2015).

Missing Data

Item non-response was examined to see if it was large and non-random which might bias results. Univariate analyses of demographic and main outcome variables among the entire dataset were conducted. Missing data was equal to or less than 1% on all demographic variables except household income (3%) and dependents (2.5%). No adjustments for missing data were done. Seven percent of participants did not answer the screening item for the PVS and did not receive questions related to IPV. However, once screened into the PVS, there was less than 1% missing on all lifetime prevalence questions. It is possible that the 7% missing responses for the PVS screener were related to survey fatigue as it comes in the middle of the survey. It is unlikely that it is related to issues of sensitivity, because the screening question is not specific to any victimization experiences. Similarly, the screening questions for the ASSIST that ask about lifetime substance use demonstrated an average 5% nonresponse rate. It is possible that this was also related to survey fatigue as they were located at the end of an extensive substance use section of the survey. Finally, the MEIM-R had a non-response rate of 7-8% across all six questions. This is likely related to survey fatigue as it was the second to last measure included at the end of an extensive survey (43 separate measures, not including demographics) that took on average 60 minutes to complete. Because the overall range of missing data was between 1-8%, no computations were undertaken to address missing data.

Univariate Analyses

Demographic variables were examined at the univariate level to provide a picture of the sample. These were reported among all women in the sample and among women who had ever had a partner (thus, had been at risk of IPV). Descriptive univariate analyses on variables of interest including lifetime and past year IPV and lifetime and current drug use as dichotomous variables (any lifetime or past year endorsement in the PVS and any endorsement of lifetime or

past three month drug use in the ASSIST) were calculated for prevalence. Additionally, lifetime IPV poly-victimization, types of IPV, ages at first IPV experience, number of drugs currently being used, and current drug use consequences were reported among women ever partnered, and partnered with reported lifetime and current drug use. Similar descriptive characteristics of these outcomes of interest among women with past year IPV were calculated. The distribution of current drug use consequences and a calculation of the categorical distribution of drug use consequences are also reported. Because the focus of these analyses was on current consequences and responses were bounded by those experienced only within the past three months, the distribution of consequences was calculated among women who reported currently using drugs at the time of the survey.

Bivariate Analyses

A correlation matrix of demographic, predictor, and outcome variables was computed to assess for significant relationships among variables. Post-traumatic stress disorder was included in the matrix to test for association with lifetime IPV and current drug use and consequences. I also tested for significant associations among predictor and outcome variables with categorical (non-ordered) demographic variables using the chi-square test for association and ANOVA. These results were used to identify demographic indicators that should be controlled for in subsequent analyses.

To explore drug use patterns within the sample, the distribution of (1) abstainers, (2) lifetime, but not current users, and (3) current drug users was calculated for prevalence across subsamples of the population of interest: all women, women ever partnered, and women with lifetime and past year IPV. Subsequently, chi-square analyses were used to determine if within each user type, women were equally distributed between those who had experienced IPV and those with no lifetime IPV or past year IPV.

Chi-square tests for association were performed to examine if different aspects of lifetime and past year IPV including poly-victimization, types of IPV, and frequency of past year IPV were significantly associated with lifetime and current drug use. Independent group *t*-tests were used to compare drug outcomes across ages at first IPV experience and types of IPV. Pairwise correlations were calculated to examine relationships between drug use and consequences and lifetime and past year IPV poly-victimization, types, and ages at first reported experience. Relationships between ethnic identity and IPV and drug outcomes were included in these tests of association. Findings from these analyses guided the inclusion of variables in subsequent models. Additionally, I ran regression models that included all sociodemographic variables entered simultaneously to identity potential risk factors for IPV and drug outcomes.

Multivariate Models to Test for Moderation

Results from bivariate analyses were examined for significance with lifetime and current drug use and current consequences to identify demographic indicators that should be controlled for in the models. Initially, demographic variables included were based on theoretical selection as they might be associated with outcomes. However, for the final multivariate models, I selected only demographic variables that were significant in bivariate analyses. As a result, models with lifetime drug use included age, education, number of dependents supporting, sexual orientation, employment, relationship status, type of community growing up, and who respondents lived with at the time of the survey. They excluded household income and dependents under age 18 living with participants at the time of the survey because they were not significantly associated at the bivariate level. Models with current drug use included all demographic variables except the type of community in which participants were raised. Models with current drug use consequences included age, education, household income, dependents under age 18 living with participants, sexual orientation, employment, and relationship status. They excluded number of dependents

supporting, type of community growing up, and who respondents lived with at the time of the survey. Post-Traumatic Stress Disorder symptomology was significantly associated with all IPV and drug outcomes and included in all models.

Models were based on statistically significant bivariate relationships between IPV and drug outcomes. Any predictor IPV variables not significantly associated with drug outcomes at the bivariate level were excluded in the models. The predictor and outcome variables for each set of models are outlined in Table 6. Models that regressed predictor variables on any lifetime drug use included any lifetime IPV, lifetime poly-victimization, past year poly-victimization, psychological and physical IPV, and age at first psychological IPV. Past year IPV, and past year and lifetime psychological IPV were included in models with current drug use. Models with current drug use consequences as the outcome variable included lifetime IPV, past year IPV, lifetime and past year sexual IPV, and age at first psychological and physical IPV experience.

Table 6.

Multivariate Models

Outcome Variables		
Lifetime drug use	Current drug use	Current drug use consequences
Predictor Variables		
Lifetime IPV	Past year IPV	Lifetime IPV
Lifetime poly-victimization	Past year psychological IPV	Past year IPV
Past year poly-victimization	Lifetime psychological IPV	Lifetime sexual IPV
Lifetime psychological IPV		Past year sexual IPV
Lifetime physical IPV		Age at first psychological IPV
Age at first psychological IPV		Age at first physical IPV

Lifetime and current drug use models used logistic regression resulting in odds ratios. Models with drug use consequences were assessed using ordinary least squares regression. I began by individually adding demographic variables that were statistically significant in bivariate analyses to the models to observe variation in the outcome variable. After examining

individual effects, I grouped demographic variables according to type: indicators of socioeconomic status (education, employment and income), familial and relationship conditions (relationship status, living arrangement and dependents), and personal characteristics (age, sexual orientation, and type of community where raised). Within each group, variables were entered in the models simultaneously.

In models with any lifetime drug use as the dependent variable, I grouped sociodemographic variables as follows: (1) age, sexual orientation, and type of community where respondents were raised, (2) level of education and employment status, and (3) relationship status, who they lived with at the time of the survey, and if they were supporting dependents. For these analyses, variables were coded as: sexual orientation as gay/lesbian/two-spirit/bisexual and heterosexual/other (reference); where participants grew up as reservation, rural not reservation, and urban/suburban (reference); education as high school/GED (reference), associate/vocational, and bachelor/graduate/professional; employment as employed full or part time and unemployed (reference); relationship status as in a serious relationship or marriage and single/divorced/separated (reference); living with as living with a partner, with family/other and alone (reference); and dependents as currently supporting or not (reference).

In models with any current drug use as the outcome variable, I grouped sociodemographic variables as follows: (1) age and sexual orientation, (2) level of education, employment status, and income, and (3) relationship status, who they lived with at the time of the survey, if they were supporting dependents, and how many dependents under 18 were living with them at the time of the survey. Coding for these variables was the same as those in models with any drug use as the outcome variable with the addition of income, which was coded as less than $10,000 (reference), $10,001 to $25,000, $25,001 to $50,000 and more than $50,001. In

models with current drug use consequences as the outcome, I grouped sociodemographic variables as: (1) age and sexual orientation, (2) education, employment status, and income, and (3) relationship status and dependents under 18 living with them at the time of the survey. Coding for these variables was the same as those in the earlier models.

To test for moderation, an interaction term was created using a predictor variable (IPV) × potential moderator (ethnic identity) and this term was included in the final model (model 7). A model of the effect of ethnic identity on associations between IPV experiences and drug use outcomes is illustrated in the modified indigenist stress-coping model below. As noted in the literature review, women may be more likely to experience IPV because of drug use or abuse (and experience more severe IPV depending on use or abuse) while others may adopt problematic drug behaviors as a result of experiencing violence (and have more problematic behavior depending on the IPV). Because I was interested in examining the potential for ethnic identity to lessen the burden of stress after having experienced IPV, I chose IPV as predictor variables and drug use as the outcomes.

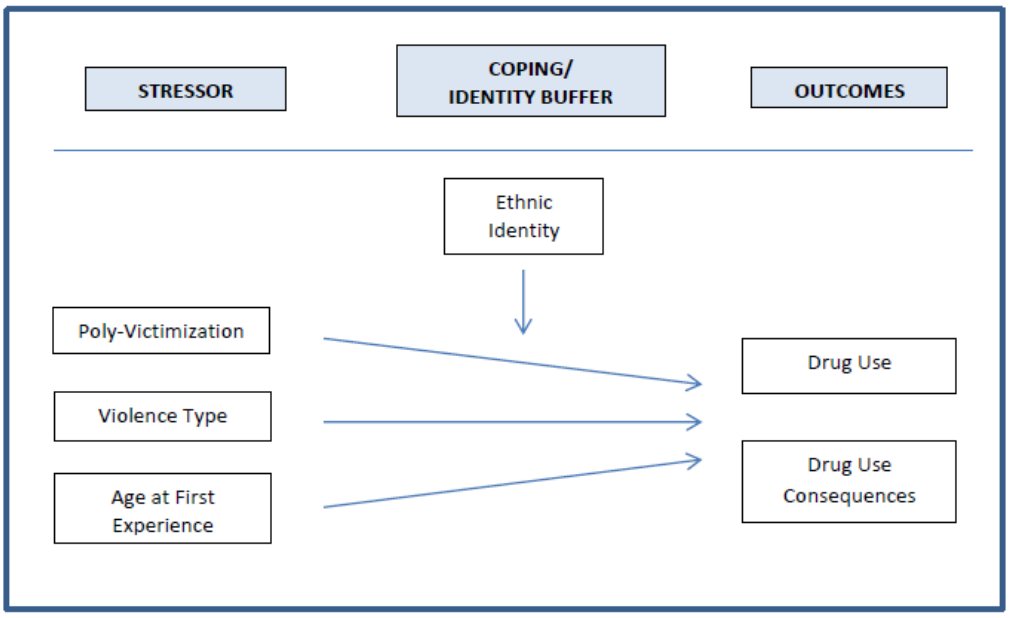

Figure 1. Modified Indigenist Stress-Coping Model (Walters et al., 2002)

Multicollinearity

Multicollinearity occurs when more than two of the predictor variables are highly correlated or when the interaction term is highly correlated with the predictor and moderator variables and is common in social science research where variables are often interrelated (Lewis-Beck, 1980; Schroeder, Sjoquist, & Stephan, 1986). To assess for multicollinearity, I tested the strength of the relationships among all predictor variables in the model using measures for tolerance and variance inflation factor (VIF). Tolerance indicates how much collinearity a regression analysis can tolerate and VIF indicates how much inflation of a standard error could be caused by collinearity (UCLA: Statistical Consulting Group, n.d.). If variables are uncorrelated with each other, both the tolerance and VIF are 1. As a general rule, if the VIF is greater than 10 for any variable it may indicate multicollinearity (Acock, 2006). A tolerance value less than 0.1 indicates a potential issue with multicollinearity (UCLA, n.d.). Lewis-Beck (1980) advises regressing each independent variable on all other independent variables. If the R^2 from any of those equations is near 1.0, there is high multicollinearity. In linear regression models where I suspected multicollinearity between interaction terms and the predictor and moderator variables, I also regressed those variables on the interaction term.

CHAPTER 4: RESULTS

Sample Description

Table 7 describes the demographic characteristics of all women in the sample and women who reported ever having had a partner (i.e. had ever been at risk of IPV). The mean age across both groups was 30 (*SD* = 11.01 and 10.99) with a range of 18 to 77. Most grew up in reservation communities (75%) and many reported a high school or GED education (64-65%). Roughly a quarter of the sample reported an Associate's or Vocational degree and 8% reported a Bachelor's degree or higher. Roughly half of the women were unemployed (54-56%) with the other half working part- or full-time (20% and 24-26% respectively). The low percentage of participants reporting college degrees and employment status may be explained by the fact that the sample was drawn from women attending TCUs at the time of the survey. Household income data suggests that many lived in economically stressed households: about a third (33-34%) reported a household family income of less than $10,000, with only 15% reporting more than $50,000. These findings should be considered carefully given that this is household family income, but not reported with the size of the household. The vast majority of respondents were heterosexual (90-91%) and over half (56-59%) reported being single, including divorced or separated, at the time of the survey. Among women supporting dependents (56-59%), the majority had one or two under the age of 18 living with them at the time of the survey.

Table 7.

Descriptive Characteristics of the Sample

	All women (*N* = 1,810)		Ever had a partner (*n* = 1,553)	
Age				
Mean	30		30	
SD	11.01		10.99	
Range	18-77		18-77	
	(%)	(*n*)	(%)	(*n*)
Sexual orientation				
Heterosexual	90	1,637	91	1,410
LGBT-S	7	129	7	108
Other	2	44	2	35
Educational degree				
High School or GED	65	1,180	64	989
Associate or Vocational	26	464	27	416
Bachelor	6	103	6	98
Graduate or Professional	2	34	2	30
Other	1	22	1	17
Income (household annual)				
Less than $10,000	34	608	33	512
$10,001 to $25,000	27	486	27	424
$25,001 to $50,000	21	389	22	339
More than $50,001	15	266	15	238
Employment				
Yes, full time	24	436	26	398
Yes, part time	20	357	20	315
No	56	1,005	54	836
Relationship status				
Serious relationship	24	434	26	399
Married	16	288	17	271
Single, divorced or separated	59	1,069	56	876
Grew up				
Reservation	75	1,363	75	1,162
Urban area	11	204	12	179
Rural, but non-reservation	10	172	10	158
Suburban area	3	51	3	46
Living arrangement				
Alone	8	139	8	122
Spouse/partner/boyfriend/girlfriend	35	641	39	604
Family, not partner	24	432	24	380
Other	32	580	28	442

Table 7 (continued)

	All women (*N* = 1,810)		Ever had a partner (*n* = 1,553)	
	(%)	(*n*)	(%)	(*n*)
Currently supporting dependents				
Yes	56	1,019	59	918
No	41	746	39	603
Dependents < 18[a]				
0	2	35	2	31
1	21	374	22	334
2	14	249	14	225
3	9	166	10	156
4	4	78	5	70
5 or more	2	37	2	33

Notes. [a] Dependents under the age of 18 living with participants at the time of the survey among those who said they were currently supporting dependents. Some equal more than 100% because of rounding percentages.

Descriptive Statistics: Demographic and Outcome Variables

Descriptive data on lifetime and past year IPV and lifetime and current drug use are reported in Table 8. Among women who had ever had a partner (i.e. were ever at risk of IPV), 49% had experienced IPV *at some time in their lives*. This increased slightly among those who reported any drug use (56%) and those with current drug use (58%). Rates of *past year* IPV ranged from 13% (all women) to 20% (women who had ever had a partner and reported current drug use). Among all women in the sample, the majority had used drugs at least once in their lifetime (67%), with almost a third (29%) reporting drug use in the past three months. Among women with current drug use (past three months) at the time of the survey, the majority (66%) used only one type of drug and reported having experienced on average two negative consequences in the past three months as a result of their drug use (range of 0-20).

Table 8.

Descriptive Characteristics of Outcomes of Interest

	All women (*N* = 1,810)	Ever had a partner (*n* = 1,553)	Ever had a partner and any drug use (*n* = 1,047)	Ever had a partner and current drug use (*n* = 489)
	% (*n*)	% (*n*)	% (*n*)	% (*n*)
Any IPV				
Yes	42 (755)	49 (755)	56 (586)	58 (283)
No	44 (793)	51 (793)	44 (459)	42 (205)
Past year IPV				
Yes	13 (236)	15 (236)	17 (183)	20 (100)
No	28 (506)	85 (1,317)	83 (864)	80 (389)
Lifetime types				
Psychological	29 (529)	34 (529)	40 (422)	39 (191)
Physical	40 (718)	46 (718)	54 (563)	56 (272)
Sexual	14 (245)	16 (245)	19 (196)	21 (101)
Any lifetime drug use				
Yes	62 (1,118)	67 (1,047)	N/A	N/A
No	33 (597)	32 (497)		
Current drug use				
Yes	29 (525)	31 (489)	47 (489) [a]	N/A
No	33 (590)	69 (1,064)	53 (558)	
Number of types of drugs currently using				
1				66 (322)
2	N/A	N/A	N/A	19 (91)
3				7 (35)
4				4 (20)
5 or more				4 (21)
Current drug use consequences [b]				
N				417
Median				1.00
Mean	N/A	N/A	N/A	2.26
SD				2.71
Range				0-20

Notes. [a] Among all women with any lifetime drug use (n = 1,118), 47% (525) reported current drug use. [b] Based on a composite score of overall consequences.

Table 8.1 provides more details about the experiences of women who reported any lifetime IPV. The mode score of IPV poly-victimization on average equaled 4 (out of a possible

5). Of the three types of IPV reported, physical IPV was the most common (95%), followed by psychological (70%) and then sexual (32%) IPV. The majority of women (46%) experienced IPV for the first time in early adulthood (19 to 25), followed by adolescence (37%; 13 to 18), and then adulthood (13%; 26 or older). And prevalence rates of lifetime and current drug use were slightly higher than rates among all women in the sample (78% and 38% respectively).

Descriptive characteristics among women who reported *past year* IPV are shown in Table 8.2. Similar to rates for women with any lifetime IPV, the mode score of IPV poly-victimization was 4 across all three groups. Of these types, physical IPV was overwhelmingly present in all experiences (95-97%), followed by psychological (65-71%) and then sexual (27-28%) IPV. The reported rate of current drug use among women with past year IPV was slightly higher than women with any lifetime IPV (55 versus 47%). The majority of women (58%) reported using only one type of drug and women among this group reported on average 3 negative consequences from drug use in the past three months (range of 0-15).

The distribution of current drug use consequences among women who reported current drug use is skewed to the left (Fig. 2), with the majority of women (60%) reporting zero to two negative consequences in the past three months (Table 9). This distribution looks similar among women who had experienced IPV and were currently using (58% reported zero to two consequences). Of these consequences, having had a strong desire or urge to use was the most common, followed by mostly equal distribution across drug use leading to health, social, legal or financial problems; failing to do what was normally expected because of use; and trying and failing to control, cut down or stop using. Few women reported someone expressing concern about their use and very few reported injecting drugs in the past three months (Fig. 3).

Table 8.1.

Descriptive Characteristics of IPV (among women with any IPV; n = 755)

	% (*n*)
Lifetime Poly-victimization	
1	21 (155)
2	13 (100)
3	18 (134)
4	29 (222)
5	19 (144)
Lifetime types	
Psychological	70 (529)
Physical	95 (718)
Sexual	32 (245)
Age of first IPV experience	
N	726
Median	19
Mean	21
SD	5.29
Range	13-50
Adolescence (13-18)	37 (276)
Early Adulthood (19-25)	46 (350)
Adulthood (26 or older)	13 (100)
Age at first type [a]	
Psychological	
Adolescence (13-18)	34 (174)
Early Adulthood (19-25)	50 (257)
Adulthood (26 or older)	16 (82)
Physical	
Adolescence (13-18)	31 (103)
Early Adulthood (19-25)	51 (168)
Adulthood (26 or older)	18 (61)
Sexual	
Adolescence (13-18)	34 (80)
Early Adulthood (19-25)	46 (108)
Adulthood (26 or older)	20 (48)
Any lifetime drug use	
Yes	78 (586)
No	22 (166)
Current drug use	
Yes	38 (283)
No	40 (302)

Note: [a] Among those who endorsed that type of IPV.

Table 8.2.

Descriptive Characteristics of Outcomes of Interest Among Women with Past Year IPV

	Past year IPV (n = 236)	Past year IPV and any drug use (n = 183)	Past year IPV and current drug use (n = 100)
	% (*n*)	% (*n*)	% (*n*)
Past year IPV poly-victimization			
1	19 (45)	18 (33)	23 (23)
2	16 (38)	13 (24)	13 (13)
3	19 (44)	19 (34)	16 (16)
4	31 (72)	34 (62)	32 (32)
5	16 (37)	16 (30)	16 (16)
Past year types			
Psychological	69 (163)	71 (130)	65 (65)
Physical	96 (226)	97 (177)	95 (95)
Sexual	28 (67)	27 (50)	28 (28)
Any lifetime drug use			
Yes	78 (183)	N/A	N/A
No	22 (53)		
Current drug use			
Yes	42 (100)	55 (100)	N/A
No	58 (136)	45 (83)	
Number of types of drugs currently using			
1			58 (58)
2	N/A	N/A	24 (24)
3 or more			18 (18)
Current drug use consequences[a]			
N			81
Median	N/A	N/A	2.00
Mean			3.01
SD			3.16
Range			0-15

Note. [a] Based on a composite score of overall consequences.

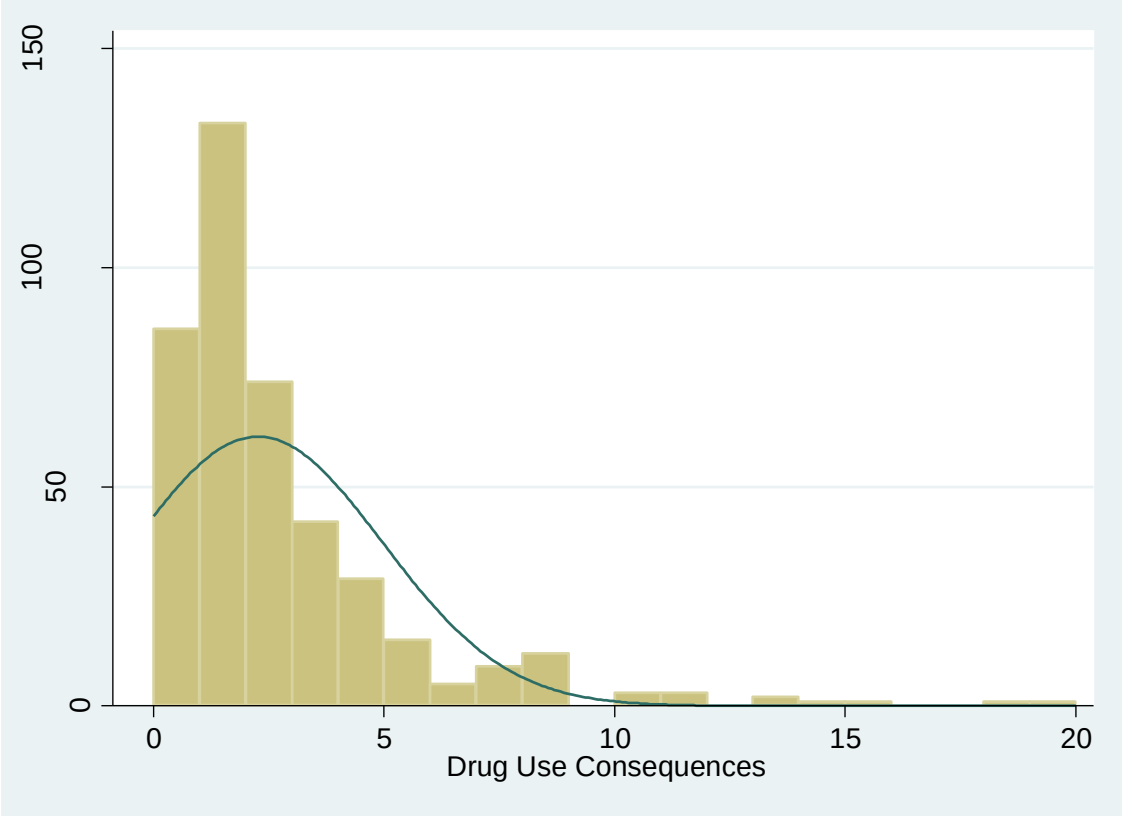

Figure 2. Current Drug Use Consequences (among women with current drug use; n=489)

Table 9.

Distribution of Current Drug Use Consequences (among women with past year drug use; n=489)

	% (*n*)
Zero	18 (86)
One	27 (133)
Two	15 (74)
Three	9 (42)
Four or more	17 (82)

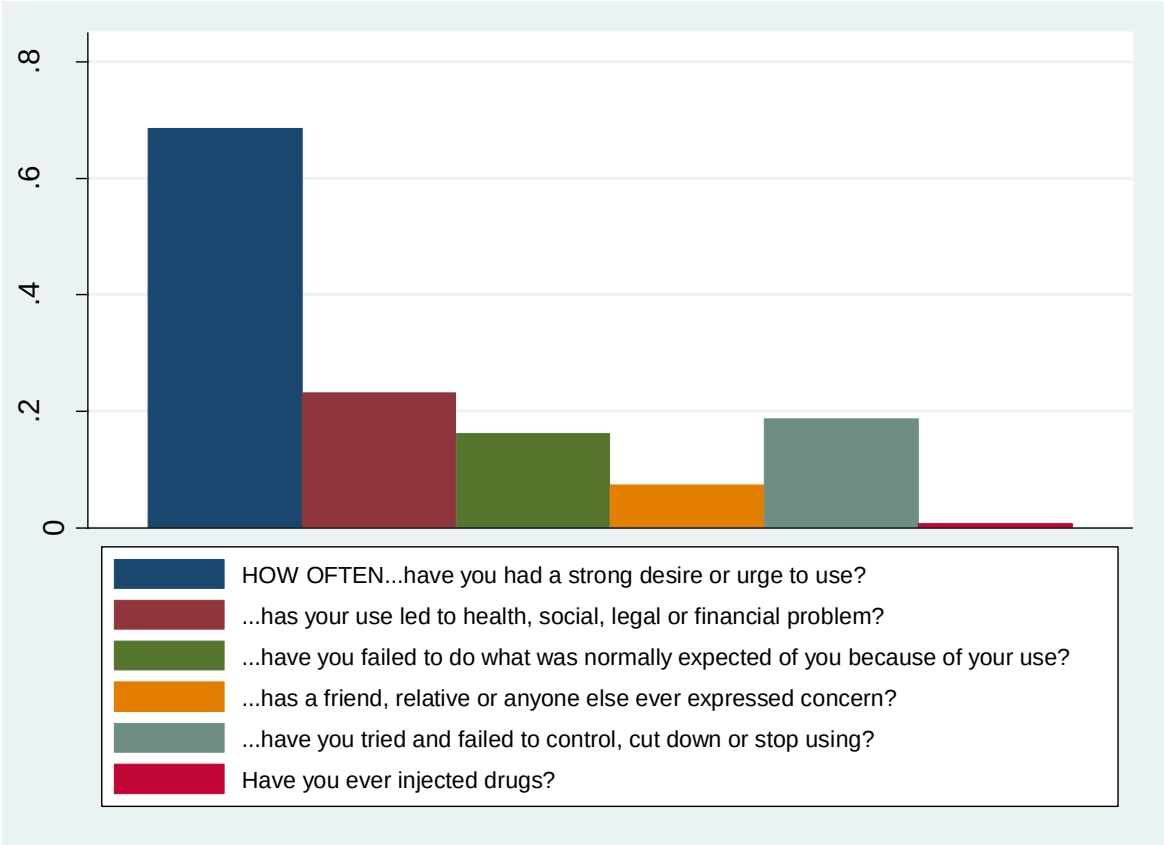

Figure 3. Means of Specific Drug Use Consequences (among women ever partnered with current drug use; n=489)

Relationships among Demographic and Outcome Variables

A matrix of pairwise correlations between demographic and outcome variables among all women is shown in Table 10 and associations between demographic and outcome variables are displayed in Table 10.1. Lifetime drug use was significantly correlated with ever having experienced IPV (r = .21, p = 000). This indicates that women who experience IPV are statistically significantly less likely to abstain from drug use in their lifetimes (r = -.21, p = .000). Current drug use was marginally significantly correlated with past year (r = .09, p = .036), but not lifetime IPV. More drug use consequences were correlated with lifetime IPV (r = .09, p = .005), past year IPV (r = .10, p = .020), and current drug use (r = .43, p = .000). Age was

positively correlated with lifetime IPV (r = .20, p = .000) and any drug use (r = .07, p = .005) and negatively correlated with past year IPV (r = -.27, p = .000), current drug use (r = -.18, p = .000), and consequences (r = -.12, p = .000). On average, as education increased, so did lifetime IPV (r = .07, p = .004) and drug use (r = .06, p = .009), but past year IPV (r = -.15, p = .000) and current drug use (r = -.15, p = .000) and consequences (r = -.10, p = .003) decreased as education rose. Supporting dependents was significantly correlated with increased lifetime IPV (r = .15, p = .000) and drug use (r = .10, p = .000), but lower current drug use (r = -.19, p = .000). Living with dependents under the age of 18 lowered current drug use (r = -.10, p = .015) and consequences (r = -.10, p = .019). Higher household income was correlated with lower past year IPV (r = -.11, p = .003) and current drug use (r = -.09, p = .004) and consequences (r = -.07, p = .037). And meeting or exceeding a threshold of PTSD symptomology was positively significantly correlated with all IPV and drug outcomes at the .001 significance level.

In regression models where I entered sociodemographic variables simultaneously on each of the IPV and drug outcomes, sexual orientation was a statistically significant predictor of all drug outcomes when controlling for all other variables in the model, OR = 2.47, 95% CI [0.96, 1.00], p = .010 for current drug use, OR = 4.56, 95% CI [1.61, 13.04], p = .004 for any drug use, and β = 1.62, p = .000 for drug consequences. The referent for sexual orientation is heterosexual/other. These findings suggest that on average, LGBT-S women in this sample are at higher risk of lifetime and current drug use and consequences. An associate's or vocational degree was a marginally significant predictor of current drug use when holding all other variables constant, OR = 0.66, 95% CI [0.45, 0.98], p = .038. The referent for education is high school/GED, suggesting that higher education may be protective against current drug use. Age

Table 10.

Pairwise correlations among demographic and outcome variables (all women; N = 1,810)

	Variable	1	2	3	4	5	6	7	8	9	10	11
1.	Any IPV	1.00										
2.	Past Year IPV	N/A	1.00									
3.	Any Drug Use	0.21***	-0.00	1.00								
4.	Current drug use	0.04	0.09*	N/A	1.00							
5.	Drug use consequence	0.09**	0.10*	N/A	0.43***	1.00						
6.	Age	0.20***	-0.27***	0.07**	-0.18***	-0.12***	1.00					
7.	Educational degree	0.07**	-0.15***	0.06**	-0.15***	-0.10**	0.39***	1.00				
8.	Income[a]	-0.00	-0.11**	0.04	-0.09**	-0.07*	0.09***	0.19***	1.00			
9.	Dependents	0.15***	-0.05	0.10***	-0.19***	-0.06	0.24***	0.14***	-0.23***	1.00		
10.	Dependents < 18[b]	0.02	0.05	0.03	-0.10*	-0.10*	0.14***	0.04	0.05	0.02	1.00	
11.	PTSD [c]	0.24***	0.17***	0.13***	0.10**	0.18***	0.02	0.02	-0.03	-0.00	0.01	1.00

Notes. [a] Annual household. [b] Currently living with. [c] Meets or exceeds standard for PTSD symptoms.
*p < .05. **p < .01. ***p < .001.

Table 10.1.

Associations between demographic and outcome variables

	Any IPV (ever partnered; *n* = 1,553)	Past year IPV (any IPV; *n* = 755)	Any drug use (all women; *N* = 1,810)	Current drug use (any drug use; *n* = 1,118)	Drug use consequences (any drug use; *n* = 1,118)
	% (*n*)	% (*n*)	% (*n*)	% (*n*)	*M*
Sexual Orientation					
Heterosexual	90 (678)	88 (208)	88 (988)***	83 (438)***	1.05***
Gay/lesbian, two-spirit, bisexual	8 (61)	8 (20)	9 (101)	13 (70)	2.5
Other, prefer not to answer	2 (16)	3 (8)	3 (29)	3 (17)	1.19
Employment					
Yes, full time	21 (160)**	55 (129)*	55 (609)*	62 (324)***	1.32*
Yes, part time	29 (215)	23 (53)	26 (291)	18 (94)	.84
No	50 (378)	23 (53)	19 (216)	20 (106)	1.27
Relationship status					
Serious relationship	25 (185)	29 (68)	26 (287)*	27 (143)***	1.27*
Married	16 (119)	13 (31)	17 (187)	12 (63)	.74
Single, divorced or separated	60 (448)	58 (137)	57 (639)	61 (319)	1.28
Grew up on/in					
Reservation	71 (527)***	70 (163)	73 (815)**	76 (397)	1.21
Urban area	14 (108)	18 (42)	12 (137)	11 (60)	1.34
Rural, but non-reservation	12 (90)	9 (22)	11 (122)	9 (45)	.83
Suburban area	3 (22)	3 (6)	3 (38)	4 (21)	1.43
Living arrangement					
Alone	9 (66)***	5 (12)**	8 (89)***	7 (39)***	.82
Spouse/partner/boyfriend/girlfriend	36 (268)	36 (86)	39 (432)	36 (187)	1.11
Family, not partner	34 (254)	30 (71)	25 (277)	20 (107)	1.07
Other	22 (167)	28 (67)	28 (317)	36 (190)	1.50

Notes. Chi-square test for association for any drug and current drug, ANOVA for consequences.
*$p < .05$. **$p < .01$. ***$p < .001$.

was predictive of lifetime and past year IPV when controlling for all other variables in the model, OR = 1.03, 95% CI [1.01, 1.04], p = .004 for any IPV and OR = 0.92, 95% CI [0.89, 0.95], p = .010 past year IPV. These findings suggest that as women age, the odds are higher that she will have experienced lifetime IPV and that younger women are at more risk for current IPV. And having grown up on a reservation was a significant predictor of past year IPV at the .01 significance level when holding all other sociodemographic variables constant, OR = 0.42, 95% CI [0.23, 077], p = .005. This finding suggests that having grown up on a reservation may reduce the odds of having experienced IPV in the past year.

Relationships between Intimate Partner Violence and Drug Use and Consequences

The distribution of abstainers, lifetime, and current drug users appears relatively equal across the sample (Table 11). Rates of abstention among all women were 32-33%. Among women who had experienced IPV 22% reported no drug use. Rates of lifetime, but not current drug use were similar among all women and those who had experienced IPV in the past year, ranging from 33% to 36%. At a slightly higher rate, 40% of women with lifetime IPV reported lifetime, but not current drug use. For those women currently using drugs, the highest rates were among women who had experienced IPV in the past year (42%), followed by women with lifetime IPV (37%). Among all women, rates of current drug use were 29-31%. Chi-square analyses were performed to determine if within each user type, women were equally distributed between those who had experienced IPV and those with no lifetime IPV. Results suggest that women with any IPV were less likely to be abstainers (Table 11.1) and more likely to have used drugs in their lifetime, but not be current users (Table 11.2), χ^2 (1, N = 1,539) = 67.80, p = .000 and χ^2 (1, N = 1,548) = 11.02, p = .001 respectively. Relatedly, results did not indicate a statistically significant association between lifetime IPV and current drug use. Past year IPV was

not statistically associated with user types overall, but chi-square analysis demonstrated a significant association between past year IPV and current drug use, χ^2 (1, N = 574) = 4.39, p = .036.

Table 11.

Drug Use Profiles

	Abstainers	Lifetime, but not current drug use	Lifetime and current drug use
	% (*n*)	% (*n*)	% (*n*)
All women (*N* = 1,810)	33 (597)	33 (593)	29 (525)
Ever partnered (*n* = 1,553)	32 (497)	36 (558)	31 (489)
Any IPV (*n* = 755)	22 (166)	40 (303)	37 (283)
Past year IPV (*n* = 236)	22 (53)	35 (83)	42 (100)

Table 11.1.

Association Between any IPV and Lifetime Drug Abstention (among women ever partnered; n =1,553)

	Abstention		
Any IPV	No	Yes	Total
No	58% (459)	42% (328)	100% (793)
Yes	78% (586)	22% (166)	100% (755)
Total	68% (1,045)	32% (497)	100% (1,553)
Pearson chi2 (4) = 70.3891	Pr = 0.000		

Note. Chi-square test for association

Table 11.2.

Association Between any IPV and Lifetime, Not Current Drug Use (among women ever partnered; n =1,553)

	Lifetime, not Current		
Any IPV	No	Yes	Total
No	68% (540)	32% (253)	100% (793)
Yes	60% (453)	40% (302)	100% (755)
Total	64% (993)	36% (555)	100% (1,558)
Pearson chi2 (1) = 67.7991	Pr = 0.000		

Note. Chi-square test for association

Lifetime Intimate Partner Violence

Pairwise correlations between lifetime IPV and drug outcomes among women who reported any lifetime IPV are reported in Table 12. Increased lifetime IPV poly-victimization was positively correlated with lifetime drug use (r = .14, p = .000), but not current use or consequences. Pairwise correlations suggest that earlier psychological IPV was associated with a slight increase in lifetime drug use (r = -.11, p = .013), and earlier psychological and physical IPV were correlated with increased drug use consequences (r = -.14, p = .005 and r = -.14, p = .024 respectively). Table 12.1 suggests high overlap among the types of IPV reported with chi-square analyses producing significant correlations for psychological and physical IPV with any drug use, χ^2 (1, N = 751) = 5.55, p = .019 and χ^2 (1, N = 750) = 4.91, p = .027 respectively, and psychological IPV with current drug use, χ^2 (1, N = 584) = 5.78, p = .016. Additionally, findings demonstrate that the mean drug use consequences for respondents who reported sexual IPV (M = 1.72, SD = 3.19) were statistically significantly different than those with no history of sexual IPV, t(509) = -2.33, p = .020. Independent group t-tests demonstrated no statistically significant difference in means when examining age at first IPV experience and risk of current drug use.

Table 12.

Pairwise Correlations Among Lifetime IPV and Drug Use and Consequences (among women with any IPV; n = 755)

		1	2	3	4	5	6	7	8	9
1.	Any drug use	1.00								
2.	Current drug use	N/A	1.00							
3.	Drug use consequences [a]	N/A	0.46***	1.00						
4.	Poly-victimization	0.14***	-0.05	0.07	1.00					
5.	Age (all types)	-0.04	-0.05	-0.07	-0.05	1.00				
6.	Age psychological	-0.11*	0.02	-0.14**	-0.10*	0.79***	1.00			
7.	Age physical	-0.08	0.01	-0.14*	0.00	0.71***	0.83***	1.00		
8.	Age sexual	-0.02	0.02	-0.06	0.11	0.73***	0.76***	0.81***	1.00	
9.	MEIM-R	0.08*	-0.03	-0.01	0.04	0.13***	0.00	0.02	0.10	1.00

Notes. [a] Composite score of current consequences.
*p < .05. **p < .01. ***p < .001.

Table 12.1.

Association Between IPV Type and Drug Outcomes (among women with any IPV; n = 755)

IPV Type	Any drug use % (*n*)	Current drug use % (*n*)	Drug use consequences
Psychological	80 (422)*	45 (191)*	*M* = 1.35 *SD* = 2.63
Physical	79 (563)*	48 (272)	*M* = 1.35 *SD* = 2.44
Sexual	80 (196)	52 (101)	*M* = 1.72 *SD* = 3.19*

Notes. Chi-square test for association for any and current drug, t-test for consequences.
*p < .05. **p < .01. ***p < .001.

Past Year Intimate Partner Violence

Past year psychological IPV was marginally significantly correlated with current drug use, χ^2 (1, N = 183) = 3.91, p = .048, but not past year physical or sexual IPV. Similar to women with lifetime IPV, independent group *t*-tests revealed that experiencing past year sexual IPV resulted in mean drug use consequences (M = 2.67, SD = 3.57) statistically significantly different than those with no history of past year sexual IPV, t(151) = -2.56, p = .011. Also similar to women with any lifetime IPV, findings suggest intersections across types of IPV reported: 50%

of women reported psychological, 54% physical and 56% sexual IPV. Pairwise correlation indicates no significant correlations between frequency of past year IPV and drug outcomes. Further examination using a chi-square test for association supported this finding.

Ethnic Identity

Ethnic identity was not statistically, significantly associated with lifetime drug use ($t(1660) = -1.84$, $p = .065$) among all women, although in pairwise correlations it was positively statistically significantly correlated with any lifetime drug use among women who experienced lifetime IPV, $r = 0.08$, $p = .023$ (Table 12). In contrast, correlations between ethnic identity and current drug use and consequences were non-significant among all women (including those who had experienced lifetime or past year IPV). Ethnic identity was marginally significantly correlated with lifetime IPV among all women, $t(1523) = -2.01$, $p = .045$, but not significantly correlated with past year IPV among women who had ever had a partner. This test tells us that there is a significant difference in means on ethnic identity scores between women who experienced lifetime IPV and those who did not. It is possible that this measure of ethnic identity was not a good measure of the construct due to lack of variability in this sample (Figure 4).

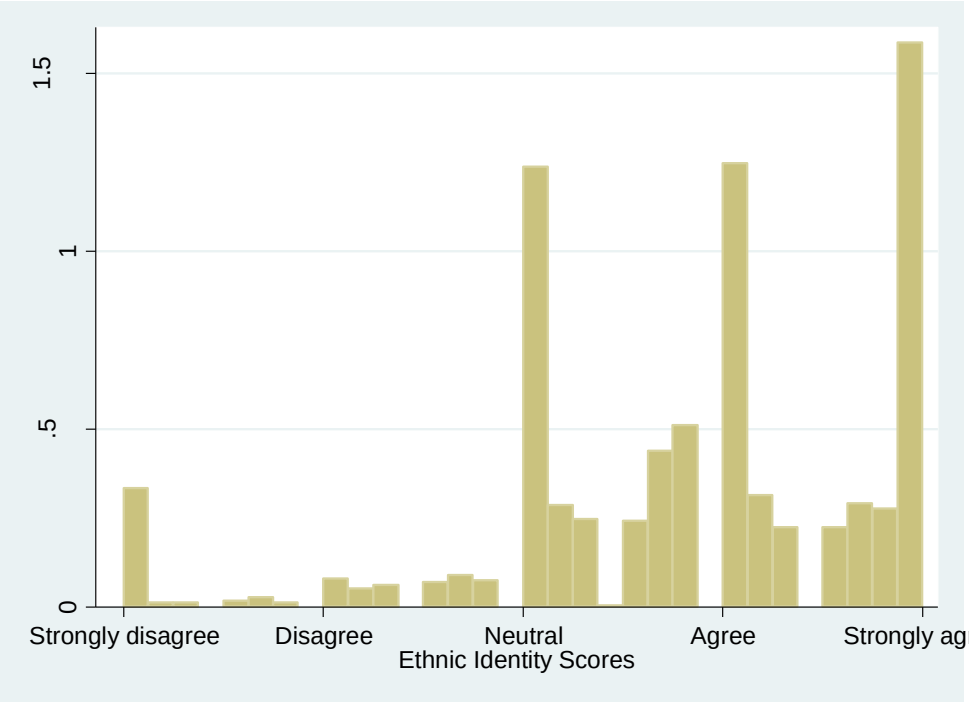

Figure 4: Distribution of Mean Scores on Ethnic Identity (among all women; N=1,810)

Models of the Effect of Ethnic Identity on Any Drug Use

I conducted six multiple logistic regression analyses to test if ethnic identity moderated the relationship between lifetime IPV experiences and any lifetime drug use. Additionally, I tested for moderation using interaction terms of the products of the IPV experience and ethnic identity. The first set of models tested the predictive value of lifetime IPV on any drug use (Table 13); the second tested lifetime IPV poly-victimization (Table 14); and the third set of models tested age at first psychological IPV experience (Table 15). Controlling for all other variables in the model, results indicated that women who had ever experienced IPV had over twice the odds of lifetime drug use compared to those who had not experienced IPV, OR = 2.21, 95% CI [1.73, 2.83], p = .000. Accounting for all other variables in the model, findings suggest that when lifetime IPV poly-victimization increased by one unit, the odds that a woman would have used drugs in her lifetime were 1.24 times larger, OR = 1.24, 95% CI [1.08, 1.43], p = .002. Finally, experiencing psychological IPV at an earlier age increased the odds that a woman would

have used drugs in her lifetime when holding all other variables constant, OR = 0.95, 95% CI [0.91, 0.99], p = .020. In all three sets of models, the main predictor variables were statistically significant until the interaction term was entered in the model. Ethnic identity and interaction terms were not statistically significant in any of the models, indicating no evidence of a moderating effect of ethnic identity on these relationships between IPV and lifetime drug use.

In models testing the predictive value of lifetime IPV (Table 12), sexual orientation was a significant predictor in all the models (OR = 3.37, 95% CI [1.83, 6.20], p = .000 in the final model), indicating that LGBT-S women at TCUs have over three times the odds of having ever used drugs than non-LGBT-S women in this sample. When lifetime poly-victimization was the main predictor variable (Table 13), sexual orientation was marginally statistically significant until PTSD was entered in the model, OR = 2.63, 95% CI [1.08, 6.41], p = .034 in model 4 and OR = 2.46, 95% CI [1.00, 6.02], p = .050 in model 5. In models of the predictive value of age at first psychological IPV, sexual orientation was not a statistically significant predictor (Table 14). In all models, PTSD was a statistically significant predictor of lifetime drug use.

In the models regressing poly-victimization on lifetime drug use (Table 13), where a participant reported having grown up was a marginally statistically significant predictor of use, suggesting that women who were raised on a reservation may have slightly lower odds of having used drugs than those raised on non-reservation lands OR = 0.57, 95% CI [0.33, 0.99], p = .046. However, because this demographic variable was not a statistically significant predictor of outcome variables in any other models.

Table 13.

Models of the Effect of Ethnic Identity on the Association Between Any IPV and Any Drug Use

	M1	M2	M3	M4	M5	M6	M7
	n = 1,539	*n* = 1,531	*n* = 1,524	*n* = 1,483	*n* = 1,483	*n* = 1,464	*n* = 1,461
	Odds Ratio (95% Confidence Interval)						
Any IPV	2.52***	2.40***	2. 93***	2. 38***	2.19***	2.21***	1.11
	(2.02, 3.15)	(1.91, 3.02)	(1.90, 3.02)	(1.87, 3.02)	(1.72, 2.79)	(1.37, 2.83)	(.45, 2.72)
Age		1.01	1.00	1.00	1.00	1.00	1.00
		(1.00, 1.02)	(.99, 1.02)	(.99, 1.01)	(.99, 1.01)	(.99, 1.01)	(.99, 1.01)
LGBT-S[a]		3.62***	3.63***	3.77***	3.51***	3.36***	3.37***
		(1.99, 6.60)	(2.00, 6.62)	(2.06, 6.90)	(1.92, 6.45)	(1.83, 6.18)	(1.83, 6.20)
Grew up[b]							
Reservation		0.80	0.78	0.74	0.75	0.75	0.76
		(.57, 1.11)	(.56, 1.09)	(.53, 1.04)	(.53, 1.06)	(.56, 1.06)	(.54, 1.07)
Rural, not reservation		1.04	1.06	1.07	1.05	1.06	1.06
		(.64, 1.67)	(.65, 1.71)	(.66, 1.75)	(.65, 1.72)	(.65, 1.74)	(.65, 1.74)
Higher Education[c]							
AA /Voc			1.21	1.20	1.20	1.16	1.16
			(.92, 1.59)	(.91, 1.59)	(.91, 1.59)	(.88, 1.54)	(.87, 1.54)
Bachelors and higher			0.89	0.88	0.87	0.87	0.88
			(.57, 1.38)	(.57, 1.38)	(.56, 1.36)	(.55, 1.37)	(.56, 1.38)
Employment[d]			0.99	0.98	1.00	1.01	1.00
			(.79, 1.24)	(.77, 1.23)	(.79, 1.26)	(.80, 1.29)	(.79, 1.28)
In a relationship[e]				1.08	1.09	1.09	1.11
				(.78, 1.50)	(.79, 1.51)	(.79, 1.53)	(.80, 1.54)
Live with[f]							
Partner				1.19	1.15	1.18	1.17
				(.70, 2.02)	(.67, 1.95)	(.69, 2.01)	(.69, 2.00)
Family or other				0.97	0.93	0.95	0.96
				(.61, 1.52)	(.58, 1.46)	(.60, 1.51)	(.61, 1.53)
Supporting dependents[g]				1.23	1.25	1.26	1.24
				(.96, 1.58)	(.97, 1.60)	(.98, 1.62)	(.96, 1.60)
PTSD symptomology					1.69**	1.64**	1.65**
					(1.23, 2.32)	(1.20, 2.26)	(1.20, 2.27)
Ethnic Identity						1.09	1.00
						(.97, 1.22)	(.86, 1.17)
Ethnic identity*any IPV							1.20
							(.95, 1.51)

Notes. Logistic regression – odds ratios reported. [a] Reference: heterosexual or other. [b] Reference: urban/suburban. [c] Reference: high school/GED. [d] Reference: unemployed. [e] Reference: single. [f] Reference: living alone. [g] Reference: not currently supporting dependents. [h] Meets or exceeds standard cutoff score for PTSD symptomology.

*p < .05. **p < .01. ***p < .001.

Table 14.

Models of the Effect of Ethnic Identity on the Association Between IPV Poly-Victimization and Any Drug Use

	M1 *n* = 752	M2 *n* = 744	M3 *n* = 742	M4 *n* = 722	M5 *n* =722	M6 *n* = 716	M7 *n* =716
	Odds Ratio (95% Confidence Interval)						
IPV poly-victimization	1.28*** (1.13, 1.45)	1.27*** (1.12, 1.45)	1.27*** (1.11, 1.44)	1.26** (1.10, 1.44)	1.23** (1.07, 1.41)	1.24** (1.08, 1.43)	1.33 (.82, 2.16)
Age		1.00 (.98, 1.01)	1.00 (.98, 1.01)	1.00 (.98, 1.02)	1.00 (.98, 1.02)	1.00 (.98, 1.01)	1.00 (.98, 1.01)
LGBT-S[a]		2.64* (1.10, 6.33)	2.64* (1.10, 6.35)	2.63* (1.07, 6.41)	2.46 (1.00, 6.02)	2.39 (.97, 5.88)	2.39 (.97, 5.88)
Grew up[b]							
Reservation		.58* (.39, .99)	.57* (.34, .98)	0.55* (.32, .94)	0.55* (.32, .96)	0.57* (.33, .99)	0.57* (.33, .99)
Rural, not reservation		0.75 (.36, 1.55)	.78 (.37, 1.63)	0.80 (.38, 1.71)	0.78 (.37, 1.68)	0.79 (.37, 1.68)	0.78 (.37, 1.68)
Higher Education[c]							
AA/Voc			1.05 (.69, 1.60)	1.04 (.68, 1.60)	1.05 (.68, 1.62)	1.02 (.66, 1.57)	1.01 (.66, 1.57)
Bachelors and higher			1.02 (.50, 2.07)	0.95 (.46, 1.96)	0.97 (.47, 2.00)	1.00 (.47, 2.11)	1.00 (.48, 2.12)
Employment[d]			1.10 (.77, 1.59)	1.05 (.72, 1.53)	1.09 (.75, 1.59)	1.13 (.77, 1.65)	1.13 (.77, 1.66)
In a relationship[e]				1.17 (.65, 2.12)	1.18 (.65, 2.13)	1.21 (.67, 2.20)	1.22 (.67, 2.22)
Live with[f]							
Partner				1.45 (.61, 3.46)	1.37 (.57, 3.27)	1.32 (.55, 3.18)	1.32 (.55, 3.17)
Family or other				0.87 (.44, 1.72)	0.82 (.41, 1.62)	0.82 (.41, 1.64)	0.82 (.41, 1.64)
Supporting dependents[g]				1.10 (.73, 1.67)	1.14 (.75, 1.72)	1.09 (.72, 1.66)	1.09 (.72, 1.66)
PTSD symptomology					1.76* (1.14, 2.73)	1.70* (1.10, 2.64)	1.70* (1.09, 2.64)
Ethnic Identity						1.19 (1.00, 1.42)	1.25 (.85, 1.84)
Ethnic identity*poly-victimization							0.98 (.87, 1.11)

Notes. Logistic regression – odds ratios reported. [a] Reference: heterosexual or other. [b] Reference: urban/suburban. [c] Reference: high school/GED. [d] Reference: unemployed. [e] Reference: single. [f] Reference: living alone. [g] Reference: not currently supporting dependents. [h] Meets or exceeds standard cutoff score for PTSD symptomology.

*p < .05. **p < .01. ***p < .001.

Table 15.

Models of the Effect of Ethnic Identity on the Association Between Age at First Psychological IPV and Any Drug Use

	M1 *n* = 510	M2 *n* = 504	M3 *n* = 503	M4 *n* = 485	M5 *n* =485	M6 *n* = 481	M7 *n* = 481
	Odds Ratio (95% Confidence Interval)						
Age at first psychological IPV	0.96* (.93, 1.00)	0.95* (.91, .99)	0.95* (.91, 1.00)	0.95* (.91, .99)	0.95* (.91, .99)	0.95* (.91, .99)	0.98 (.91, 1.05)
Age		1.01 (.99, 1.03)	1.01 (.99, 1.04)	1.01 (.99, 1.04)	1.01 (.99, 1.04)	1.01 (.99, 1.04)	1.01 (.99, 1.04)
LGBT-S[a]		2.01 (.68, 5.90)	2.05 (.70, 6.02)	1.97 (.65, 5.96)	1.76 (.58, 5.39)	1.74 (.57, 5.33)	1.72 (.56, 5.30)
Grew up[b]							
Reservation		0.65 (.34, 1.25)	0.64 (.33, 1.24)	0.64 (.33, 1.24)	0.65 (.33, 1.27)	0.67 (.34, 1.31)	0.66 (.34, 1.29)
Rural, not reservation		0.97 (.40, 2.34)	0.96 (.39, 2.32)	0.90 (.37, 2.24)	0.89 (.36, 2.22)	0.88 (.35, 2.19)	0.83 (.33, 2.07)
Higher Education[c]							
AA /Voc			1.16 (.69, 1.93)	1.18 (.70, 2.00)	1.21 (.71, 2.06)	1.17 (.68, 2.01)	1.17 (.69, 2.01)
Bachelors and higher			1.02 (.45, 2.30)	0.97 (.42, 2.24)	.98 (.42, 2.26)	1.00 (.42, 2.38)	1.06 (.44, 2.55)
Employment[d]			1.03 (.65, 1.63)	1.00 (.61, 1.60)	1.02 (.63, 1.65)	1.05 (.64, 1.72)	1.03 (.63, 1.68)
In a relationship[e]				1.24 (.59, 2.59)	1.26 (.60, 2.63)	1.26 (.60, 2.63)	1.25 (.60, 2.61)
Live with[f]							
Partner				1.50 (.50, 4.50)	1.33 (.44, 4.00)	1.29 (.43, 3.87)	1.28 (.43, 3.83)
Family or other				0.75 (.32, 1.74)	0.66 (.28, 1.55)	0.68 (.29, 1.61)	0.68 (.29, 1.59)
Supporting dependents[g]				1.14 (.68, 1.94)	1.24 (.73, 2.11)	1.16 (.68, 2.00)	1.16 (.68, 2.00)
PTSD symptomology[h]					1.98* (1.17, 3.37)	1.93* (1.13, 3.29)	1.97* (1.15, 3.37)
Ethnic Identity						1.22 (.97, 1.53)	1.55 (.97, 2.49)
Ethnic identity* psychological IPV age							0.92 (.79, 1.06)

Notes. Logistic regression – odds ratios reported. [a] Reference: heterosexual or other. [b] Reference: urban/suburban. [c] Reference: high school/GED. [d] Reference: unemployed. [e] Reference: single. [f] Reference: living alone. [g] Reference: not currently supporting dependents. [h] Meets or exceeds standard cutoff score for PTSD symptomology.

*p < .05. **p < .01. ***p < .001.

Based on statistically significant findings in bivariate analyses, I also tested for moderation of ethnic identity on relationships between past year poly-victimization, lifetime physical and psychological IPV and any drug use. When I regressed lifetime physical IPV and past year poly-victimization in separate models on any drug use, as soon as the first set of sociodemographic variables were entered (model 2) the predictor variables failed to be predictive of any drug use and never regained statistical significance across remaining models. In models testing the predictive value of psychological IPV, the statistical significance of psychological IPV held until model 4 when familial and relationship demographic variables were entered in the model. Tables of models in which the main predictor did not remain significant once demographic variables were included are not shown.

Models of the Effect of Ethnic Identity on Current Drug Use

Multiple logistic regression analyses using the model-building approach described in the previous section were used to test for the effect of ethnic identity on relationships between IPV experiences and current drug use in three sets of models. Although demonstrating a statistically significant association in bivariate analyses (r = .09, p = .036), past year IPV was not predictive of current drug use as soon as the first set of sociodemographic variables were entered into the model (model 2) and never regained statistical significance in the remaining models.

In models regressing lifetime psychological IPV on current drug use (Table 16), lifetime psychological IPV was statistically significant when no other variables were in the model. However, the odds ratio was negative, suggesting that women who reported lifetime psychological IPV had lower odds of current drug use than women without any experience of psychological IPV, OR = 0.64, 95% CI [0.45, 0.92], p = .017. This does not make sense in light of the prevailing literature as well as other findings about the predictive value of IPV on drug use in this study. Psychological IPV became non-significant when the first set of sociodemographic

variables were entered into the model (model 2) and remained that way until the interaction term was entered (model 7) at which point it regained statistical significance and demonstrated a positive odds ratio, OR = 5.91, 95% CI [1.05, 33.23], p = .044. The interaction term was also significant and suggests moderation, OR = 0.59, 95% CI [0.39, 0.91], p = .018. To examine this finding further, I regressed psychological IPV on current drug use with only ethnic identity and the interaction term in the model to test for moderation without other variables in the model. The interaction term remained statistically significant (OR = 0.63, 95% CI [0.43, 0.92], *p* = .016), but psychological IPV was not a significant predictor of current drug use in this simplified model. Because the interaction term was significant and had an odds ratio less than zero, this indicates that among women who reported psychological IPV, as one's ethnic identity score increased, the likelihood of current drug use decreased. I tried other combinations of sociodemographic variables and the interaction term remained significant in these models, but the statistical significance of lifetime psychological IPV was inconsistent. Furthermore, the confidence interval for the main predictor was large, indicating a large standard error. Given the lack of moderation in other models in these analyses, the lack of predictive power of other types of IPV (physical and sexual) on current drug use, the unusual pattern of the main predictor variable becoming significant in the last model after being a non-significant predictor in earlier models, and the inverse relationship between psychological IPV and current drug use in model 1, I view this finding of moderation with caution. Correlations between lifetime psychological IPV and ethnic identity were reviewed for the possibility that the interaction term was detecting a nonlinear relationship between the predictor and outcome variables. However, the correlation was negligible (*r* = 0.00). This may require further investigation with corroborating data.

Chi-square analyses indicated that past year psychological IPV was significantly associated with current drug use at the bivariate level, χ^2 (1, N = 584) = 5.77, p = .016. Although I examined it for moderation, the findings were unstable likely due in part to the small sample size in later models (n = 112) and I was unable to detect any reliable relationships between variables. Tables of null findings are not shown.

Table 16.

Models of the Effect of Ethnic Identity on the Association Between Lifetime Psychological IPV and Current Drug Use

	M1 *n* = 584	M2 *n* = 584	M3 *n* = 568	M4 *n* = 551	M5 *n* =551	M6 *n* = 548	M7 *n* = 504
	Coefficient (95% Confidence Interval)						
Psychological IPV	0.64* (.45, .92)	0.76 (.52, 1.10)	0.78 (.53, 1.16)	0.85 (.56, 1.27)	0.78 (.52, 1.18)	0.78 (.51, 1.17)	5.91* (1.05, 33.23)
Age		0.97*** (.96, .99)	0.98* (.96, 9.95)	0.98* (.96, 9.95)	0.97* (.96, .99)	0.98* (.96, .99)	0.98* (.96, .99)
LGBT-S[a]		2.30** (1.24, 4.27)	2.33** (1.24, 4.37)	2.06* (1.07, 3.96)	1.89 (.97, 3.66)	1.88 (.97, 3.64)	1.82 (.93, 3.54)
Higher Education[b]							
AA/Voc			0.73 (.48,1.09)	0.73 (.48, 1.11)	0.74 (.48, 1.12)	0.74 (.48, 1.12)	0.73 (.48, 1.11)
Bachelors and higher			1.16 (.61, 2.22)	1.20 (.62, 2.31)	1.21 (.62, 2.35)	1.21 (.62, 2.35)	1.24 (.66, 2.41)
Employment[c]			0.66* (.45, .94)	0.69 (.47, 1.01)	0.72 (.49, 1.06)	0.72 (.49, 1.05)	0.73 (.49, 1.07)
Income[d]							
$10,001 to $25,000			1.25 (.80, 1.95)	1.20 (.76, 1.91)	1.16 (.72, 1.85)	1.17 (.73, 1.87)	1.18 (.74, 1.89)
$25,001 to $50,000			1.13 (.69, 1.86)	1.16 (.69, 1.95)	1.11 (.66, 1.87)	1.10 (.65, 1.85)	1.10 (.65, 1.85)
> $50,001			0.78 (.44, 1.40)	0.73 (.40, 1.36)	0.72 (.39, 1.33)	0.71 (.38, 1.32)	0.69 (.37, 1.29)
In a relationship[e]				0.88 (.48, 1.59)	0.88 (.48, 1.60)	0.87 (.48, 1.58)	0.93 (.51, 1.70)
Live with[f]							
Partner				1.06 (.47, 2.40)	0.99 (.44, 2.26)	0.99 (.44, 2.27)	0.98 (.43, 2.24)
Family or other				1.17 (.60, 2.30)	1.10 (.55, 2.17)	1.10 (.56, 2.17)	1.09 (.55, 2.17)
Supporting dependents[g]				0.77 (.34, 1.77)	0.79 (.35, 1.81)	0.80 (.35, 1.82)	0.77 (.35, 1.79)
Dependents under 18[f]				0.63 (.29, 1.39)	0.64 (.29, 1.40)	0.64 (.29, 1.42)	0.63 (.28, 1.41)
PTSD symptomology[g]					1.63* (1.11, 2.40)	1.60* (1.09, 2.36)	1.59* (1.08, 2.35)
Ethnic Identity						1.02 (.84, 1.24)	1.47* (1.02, 2.12)
Ethnic identity*Psychological IPV							0.59* (.39, .91)

Notes. Logistic regression – odds ratios reported. [a] Reference: heterosexual or other. [b] Reference: urban/suburban. [c] Reference: high school/GED. [d] Reference: unemployed. [e] Reference: single. [f] Reference: living alone. [g] Reference: not currently supporting dependents. [h] Meets or exceeds standard cutoff score for PTSD symptomology.

*p < .05. **p < .01. ***p < .001.

Models of the Effect of Ethnic Identity on Current Drug Use Consequences

Six multiple linear regression analyses tested if ethnic identity moderated relationships between IPV experiences and current drug use consequences that were statistically significant at the bivariate level. The first analysis regressed lifetime IPV on consequences (Table 17). Lifetime IPV significantly predicted more current drug use consequences (β = .47, p = .002) and explained a significant proportion of variance in consequences when controlling for all other variables in the model, R^2 = .12, F(13, 853) = 8.93, p = .000. The predictive value of lifetime IPV lost statistical significance when the interaction terms was entered in the model, β = .44, p = .274.

The second set of models tested the predictive value of lifetime sexual IPV on drug use consequences (Table 18). Sexual IPV was a statistically significant predictor of current drug use consequences (β = .63, p = .009), predicting more consequences and a significant proportion of variance when holding all other variables constant, R^2 = .12, F(13, 481) = 5.12, p = .000. It remained a statistically significant predictor until the interaction term was entered in the final model.

Post-Traumatic Stress Disorder was a statistically significant predictor of current drug use consequences in all models at the .001 level. Similar to previous modelling, ethnic identity and interactions terms were not statistically significant in these sets of models, demonstrating no evidence of moderation. Living with dependents under the age of 18, age, sexual orientation, and PTSD were all statistically significant predictors in the both of the final models. This suggests that women caring for children or teens were on average, less likely to report negative consequences from drug use in the past three months and that younger women, sexual minorities, and those with PTSD symptomology were at more risk of negative consequences from current drug use.

Table 19 shows the third set of models in which past year sexual IPV was regressed on drug use consequences. Past year sexual IPV was a statistically significant predictor of current drug use consequences holding all other variables constant, $\beta = 1.18$, $p = .018$. When the interaction term was entered in the model past year sexual IPV was no longer predictive of current drug use consequences. As in previous models, PTSD was statistically significant and ethnic identity and the interaction term were not statistically significant, demonstrating no evidence of moderation of this relationship. Unlike previous models, age and sexual orientation were not statistically significant predictors in any of the models, but a household income over $50,001 was significant at the .05 significance level in the final three models suggesting that those with lower incomes were more likely to report negative drug use consequences. However, given the small sample size in these models, findings should be interpreted with caution. The issue of sufficient power to accurately detect statistical significance in this set of models suggests that these should not be considered reliable estimates.

Table 17.

Models of the Effect of Ethnic Identity on the Association Between Any IPV and Current Drug Use Consequences

	M1	M2	M3	M4	M5	M6	M7
	n = 900	*n* = 900	*n* = 883	*n* = 879	*n* =879	*n* = 867	*n* = 867
	Coefficient (95% Confidence Interval)						
Any IPV	0.41**	0.53***	0.57***	0.63***	0.44**	0.47**	0.64
	(.12, .69)	(.25, .82)	(.28, .86)	(.33, .92)	(.15, .73)	(.17, .76)	(-.51, 1.79)
Age		-0.03***	-0.02**	-0.02*	-0.02*	-0.02**	-0.02**
		(-.04, -.02)	(-.04, -.01)	(-.03, -.00)	(-.03, -.00)	(-.04, -.01)	(-.04, -.01)
LGBT-S[a]		1.42***	1.40***	1.32***	1.17***	1.13***	1.13***
		(.95, 1.90)	(.91, 1.88)	(.83, 1.80)	(.69, 1.65)	(.65, 1.62)	(.65, 1.62)
Higher Education[b]							
AA or			-.032	-0.28	-0.29	-0.27	-0.27
Vocational			(-.65, .01)	(-.62, .05)	(-.61, .04)	(-.60, .06)	(-.60, .06)
Bachelors			-0.47	-0.48	-0.50	-0.49	-0.49
and higher			(-1.02, .08)	(-1.03, .06)	(-1.04, .03)	(-1.03, .05)	(-1.03, .05)
Employment[c]			-0.14	-0.13	-0.05	-0.05	-0.04
			(-.44, .15)	(-.42, .17)	(-.35, .24)	(-.34, .25)	(-.34, .25)
Income[d]							
$10,001 to			-0.16	-0.19	-0.24	-0.26	-0.26
$25,000			(-.52, .21)	(-.56, .17)	(-.60, .12)	(-.62, .11)	(-.62, .11)
$25,001 to			-0.20	-0.21	-0.25	-0.27	-0.27
$50,000			(-.59, .20)	(-.60, .19)	(-.64, .14)	(-.66, .12)	(-.66, .12)
> $50,001			-0.07	-0.10	-0.10	-0.10	-0.10
			(-.52, .38)	(-.55, .36)	(-.55, .35)	(-.56, .35)	(-.56, .35)
In a relationship[e]				-0.00	0.01	-0.02	-0.02
				(-.29, .28)	(-.28, .29)	(-.30, .27)	(-.30, .27)
Dependents				-0.46**	-0.44**	-0.43**	-0.43**
under 18[f]				(-.75, -.17)	(-.72, -.15)	(-.72, -.14)	(-.72, -.14)
PTSD					0.92***	0.91***	0.91***
symptomology[g]					(.60, 1.25)	(.58, 1.24)	(.58, 1.24)
Ethnic Identity						-0.02	0.00
						(-.17, .12)	(-.22, .22)
Ethnic							-0.05
identity*any IPV							(-.33, .24)

Notes. Ordinary Least Squares. [a] Reference: heterosexual or other. [b] Reference: high school/GED. [c] Reference: unemployed. [d] Reference: < $10,000. [e] Reference: single. [f] Living with at the time of the survey. [g] Meets or exceeds standard cutoff score for PTSD symptomology.
*p < .05. **p < .01. ***p < .001.

Table 18.

Models of the Effect of Ethnic Identity on the Association Between Lifetime Sexual IPV and Current Drug Use Consequences

	M1	M2	M3	M4	M5	M6	M7
	n = 511	*n* = 511	*n* = 502	*n* = 499	*n* =499	*n* = 495	*n* = 495
	Coefficient (95% Confidence Interval)						
Sexual IPV	0.54*	0.70**	0.75**	0.74**	0.63**	0.63**	1.54
	(.08, 1.00)	(.25, 1.16)	(.28, 1.21)	(.27, 1.21)	(.16, 1.09)	(.16, 1.10)	(-.38, 3.46)
Age		-0.04***	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*
		(-.06, -.02)	(-.05, -.01)	(-.05, -.01)	(-.05, -.01)	(-.05, -.01)	(-.05, -.01)
LGBT-S[a]		1.33***	1.27**	1.10**	0.96*	0.96*	0.97**
		(.61, 2.04)	(.55, 1.99)	(.37, 1.84)	(.23, 1.69)	(.23, 1.69)	(.24, 1.71)
Higher Education[b]							
AA or			-0.34	-0.33	-0.31	-0.30	-0.30
Vocational			(-.87, .14)	(-.84, .18)	(-.81, .19)	(-.81, .21)	(-.81, .20)
Bachelors and			-0.60	-0.57	-0.56	-0.56	-0.56
higher			(-1.37, .18)	(-1.35, .21)	(-1.33, .20)	(-1.33, .21)	(-1.33, .21)
Employment[c]			-.0.29	-.0.26	-.0.14	-.0.15	-.0.16
			(-.75, .16)	(-.72, .20)	(-.59, .31)	(-.61, .31)	(-.62, .30)
Income[d]							
$10,001 to			-0.14	-0.21	-0.29	-0.29	-0.28
$25,000			(-.70, .42)	(-.78, .36)	(-.86, .27)	(-.85, .28)	(-.85, .29)
$25,001 to			-0.19	-0.24	-0.31	-0.31	-0.32
$50,000			(-.80, .42)	(-.86, .38)	(-.92, .30)	(-.92, .30)	(-.93, .29)
> $50,001			0.11	0.00	-0.07	-0.07	-0.10
			(-.61, .82)	(-.73, .73)	(-.79, .65)	(-.79, .65)	(-.83, .63)
In a relationship[e]				0.14	0.13	0.13	0.11
				(-.31, .59)	(-.32, .57)	(-.32, .58)	(-.33, .57)
Dependents under 18[f]				-0.53*	-0.51*	-0.50*	-0.51*
				(-.99, .08)	(-.96, .07)	(-.96, .05)	(-.96, .06)
PTSD symptomology[g]					0.91***	0.91***	0.90***
					(.46, 1.37)	(.45, 1.36)	(.44, 1.36)
Ethnic Identity						-0.03	0.05
						(-.26, .19)	(-.24, .33)
Ethnic identity*sexual IPV							-0.23
							(-.71, .25)

Notes. Ordinary Least Squares. [a] Reference: heterosexual or other. [b] Reference: high school/GED. [c] Reference: unemployed. [d] Reference: < $10,000. [e] Reference: single. [f] Living with at the time of the survey. [g] Meets or exceeds standard cutoff score for PTSD symptomology.

*p < .05. **p < .01. ***p < .001.

Table 19.

Models of the Effect of Ethnic Identity on the Association Between Past Year Sexual IPV and Current Drug Use Consequences

	M1 *n* = 153	M2 *n* = 153	M3 *n* = 150	M4 *n* = 150	M5 *n* =150	M6 *n* = 149	M7 *n* = 149
	Coefficient (95% Confidence Interval)						
Sexual IPV	1.23* (.28, 2.19)	1.30** (.33, 2.27)	1.41** (.41, 2.41)	1.41** (.40, 2.42)	1.23* (.26, 2.20)	1.18* (.21, 2.16)	2.18 (-2.04, 6.41)
Age		-0.03 (-.08, .03)	-0.01 (-.07, .05)	-0.01 (-.07, .05)	-0.01 (-.07, .04)	-0.01 (-.07, .04)	-0.01 (-.07, .04)
LGBT-S[a]		0.73 (-.59, 2.05)	0.84 (-.48, 2.16)	0.76 (-.59, 2.12)	0.80 (-.49, 2.09)	0.89 (-.42, 2.20)	0.90 (-.42, 2.21)
Higher Education[b]			-0.37	-0.31	-0.22	-0.18	-0.20
AA or			(-1.45, .72)	(-1.42, .79)	(-1.27, .84)	(-1.24, .88)	(-1.26, .87)
Vocational			-0.62	-0.63	-0.54	-0.54	-0.49
Bachelors and higher			(-2.76, 1.52)	(-2.80, 1.55)	(-2.61, 1.53)	(-2.62, 1.54)	(-2.58, 1.60)
Employment[c]			-.0.54	-.0.53	-.0.27	-.0.27	-.0.29
			(-1.44, .36)	(-1.44, .38)	(-1.14, .60)	(-1.16, .61)	(-1.18, .60)
Income[d]							
$10,001 to $25,000			0.24	0.20	0.14	0.07	0.07
			(-.82, 1.30)	(-.88, 1.28)	(-.89, 1.17)	(-.98, 1.12)	(-.98, 1.13)
$25,001 to $50,000			-0.74	-0.78	-1.08	-1.09	-1.11
			(-2.07, .60)	(-2.14, .58)	(-2.40, .23)	(-2.41, .22)	(-2.43, .21)
> $50,001			-1.39	-1.49	-1.78*	-1.72*	-1.76*
			(-2.84, .05)	(-2.97, .00)	(-3.20, -.35)	(-3.15, -.28)	(-3.21, -.31)
In a relationship[e]				0.08	0.10	0.14	0.12
				(-.84, .99)	(-.76, .97)	(-.74, 1.01)	(-.76, 1.00)
Dependents under 18[f]				-0.30	-0.33	-0.29	-0.30
				(-1.23, .64)	(-1.22, .56)	(-1.20, .62)	(-1.20, .61)
PTSD symptomology[g]					1.65***	1.66***	1.64***
					(.81, 2.49)	(.81, 2.51)	(.78, 2.49)
Ethnic Identity						-0.25	-0.17
						(-.73, .24)	(-.75, .41)
Ethnic identity*sexual IPV							-0.26
							(-1.31, .80)

Notes. Ordinary Least Squares. [a] Reference: heterosexual or other. [b] Reference: high school/GED. [c] Reference: unemployed. [d] Reference: < $10,000. [e] Reference: single. [f] Living with at the time of the survey. [g] Meets or exceeds standard cutoff score for PTSD symptomology.
*p < .05. **p < .01. ***p < .001.

Because of statistical significance at the bivariate level, I ran three additional sets of models. One regressed past year IPV on drug use consequences. Past year IPV was not a

statistically significant predictor as soon as the first set of sociodemographic variables were entered in model 2 and never regained significance in the remaining models. The same was true for the models regressing age at first psychological IPV on consequences. And although statistically significant at the bivariate level, when physical IPV was regressed on consequences it was not a significant predictor of current drug use consequences and remained that way throughout all models.

Summary of Findings

This is a primarily reservation-based sample of Native women around 30 years of age with a high school or GED attending a TCU. Many of the women work, but report low household incomes. Over half of the women were single at the time of the survey and living with one or two youth under 18 years of age. Many of the women (62%) had used at least one drug in their lifetime, but most were not currently using – a little over a quarter (29%) of the sample had used in the past three months. Of the women who reported current drug use, many did not report any negative consequences in the past three months related to drug use and of those that did, the majority reported only one negative consequence. Over half of these women (51%) had never been exposed to IPV, but about half (49%) had experienced violence by an intimate partner in their lifetime. The majority of the sample (85%) reported no IPV in the past year, but 15% reported some kind of violence in an intimate partnership in the past year.

Intimate partner violence, more experiences of different types of IPV (as measured by poly-victimization), and the age at which women first experienced psychological IPV were all significant predictors of lifetime drug use. Lifetime drug use was significantly correlated with IPV and drug use consequences. Lifetime IPV was not associated with current drug use, but past year IPV was, suggesting the possibility that IPV and drug use are related when co-occurring,

but previous IPV may not have a lasting effect on a woman's choice to use drugs in this sample. Relatedly, more lifetime IPV was significantly associated with lifetime use, but not current drug use or consequences. None of the IPV variables were significant predictors of current drug use, but lifetime IPV and lifetime and past year sexual IPV were significant predictors of current drug use consequences. Ethnic identity did not moderate any of the relationships between IPV and drug outcomes in stable regression models.

CHAPTER 5: DISCUSSION, IMPLICATIONS, AND CONCLUSION

Several findings from this study will advance our knowledge on IPV and drug use and consequences, as well as ethnic identity as a potential stress buffer among Native women at TCUs. While women in this sample did not demonstrate elevated risk of IPV when compared to other estimates for Native women, they reported slightly higher prevalence estimates when compared to national samples of non-Native women and appear to be at high risk of drug use. Three additional findings stand out as particularly notable: (1) having experienced any IPV was a significant predictor of reporting drug use at least once in a lifetime, (2) there is a need for research examining teen dating violence in Indian Country, and (3) more work should be done to investigate and develop measures of identity specific to Native worldviews and life experiences in order to test the buffering effect of identity in this and other AIAN samples. I begin this discussion with a brief comparison of prevalence estimates of drug use in this sample with other established findings before presenting prevalence estimates of IPV and a call for research focused on teen dating violence among this population. I then move to other major findings, including IPV as predictor of drug use and an examination of the measure of ethnic identity used in this study. The remainder of the chapter includes limitations of the study, calls for future research, practice implications, and a conclusion.

Comparisons of Drug Use Prevalence

Although comparisons to other national AIAN drug use estimates are difficult given the very limited research that focuses on AIANs use of substances excluding alcohol, estimates of lifetime and current drug use appear higher among Native women at TCUs. Estimated drug use in the past three months was over twice as high (29%) than past year drug use (12%) among

AIANs in the 2013 NSDUH (SAMHSA, 2014). However, as noted in the literature review, prevalence data for AIAN populations may be underestimated in the NSDUH because AIANs are not included in the AIAN category if they reported more than one race. Of larger reservation-based surveys that include drug use estimates, this sample of women also reported greater lifetime drug use (62%) than women in the AI-SUPERPFP sample (41 – 52%). Notably, data collection took place between 1997 and 1999 for the AI-SUPERPFP, making those estimates nearly 20 years old. Given changing trends in drug use over the past 20 years, it may be unreliable to compare these estimates. And finally, rates of non-alcoholic substance use in this study were also higher than those reported by women in a survey of Navajo Nation IHS service areas (Kunitz, 2008). When comparing estimates in this study to those among college students at non-tribal colleges and universities, lifetime rates were generally lower (41 – 51% compared to 62%), but estimates of current use (past three month and year) were comparable (Johnston et al., 2015; Lipari & Jean-Francois, 2016; Mohler-Kuo et al., 2003). Lifetime drug use appears to be greater among this population of Native women, but current use appears somewhat representative of other college students in the United States. However, we cannot make comparisons with certainty given differences in survey methodologies.

Comparisons to Other Estimates of Intimate Partner Violence

Because it is the largest national random sample survey of IPV in Indian Country and because its demographic profile is most similar to women in this study, findings from the AIAN oversample of the 2010 NISVS are the most comparable national estimates of IPV. As noted in the literature review, the NISVS report only estimated physical violence and psychological aggression by an intimate partner. Lifetime prevalence estimates of physical violence were greater in the NISVS sample (56%) than in this study (40%) as were estimates of psychological

aggression (66% versus 29%). Differences in the magnitudes of estimates could be a result of the way that the questions were asked in the two surveys. The NISVS relies on a "broadly worded checklist" (Hamby, 2016a, p. 354) of detailed behaviors that could be considered violent. In contrast, the PVS was designed to measure not only acts that could be considered violence, but "intentionally perpetrated, unwanted acts that meet a minimum threshold of severity" (Hamby, 2016a, p. 354). As Jouriles and Kamata (2016) point out, the wording of the PVS requires greater interpretation of the act than only reporting whether it has occurred. These different approaches to measurement may be the reason for differences in prevalence rates between the studies.

Variability in sample size, sampling strategies, and measures make comparisons with community-based samples unreliable. There are wide variations in community-based estimates of IPV, ranging from 59 – 87% prevalence of lifetime IPV – greater than the estimated 49% among women at risk for IPV in this sample (Bohn, 2003; Duran et al., 2009; Malcoe et al., 2004; Wood & Magen, 2009). These widely ranging estimates of the magnitude of IPV likely are a result of sampling strategies and sample size. For example, the highest reported rate (87%) is from a sample of 30 women at a prenatal clinic in a city (Bohn, 2003). This is a group who may be at particular risk for IPV: in Sapra and colleagues' (2014) review of the literature on IPV among AIAN populations they found that IPV during pregnancy is common among Native women. Because clinic-based samples are likely to show higher reported rates, other population-based samples of AIANs living on reservations may be a better comparison for the results from this study. Rates of lifetime physical IPV in AI-SUPERPFP data and another reservation-based sample are comparable to the lifetime physical IPV estimate reported in this study (Manson et al, 2005; Yuan et al., 2006). However, another reservation-based sample reported lower rates of past year physical IPV (3%) than the 12% estimate in this sample (Harwell, Moore, & Spence,

2003). Yuan et al. (2006) also reported a lifetime estimate of sexual violence by an intimate partner that was about half of the 14% estimated in this study.

Looking at comparisons to the general population from the most recent 2011 NISVS, lifetime and past year psychological aggression was lower among Native women in this sample, but lifetime and past year physical abuse was higher. Lifetime estimates of sexual violence were lower among the sample of Native women while estimates of past year sexual violence by an intimate partner were comparable. I am unable to assess if these differences are statistically significant.

Given the scant literature on IPV among general population surveys of college students, comparisons are difficult. One large national survey reported past year rates of physical violence by an intimate partner much lower than rates reported in this study (2% compared to 12%) and sexual violence and psychological aggression consistent with the findings reported in this analysis (ACHA, 2016). Another report focused only on sexual violence reported a much higher rate of attempted and completed rape by a current or ex-boyfriend (11%) when compared to the sexual IPV reported by women in this sample (Fisher, Cullen, & Turner, 2000). However, similar to the discrepancy in rates with NISVS data, the authors note that the use of behaviorally specific screening questions generally find higher levels of sexual victimization. Unfortunately, results cannot be compared to findings from the only previous study of violence among Native women at a TCU because those findings are not specific to IPV (Chenault, 2004).

Overall, findings in this study suggest that women in this sample reported rates consistent with some reservation-based surveys of physical IPV, but slightly lower than the most recent national survey of Native women for both physical and psychological partner violence. On the other hand, when compared to other college students, Native women at TCUs appear to be at

higher risk of physical IPV. It is difficult to make meaningful comparisons between the findings in this study and other research on Native women because of sampling strategies and the use of different measures. Many of the surveys with the highest prevalence rates are clinic-based samples, which are more likely to indicate higher estimates because they focus on a population seeking help. Moreover, findings demonstrate the need for consistency in IPV measurement. Regardless of comparisons, almost half of the women in this sample reported IPV, supporting previous research that has identified IPV as a public health issue for Native women.

A Call to Examine Teen Dating Violence

Nearly half of the women who reported lifetime IPV in this study had experienced it for the first time in early adulthood. This finding is consistent with general population studies. An unexpected finding was that over a third of the sample (37%) reported experiencing IPV between the ages of 13 and 18. This is higher than most estimates of teen dating violence (TDV) in the general population, which range between 10 and 25% (CDC, 2009; Coker et al., 2015; Howard, Wang, & Yan, 2007). There is practically no research examining TDV among AIAN adolescents. One study of Montana students in grades 7 – 12 included an AI subsample of 1,465 and researchers found that 13% of AI students residing on reservations reported physical dating violence and 11% reported sexual dating violence in the past year. In the same study, 8% of AI students in urban schools reported physical violence and 10% reported sexual violence by someone they were dating or going out with in the past twelve months (Montana Office of Public Instruction, 2015). Again, these findings are higher than those in the general population and support results from this survey that suggest the need for prevention efforts related to TDV in Native communities.

Identification of TDV can be challenging, but is an important component of dating and intimate partner violence prevention and intervention. Researchers have suggested that identification of the problem may be difficult because adolescents may limit their understanding of dating violence to physical violence. Studies have reported that some signs of abuse that are related to possessive or controlling behaviors by a romantic partner may seem normative to adolescents (Murphy & Smith, 2010). American Indian and Alaska Native adolescents may have particular risk and protective profiles with respect to the general population. These include living in rural or reservation communities, the sociohistorical context of tribal communities, unique patterns of risk for abuse or child welfare placement as well as relational worldviews that impact familial and community support systems and romantic partnerships. Future research using this dataset could focus on those women who reported early experiences of IPV to examine if they have higher rates of substance abuse, current IPV, or other distinct health outcomes.

Intimate Partner Violence as a Predictor of Drug Use

Consistent with previous findings in the literature indicating significant relationships between IPV and substance use (Hasin et al., 2007; Mitchell et al, 2003; SAMHSA, 2014), this investigation found that lifetime IPV was a significant predictor of *lifetime* drug use. This was demonstrated in regression models with a dichotomous (yes/no) predictor variable of IPV as well as those in which the predictor variable was an ordinal measure of lifetime poly-victimization. However, neither lifetime nor current IPV remained a significant predictor of *current* drug use in the models. While the research does not tell us if IPV and drug use are causally related, this finding is an indication that Native women at risk of experiencing IPV are on average at more risk of using drugs at some point in their lifetime.

These findings could indicate an "aging out" effect for risky behavior among this sample. The literature does suggest earlier initiation of drug use among AIAN adolescents, and that may account for these findings. It may also suggest other personal or communal resiliency factors not accounted for in the analyses or existing literature. For example, in contrast to an aging out explanation, the weathering hypothesis describes the effect of stress among marginalized populations as cumulative and suggests that health inequities are a result of a weathering process that increases over time because of increased stressors and the adoption of unhealthy behaviors to respond to those stressors, resulting in poor health outcomes early in life (Geronimus, 1992; Palacios & Portillo, 2009). This hypothesis could explain early risk behaviors, but does not adequately explain the lack of a "lasting effect" of IPV on drug use as demonstrated in the lack of a relationship between lifetime IPV and current drug use, suggesting the possibility of resiliency models not yet adequately examined among this population.

This lack of a relationship could also be a result of a number of other factors including the severity or duration of the IPV, personal stress thresholds or resiliency, or sociodemographic variables not accounted for in the models. Researchers have detailed differences in individual responses to stress and the adoption or avoidance of PTSD as a result of individual "thresholds" in response to stressful events. These responses to trauma may be biological or genetic (Roberts, Moore, & Beckham, 2007), a result of the severity or type of trauma (Yehuda, 1999), or a function of social networks and environment. Future research could explore the experiences and attributes of women who had experienced IPV, but are not current drug users and compare them to current users to see if there are any aspects of their experiences that might contribute to a resiliency model specific to this group and other trauma survivors.

Examinations of the predictive value of different types of IPV demonstrated mixed results. For example, the *age* at first psychological IPV remained a significant predictor of lifetime drug use in regression models, but *lifetime* physical and psychological IPV did not. One finding that can be stated with confidence is that different types of IPV did not occur in isolation. Extensive overlap is illustrated in the prevalence rates of psychological, physical and sexual IPV as well as the fact that about half of the women reported poly-victimization scores of 4 or 5, suggesting they had experienced multiple forms of violence in intimate partnerships. Intimate partner violence as a constellation of multiple tactics of control and violence is prevalent in the literature and consistent with the findings in this study. Interestingly, lifetime and past year sexual IPV were significant predictors of negative drug use consequences, suggesting the need to examine the unique effects of sexual violence within intimate partnerships. Limited knowledge about the nature of partner sexual violence has been noted in the literature (Logan et al., 2015).

Findings related to PTSD in the relationships between IPV and drug outcomes are notable. As expected, PTSD maintained positive statistically significant relationships with drug use and consequences in bivariate analyses and all the regression models. However, in contrast to findings in the literature that have demonstrated moderating effect of PTSD on relationships between trauma and subsequent substance use (see McCauley, Killeen, Gros, Brady, & Back, 2012; Roberts, Moore, & Beckham, 2007; Stewart, 1996; Stewart & Israeli, 2002), PTSD did not moderate relationships between IPV and drug use or consequences in this study. More research on PTSD as a sequela on the path to developing an SUD after experiencing trauma remains to be done.

Testing the Buffering Effect of Ethnic Identity

Measurement Issues

My hypothesis that women who had experienced IPV and reported higher ethnic identity would report less drug use and fewer consequences was not supported by the data. This lack of a demonstrated effect was likely due to lack of variability in the ethnic identity measure with this sample (see Figure 4). Responses were skewed toward positive endorsements of exploration and commitment to ethnic identity, with the majority of responses falling in the neutral to agree or strongly agree categories and little variability in the range of responses. This could be due to a number of reasons: (1) in this particular sample the MEIM-R may act as a proxy for group membership more than a measure of individual identity attitudes, (2) this measure may not be sensitive to constructs such as internalized oppression or other potentially unique aspects of AIAN identity, and (3) as a consequence of a relatively homogenous sample – primarily reservation-based (where they were raised and presumably where they were living given the location of TCUs), similar ages, all Native women and all students – which could lead to a lack of variability in responses. Moderation is notoriously difficult to demonstrate, so the lack of a moderating effect of ethnic identity is not surprising. Other reasons for the lack of demonstrated effects could be related to sample size and the relationship between ethnic identity and IPV in at least one set of models. The minimum sample size needed for these analyses was at least 375 respondents, but the models assessing the effect of past year sexual IPV on current drug use consequences had a sample size of 149 in the final model. This may have led to an unstable model and limited my ability to test for moderation.

An additional methodological issue may stem from the fact that respondents were not asked to identify the ethnic identity they were thinking of when responding to the survey items. A large portion of the U.S. AIAN population identify with more than one race (U.S. Census

Bureau, n.d.) and we cannot be certain that respondents were thinking of a Native identity when they answered the questions. Assuming respondents were thinking of a Native identity when responding to the questions, the lack of a demonstrated effect could be due to an absence of AIAN-specific identity characteristics. As described in the literature review, aspects of ethnic identity and cultural connectedness are complex. They involve identity prescribed by membership in a particular group as well as how people self-identify (e.g. Indian, Choctaw, mixed race). And finally, there are stages of identity development to consider – younger women in the sample may have been at different stages of development than older women (see for example, the work of Phinney, 1992).

The Relationship of Ethnic Identity to Drug Use and Intimate Partner Violence

It is important to briefly address the positive correlations between ethnic identity and lifetime IPV among women who had ever had a partner and lifetime drug use among women who had experienced IPV described in bivariate analyses. Post hoc analyses included running simple regression models to test the predictive effect of ethnic identity on these outcome variables. When the predictive value of ethnic identity was tested on lifetime IPV, it remained marginally statistically significant (OR = 1.11, 95% CI [1.002, 1.225], $p = .045$), suggesting that as ethnic identity increased by one unit, the odds of having experienced IPV also increased. It also remained a statistically significant predictor of lifetime drug use among women who had experienced lifetime IPV (OR = 1.21, 95% CI [1.03, 1.43], $p = .023$). I would argue that this is possibly a result of the measure of ethnic identity acting as a proxy for group membership and consequently community risk factors or sociodemographic variables that are actually driving the effect on the likelihood of having engaged in risky behaviors at some point in their lives, presumably at a younger age because ethnic identity was not statistically predictive of current drug use or consequences.

For example, the MEIM-R could be acting as a proxy for having grown up on the reservation and as a result, having had more exposure to drugs at an earlier age. As noted in the literature review, there is a strong body of work demonstrating early initiation of drug use among AIAN adolescents (Whitesell et al., 2012). It could also be acting as a proxy for discrimination and resulting risky behaviors. Complex relationships between discrimination, microaggressions, substance abuse and Native identity have been reported in previous work and can end up demonstrating significant relationships between strong Native identities and negative health outcomes (Galliher et al., 2010; Jones & Galliher, 2015; Petoskey, et al., 1998). Given the lack of a demonstrated effect of ethnic identity in regression models testing for moderation, these correlations are likely spurious findings. More work should be done on the measurement of ethnic identity in AIAN populations.

Measurement Development

Although this study did not demonstrate a buffering effect of identity on relationships between IPV and drug outcomes, in light of the methodological issues just described and drawing on evidence from previous studies, further investigation on the potential buffering effect of identity is still warranted. Unique aspects of AIAN identity, such as those identified in the Urban American Indian Identity model (Walters, 1999) should be considered when assessing potential moderating effects of identity on drug outcomes or other health issues with Native populations. The MEIM-R was designed for use across multiple populations and was intentionally not specific to any particular racial or ethnic group. Furthermore, the measure doesn't capture attitudes about how women feel about being Indian. As noted in the literature review, Phinney (1992) developed the MEIM-R with the assumption that identity is about belonging. A sense of belonging may be conceptualized differently than attitudes about one's group. Results from this investigation indicate that a general measure of identity was not

effective in assessing the buffering effect of identity within reservation-based tribal communities. This suggests the need to identify and integrate AIAN-specific aspects of identity similar to the work that was done to develop the Urban American Indian Identity model, but with reservation-based communities.

Conceptual definitions and measures also need to be able to differentiate between the effects of group membership, identity attitudes, and behaviors associated with attitudes, values and community norms. New measures to identity culturally-specific protective factors need to consist of a combination of both behaviors and identity attitudes. The majority of cultural measures are behavioral (Walters, 1999). However, behavior does not exist alone – decisions are made based on attitudes about the behavior and motivations for the behavior. These interactions underlie the belief that culture is healing – describing a way of life, value for the culture, sense of belonging and an identity, and traditions and behaviors associated with culture. Cognitive attitudes and behaviors need to be examined together to understand more fully the multidimensional aspects and influence of identity among AIAN populations. For example, someone may be deeply embedded in a Native community, but because of internalized oppression not score high on a measure of ethnic identity assessing the value they place on their Native identity. Alternately, a person may report high affiliation with a Native identity, but engage in risky behaviors.

Relational worldviews, cultural connectedness, social networks or community norming should all be considered in our attempts to understand how identity might influence women's responses to IPV and subsequent drug use as well as other protective roles it might play in the lives of Native peoples. Group membership taken alone is an insufficient measure. In fact, it may show misleading findings that suggest a stronger ethnic identity is associated with higher risk of

IPV or drug use when in fact that group membership is acting as a proxy for some other variable such as discrimination, community-level factors such as geographies, access to services, and other systemic or sociodemographic variables not accounted for in these analyses.

Researchers need to identity these different components (behavior and attitude) and how they interact to influence health outcomes, in order to determine if and how they should be integrated in prevention and intervention efforts. Clarifying the processes by which identity is operationalized to affect health behaviors and outcomes would allow researchers and community members to identify underlying components of these constructs that should be included in prevention and intervention efforts. A measure that could assess processes of identity development and its influence on health behaviors could identify culturally-specific protective factors *across* tribal groups that should be included in programs designed to address substance use or violence that could then be adapted for use *within* different tribal communities incorporating tribally-specific values, teachings, and histories.

Limitations of the Study

Results of this study should be interpreted in light of the following limitations. This is a cross-sectional study, therefore the temporal ordering of relationships between IPV and drug use cannot be determined and no causal inferences can be made. There is the possibility that duration or frequency of IPV would contribute to different drug use or abuse, but because the measure used to estimate IPV did not include these aspects of IPV, that cannot be tested with this data. And because the analyses were limited to observing the effect of IPV on drug outcomes without measuring or controlling for other violence or personal traumas, the possibility remains that another type of trauma or some other third variable influenced the results. Because I was unable to examine individual substances and consequences, these results do not examine possible

nuances in patterns of individual drug use or drug types (e.g. stimulants, depressants, etc.). Inherent in research on sensitive subjects like violence and substance use is the possible unwillingness of participants to be truthful about their experiences. Although the lack of missing data in this sample suggests that women were willing to report their experiences. And as in most social science research about individual behavior, self-reported behaviors are sensitive to inaccurate recall.

Future Research

Disentangling the Differential Effects of Individual Drugs

As identified as a limitation of the study, I was unable to assess for relationships between IPV and individual drugs or drug categories. Previous research has demonstrated differences in rates of use and associated consequences across substances. An examination of the differences in frequencies across and within types and consequences should be considered in future research (e.g. Is craving marijuana monthly or less than monthly substantively different? Is craving cocaine and methamphetamine monthly substantively different?). Identification of use patterns has the potential to inform theoretical perspectives about why women might use certain substances following victimization (e.g. to forget, to feel better, or to relieve stress). This includes an inability to investigate relationships between IPV and individual substances with regard to both use and consequences. It is also likely that marijuana use was driving the majority of drug use and consequences reported in this sample. Marijuana is overwhelmingly the most commonly used drug in many of the research findings reviewed for this study with other drugs reported at much lower rates (Duran et al., 2004; Mitchell et al., 2003). Separating marijuana from other drugs may provide differing patterns in use and consequences.

In contrast to previous research findings, of women currently using drugs in this sample, the majority reported using only one type of drug. This can likely be explained by the fact that this study was exclusive to drug use, specifically excluding alcohol, while the majority of research includes both alcohol and drugs in estimates of poly-substance use. Previous research reports high overlap between drugs and alcohol with the most commonly used substance being alcohol. This has been demonstrated in surveys of Native women and among college students (ACHA, 2016; Duran, et al., 2004; Johnston et al., 2015; Mitchell et al., 2003; Silvestri et al., 2015). Future research should include alcohol use for comparisons with other poly-substance use estimates in the literature.

Refining Methodologies for Examining Intimate Partner Violence

As Alhabib, Nur, and Jones (2010) point out in their systematic review of IPV prevalence studies, the measurement of domestic violence is fraught with problems and warrants further empirical testing. Choice of methodology and measures invariably impact prevalence rates, as demonstrated in this dissertation. In their review, in person interviews yielded more disclosures of violence than self-report or telephone interviews (Alhabib et al., 2010). The use of computer surveys have become more common and differences in estimates comparing face-to-face interviews with computer surveys would be a valuable contribution to the science of measuring victimization. Another area to examine would be the interpretation of behaviors that constitute "violence" and potential differences in the constructions of victimization. It is one thing for researchers to define and report on behaviors we consider violent or label women as victims, but there is much more work to be done on understanding if those definitions and labels are shared by the women involved.

Examining Lesbian, Gay, Bisexual, and Two-Spirit Risk of Drug Use

Findings suggest that Native sexual minority women may be at particular risk for drug use and consequences among women in reservation-based communities. Sexual orientation was not only positively, significantly correlated with all three drug outcomes in bivariate tests for association, in regression models with only sociodemographic variables it was a significant predictor of all drug outcomes. Furthermore, it was a significant predictor in one model of lifetime drug use and two models of current drug use consequences when controlling for *all other variables* in the models. There is a notable gap in the literature on sexual orientation in Native health research. In one of the few national epidemiological surveys of Native LGBT-S health, researchers suggested that this population might be at particular risk for drug use (Balsam, Huang, Fieland, Simoni, & Walters, 2004; Evans-Campbell et al., 2012). Although there is an issue of power with only 100 women reported being LGBT-S in this sample, results from this dissertation provide preliminary evidence supporting previous findings. Given the significance of outcomes in this study, more research specific to AIAN sexual minorities and drug use in reservation-based samples is warranted.

Implications for Practice

The findings presented from this work underscore several important implications for social work practice. First, the overwhelming prevalence of drug use and IPV in this sample highlight the need for strategic prevention efforts in reservation-based communities and among TCU students. Health care in many reservation-based communities is provided by primary care clinics. Providers at those clinics should routinely screen for substance abuse and IPV and establish policies and protocols for responding to patient needs related to these issues. When working with women who have experienced IPV, practitioners should include prevention efforts

related to substance use, work closely with treatment programs, and integrate treatment options into primary care and IPV services. Results also suggest the need for trauma-informed substance abuse treatment options that are specific to the unique dynamics of IPV. In trauma-informed systems, knowledge of trauma and its impacts (e.g. substance use) are a regular part of staff training and established community supports are utilized in treatment as well as incorporating families, elders and other natural support systems. Because TCU staff and faculty are often providing support around substance use and/or IPV to students informally and without training, staff and faculty could benefit from integration into trauma-informed systems for women seeking drug treatment or IPV counseling. Faculty and staff should be trained in the identification of trauma and substance abuse as well as how to refer students to available services.

For those communities with treatment facilities available, trauma-informed care and culturally-specific healing and recovery services should be integrated in services. One example of such a program is Chi Hullo Li, a long term, culturally sensitive residential treatment program for Native women. Part of the Choctaw Nation of Oklahoma's Behavioral Health Program, Chi Hullo Li allows children to reside with the mother at the treatment facility and explicitly include cultural and spiritual identity in their programs, offering the integration of cultural and traditional modes of healing and recovery. Another example is Nokomis Endaad-Shki Bimaadzi Mikaana, an intensive outpatient treatment program of the Minnesota Indian Women's Resource Center. In their efforts to address trauma and addiction, this program addresses cultural loss, loss of language, and other grief and shame specific to tribal communities – drawing on culturally-specific teachings and medicines as well as western models of treatment. This is achieved by having an elder-in-residence available to work with clients, integrating tribal teachings specific to women and women's roles, offering ceremonies according to specific tribal traditions, and

focusing on reconnecting to cultural strengths. Practitioners are required to address historical trauma, micro-aggressions, and cultural diversity in all treatment plans.

Early Drug Use Prevention

The findings of this study also suggest that early initiation of drug use may be common among this sample. Although this analysis did not include a measure of the age at which participants first used drugs, 62% of the sample reported lifetime drug use with 29% reporting current drug use. The mean age of participants was 30 years old (*SD* = 11.01) so at least a third of the women had used drugs before they reached that age. Early substance use is well documented among AIAN adolescents and young adults (Kunitz, 2008; National Institute of Drug Abuse, 2014). Consistent with the literature, findings demonstrate the need for effective prevention efforts among this population. In addition to prevention strategies that have been proven effective with non-Native youth, tribal teens and young adults may benefit from messages and efforts specific to unique aspects of tribal or reservation-based life. These include a focus on tribal teachings or stories that address substance use, relationships to medicines (plants, herbs, etc.), colonial violence, contemporary racism or microaggressions, and relational responsibilities to family or tribe. One example of a health resource for Native youth is the We R Native program coordinated by the Northwest Portland Area Indian Health Board. This online resource includes a website with information about health issues, including substance use and violence (weRnative.org), text messaging services, a social media presence, and print materials available to tribes and individuals. In an example of how their media presence is designed to be specific to Native youth, there is an online "Ask Auntie" service where youth ask questions about all aspects of health, school and cultural issues which are then answered by community leaders and professionals. Not only is the program designed to address health issues facing Native youth, it also seeks to inspire activism by tribal youth. To do so, the program offers

monthly contests in which youth are asked to submit entries about ways that they are involved in their communities, including the ways they celebrate Native pride or how they are making a difference in their communities. Community service grants are also administered to youth.

Promote Healthy Relationships among AIAN Youth

Native women in this sample begin experiencing IPV at nearly equivalent rates between adolescence and early adulthood. Women reported IPV as early as age 13. The literature is nearly absent of research exploring the unique features of teen dating violence among AIAN communities, especially among reservation-based communities where the majority of the participants in this sample were raised. Tribal communities should ensure screening for TDV at earlier ages and in appropriate environments (e.g. in primary care or at schools), prevention efforts targeting junior high and high schoolers, prevention messaging that is specific to tribal values and worldviews and takes place in salient locations and cultural events, and intervention development for programs that are designed to address the unique needs of AIAN adolescents. Examples of existing efforts to address TDV in Indian Country include the United American Indian Involvement's annual camps for Native teens that include workshops on TDV and substance abuse, the Teen Dating Curriculum developed by the Native American Women's Health Education Resource Center, and violence prevention materials developed by the Family Violence Prevention Fund for AIAN teens.

Conclusion

The United States has not shown me the terms of my surrender.

Marie Lego, Pit River Nation (Jaimes & Halsey, 1992, p. 311)

Given the dearth of research on drug use in the AIAN population, the descriptive statistics emerging from this study on rates and patterns of use among Native women at TCUs

offer valuable new insight on the topic. Furthermore, this is the second largest national survey to measure IPV among Native women. These findings offer descriptive data and a robust estimate of the prevalence of IPV among this unique population. The examination of relationships between drug use and IPV will inform the growing body of literature on the comorbidity of trauma and substance use, particularly among Native women. This work offers valuable new knowledge on these pressing public health issues for Native women in Indian Country.

Native women at TCUs may be at particularly high risk for drug use in Native communities. In fact, they had higher rates of use when compared to other reservation and tribal-based findings. Interestingly, current drug use was comparable to general population college students suggesting that unique drug use norms or behaviors may be specifically related to college attendance. Future work remains to determine if this is true for Native men or non-Native students at TCUs and if this is particular to TCU students on reservations or to reservation-based tribal communities overall. There were significant relationships between lifetime IPV and drug use in this sample. This may not be a causal relationship, but could be an indication that women on reservations may have different "risk profiles" for behaviors including substance use and violence. On the other hand, rates of IPV are lower than a number of other prevalence estimates. This may point toward the following observations: (1) women at TCUs may be among a particularly "healthy" segment of reservation-based populations and/or (2) these results indicate an "aging out" process of risky behaviors such as IPV and substance use.

In spite of indications of risk, an overwhelming percentage of women in the sample did not experience IPV in the past year and few reported drug use in the past three months. Furthermore, findings suggest that having experienced IPV may not have lasting effects on drug use as seen in the lack of significant relationships between lifetime IPV and current drug use and

consequences. In fact, nearly a quarter (22%) of women who had experienced IPV reported no drug use at any time in their lives. Native women continue to resist, give life, teach, heal, laugh and love in spite of the historical and contemporary traumas. Their strength is evident in this research.

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APPENDIX

Appendix A.

Variables and Measures

Survey Question	Response
DEMOGRAPHIC QUESTIONS	
What is your current age?	Open-ended
Gender Identity	Male Female Transgender
Sexual Orientation	Straight Gay/Lesbian Two-Spirit Bisexual Other I prefer not to answer
What is the highest level of education you have completed?	High School diploma General Equivalency Degree Vocational degree Associate's degree Bachelor's degree Graduate or professional degree None of the above
What is your family's combined annual household income?	Less than $2,000 per year Between $2,001 and $5000 per year Between $5,001 and $10,000 per year Between $10,001 and $15,000 per year Between $15,001 and $25,000 per year Between $25,001 and $50,000 per year Between $50,001 and $75,000 per year Between $75,001 and $100,000 per year More than $100,000 per year
Are you currently working for pay?	No Yes, working full time Yes, working part time
What is your relationship status (check all that apply)?	Single Living as married/in a serious relationship

	Married Divorced/separated
Where did you grow up, mostly?	On a reservation In an urban area In a rural but non-reservation area In a suburban area
Who are you living with this semester/quarter while you are attending {CAMPUS}? (Select all that apply)	I live alone Spouse/partner/boyfriend/girlfriend With my child or children With my parent(s) Other relatives With roommates Other (please specify)
Excluding yourself and your spouse or partner, do you currently support any dependents? (A dependent is a person for whom you pay at least half their expenses, such as food, shelter, clothing, health care, and schooling. This may include your children, parents, or others. Note that a dependent does not have to live with you.)	No Yes
Excluding yourself and your spouse or partner, how many dependents do you currently support in each age category? (Enter '0' where appropriate.)	Less than age 18 _____ Age 18 or older _____
How many of these dependents are currently living with you?	Less than age 18 _____ Age 18 or older _____
THE REVISED MULTI-GROUP ETHNIC IDENTITY MEASURE (MEIM-R)	
I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.	Strongly disagree (1) Disagree (2) Neutral (3) Agree (4) Strongly Agree (5)
I have a strong sense of belonging to my own ethnic group.	
I understand pretty well what my ethnic group membership means to me	
I have often done things that will help me understand my ethnic background better.	
I have often talked to other people in order to learn more about my ethnic group.	
I feel a strong attachment towards my own ethnic group.	
PARTNER VICTIMIZATION SCALE	
Have you ever had a boyfriend, girlfriend, husband, wife or partner?	No Yes
Not including horseplay or joking around, my partner threatened to hurt me and I thought I might really get hurt.	No Yes
Not including horseplay or joking around, my partner pushed, grabbed, or shook me.	
Not including horseplay or joking around, my partner hit me.	
Not including horseplay or joking around, my partner beat me up.	

My partner made me do sexual things when I didn't want to.	
STEM: How old were you when this first happened to you?	
Your partner threatened to hurt you and you thought you might really get hurt.	Fill in the blank
Your partner pushed, grabbed, or shook you.	
Your partner hit you.	
Your partner beat you up.	
Your partner made you do sexual things when you didn't want to.	
STEM: How many times did this happen to you in the past year? If this happened but not in the past year, select 7.	
Your partner threatened to hurt you and you thought you might really get hurt.	Once in the past year Twice in the past year 3-5 times in the past year 6-10 times in the past year 11-20 times in the past year More than 20 times in the past year Not in the past year, but it did happen before
Your partner pushed, grabbed, or shook you.	
Your partner hit you.	
Your partner beat you up.	
Your partner made you do sexual things when you didn't want to.	
OTHER DRUGS: ALCOHOL, SMOKING, & SUBSTANCE INVOLVEMENT SCREENING TEST (ASSIST)	
STEM: In your lifetime, which of the following substances have you ever used? For prescription medications, please report on nonmedical use only.	
Cannabis (marijuana, pot, grass, hash, etc.)	No Yes
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: In the past three months, how often have you used the substances you selected?	
Cannabis (marijuana, pot, grass, hash, etc.)	Never Less than monthly Monthly Weekly Daily or almost daily
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	

Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: In the past three months, how often have you had a strong desire or urge to use…	
Cannabis (marijuana, pot, grass, hash, etc.)	Never Less than monthly Monthly Weekly Daily or almost daily
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: During the past three months, how often has your use of the drugs listed below led to health, social, legal or financial problem?	
Cannabis (marijuana, pot, grass, hash, etc.)	Never Less than monthly Monthly Weekly Daily or almost daily
Cannabis (marijuana, pot, grass, hash, etc.)	
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: During the past three months, how often have you failed to do what was normally expected of you because of your use of…	
Cannabis (marijuana, pot, grass, hash, etc.)	Never Less than monthly Monthly Weekly Daily or almost daily
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	

Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: Has a friend, relative or anyone else EVER expressed concern about your use of…	
Cannabis (marijuana, pot, grass, hash, etc.)	No, never Yes, but not in the last 3 months Yes, in the past 3 months
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
STEM: Have you ever tried and failed to control, cut down or stop using…	
Cannabis (marijuana, pot, grass, hash, etc.)	No, never Yes, but not in the last 3 months Yes, in the past 3 months
Cocaine (coke, crack, etc.)	
Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	
Methamphetamine (speed, crystal meth, ice, etc.)	
Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	
Sedatives or Sleeping Pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, Etc.)	
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	
Street Opioids (heroin, opium, etc.)	
Prescription Opioids (fentanyl, oxycodone, [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.	
Have you ever used any drug by injection?	No Yes
PTSD CHECKLIST – CIVILIAN VERSION (PCL-C)	
Repeated, disturbing *memories, thoughts, or images* of a stressful experience from the past?	Not at all A Little Bit Moderately Quite a Bit Extremely
Repeated, disturbing *dreams* of a stressful experience from the past?	
Suddenly *acting* or *feeling* as if a stressful experience *were happening* again (as if you were reliving it)?	
Feeling *very upset* when *something reminded* you of a stressful experience from the past?	
Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?	
Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?	

Avoid *activities* or *situations* because they *remind you* of a stressful experience from the past?	
Trouble *remembering important parts* of a stressful experience from the past?	
Loss of *interest in things that you used to enjoy?*	
Feeling *distant* or *cut* off from other people?	
Feeling *emotionally numb* or being unable to have loving feelings for those close to you?	
Feeling as if your *future* will somehow be *cut short*?	
Trouble *falling* or *staying asleep*?	
Feeling *irritable* or having *angry outbursts*?	
Having *difficulty concentrating*?	
Being *"super alert"* or watchful on guard?	
Feeling *jumpy* or easily startled?	