

AN ABSTRACT OF THE DISSERTATION OF

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Abstract approved:

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Professional organizations in the fields of counseling and psychotherapy-related professions all require counselors and counseling students to work with a vast array of potential clients who may differ significantly from themselves. For example, these counselor and client differences can include one or several factors such as age, race, ethnicity, ability status, socioeconomic status, sexual orientation and/or gender identity. As part of building up counselor competency to work with diverse individuals, ethical standards require counselors and counseling students to seek out relevant literature as it relates to appropriate assessment, intervention and advocacy for their clients.

Likewise, the Substance Abuse and Mental Health Services Administration (SAMHSA) requires counselors and counselor supervisors within the substance use counseling specialty to attend to issues of diversity both within the counselor to client relationship but also the supervisor to supervisee relationship. Additionally, substance use counseling supervisors are required to provide or coordinate appropriate and relevant supervisee training as needed related

to issues of diversity to empower counselors to better advocate for both individual client needs as well as organizational change when appropriate.

As part of a commitment to explore issues related to multicultural counseling and contribute to relevant literature, the research presented in this dissertation sought to study a population that often goes unnoticed and slips through the cracks of researcher consciousness. Few research studies that explore issues related to substance use or substance use as it relates to sexuality focus exclusively on female-identified populations. As such, women who have sex with women (WSW) often go unnoticed within study populations and become an invisible minority.

Evidence exists to suggest women who report same-sex partners may be at elevated risk for experiencing negative health effects from alcohol and tobacco use. Using substances such as alcohol and tobacco at higher rates and frequencies can result in significant negative medical, social and interpersonal outcomes. Important common factors appear numerous times in the literature base on problematic substance use within lesbian and bisexual populations. For example, women who report same-sex partners more commonly report being current or former smokers, are less likely to abstain from alcohol and report more frequent instances of being drunk and an overall higher rate of alcohol consumption.

The current study first utilized multiple regression analyses to examine the predictability of known demographic and behavioral risk factors for increased substance use among a sample of WSW who participated in the New York City Community Health Survey (NYCCHS). Age, annual household income, race and past or current history of depression were included in the regression analyses to determine the predictability of these variables on participants self-reported levels of alcohol and tobacco use. Results showed that within the sample of WSW, age and a

past or current history of depression were significant predictors of alcohol use. Race was the only significant predictor of tobacco use.

Next, drawing upon the same sample of WSW in the NYCCHS, three two-tailed t-tests for independent means were performed to determine if a difference exists on levels of alcohol and tobacco use between WSW and who have experienced interpersonal violence, as quantified by the reported experience of either intimate partner violence or unwanted sexual contact, and WSW who have not experienced interpersonal violence. For WSW who reported alcohol use within the last 30 days, results showed that there exists a significant difference between the number of alcoholic drinks consumed between WSW who also reported interpersonal violence and WSW who did not report interpersonal violence. For WSW who reported any lifetime use of alcohol, results also showed a significant difference between the number of alcoholic drinks consumed between WSW who also reported interpersonal violence and WSW who did not report interpersonal violence. There was no significant difference in tobacco use between the two groups of WSW.

The primary implication that emerged from this study was that women who report same-sex partners might be at increased risk of experiencing negative life outcomes stemming from elevated alcohol use and, in some instances, tobacco use. This population of WSW often goes unnoticed both in the realm of research in psychology and related fields and also within the context of treatment-setting environments. Sexual behavior and sexual orientation are often conflated. As such, women who have same-sex partners but do not identify openly or otherwise as lesbian, bisexual or other sexual minority, can frequently fall victim to heteronormative expectations and assumptions in community counseling environments but also within the intimacy of the therapy room. Particularly in treatment setting specific to substance use

disorders and co-occurring disorders, these results reinforce the importance of counselors not only inquiring about sexual orientation but also remaining mindful and sensitive to gendered language when exploring past and current client relationships.

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Substance Use Among Women Who Have Sex With Women

by

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I understand that my dissertation will become a part of the permanent collection of Oregon State University Libraries. My signature below authorizes release of my dissertation to any reader upon request.

Cort M. Dorn-Medeiros, Author

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CONTRIBUTION OF AUTHORS

Dr. Cass Dykeman assisted with the methodology and research design, in addition to editing and refinement of this manuscript. Dr. Timothy Bergquist assisted with data pulling and data analysis.

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Chapter 1

General Introduction

Women who report having same-sex partners are a vastly understudied population in research on problematic substance use. While there is a variety of psychology-related literature that is lumped under the category of lesbian, gay, and bisexual (LGB) research, gay males grossly outnumber female-identified individuals as sampling populations (Lee & Crawford, 2007). An even bigger challenge is presented when searching for literature that includes female participants based on sexual behavior and not sexual orientation. While some public-health-related research looks at various health and health-risk factors within populations of women who report having sex with other women (WSW) (Kennedy, Scarlett, Duerr, & Chu, 1995; Fujie, Sternberg, & Markowitz, 2010), similar research within the social sciences remains sparse. Sexual behavior and sexual practices are rarely asked about in studies outside of the public health field and the studies instead rely on sexual identity as demographic data or as criteria for participation. There is a great need for more research examining various risk factors for problematic substance use among WSW.

Problematic substance use is a significant public health risk in the United States and across the globe (McGinnis & Foege, 1999; Murray et al., 1998). Using substances such as alcohol, tobacco, and prescription narcotics at higher rates and with greater frequency can result in significant negative medical, social, and interpersonal outcomes (Gronbaek, 2009; Eliasson, 2003; Newcomb & Bentler, 1988). While there has been research looking at substance use and abuse within various populations of men who report having sex with men (MSM) (Halkitis, Mukherjee, & Palamar, 2009; Jerome & Halkitis, 2009) similar research looking at WSW does not seem to exist.

Both manuscripts utilized a retrospective cross-sectional observational design following the STROBE protocol (Jepsen, Johnsen, Gillman, & Sørensen, 2004; Vandenbroucke et al., 2007) with publically accessible data from the New York City Community Health Survey (NYCCHS). Chapter two presents a research study examining the predictive power of annual household income, age, race, and self-reported history of depression on alcohol, tobacco, and recreational drug use among WSW. Chapter three presents a research study looking at the relationship between the experience of interpersonal violence as quantified by intimate partner violence (IPV) or unwanted sexual contact (USC) on amount and frequency of alcohol, tobacco, and recreational drug use among WSW. Chapter four presents general conclusions that emerged across the two manuscripts and brings the manuscripts together.

Importance to the Profession of Counseling

This dissertation is intended to contribute to the current literature and knowledge base within the counseling profession. Specifically, this work seeks to address topics related to multicultural counseling and counseling related to alcohol, drug, and tobacco usage. The Multicultural Counseling Competencies guidelines (Sue, Arredondo, & McDavis, 1992) included within the American Counseling Association (ACA) Code of Ethics (2014) require counselors and counseling students to work with a vast array of potential clients who may differ significantly from themselves. For example, these counselor and client differences can include one or several factors such as age, race, ethnicity, ability status, socioeconomic status, sexual orientation, and gender identity. As part of building up counselor competency to work with diverse individuals, counselors and counseling students are required to seek out relevant literature as it relates to appropriate assessment, intervention, and advocacy for their clients (American Counseling Association, 2014).

Likewise, the Substance Abuse and Mental Health Services Administration (SAMHSA) requires counselors and counselor supervisors within the substance-use counseling specialty to attend to issues of diversity, within the counselor-to-client relationship but also within the supervisor-to-supervisee relationship. Additionally, substance-use-counseling supervisors are required to provide or coordinate appropriate and relevant supervisee training as needed related to issues of diversity to empower counselors to better advocate for both individual client needs and organizational change when appropriate (Substance Abuse and Mental Health Services Administration, 2012).

As part of a commitment to explore issues related to multicultural counseling and contribute to relevant literature, the research presented in this dissertation seeks to study a population that often goes unnoticed and slips through the cracks of researcher consciousness. Few research studies that explore issues related to substance use or substance use as it relates to sexuality focus exclusively on female-identified populations. As such, WSW often go unnoticed within study populations and become an invisible minority.

There are many reasons why this dissertation utilized sexual behavior and not sexual orientation as inclusion criteria for participation. One, as previously mentioned, WSW are often an “invisible minority,” as sexual behavior is rarely asked about in studies whose research questions do not directly address sexual behavior. Rather, studies that seek to include demographics about sexuality tend to ask about participants’ self-identified sexual orientation (e.g., gay, lesbian, bisexual). These studies tend to present an underlying assumption that sexual orientation equates to sexual behavior. This is problematic, as there is research to indicate that self-reported sexual orientation can have a significant discrepancy with sexual behavior (Pathela et al., 2006). Second, a brief search of literature that has utilized sexual behavior and

not sexual orientation as a point of study, often within the public-health domain, has more often than not exclusively looked at populations of men who have sex with men (MSM). Third, past research that has looked at substance-use issues within populations who report having same-sex partners has also mostly utilized male populations (Lee & Crawford, 2007).

In summary, this dissertation will provide important knowledge and information relevant to the counseling profession. This dissertation is intended to remain consistent with the ACA Multicultural Competencies (2014) by providing a unique contribution to the professional counseling literature on a historically understudied and underserved population.

Current State of Scientific Knowledge

The use of alcohol, tobacco, and recreational drugs at elevated levels is a serious public-health risk in the United States (McGinnis & Foege, 1999; Murray et al., 1998). There exists a solid and extensive research base on the general topics of substance use, substance abuse, and interpersonal violence. However, studies that focus on sexuality, sexual behavior, or sexual orientation as they relate to all of these aforementioned topics are not nearly as extensive. Additionally, a good majority of the relevant literature on alcohol, tobacco, and drug use among individuals who reported having same-sex partners frequently used exclusively male populations (Lee & Crawford, 2007). Likewise, a majority of research conducted on males who report same-sex partners has also been conducted in relation to public-health research around the health implications of drug use (Halkitis, Mukherjee, & Palamar, 2009; Jerome & Halkitis, 2009). Little research exists similarly focusing on substance use among WSW or women who report same-sex partners.

In reference to substance use within WSW and the topics of predictor variables and IPV presented in this dissertation, six points in the professional literature need to be addressed. These

points are: (a) a rationale for the use of sexual behavior, and not sexual identity, as an inclusion criteria for study participants, (b) the gap in current literature in examining substance use among this particular population, (c) a summary of the demographic predictor variables examined in reference to the study population, (d) a summary of the behavioral predictor variables examined in reference to the study population, (e) a summary of known predictor variables of interpersonal violence and problematic substance use, and (f) a summary of known outcomes of the experience of interpersonal violence and problematic substance use.

The rationale behind utilizing participant-reported sexual behavior for inclusion criteria, and not self-reported sexual identity, such as lesbian or bisexual, is twofold. One, it can logically be assumed that there is a substantial overlap among women who identify as lesbian or bisexual with women who report having had sex with other women. Second, important literature points to a substantial discrepancy between an individual's sexual behavior and self-reported sexual identity (Pathela et al., 2006). In other words, many individuals who report having sexual encounters with the same sex do not identify as gay, lesbian, or bisexual.

It is important to note that these studies on sexual behavior and identity discrepancies only discuss male populations. There is currently no known literature available on the prevalence of this discrepancy among female populations. Thus, the intention of utilizing sexual behavior for this study in lieu of sexual identity was twofold. One, on a practical level, utilizing sexual behavior would encompass a larger amount of potential participants than only using sexual identity. Two, although it was assumed there would be a significant portion of overlap between WSW and women who identified as lesbian or bisexual, it was a point of interest to see the demographic breakdown of sexual identity in the resulting sample populations.

There is a lack of literature specifically examining problematic substance use within populations of WSW. Of the literature that does exist, the majority of studies utilize sexual orientation as inclusion criteria that, as previously mentioned, may not accurately reflect or include a number of WSW. However, a brief review of the literature base on lesbian and bisexually identified women and substance use and abuse can at least provide a base from which to begin. There is some evidence to suggest women who report same-sex partners may be at elevated risk for experiencing negative health effects from alcohol, tobacco, and recreational drug use (Bradford et al., 1994; Cochran, 2001; Cochran et al., 2000; Diamant et al., 2001; Hughes & Eliason, 2002). While this evidence exists, it should be noted that it is not always consistent and therefore cannot claim to be fully conclusive (Cochran et al., 2003; Roberts & Sorenson, 1999).

Some important common factors appear numerous times in the literature base on problematic substance use within lesbian and bisexual populations. For example, women who report same-sex partners more commonly report using tobacco (Cochran et al., 2001; Gruskin et al., 2007), are less likely to abstain from alcohol and report a higher frequency of instances of drinking until intoxicated and an overall higher rate of alcohol consumption (Cochran et al., 2000; Diamant et al., 2000; Hughes & Eliason, 2002). Based on this information, we can logically assume that WSW are likely to be at increased risk for problematic substance use.

Although there is not a significant amount of literature on risk factors for problematic substance use among WSW or lesbian or bisexual women, we can look to past studies to pull out common risk factors for problematic substance use within both the general population and female populations. For example, specific demographic predictor variables, including annual household income, age, and race, are known to be associated with increased risk of problematic

substance use among women. Research suggests there is a strong association between socioeconomic disadvantage and problematic alcohol, drug, and tobacco use (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012).

Poverty, substandard housing, and lower levels of educational grade completion all substantially increase the risk of problematic drinking, heavier tobacco use, and illicit drug use (Booth, Bildner, & Bozzo, 2001; National Center on Addiction and Substance Use, 2000). According to a 2013 study by the Williams Institute at UCLA, lesbian and bisexual women are more likely to live off lower incomes and experience poverty than heterosexual women. Lesbian couples are also more likely to have significantly lower household incomes and experience poverty than heterosexual couples and gay male couples. Women with same-sex partners and who report a lower annual income thus appear to be at particular risk for increased alcohol, tobacco, and substance use.

Among different age groups, adolescents beginning around age 15 and younger people between the ages of 18 and 25 years old are at elevated risk of experiencing problematic substance use (Choquet et al., 2004; Merline et al., 2004). With the exception of tobacco use, the prevalence of overall substance use tends to decrease in the late 20s and 30s. However, significant numbers of adults continue to use higher levels of alcohol and illegal substances (Melchior et al., 2008; Schulenberg et al., 2005). In the United States, risk of substance use appears to be highest among youth and young adults who come from a lower socioeconomic bracket and lower-income households (Merline et al., 2004; Windle et al., 2005; Windle & Wiesner, 2004). Additionally, youth and young adults who identify as gay, lesbian, or transgender present with overall increased substance use when compared to heterosexually identified peers (Bontempo & D'Augelli, 2002; McLaughlin et al., 2012).

Finally, there is also a difference in frequency and intensity of use of various substances among different racial identities. While White-identified persons tend to have the highest overall prevalence rates of substance use, specific substances seem to be used more frequently relative to the specific racial identity. According to results from the 2013 National Survey on Drug Use and Health (NSDUH), those who identified as White were more likely than any other race/ethnicity to report current use of alcohol (57.7%). Although White-identified individuals reported the most frequent use of alcohol as opposed to other racial groups, Native Hawaiian or Other Pacific Islander had the highest rate of binge drinking (24.7%). The prevalence of current tobacco use was highest for American Indians or Alaskan Natives (40.1%), and individuals who identified with two or more races have the highest rate of illicit drug use (17.4%).

It needs to be pointed out that a higher rate or prevalence of substance use, such as with White individuals and alcohol use, does not suggest a higher rate of negative consequences for substance use. Non-White individuals are more likely to live off lower incomes, experience housing instability, and experience the day-to-day impact of minority stress from societal and institutional racism (Clark, Anderson, Clark, & Williams, 1999). As such, the consequences of substance use can be more severe for non-White individuals, even though overall prevalence rates may be lower. Few studies exist looking at the intersectionality of predictor variables, such as age, race, and income level, and sexual identity or sexual behavior practices.

Specific behavioral-predictor variables have also been shown to increase the risk of problematic substance use. Individuals with a past or current history of problems associated with mental health have a greater likelihood to use elevated amounts of alcohol, tobacco, and recreational drugs. Depression is the most frequently occurring mental health disorder associated with most co-occurring substance use disorders (Grant, 1995; Grant & Hartford, 1995; Regier et

al., 1990). Prevalence of depression among WSW remains unknown, as sexual practices are often not asked about in studies looking at episodes of depression. However, WSW are estimated to experience episodes of Major Depressive Disorder (MDD) roughly 2.7 times more than other women (Gilman et al., 2001).

Studies looking at mental health in same-sex-experienced populations have had serious limitations. Firstly, the majority of these studies in the public-health field have looked at male populations and MSM. Secondly, outcomes in related fields such as psychology have commonly been based on anecdotal evidence and/or suffered from selection bias. In the past, studies looking at the intersection of substance use and any health-related condition, be it mental or physical health, have often had to obtain participants from commercial or other clinical venues, for example surveying patrons of bars, clubs, or sexually transmitted infection (STI) clinics. More research is needed on depression and other behavioral, relational, and interpersonal factors and their subsequent consequences, including possible impact on problematic substance use, among WSW. One such factor is the experience of interpersonal violence including IPV and sexual assault or USC.

Definitive statistics on the prevalence of interpersonal violence, including IPV and USC, among WSW do not currently exist. There is also a significant gap in literature exploring known predictor variables and risk factors for increased substance use within the context of WSW who have also experienced interpersonal violence. As mentioned previously, we can make a logical assumption based on peripheral literature that WSW are likely at increased risk of problematic substance use. There is also some evidence pointing to specific personal and interpersonal factors, such as fusion between self and partner, lower self-esteem, and independence, that may contribute to physical aggression and physical violence within female same-sex relationships

(Miller, Greene, Causby, White, & Lockhart, 2001). The National Violence Against Women Survey (2011) found that 35.4% of women reporting living with a same-sex partner also reported physical abuse within their lifetime. In contrast, 20.4% of women reporting exclusively opposite-sex cohabitation partners reported the experience of physical abuse. A dearth of literature specifically examining the experience of interpersonal violence within female sexual minority populations, including lesbian and bisexually identified women and WSW, prevents the drawing of further conclusions.

The experience of IPV or USC is known to have numerous negative outcomes that can impact present and future relationships, parenting abilities, and overall physical, social, emotional, and psychological health. Women who have experienced IPV can have greater frequency of depressive episodes, report lower self-esteem, and have a higher rate of overall psychological distress compared to women who have not experienced IPV (Cascardi & O'Leary, 1992; Khan, Welch, & Zillmer, 1993; Sato & Heiby, 1992; Testa, Miller, & Downs, 1993). Likewise, victims of USC or sexual violence can endure a significant blow to their psychological, social, and emotional health. Outcomes of USC, sexual assault, or other sexual violence can include an increase in depressive episodes, the experience of symptoms related to post-traumatic stress disorder (PTSD), self-harming behaviors, and an increase in substance use including alcohol, illicit or prescription narcotics, and tobacco (Rape, Abuse & Incest National Network, 2014). There remains an ongoing need to further examine the overall impact of interpersonal violence across all populations, and specifically within populations of female sexual minorities and WSW.

Description of Research Manuscripts

The first manuscript in this dissertation explores the predictability of annual household income, age, race, and past or current history of depression on alcohol, tobacco, and recreational drug use. This study seeks to explore the likely connection between these multiple variables and frequency and quantity of substance use to address the current gap in literature. This study will also provide a unique contribution to the literature on a historically understudied and underserved population of women. The target journal for this study was *Substance Use & Misuse*, formerly known as *The International Journal of the Addictions*. This journal was selected as it seeks to publish research addressing gender-specific issues as well as issues related to multiculturalism and diversity. *Substance Use & Misuse* has published numerous articles on the topic of substance use within the lesbian, gay, bisexual, and transgender (LGBT) communities and more specifically has published research on substance-use patterns within female sexual minority populations (Cochran, Peavy, & Robohm, 2007; Hughes, 2003; Parks & Hughes, 2007).

Two research questions guided the first study. The first research question was: Among WSW, do annual household income, age, history of depression, and race predict quantity and frequency of alcohol use? The second research question was: Among WSW, do annual household income, age, history of depression, and race predict quantity and frequency of tobacco use?

The second manuscript in this dissertation examines the relationship between the experience of interpersonal violence, as quantified by respondent self-reported experience of either IPV or USC and alcohol and tobacco use among WSW. This study seeks to fill a gap in the current literature that could have a significant impact on recommendations and suggestions for IPV and substance-use screenings, assessment, and treatment. This study will also provide a

unique contribution to the literature on a historically understudied and undeserved population of sexual minority women. The target journal for this study was *The Journal of LGBT Issues in Counseling*, the official journal of the Association of Lesbian, Gay, Bisexual and Transgender Issues in Counseling (ALGBTIC). This journal was selected because it publishes articles that specifically focus on the health and well-being of sexual minority populations. This journal has also previously published research on the social and cultural context of same-sex IPV (Murray, Mobley, Buford, & Seaman-DeJohn, 2007).

Three research questions guided the second study. The first research question was: Among WSW who report alcohol use within the last 30 days, does level of alcohol use differ between those who report experiencing interpersonal violence and those who do not report such experiences? The third research question was: Among WSW who report any lifetime use of alcohol, does level of alcohol use different between those who report experiencing interpersonal violence and those who do not report such experiences? The third research question was: Does level of tobacco use differ between WSW who report experiencing interpersonal violence and WSW who do not report such experiences?

Thematic Link Between Studies

There are multiple thematic links between the two studies presented in this dissertation. These links can be clustered together in four different points. The first link is: Both articles seek to contribute to the limited research base on a frequently “invisible minority” of WSW. The second link is: Both articles seek to increase awareness of issues and concerns of female sexual-minority populations and clients as they relate to substance use and substance abuse. The third link is: Both articles are consistent with multicultural counseling competencies and social justice advocacy goals within the counseling, counselor education, and supervision profession. And the

fourth link is: Both studies seek to bring public-health-related data and information to the counseling, counselor education, and supervision audience in an accessible way.

Glossary of Specialized Terms

Binge drinking – A pattern of drinking five or more alcoholic drinks on the same occasion on at least 1 day in the past 30 days (Substance Abuse and Mental Health Services Administration, 2014).

BRFSS – An initialism referring to the Behavioral Risk Factor Surveillance Survey. The BRFSS is a system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventative services.

DOHMH – An initialism referring to the New York City Department of Health and Mental Hygiene. The mission of DOHMH is “to protect and promote the health of all New Yorkers” (New York City Department of Health and Mental Hygiene Annual Report, 2014).

Interpersonal Violence – The World Health Organization defines interpersonal violence as referring to, “...violence between individuals that is subdivided into family and intimate partner violence and community violence. The former category includes child maltreatment; intimate partner violence; and elder abuse, while the latter is broken down into acquaintance and stranger violence and includes youth violence; physical and sexual assault by strangers, violence related to property crimes; and violence in the workplace and other institutions” (World Health Organization Violence Prevention Alliance, 2015).

IPV – An initialism referring to intimate partner violence. IPV can describe physical violence, sexual violence and stalking, and/or psychological aggression by a current or former intimate partner. IPV can also include coercive acts. An “intimate partner” is a person with

whom one has a close personal relationship that can be characterized by one of the following: emotional connectedness, regular contact, ongoing physical contact and sexual behavior, identity as a couple, and/or familiarity and knowledge about each other's lives (Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention, 2014).

LGBT – An initialism for lesbian, gay, bisexual, and transgender.

NHNES – An initialism referring to the National Health and Nutrition Examination Survey. The NHNES is a program of studies designed to assess the health and nutritional status of adults and children in the United States. This study is designed to combine interviews with physical examination.

NSDUH – An initialism referring to the National Survey on Drug Use and Health. The NSDUH provides national and state-level data on the use of tobacco, alcohol, and illicit drugs (including nonmedical use of prescription drugs) and mental health in the United States.

NYCCHS – An initialism referring to the New York City Community Health Survey, a telephone survey conducted annually by the New York City Department of Health and Mental Hygiene, Division of Epidemiology, Bureau of Epidemiological Services. NYCCHS provides robust data on the health of New Yorkers, including neighborhood, borough, and citywide estimates on a broad range of chronic diseases and behavioral risk factors.

Problematic Substance Use – A term covering a wide range of substances, including alcohol, tobacco, and licit and illicit drugs. This term indicates an individual's substance use that is causing or worsening physical, emotional, psychological, and/or interpersonal problems in his or her life.

Recreational Drug Use – A drug (e.g., cocaine, marijuana, methamphetamine, non-prescribed or prescribed narcotics) used without medical justification, or when applicable at frequencies or quantities greater than prescribed, for its psychoactive effects, often in the belief that occasional use of such substance is non-habit forming. While definitions vary widely in the literature, the intent of recreational drug use is often to have fun and for enjoyment purposes, typically in a social context (European Monitoring Centre for Drugs and Drug Addictions, 2002).

Sexual Minority – Refers to members of sexual orientations such as lesbian, gay, or bisexual, or those who engage in sexual practices that are not viewed as part of the mainstream, such as men who have sex with other men and women who have sex with other women (Gender Equality Resource Center at University of California Berkeley, 2013).

USC – An initialism referring to unwanted sexual contact. Per the NYCCHS, USC is based on an individual's report of feeling forced into any type of unwanted vaginal, oral, or anal sex.

WSW – An abbreviation referring to women who have sex with women, introduced initially within the context of public-health study of HIV transmission “to reflect the idea that behaviors, not identities, place individuals at risk” (Young & Meyer, 2005).

Organization

Both manuscripts that follow utilized a retrospective cross-sectional observational design following the STROBE Protocol (Jepsen, Johnsen, Gillman, & Sørensen, 2004; Vandembroucke et al., 2007). Data were collected from female-identified respondents of the New York City Community Health Survey (NYCCHS) from the years 2008 to 2013. The NYCCHS is an annual telephone survey conducted by the New York City Department of Health and Mental Hygiene (DOHMH) Division of Epidemiology, Bureau of Epidemiology Services. All data are self-

reported and datasets publically accessible and available for download through the DOHMH website.

The purpose of this dissertation is to demonstrate scholarly work using the manuscript document dissertation format as outlined by the Oregon State University Graduate School of Teacher and Counselor Education. In adherence to this format, chapter one presents background information and a rationale that connect the two journal manuscripts in chapters two and three and support their movement toward the research conclusions relevant to the fields of multicultural counseling and counseling related to substance use disorders. Specifically, the relationship will be explored between annual household income, age, race, and history of depression, as well as the experience of interpersonal violence, and alcohol, tobacco and recreational drug use among WSW.

Chapter two presents a review of recent literature that includes four different points. These points are: (a) a rationale for the use of sexual behavior and not sexual identity as an inclusion criteria for study participants, (b) the gap in current literature in examining substance use along this particular population, (c) a summary of the demographic predictor variables examined in reference to the study population, and (d) a summary of the behavioral predictor variables examined in reference to the study population. After reviewing the background of relevant literature, chapter two presents a research study that utilizes a multiple regression analysis on participant data from the NYCCHS to examine the predictability of annual household income, age, race, and past or current history of depression on alcohol, tobacco, and recreational drug use among WSW.

Chapter three presents an overview of four different points in the relevant literature. These points are: (a) a rationale for the use of sexual behavior and not sexual identity as an

inclusion criteria for study participants, (b) an brief overview of current literature on IPV and USC within female sexual minority populations, (c) a summary of known predictor variables of interpersonal violence, including IPV and USC, and problematic substance use, and (d) a summary of known outcomes of the experience of interpersonal violence, including IPV and USC, and problematic substance use. Following the initial literature review, chapter three presents a research study that utilized a t-test for independent means to examine if there was a significant difference on alcohol and tobacco use among WSW who reported experiencing interpersonal violence and WSW who did not report experiencing interpersonal violence.

Chapter four presents general conclusions that emerged from the two manuscripts and brings together the two manuscripts.

CHAPTER 2

PREDICTIVE VARIABLES OF SUBSTANCE USE AMONG WOMEN WHO HAVE SEX
WITH WOMEN

Predictive Variables of Substance Use Among Women Who Have Sex with Women

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Abstract

Background: Evidence suggests that women who report same-sex partners may be at particular risk for experiencing negative health effects from alcohol and tobacco use. There is evidence to suggest that variables such as annual household income, age, race, and history of depression can impact alcohol and tobacco use among individuals. There is little research in this area specific to female populations. Objectives: This study examines the predictive power of annual household income, age, race, and history of depression on frequency and quantity of alcohol and tobacco use among women who report having had same-sex partners within the past year. Methods: This study utilized a retrospective cross-sectional observational design following the STROBE protocol. All data were obtained from results of the 2008–2013 New York City Community Health Survey. A total of 547 women were included for participation. Multiple regression analyses were performed on the criterion variables to determine the predictability of age, annual household income, race, and history of depression on alcohol and tobacco use. Results: Age and history of depression were statistically significant predictors of alcohol use in WSW, and race was a statistically significant predictor of tobacco use with non-Hispanic White respondents, who were more likely to report tobacco use than those of all other racial identities. Conclusions/Importance: Results of this study provide greatly needed insight into possible risk factors for alcohol and tobacco use among a significantly understudied population. It is recommended that future research continue to examine the intersection of the significant predictors of age, history of depression, and race; sexual identity or sexual behavior; and substance use.

Keywords: substance use, tobacco, alcohol, women, sexuality, lesbian

Predictive Variables of Substance Use Among Women

Who Have Sex with Women

Elevated use of alcohol and tobacco is a major public health risk in the United States (McGinnis & Foege, 1999; Murray et al., 1998). Using substances at increased rates of frequency and quantity negatively impacts relationships with family and friends and the ability to have normal roles in life, and it can significantly impair the ability to meet one's basic needs. In the plethora of studies that have examined multiple aspects of problematic substance use, including risk factors, treatment outcomes, and prevention strategies, few studies focus exclusively on female populations. Males are routinely used as the normative population with little recognition of females having their own set of unique characteristics and behaviors. There exists a dire need to refocus our research lens to examine problematic substance use more closely among female populations.

Many past studies on substance use among individuals who report having same-sex partners also frequently use male populations as study samples (Lee & Crawford, 2007). In addition, a majority of research conducted on males who report same-sex partners is conducted in relation to public-health research around the health implications of drug use (Halkitis, Mukherjee, & Palamar, 2009; Jerome & Halkitis, 2009). Little research exists similarly focusing on substance use among women who report same-sex partners. One practical challenge that comes with studying females who report same-sex partners is that rarely are sexual practices asked about in research on substance use that does not exclusively focus on individuals who identify as gay, lesbian, or bisexual. As such, the population of women who have sex with women (WSW) is often an invisible minority. While we know, for example, that certain risk factors for problematic substance use exist, such as income level, age, and co-occurring mental

health issues, we do not know much about the relationship between these factors in substance use within populations of WSW.

In reference to substance use within populations of WSW, four points in the professional literature need to be addressed. These points are: (a) a rationale for the use of sexual behavior, and not sexual identity, as an inclusion criteria for study participants, (b) the gap in current literature in examining substance use along this particular population, (c) a summary of the demographic predictor variables examined in reference to the study population, and (d) a summary of the behavioral predictor variables examined in reference to the study population.

The rationale behind utilizing inclusion criterion for this study based upon participant-reported sexual behavior, and not self-reported sexual identity such as lesbian or bisexually identified women, is twofold. One, it is a logical assumption that there is likely a significant overlap among women who self-identify as lesbian or bisexual who also report having had sex with other women. Second, there is current literature that points to a significant discrepancy between sexual behavior and self-reported sexual identity (Pathela et al., 2006). In other words, many individuals who report having same-sex sexual encounters do not identify as gay, lesbian, or bisexual. It is important to note that these studies on sexual behavior and identity discrepancies tend to predominantly discuss male populations. There is little literature available on the prevalence of this discrepancy among female populations.

There also exists a dearth in literature on predictor variables and risk factors for problematic substance use specifically within populations of WSW. Some evidence suggests women who report same-sex partners may be at elevated risk for experiencing negative health effects from alcohol, tobacco, and other substance use (Bradford et al., 1994; Cochran, 2001; Cochran et al., 2000; Diamant et al., 2001; Hughes & Elliason, 2002). While existing evidence

is not always consistent (Cochran et al., 2003; Roberts & Sorenson, 1999), women who report same-sex partners more commonly report being current or former smokers (Cochran et al., 2001; Gruskin et al., 2007), are less likely to report abstaining from alcohol, and report more frequent instances of being drunk and an overall higher rate of alcohol consumption (Cochran et al., 2000; Diamant et al., 2000; Hughes & Eliason, 2002). We know from current literature that WSW are likely to be at increased risk for problematic substance use. However, there is a significant gap in literature exploring known predictor variables and risk factors for increased substance use within the context of this understudied population.

Specific demographic predictor variables are known to be associated with increased risk of problematic substance use among women. Research suggests there is a strong association between socioeconomic disadvantage and problematic alcohol, drug, and tobacco use (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012). Poverty, substandard housing, and lower levels of educational grade completion all substantially increase the risk of problematic drinking, heavier tobacco use, and illicit drug use (Booth, Bildner, & Bozzo, 2001; National Center on Addiction and Substance Use, 2000). Substance use disorders are known to affect lower-income women, with approximately one fifth of women with children receiving Temporary Assistance for Needy Families (TANF) reporting illicit substance use within the past year. Additionally, the same women were twice as likely to report recent illicit substance use as women who did not meet income requirements for TANF (Pollack, Danzinger, Jayakody, & Seefeldt, 2002). According to a 2013 study by The Williams Law Institute, UCLA's law school, lesbian and bisexual women are more likely to live off lower incomes and experience poverty than heterosexual women. Lesbian couples are also more likely to have significantly lower household incomes and experience poverty than heterosexual couples and gay male couples. Women with

same-sex partners and who report a lower annual income thus appear to be at particular risk for increased alcohol, tobacco, and substance use. Another known predictor variable that may impact alcohol and tobacco use within WSW is age group.

Among different age groups, adolescents and younger people are at elevated risk of experiencing problematic substance use (Choquet et al., 2004; Merline et al., 2004). With the exception of tobacco use, the prevalence of overall substance use tends to decrease in the 20s and 30s. However, significant numbers of adults continue to use higher levels of alcohol and illegal substances (Melchior et al., 2008; Schulenberg et al., 2005). In the United States, risk of substance use appears to be particularly high among youth and young adults who come from a lower socioeconomic bracket and lower-income households (Merline et al., 2004; Windle et al., 2005; Windle & Wiesner, 2004). Additionally, youth who identify as gay, lesbian, or transgender evidence increased use when compared to heterosexually identified peers (Bontempo & D'Augelli, 2002; McLaughlin et al., 2012). The reasons behind increased substance use among youth who report same-sex attraction and partners are typically linked to minority stress around societal heterosexism and increased rates of harassment and victimization from parents and caregivers (Hendricks & Testa, 2012; Meyer, 2003; Fedewa & Ahn, 2011). Few studies exist examining the relationship of socioeconomic disadvantage, age, and substance use within populations of WSW.

According to results from the 2013 National Survey on Drug Use and Health (NSDUH), those who identified as White were more likely than those of any other race/ethnicity to report current use of alcohol (57.7%). Those who identified with two races had the second highest prevalence rate (47.4%), followed by Black or African American (43.6%), Hispanic or Latino (43.0%), Native Hawaiian or Other Pacific Islander (38.4%), American Indian or Alaska Native

(37.3%), and Asian (34.5%). Native Hawaiian or Other Pacific Islander had the highest rate of binge use (24.7%), followed by Hispanic or Latino (24.1%), White (24.0%), American Indian or Alaska Native (23.5%), Black or African American (20.1%), two or more races (19.6%), and Asian (12.4%). Native Hawaiian or Other Pacific Islander indicated the highest rate of heavy alcohol use (8.9%), followed by those who identified with two or more races (7.5%), White (7.3%), American Indian or Alaska Native (5.8%), Hispanic or Latino (4.8%), Black or African American (4.5%), and Asian (2.0%).

In 2013, the prevalence of current tobacco use was highest for American Indians or Alaska Native (40.1%), followed by individuals identifying with two races (31.2%), White (27.7%), Black or African American (27.1%), Native Hawaiian or Other Pacific Islander (25.8%), Hispanic or Latino (18.8%), and Asian (10.1%). Additionally, individuals who identified with two or more races reported the highest rate of illicit drug use (17.4%), followed by Native Hawaiians or Other Pacific Islander (14.0%), American Indians or Alaska Native (12.3%), Black or African American (10.5%), White (9.5%), Hispanic or Latino (8.8%), and Asian (3.1%).

In large-scale studies on substance use rates among different racial and ethnic groups, such as those listed above, Whites tend to report higher overall prevalence rates. It should not be assumed, however, that consequences of such substance use are experienced equally across races. It is important to note that these prevalence rates are also reported across gender identities and are not further broken down by sexual identity or sexual behavior practices. While current literature does indicate differences in prevalence rates between racial groups, specific risk for negative consequences is difficult to tease out due to the intersection of other risk factors discussed here, such as income level and age. For example, while individuals identifying as

White may indicate the highest prevalence of current alcohol use, non-White individuals are more likely to live off lower incomes, experience housing instability, and experience the day-to-day impact of minority stress from societal and institutional racism. These additional factors may then impact the intensity of substance use and personal, professional, and legal consequences of use for non-White individuals. Few studies exist looking at the intersectionality of different predictor variables, including age, race, income level, and sexual identity or sexual behavior practices.

Specific behavioral predictor variables have also been shown to increase the risk of problematic substance use. More specifically, issues with mental and behavioral health have been associated with a greater likelihood of elevated alcohol, tobacco, and other substance use. Depression is the most frequently occurring mental health disorder associated with most co-occurring substance use disorders (Grant, 1995; Grant & Hartford, 1995; Regier et al., 1990). As sexual orientation and sexual practices are often not asked about in studies looking at episodes of depression, exact prevalence numbers of depression among women who have sex with women are not yet known. Women who have sex with women have been *estimated* to experience episodes of Major Depressive Disorder (MDD) roughly 2.7 times more than other women (Gilman et al., 2001). Studies looking at mental health in same-sex-experienced populations have had major limitations including outcomes based strictly on anecdotal evidence and selection bias, as samples have often been drawn from commercial or other clinical venues such as bars, clubs, or sexually transmitted infection (STI) clinics. Additionally, past sample populations have been overwhelmingly focused on men who have sex with men. More research is needed on depression and its subsequent consequences, including possible impact on problematic substance use, among women who have sex with women.

Utilizing data from the 2008–2013 New York City Community Health Survey, this study closely examines the connection between annual household income, age, race, and previous diagnosis of depression and frequency and quantity of alcohol and tobacco use among women who reported same-sex partners. This study seeks to further explore the likely connection between these multiple variables and frequency and quantity of substance use and address the current gap in literature. This study will also provide a unique contribution to the literature on a historically understudied and undeserved population of women.

This study was designed to determine the predictive power of respondent self-reported annual household income, age, history of depression, and race on levels of alcohol and tobacco use among female-identified respondents who also reported having same-sex partners within the past year. Two research questions guide this study. The first research question is: Among women who have sex with women, do annual household income, age, history of depression, and race predict quantity and frequency of alcohol use? The second research question is: Among women who have sex with women, do annual household income, age, history of depression, and race predict quantity and frequency of tobacco use?

Method

Design

This study utilized a retrospective cross-sectional observational design following the STROBE protocol (Jepsen, Johnsen, Gillman, & Sørensen, 2004; Vandembroucke et al., 2007; Mann, 2003). Data were collected from female-identified respondents of the New York City Community Health Survey (NYCCHS) between the years 2008 and 2013. The NYCCHS is an annual telephone survey conducted by the New York City Department of Health and Mental Hygiene (DOHMH) Division of Epidemiology, Bureau of Epidemiology Services. The

NYCCHS provides robust data on the health of New York City residents. It includes neighborhood, borough, and citywide estimates on a range of chronic diseases and behavioral risk factors. As the NYCCHS is a telephone-based survey, only NYC residents with landline or cell phones are included in the survey. Interviews are conducted in English, Spanish, Russian, and Chinese (Mandarin and Cantonese). All data are self-reported.

Prior to data collection, a power analysis was conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). The test family was: *F* tests. The statistical test was: linear multiple regression: fixed model, R^2 deviation from zero. The type of power analysis was: a priori: compute required sample size, given α , power, and effect size. The effect size was drawn from data reported by Harned, Najavits, and Weiss (2006). The Cohen's *d* reported in Harned ($d = .80$) was converted into the Cohen's f^2 needed for a multiple regression power calculation in G*Power 3.1. The following input parameters were employed: (a) $f^2 = 0.16$, (b) power ($1 - \beta$ error probability) = 0.95, (c) $\alpha = .05$, and (d) number of predictors = 4. The G*Power 3.1 output included a sample size of 121 and an actual power of 0.95.

Participants

Analyses were limited to female-identified respondents who completed the sexual partner history question. Data were obtained from the NYCCHS years 2008–2013 to include a sufficient sample of women who reported having sex with women (WSW). The sample of 547 respondents ranged in age from 18 to 83. The respondent sample was racially and ethnically diverse, with 341 of the total sample identifying as non-White, 136 identifying as Black or African American, 167 as Hispanic or Latino 19 as Asian American or Pacific Islander, 206 as Non-Hispanic White and 19 as Other. In terms of sexual orientation, 283 identified as lesbian, 83 as bisexual and 168 as heterosexual, and 10 did not answer and 3 refused.

The range in years for data inclusion was selected to provide a more robust sample of WSW for sufficient statistical power. As the NYCCHS includes an approximated annual random sample of 8,500 New York City residents ages 18 and over from all five boroughs of the city (Manhattan, Bronx, Brooklyn, Queens, and Staten Island) the data utilized for this study can be considered a cross-sectional representation of NYC residents.

Measures

The NYCCHS is a cross-sectional telephone health surveillance survey of approximately 8,500 adult New Yorkers and has been conducted annually since 2002 by the city's Department of Health and Mental Hygiene. It uses a dual-frame RDD methodology (including landline and cell phone numbers) to contact households in New York City and randomly selects one adult to complete the CHS interview in each contacted household. The NYCCHS uses a disproportionate stratified sample design to produce robust estimates at the city, borough, and neighborhood levels.

The NYCCHS content is redesigned each year, while maintaining some core health and demographic questions. Questions are requested from agency programs each year, and programs are encouraged to submit questions that have been validated in previous large national or state surveys. The use of measures from other large surveys also allows for comparison to New York City. A variety of questions that have been included on the NYCCHS have come from other large surveys, including the Behavioral Risk Factor Surveillance Survey, the National Health and Nutrition Examination Survey, the National Health Interview Survey, and the National Survey on Drug Use and Health. Each year, the Bureau of Epidemiology Services also works with programs to develop new questions (when previously validated questions are not available). New questions are pretested using cognitive interviewing techniques with community members.

Cognitive interviewing techniques are used to evaluate how respondents understand and answer survey questions. Survey questions are then modified based on results of the cognitive testing. Once questionnaire content has been finalized, the questionnaire is constructed with special attention to module order, question order within modules, and the overall flow of the survey. Before data collection begins, a small field test is also conducted with respondents reached via telephone (RDD) to test for questionnaire timing, a final check on flow, and to catch any unforeseen questionnaire problems.

As part of the survey, demographic information was collected from all surveyed participants. Participants were asked a series of questions about self-identified gender, annual household income, age, race, sexual partners, and history of depression. Participants were also asked about rates and frequency of substance use within the past year, including alcohol and tobacco use. All participants were asked about sexual behavior. Participants were specifically asked about their sexual partners over the prior 12 months and within their lifetime. Included participants answered “at least one” to the survey question, “During the past 12 months, with how many women have you had sex?” or answered affirmatively to the survey question, “Have you ever had sex with a woman?” All survey questions utilized for this study can be found in full text online (New York City Department of Health and Hygiene, 2008–2013).

Procedures

De-identified data were obtained from the NYCCHS for inclusion in this study. All data obtained from the NYCCHS are made accessible to the public via website. Original data were collected via telephone survey from a random sample of approximately 8,500 NYC residents living in all five NYC boroughs. Data collected from the NYCCHS are used to better understand health and risk behaviors of NYC residents and to track certain indicators over time. The target

population of the NYCCHS is non-institutionalized adults ages 18 and over who live in a household with a landline telephone (until 2008) or have only use of a cell phone (2009–current). The NYCCHS includes, on average, 125 questions covering general health status, mental health, health care access, sexual behavior, alcohol consumption, tobacco usage, HIV, and a plethora of other topics.

The NYCCHS uses a stratified random sample to produce both neighborhood and citywide estimates. Strata are defined using the United Healthcare Fund's (UHF's) neighborhood designation. Slight modifications have been made to adjust for new New York City zip codes since the UHF's designations. A computer-assisted telephone interviewing (CATI) system is used to collect all survey data. A commercial vendor provides the NYCCHS sampling frame. Upon a household agreeing to participate, one adult in the household is randomly selected to complete the survey. Data collection typically starts in March of the study year and ends in November.

Data Analysis

Multiple regression analyses were performed on each criterion variable to determine the predictive power of annual household income, age, history of depression, and race (predictor variables) on alcohol use and tobacco use (criterion variables) within the sample of WSW. All statistical analyses were performed using Microsoft Excel 2010 (Microsoft Corporation, 2010).

Stepwise backward regression analyses were used to analyze the study data for each of the two research questions. This process was selected to determine the amount of variance in means of the criterion variables of alcohol use and tobacco use while accounting for any possible influence of the predictor variables of age, annual household income, race or history of depression. This procedure was also selected to eliminate the previously selected predictor

variables from the model as they were shown to have a non-significant effect on the respective criterion variable (Chung & Mezei, 1999; Rinne, De Kloet, Wouters, Goekopp, DeRijk & van der Brink, 2002). This process begins with all predictor variables in the model and then removes them one at a time if not significant.

A correlational matrix was first run to identify which of the four predictor variables had the highest correlation with the criterion variables of alcohol use and tobacco use. All variables were then entered into the regression model. The *t* statistic was first calculated for each variable in the model for its approximate coefficient and then squared to obtain the R^2 value. Variables were then removed from the regression model based on the statistical significance of the correlation coefficient at $p < .05$. The regression was then run a second time only including the significant variables. As suspected only the variables with the highest correlation, age and history of depression on alcohol use and race on tobacco use, were significant.

Results

A total of 547 WSW were obtained as an initial sample population between all years 2008-2013. Following data cleaning procedures, a total of 509 WSW were included in the first research question looking at alcohol use and a total of 114 WSW were included in the second research question looking at tobacco use. As expected, there was a significant amount of overlap between sexual identity and sexual behavior, with 366, approximately 67%, of the total sample of WSW also identifying as lesbian or bisexual.

The initial data review included an observation of means, standard deviations and correlations among all predictor and criterion variables. Pearson product-moment correlation was utilized to determine the interdependence between each of the four predictor variables and the two criterion variables of alcohol use and tobacco use. In terms of the first research question,

the initial run of the full model regression utilizing all four predictor variables resulted in $R^2 = 0.056$ or roughly 5.6% of the total variance in alcohol use could be accounted for by age, annual household income, race and history of depression. In the full model, race was found to provide the least explanatory power ($p = 0.6250$) followed by annual household income ($p = 0.6018$). Bivariate correlations indicated higher levels of alcohol use were negatively associated with the predictor variables of age ($r = -0.215, p < .05$) and history of depression ($r = -0.104, p < .05$). The additional predictor variables of race ($r = 0.019, p > .05$) and annual household income ($r = -0.021, p > .05$) were not found to be significantly associated with alcohol use. The second model run with only the significant variables of age and history of depression resulted in $R^2 = 0.0548$ or approximately 5.5% of the variance accounted for by the two significant variables.

In terms of the second research question, the initial run of the full model regression utilizing all four predictor variables resulted in $R^2 = 0.069$ or roughly 6.9% of the total variance in tobacco use could be accounted for by age, annual household income, race and history of depression. The initial bivariate correlations showed only a significant negative association between the predictor variable of race ($r = -0.216, p < .05$) and tobacco use. Additional predictor variables of age ($r = 0.072, p > .05$), annual household income ($r = 0.003, p > .05$) and history of depression ($r = -0.113, p > .05$) were not found to have a significant association with the criterion variable of tobacco use. The second model run with only the significant variable of race resulted in $R^2 = 0.0468$ or approximately 4.7% of the variance in tobacco use accounted for by the significant variable of race.

Multiple regression analysis was then performed for each of the two research questions to determine the amount of unique variance in alcohol use and tobacco use, respectively, when

accounting for the variables of age, annual household income, race and history of depression within the sample of WSW.

In terms of the first research question, there was a predictive relationship between the variables of age and history of depression. Both of these variables were negatively associated with the criterion variable of self-reported alcohol use meaning as age increased, alcohol use decreased and as score of the survey question of history of depression increased (1 = yes, 2 = no), alcohol use decreased. Indicating that respondents who reported they had been told they have depression overall reported higher levels of alcohol use than those who had not been told they had depression. There was no predictive relationship between race and annual household income and alcohol use within the sample population.

In terms of the second research question, there was a predictive relationship between the variable of race and level of tobacco use. These results indicate respondents who identified as White reported higher levels of tobacco use than those that identified as non-White. There was no predictive relationship found between age, annual household income and history of depression with tobacco use.

Discussion

The results of this study align closely with and slightly divert from the current body of research on substance use within the general population and within sexual minority populations. In terms of the first research question, results indicated that age and history of depression were the only criterion variables that proved statistically significant as predictors of alcohol use in WSW. Specifically, as age increased, alcohol use decreased. A respondent's indicating a medical provider had told her that she was depressed was also predictive of alcohol use. The significance of these two variables supports a substantial amount of literature indicating

adolescents and younger adults tend to report greater frequency and quantity of alcohol use than older individuals (Amadio, 2006; Choquet et al., 2004; Hughes & Eliasson, 2002). Several reasons could explain this trend in relation to age and substance use, particularly alcohol use. Over the years, evidence has shown adolescents and young adults overwhelmingly use alcohol more than other substances of potential abuse (National Institute on Alcohol Abuse and Alcoholism, 2013). This could be due to social issues related to peer relations or simply the exploratory and curiosity-driven developmental stages of adolescents and young adulthood.

College-age drinking has also been widely regarded as its own topic of research and interest, with possible motivations for elevated alcohol use stemming primarily from social pressures and the concept of “prepartying” (LaBrie, Ehret, Hummer, & Prenovost, 2012; LaBrie, Hummer, Pedersen, Lac, & Chithambo, 2012; Lindgren, Foster, Westgate, & Neighbors, 2013). It is not uncommon for college-age students to report elevated use of alcohol during college years, including episodes of binge drinking, prior to decreasing overall levels post graduation (Sher, Bartholow, & Nanda, 2001; Slater, 2001). Gay, lesbian, and bisexual adolescents and young adults have also demonstrated elevated use of alcohol compared to their heterosexual peers (Amadio, 2006; Baiocco, D’Alessio, & Lahgi, 2010; Hughes & Eliasson, 2002). The results of the current study implicate strong support for the current body of research on age, alcohol use, and sexuality.

In a similar fashion, research has long supported the connection between substance use and mental health issues. Depression, in particular, has been strongly associated with increased use of alcohol and other substances (Burns, Teeson, & O’Neill, 2005; Curry et al., 2012; Foulds, Adamson, Boden, Williman, & Mulder, 2015). Although this relationship may be said to be somewhat cyclical in nature, the idea that individuals who consume alcohol in an attempt to

mitigate symptoms of depression in a variety of populations is certainly not new (Abraham & Favra, 1999; Jakupcak, Tull, McDermott, Kaysen, Hunt, & Simpson, 2010).

While men consistently report drinking more excessively than women, depression tends to be more prevalent in women than men (Center for Disease Control and Prevention, 2014; Anxiety & Depression Association of America, 2014). Due to the lack of research on the current study population, the prevalence rate of depression and other mental health issues in WSW is currently unknown. However, given that depression is the mental health issue most frequently diagnosed in co-occurrence with an alcohol use disorder, it is likely that prevalence rates are significant among WSW who report elevated use of alcohol (Grant & Hartford, 1995; Regier et al., 1990). Female sexual minority populations have also been found to have culturally specific factors related to stigma and minority stress that may also impact the relationship between depression and alcohol use (Hughes, 2011; Molina, Marquez, Logan, Leeson, Balsam, & Kaysen, 2015).

In examining the first research question, the lack of statistical significance of the variables of annual household income and race are somewhat divergent from current literature. There exists a small amount of research indicating a potential connection between annual income and varying levels of alcohol or other substance use (Karriker-Jaffe, Roberts, & Bond, 2013). Many of these studies, however, focus more exclusively on the experience of poverty, and sample populations are often drawn from social service agencies or other governmental programs for financial assistance (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012). Further, these studies have rarely included the additional layer of sexual identity or sexual behavior, although more recently there has been some evidence indicating lesbian or bisexually identified women have a greater chance of living in poverty (The Williams Institute at UCLA, 2013).

Likewise, while women who identify as White (14%) or Native American (22%) have the highest prevalence rates relative to other racial and ethnic groups of alcohol use and heavy drinking, evidence is varied on what mitigating factors contribute to heavier rates of drinking (Chartier & Caetano, 2010). More research is greatly needed on both income level and racial identity as they relate to alcohol use within WSW and female sexual minorities.

In terms of the second research question, results indicated race was the only significant predictor of tobacco use with respondents identifying as White being more likely to use tobacco than those identifying as non-White. Current literature on sexual minority populations shows women who report same-sex partners and other non-heterosexually identified women to be more likely to report tobacco use or to identify as being smokers (Cochran et al., 2001; Gruskin et al., 2007; Gruskin, Byrne, Altschuler, & Dibble, 2009). Additionally, non-Hispanic White or Caucasian men and women do indicate higher rates of tobacco use than many other racial identities, including Black or African American, Hispanic, and Asian (Cornelius, Lynch, Martin, Cornelius, & Clark, 2001; Substance Abuse and Mental Health Services Administration, 2013). It is important to note that no WSW in the current sample identified as American Indian or Alaska Native or identified with two races. American Indians, Alaska Natives, and individuals identifying with multiple races have been shown to yield the highest prevalence rate for tobacco use (National Survey on Drug Use and Health, 2013). These racial identities were therefore not included in the current sample of WSW. The results of the current study implicate a strong need for further research on the intersection of sexual behavior, race, and tobacco use.

Non-significant results for age, annual income, and history of depression were somewhat unexpected when looking at current prevalence rates of cigarette smoking, particularly among individuals living at or below the poverty level (29.2%) compared to those at or above the

poverty level (16.2%) (Centers for Disease Control and Prevention, 2015). There is also a small body of evidence pointing to a relationship between tobacco use and depression with increased tobacco use potentially exacerbating depressive symptoms (dos Santos, Migott, Bau, & Chatkin, 2010). However, the exact nature of this relationship, as well as the interacting variable of sexual identity or sexual behavior, is not fully understood. Similarly, past studies around age and tobacco primarily focus on age of onset of tobacco use and prevalence rate across the lifetime. While early age of onset has been strongly associated with continued tobacco use into adulthood, the predictability of current age on tobacco use is unclear (Huerta, Chodick, Balicer, Davidovitch, & Grotto, 2005). This is likely due to the wide range of adults ages 18–65 who report, on average, somewhat greater tobacco use (20%), than those 65 or older (9%) (Center for Disease Control and Prevention, 2015).

The results of this study contain several limitations. These limitations primarily include the following: (a) the demographic location and size of sampling data, (b) the randomization of the selection process, (c) criteria for participant selection and (d) the statistical tool used for data analysis.

The NYCCHS is a large and rich database providing a vast amount of personal, medical, behavioral, and environmental data on a random sample of New York City residents. While one may be able to argue that the overall sample size and randomization process of the NYCCHS is sufficient for transferability and generalizability to the New York City area and its residents, one must remain cautious in generalizing to other populations and communities across the country. In particular, smaller cities, towns, and rural communities are likely to have their own cultural components and external variables, be they environmental, relational, or personal that greatly limit the generalizability of this study.

Additionally, the large size of the NYCCHS, while ideal for retrieving data on a smaller section of the greater population, such as WSW, presents its own challenges in producing and interpreting statistically significant results. The overall NYCCHS database contains thousands of entries, and the current sample of WSW of 547 greatly surpasses the sample requirement of 121 for adequate power. Using a large database and sample of this size can lead to the issue of providing overpowered results. Overpowered results can derive from the use of large sample sizes that can potentially detect a statistical difference, or provide a “positive” result when none actually exists (Ellis, 2010; Hochster, 2008). This, of course, can lead to many procedural and ethical dilemmas. Results of this study, therefore, are not intended to be directive in nature and should be interpreted with caution.

While participant selection was randomized with the assistance of the a randomized telephone dialer system, it is important to note that only New York City residents with regular access to either a landline phone or a cell phone were included for possible selection for participation. This ruled out many individuals from participating in the survey that either use cell phones with prepaid minute cards or who have financial, personal, or other barriers to obtaining a landline or cell phone. The age range for participation for the NYCCHS also only includes residents over the age of 18. Therefore this study sample included young adults ages 18–24, but was limited by its inability to include early to mid-adolescents, a population that has been shown to demonstrate increased rates of substance use (Choquet et al., 2004; Merline et al., 2004). Study conclusions can therefore not be generalized to the younger population due to significant developmental, social, and educational differences from those of adult age.

The decision to focus on WSW as a study population also presents some limitations. While roughly 67% of the study sample of WSW also self-identified as lesbian or bisexual, there

was also a substantial percentage that identified as heterosexual or who did not answer the question about sexual orientation. Participation was also not limited to women who exclusively reported having sex only with other women. As such, results are limited in the ability to generalize to larger populations of female sexual minorities.

Finally, the multiple regression technique chosen to analyze data also provides its own limitations around study interpretation. Multiple regression analysis can only determine relationships, or correlations, between variables. Even if a strong relationship is found between two or more variables in a multiple regression analysis, it does not imply influence or causality between variables. For example, it was determined within the current sample population that age was a significant predictor of alcohol use in WSW. As age increased in the sample population, alcohol use decreased. This result is beneficial information in terms of directions for future research and insight into the possibility of increased risk for alcohol use in younger age groups of WSW. However, simply based on these results, we cannot say age, or a factor of age, directly or indirectly causes an increase in alcohol use or vice versa. Additionally, due to the categorical nature of the race variable, we are unable to interpret results down to discrete racial categories. Rather, we can only speak of White and non-White

In conclusion, the results of this study indicate that age and history of depression are significant predictors of alcohol use, and race a significant predictor of tobacco use among a sample of WSW. While the limitations of this study inhibit the ability to speak to causality between and among these variables, the results do provide some greatly needed insight into possible risk factors for alcohol and tobacco use among a greatly understudied population. More specifically, due to the limited racial demographics of the current study sample, more research is needed, particularly on tobacco use in WSW who identify as American Indian or Alaska Native.

Future research could particularly benefit from continuing to examine the intersection of the significant predictors of age, history of depression, and race; sexual identity or sexual behavior; and substance use.

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CHAPTER 3

INTERPERSONAL VIOLENCE AND SUBSTANCE USE AMONG WOMEN WHO HAVE SEX WITH WOMEN

Interpersonal Violence and Substance Use Among Women Who Have Sex with Women

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Abstract

Violence against women and elevated use of alcohol and tobacco are major concerns in public health. Few studies on substance use and substance use treatment concentrate only on female populations. This study utilized data from the 2008 New York City Community Health Survey to explore the significance of interpersonal violence on levels of alcohol and tobacco use within a sample of women who reported having sex with other women (WSW). A total of 92 women were included in the sample population. Results indicated there was a significant difference in the mean number of alcoholic drinks consumed between WSW ($M = 3.6, SD = 4.16$) and WSW who did not report the experience of interpersonal violence ($M = 0.49, SD = 0.59$); conditions $t(57) = 5.338, p = 0.0000$. Looking at the entire sample of WSW, a significant difference was also found in average number of drinks consumed between WSW who reported interpersonal violence ($M = 2.0, SD = 3.50$) and WSW who did not report experiencing interpersonal violence ($M = 0.30, SD = 0.53$); conditions $t(89) = 4.229, p = 0.0001$. No difference was found in levels of tobacco use between WSW who reported interpersonal violence ($M = 5.1, SD = 6.91$) and WSW who did not report interpersonal violence ($M = 5.2, SD = 4.37$); conditions $t(15) = -0.025; p = 0.980$. These findings suggest that WSW, regardless of sexual orientation or sexual identity, may be at increased risk for elevated alcohol use and respective negative life outcomes. Additional implications and directions for future research based on the current study outcomes are also addressed.

Keywords: substance use, tobacco, alcohol, women, interpersonal violence, lesbian, bisexual

Interpersonal Violence and Substance Use Among Women Who Have Sex with Women

Violence against women is a major concern in public health (Tjaden & Thoennes, 2000). In particular, intimate partner violence (IPV), sexual assault, and stalking or psychological violence can have a significant negative impact on survivors' mental and physical health and overall well-being (Rees et al., 2011). Research suggests a strong connection between intimate-partner violence, sexual-assault history, and problematic substance use in women (Brown, Stout, & Mueller, 1996; Najavits, Sonn, Walsh, & Weiss, 2004; Testa, Livingston, & Leonard, 2003). While there is a substantial variance in the prevalence rates of IPV in particular in women who have sex with women (WSW), we know that female same-sex IPV is becoming more known as a serious public health issue (Miller, Greene, Causby, White, & Lockhart, 2008). Evidence also exists to suggest that women who identify as lesbian or bisexual or have a history of same-sex partners are at greater risk for increased levels of alcohol, tobacco, and drug use (Bradford et al., 1994; Cochran, 2001; Cochran et al., 2000).

Problematic substance use is also a major public-health risk in today's society (McGinnis & Foege, 1999; Murray et al., 1998). Utilizing substances at expanded rates of recurrence and amount adversely affects relationships with family, partners, and friends, hinders the capacity to satisfy life roles, and can fundamentally disable the capacity to meet one's essential needs. In the abundance of research that has inspected different parts of risky substance use, including danger elements and treatment utilization and outcomes, few studies concentrate only on female populations. Men are routinely utilized as sampling populations, with little acknowledgment that females tend to have their own particular arrangement of unique attributes, behaviors, and practices. There exists a

desperate need to refocus our research lens, to look more closely at elements that impact problematic substance use in female populations.

There is a significant amount of research focused on the impact of IPV and sexual assault on women's problematic use of substances (Brown, Stout, & Mueller, 1996; Najavits, Sonn, Walsh, & Weiss, 2004). However, few studies look at these factors within the context of same-sex relationships or within populations of women who specifically report having sex with other women. Sexual practices are rarely asked about in research on IPV or substance use that does not exclusively focus on individuals who personally identify as gay, lesbian, or bisexual. As such, WSW often remain invisible minorities within research populations. We know, for example, that the experience of IPV can increase chances of problematic substance use. While there is a movement in current research to develop more culturally sensitive IPV screening and assessment tools for women reporting same-sex partners, there is little research available on the impact of IPV and sexual assault on rates of tobacco, alcohol, and other substance use in WSW. For the purposes of this study, IPV and sexual assault are being categorized under the term "interpersonal violence." From here on, this term will indicate the experience of either IPV or unwanted sexual contact.

In reference to the experience of interpersonal violence and substance use within populations of WSW, four points in the professional literature need to be addressed. These points are: (a) a rationale for the use of sexual behavior, and not sexual identity, as an inclusion criteria for study participants, (b) an brief overview of current literature on interpersonal violence within female sexual minority populations, (c) a summary of known predictor variables of interpersonal violence and problematic

substance use, and (d) a summary of known outcomes of the experience of interpersonal violence and problematic substance use.

The rationale behind defining inclusion criteria for this study based upon participant-reported sexual conduct, and not self-reported sexual orientation, for example, self-identifying as lesbian or bisexual is twofold. One, there is likely a noteworthy crossover among women who self-identify as lesbian or bisexual and women who report having had sex with other women. Second, there is current research that indicates a substantial difference between sexual conduct and self-reported sexual orientation or identity (Pathela et al., 2006). Numerous people who report having same-sex sexual experiences don't identify themselves as gay, lesbian, or bisexual. It is critical to note that these studies on sexual behavior and sexual identity disparities have a tendency to primarily utilize male populations. There is little writing accessible on the pervasiveness of this disparity among female populations.

While there has been a substantial amount of research conducted around the topic of IPV, including the experience of sexual assault or unwanted sexual contact (USC), there is not an exhaustive literature base directly examining the experience of interpersonal violence specifically within female sexual minority populations. The existing literature base on the intersection of interpersonal violence, substance use, and sexual behavior among women is at best extremely limited. Rates of IPV alone in lesbian couples have such a vast range within the literature base of anywhere from 12% to 75%, rendering strictly looking at the issue of prevalence among this population virtually useless (Bradford et al., 1994; Lie, Shilit, Bush, Montagne, & Reyes, 1991). Additionally, individuals with same-sex partners may be more reluctant to report

incidents of interpersonal violence due to added societal stressors and gender stereotypes. As such, it is likely that the actual rate of interpersonal violence among this population is greater than what is often reported in the literature (Klosterman, Kelley, Milletech, & Mignone, 2011).

There does, however, exist a small research base that begs to examine this topic more in depth. The National Violence Against Women (2011) survey found that 35.4% of women reporting living with a same-sex partner also reported physical abuse within their lifetime. In contrast, 20.4% of women reporting exclusively opposite-sex cohabitation partners reported the experience of physical abuse. While some research indicates strong similarities between same-sex couples and heterosexual couples who specifically experience interpersonal violence in terms of the cyclical nature of abusive relationships and the intricacies of power dynamics (McClennen, 2005; Kulkin, Williams, Borne, de la Bretonne, & Laurendine, 2007) there are some unique aspects to IPV within same-sex couples. One such unique factor is the possibility of forced outing, meaning the threat of reveling one's sexual orientation to family, friends, coworkers, etc., without consent. The threat of outing can be used as a control factor and abusive factor in and of itself within a same-sex relationship, while also serving as a preventative factor for victims to seek out help and support (Kulkin et al., 2005). Although definitive statistics on the frequency of IPV in WSW do not currently exist, there are some known predictor variables of both IPV and problematic substance use among female sexual minority populations.

In a study examining the type and frequency of IPV among lesbian-identified women, Miller, Greene, Causby, White, and Lockhart (2001) found that acts of *physical*

aggression (threats of violence, throwing inanimate objects, pushing, grabbing, etc.) were reported in almost half the participants. Acts of *physical violence* (punching, cutting, threatening with a deadly weapon, etc.) were much less common. In looking at what might predict physical violence in female same-sex relationships, Miller et al. (2001) examined the variables of fusion (self and partner), independence, control, and self-esteem. Fusion was the biggest predictor of physical aggression, followed by self-esteem and independence. All four variables were found to have a strong relationship with physical violence, with control being the strongest predictor followed by independence, self-esteem and fusion.

In a significantly larger study performing a meta-analysis on 85 studies examining predictor variables of IPV in the general population using a normative heterosexual framework, Stith, Smith, Penn, Ward, & Tritt (2004) found 16 perpetration and 9 victimization risk factors. Large effect sizes were found for five variables, including emotional abuse, forced sex, illicit drug use, attitudes condoning marital violence, and marital satisfaction. A large effect size was found for victimization with victims who also used violence toward their partners. A moderate effect size was also found for victimization with victims who had experienced depression and held a fear of future abuse. Other risk factors for IPV among heterosexual couples included witnessing or experiencing family violence as a child, attitudes toward women, attitudes toward gender roles, and past experience as either a perpetrator or a victim of IPV (Stith et al., 1996).

Evidence suggests that WSW may be at elevated risk for experiencing negative health effects from alcohol, tobacco, and recreational drug use and other negative life outcomes (Bradford et al., 1994; Cochran, 2001; Cochran et al., 2000; Diamant et al.,

2001; Hughes & Eliason, 2002). While existing evidence is not always consistent (Cochran et al., 2003; Roberts & Sorenson, 1999), women who report same-sex partners more commonly report being current or former smokers (Cochran et al., 2001; Gruskin et al., 2007), are less likely to report abstaining from alcohol, and report more frequent instances of being drunk and an overall higher rate of alcohol consumption (Cochran et al., 2000; Diamant et al., 2000; Hughes & Eliason, 2002). We know from current literature that WSW are likely to be at increased risk for problematic substance use. However, there is a significant gap in literature exploring the intersection of interpersonal violence, substance use, and same-sex sexual behavior among women.

Utilizing data from the 2008 New York City Community Health Survey (NYCCHS), this study seeks to explore the significance of self-reported incidences of interpersonal violence on levels of alcohol and tobacco use within a sample of WSW. Data were examined for both WSW who reported experiencing interpersonal violence and WSW who did not report this experience, as defined by the NYCCHS. This study seeks to fill a gap in the current literature that could have a significant impact on recommendations and suggestions for IPV, sexual assault, and other interpersonal violence and substance use screenings, assessment, and treatment. This study will also provide a unique contribution to the literature on a historically understudied and undeserved population of sexual minority women.

Three research questions guided this study. The first research question was: Does level of alcohol use differ between WSW who report alcohol use within the past 30 days and report the experience of interpersonal violence, and WSW who report alcohol use within the last 30 days and do not report experiencing interpersonal violence? The

second research question was: Does level of alcohol use differ between WSW who report interpersonal violence and WSW who do not report such experiences? The third research question was: Does level of tobacco use differ between WSW who report interpersonal violence and WSW who do not report such experiences?

Method

Design

This study utilized a retrospective cross-sectional observational design following the STROBE protocol (Jepsen, Johnsen, Gillman, & Sørensen, 2004; Vandenbroucke et al., 2007; Mann, 2003). Data were collected from female-identified respondents of the NYCCHS for the year 2008. Only data from 2008 were utilized, as questions regarding interpersonal violence, as quantified by the self-reported experience of IPV or USC, were not asked on subsequent versions of the survey. The NYCCHS is an annual telephone survey conducted by the New York City Department of Health and Mental Hygiene (DOHMH) Division of Epidemiology, Bureau of Epidemiology Services. The NYCCHS provides robust data on the health of New York City (NYC) residents. It includes neighborhood, borough, and citywide estimates on a range of chronic diseases and behavioral risk factors. As the NYCCHS is a telephone-based survey, only NYC residents with landline (2008 and prior) or cell phones (2009 to the present) are included in the survey. Interviews are conducted in English, Spanish, Russian, and Chinese (Mandarin and Cantonese). All data are self-reported.

Before the data analysis was conducted, a power analysis for an independent samples *t*-test was performed. The Cohen's *d* effect size for the power calculation was drawn from data reported by Marshal et al. (2008). An a priori power analysis using

G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) was performed. The following input parameters were used: (a) two-tailed, (b) $d = 0.80$, (c) power ($1 - \beta$ err probability) = 0.95, (d) allocation ratio $N2/N1 = 1$, and (e) $\alpha = .05$. The G*Power 3.1 output contained a sample size of 84 and an actual power of 0.951.

Participants

Analyses were limited to female-identified respondents who completed the sexual partner history question. Data were obtained from the NYCCHS, year 2008. The sample of 92 respondents ranged in age from 18 to 72, with 2 not answering. The respondent sample was racially and ethnically diverse, with 54 out of 92 identifying as non-White, 38 identifying as White non-Hispanic, 21 identifying as Black or African American, 27 as Hispanic or Latino, 0 as Asian or Pacific Islander and 6 Other. In terms of sexual orientation, 48 identified as homosexual, gay, or lesbian, 12 as bisexual, and 28 as heterosexual or straight; 3 respondents answered they did not know or were not sure, and 1 respondent refused to answer the question.

For the year 2008, the NYCCHS included a random sample of 7,554 NYC residents ages 18 and over from all five boroughs of the city (Manhattan, Bronx, Brooklyn, Queen, and Staten Island). Thus the data utilized for this study can be considered a cross-sectional representation of people living in NYC.

Measures

The NYCCHS is a cross-sectional telephone health surveillance survey of approximately 8,500 adult New Yorkers and has been conducted annually since 2002 by the New York City Department of Health and Mental Hygiene. It uses a dual-frame RDD methodology (including landline and cell phone numbers) to contact households in New

York City and randomly selects one adult to complete the NYCCHS interview in each contacted household. The NYCCHS uses a disproportionate stratified sample design to produce robust estimates at the city, borough, and neighborhood levels.

The NYCCHS content is redesigned each year with some core health and demographic questions maintained. Questions are solicited from agency programs each year, and programs are encouraged to submit questions that have been validated in previous large national or state surveys. Using measures from other large surveys also allows for comparison to New York City. Various questions that have been included on the CHS have come from other large surveys, such as the Behavioral Risk Factor Surveillance Survey, the National Health and Nutrition Examination Survey, the National Health Interview Survey, and the National Survey on Drug Use and Health. Each year, the Bureau of Epidemiology Services also works with programs to develop new questions (when previously validated questions are not available). New questions are pretested using cognitive interviewing techniques with community members. Cognitive interviewing techniques are used to understand how respondents understand and answer survey questions, and survey questions are modified based on results of the cognitive testing. Once questionnaire content has been finalized, the questionnaire is constructed with special attention to module order, question order within modules, and the overall flow of the survey. Before data collection begins, a small field test is also conducted with respondents reached via telephone (RDD) to test for questionnaire timing, perform a final check on flow, and to catch any unforeseen questionnaire problems.

As part of the survey, demographic information was collected from all surveyed participants. Participants were asked a series of questions about self-identified gender,

annual household income, age, race, and sexual partners. Participants were also asked about rates and frequency of substance use within the past year, including alcohol and tobacco. All participants were asked about sexual behavior. Specially, participants were asked about their sexual partners both over the past 12 months and within their lifetime. Included participants answered affirmatively to one or both of the survey questions that inquired about sexual activity with other women. Participants included in this study answered “at least one” to the following survey question: During the past 12 months, with how many women have you had sex? Participants who responded “yes” to the following question were also included for participation: Have you ever had sex with a woman? Additionally, participants were asked specifically if they had felt frightened for their safety or the safety of their children or friends due to threats from an intimate partner. Participants were also asked if, since turning the age of 18, they had experienced any type of USC. An affirmative answer to either one of these questions was counted as the participant experiencing abuse within her lifetime. All survey questions utilized for this study can be found in full text online (New York City Department of Health and Hygiene, 2008).

Procedures

De-identified data were obtained from the NYCCHS for inclusion in this study. All data obtained from the NYCCHS are made accessible to the public via the website. Original data were collected via telephone survey from a random sample of 7,554 residents living in all five NYC boroughs. Data collected from the NYCCHS are used to better understand health and risk behaviors of city residents and to track certain indicators over time. The target population of the NYCCHS is non-institutionalized adults ages 18

and over who, for year 2008 data, also lived in a household with a landline telephone. The NYCCHS includes, on average, 125 questions covering general health status, mental health, health care access, sexual behavior, alcohol consumption, tobacco usage, HIV, and a plethora of other topics.

The NYCCHS uses a stratified random sample to produce both neighborhood and citywide estimates. Strata are defined using the United Healthcare Fund's (UHF) neighborhood designation. Slight modifications have been made to adjust for new NYC zip codes since the UHF's designations. A computer-assisted telephone interviewing (CATI) system is used to collect all survey data. The NYCCHS sampling frame was provided by a commercial vendor. Upon a household agreeing to participate, one adult per household is randomly selected to complete the survey. Data collection typically starts in March of the study year and ends in November.

Data Analysis

An initial pivot table verified that all respondents being categorized for the purposes of this study as WSW were also female-identified. Independent samples *t*-tests were then conducted to compare self-reported frequency and quantity of alcohol use and tobacco use in WSW who also reported a history of interpersonal violence, as indicated by an affirmative answer to either survey question regarding IPV or USC, and WSW who did not report a history of interpersonal violence. For alcohol use, two independent samples *t*-tests were performed, one only including respondents who stated that they had consumed at least one alcoholic drink within the past 30 days, and a second *t*-test that included the entire sample of WSW, regardless of whether or not the respondent had consumed an alcoholic drink within the past 30 days. The alpha was set to a .05 level of

significance for all three research questions. All statistical analyses were performed using Microsoft Excel 2010 (Microsoft Corporation, 2010).

Results

No respondents included for participation reported the experience of IPV as quantified by the NYCCHS. While lack of affirmative responses for incidences of IPV with the current sample of WSW was surprising, it did appear in line with lack of affirmative responses in general from all female respondents. Of the 4,693 female respondents, or 62.1% of the total population for survey year 2008, only 116, or 1.5%, reported an experience of IPV. Given that extremely low percentage, it is more understandable why there were no reports of IPV within the current sample. A total of 7 respondents of the sample population indicated they had been forced into USC, 84 stated they had not experienced USC, and 1 refused to answer. Possible reasons for the lack of respondent report of IPV are discussed further in sections below.

The first research question used an independent samples *t*-test to compare differences in mean number of drinks between WSW who reported having at least one alcoholic drink within the past 30 days and the experience of interpersonal violence, and WSW who also reported having at least one alcoholic drink within the past 30 days and who did not report the experience of interpersonal violence. There was a significant difference between the average number of drinks between WSW who reported having at least one alcoholic drink within the past 30 days and reported the experience of interpersonal violence ($M = 3.6, SD = 4.16$) and WSW who reported having at least one alcoholic drink within the past 30 days but did not report the experience of interpersonal

violence ($M = 0.49$, $SD = 0.59$); conditions $t(57) = 5.338$, $p = 0.0000$. An effect size calculated utilizing Cohen's d indicated a moderate effect size of 0.6.

The second research question used a two-tailed independent samples t -test to compare the differences in mean number of alcoholic drinks within the entire sample of WSW. Results indicated a significant difference in mean number of drinks between WSW who also reported the experience of interpersonal violence ($M = 2.0$, $SD = 3.50$) and WSW who did not report experiencing interpersonal violence ($M = 0.30$, $SD = 0.53$); conditions $t(89) = 4.229$, $p = 0.0001$. An effect size calculated using Cohen's d indicated a very strong effect size of 1.06. An effect size this large indicates the difference in means between two groups to be greater than one standard deviation. In a sight review of the data, it appears one respondent reported a significantly larger number of drinks per day than all other respondents, which likely contributed to the larger effect size.

The third research question also used a two-tailed independent samples t -test to compare tobacco use as quantified by the average number of cigarettes smoked per day between WSW who also reported interpersonal violence and WSW who did not report interpersonal violence. Results indicated there was no significant difference between WSW who report interpersonal violence ($M = 5.1$, $SD = 6.91$) and WSW who did not report interpersonal violence ($M = 5.2$, $SD = 4.37$); conditions $t(15) = -0.025$; $p = 0.980$.

It is noted that the respective variances for the previous t -tests were, in general, very high and they all exceeded their respective means. The likely reason behind this is due to the overall disbursement of individual scores or number of drinks or number of cigarettes smoked per day. These higher variances indicate a much wider range of possible outcomes. For WSW and reported alcohol use, the number of drinks reported

per day ranged from 0.033 to 30. Likewise, for tobacco use the number of cigarettes smoked per day ranged from 0.033 all the way to 67.

Discussion

The purpose of this study was to determine if there was a significant difference in alcohol and tobacco use in WSW who also experienced interpersonal violence and WSW who did not report experiencing interpersonal violence. Research on heterosexual couples has long indicated that regular alcohol use and/or heavy alcohol use is a significant risk factor for interpersonal violence, including IPV and sexual assault, within the U.S. and across the globe (de Campos Moreira et al., 2011; Livingston, 2011; O'Leary & Schumacher, 2003; Testa, Livingston, & Leonard, 2003). Although there is growing knowledge about and awareness of interpersonal violence within the context of gay and lesbian relationships and populations, research along this line is still a relatively new endeavor. This discussion will therefore reflect upon and strategically compare results of this study primarily to literature both on interpersonal violence among heterosexual populations and on interpersonal violence in lesbian and female same-sex bisexual relationships.

In terms of the first research question, the results proved to be statistically significant indicating a difference in average number of drinks consumed between both the comparison groups of WSW who reported alcohol use within the last 30 days, with one group reporting interpersonal violence and the other not reporting interpersonal violence. These results align closely to literature pointing to elevated alcohol use among female sexual minority populations who have experienced various forms of interpersonal violence, including IPV and sexual assault (Eaton et al., 2008; Glass et al., 2008).

Although the results of such studies have not always proven to be statistically significant (Eaton et al., 2008) they have pointed to an increasing trend among lesbian and bisexual relationships that appears to mirror what we know about the risk associated with alcohol use in heterosexual couples. While there could be several reasons for the lack of WSW reporting IPV, one possible reason would be the delivery of the NYCCHS via telephone. It is likely female respondents may not feel safe to respond affirmatively to a question of IPV over the telephone especially if they may still be living in a violent or threatening situation.

In terms of the second research question looking at the entire sample of WSW, regardless of alcohol use within the last 30 days, results also proved to be statistically significant, indicating a difference in mean number of drinks consumed. Similar to the results from the first research question, these results appear to support a significant amount of current research related to this topic. The experience of sexual violence and sexual assault as a part of interpersonal violence has been associated with elevated use of alcohol, binge drinking, and even suicidality, particularly among younger female populations (Behnken, Le, Temple, & Berenson, 2010; Le, Behnken, Markham, & Temple, 2011). It is currently unknown how same-sex sexual behavior or sexual minority status may factor into the equation of sexual assault, alcohol use, and specific associated negative life outcomes. We can, however, logically formulate some possibilities based upon the results of this study.

One possibility would be consistent with the idea of alcohol use as a coping strategy for the trauma incurred by the experience of USC and interpersonal violence. The effects of trauma are known to be significant and pervasive in their potential

corrosion of victims' physical, mental, emotional, and psychiatric health and well-being. Such effects can lead to greater negative life outcomes and/or psychiatric diagnoses that can greatly inhibit fulfilling major life roles, ability to handle stress, and ability to tolerate states of heightened arousal such as post-traumatic stress disorder (PTSD) (Mueser, Rosenberg, Goodman, & Trumbetta, 2002; Marshall & Leifker, 2014; Vujanovic et al., 2012). Research on the motivation behind elevated use of alcohol has long been associated with coping strategies for trauma with or without the presence of a PTSD diagnosis (Cooper, 1994; Dixon, Leen-Feldner, Ham, Feldner, & Lewis 2009; Vujanovic, Bonn-Miller, & Marlatt, 2011). While the results of the current study limit the ability to speak directly to reasons behind the significant difference in mean number of drinks consumed between the two samples, based upon past evidence presented here, one strong possibility is that WSW in the sample population utilized alcohol as a coping mechanism for the traumatic experience of interpersonal violence.

On the flip side, another possibility is that the presence of elevated alcohol use existed before or during the experience or experiences of interpersonal violence. This does not eliminate the possibility that alcohol use continued as a potential coping mechanism.

While these potential reasons behind the significant results of this study are laid out in a linear fashion, it is important to recognize that there are likely many interacting factors involved in the relationships among sexual behavior, alcohol use, and interpersonal violence. Rather, this possibility posits the idea that elevated alcohol use may be associated with greater risk of victimization for interpersonal violence. There exists a body of research primarily on adolescent and young-adult populations in

particular, which looks at alcohol use and other substance use as a mitigating factor for IPV, sexual assault, and other forms of interpersonal violence (Peleg-Oren, Cardenas, Comerford, & Galea, 2013; Reingle, Jennings, Connell, Businelle, & Chartier, 2014).

In terms of the third research question, there was no difference found in the amount of tobacco use between WSW who reported interpersonal violence and WSW who did not report interpersonal violence. These results appear somewhat contrary to a current body of literature, which indicates that female sexual minority populations report a greater likelihood to use tobacco than their heterosexual counterparts (Cochran et al., 2001; D'Augelli, 2004; Gruskin et al., 2007; Grusken, Byrne, Altschuler, & Dibble, 2009).

There could be several reasons for the lack of significance with tobacco use within the current study. One possibility could be the cohort effect, potentially influenced by increasing health education, marketing campaigns, and general information and resources regarding the detrimental effects of tobacco use. In addition, a significant number of respondents in the sample population ($n = 75$) did not answer the survey questions regarding tobacco use. Although the survey is random and made anonymous for data entry purposes, there remains a possibility that respondents were hesitant to share information regarding tobacco use for fear of it entering into their medical record and potentially impacting outside factors such as medical care or insurance premiums.

There are several limitations to this study, including but not limited to the demographic location of the sample population, the randomization process of participant selection, the limitations of participation in the NYCCHS, and the use of sexual behavior,

exclusive from sexual orientation or identity, as criteria for participation in the current study.

Data for this study is inclusive only of residents of a large major city in the northeastern United States. While utilizing the NYCCHS provided a sufficiently large sample size, it should be noted that this database only reflects a sample demographic of WSW within NYC. The NYCCHS does not sufficiently represent the demographic of smaller cities, rural areas, or even other major cities throughout the United States. Other demographic areas around the country possess their own contextual and environmental factors, which would likely confound the results of the current study. As such, results of this research cannot be generalized to other areas of the country.

The randomization process for participant selection for the NYCCHS is done with the assistance of a telephone dialer system. This system provides several benefits, including the ability to reach thousands of potential participants in a mere fraction of the amount of time it would take to go door-to-door or to randomly survey people off the street. However, this method greatly limited participation in the survey by restricting it to only New York City residents with regular access to a landline phone. The NYCCHS did not include residents with cell phones until the survey year 2009, and access to either a landline or cell phone has always been a requirement for participation in the telephone-based survey. For the year 2008, this ruled out many residents who either used regular cell phones or cell phones with prepaid minute cards. For all years it has also ruled out individuals who have financial, personal, or other barriers to obtaining regular telephone access. For example, this limitation likely ruled out the majority of the homeless population within New York City and those who may be housed but for whom a phone

would be out of financial consideration. This restriction has likely excluded more communities comprised of immigrant populations, communities of color, and undocumented individuals and families.

This study is also limited by the restrictions for participation in the NYCCHS. The age range for participation for the NYCCHS includes residents over the age of 18. This does not capture data from early to mid-adolescents and younger teens, who have been shown to demonstrate increased rates of substance use (Choquet et al., 2004; Merline et al., 2004).

The decision to use sexual behavior in lieu of sexual orientation or identity as criteria for the primary study population provided a larger number of participants brought its own set of limitations to study conclusions. While roughly 65% of the study sample of WSW also self-identified as lesbian or bisexual, approximately 30% identified as heterosexual or straight. Participation was also not limited to women who exclusively reported having sex only with other women. As such, results are limited in their ability to generalize to larger populations of female sexual minorities.

Finally, the results of the first and third research questions were underpowered due to small sample sizes. Underpowered results can provide several challenges and limitations to data interpretation. Such results run the risk of committing either a Type I or Type II error, increase effects sizes and potentially make it difficult to replicate the study (Gervais, Jewell, Najle & Ng, 2015)

There are numerous theoretical implications for future research based on the outcomes of this study. The main implication for future research is examining more closely the intersection of alcohol use, sexual orientation, and sexual behavior.

Specifically, it could be particularly beneficial to more closely study alcohol use patterns among women who report same-sex behavior but do not identify as lesbian, bisexual, or queer, or who identify specifically as heterosexual. Second, there remains a continued need to study prevalence rates of both interpersonal violence and alcohol use among female sexual minority populations. Third, given the small base of literature that currently exists on substance use and interpersonal violence among WSW in general, this appears to be a good opportunity to engage in qualitative research around the experience of women who report same-sex partners and elevated use of alcohol and who have experienced interpersonal violence. Finally, given the discrepancy between the lack of significant results regarding tobacco use in the current study and what exists within the literature, this appears an area rich for additional research on tobacco use among WSW populations.

Practical implications of the current study include additional recommendations for substance use and interpersonal violence screening, assessment, and treatment. Especially in a treatment setting not specifically targeted at sexual minority clients, it is not uncommon that sexual identity and sexual behavior are assumed to be one and the same. Particularly in a substance use or co-occurring disorders treatment facility, it is now typical to inquire during assessment about sexual identity with the intention of being more multiculturally sensitive to provide more holistic care. However, as noted throughout this study, discrepancy exists between sexual identity and sexual behavior. Indeed, nearly 30% of the current study population of WSW identified themselves as heterosexual. Heterosexist assumptions can often lead counselors, therapists, and other treatment personnel to assume exclusively male partners for female clients who are either

not partnered or partnered with a male. The results in this research indicate a stronger need for sensitivity to gendered language and more exploration of past and current sexual partners in treatment assessment and delivery.

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Chapter 4

General Conclusions

In this chapter, the findings of the previous two studies will be summarized, discussed, and explored, including limitations and implications. Additionally, recommendations for future research will also be addressed based upon the results of these studies. This chapter will contain the following summaries: (a) findings from the first study, (b) limitations of the first study, (c) discussion of the results of the first study, (d) recommendations from the first study, (e) findings from the second study, (f) limitations of the second study, (g) discussion of the results from the second study, and (h) recommendations from the second study. This chapter concludes with of an analysis of the thematic link between the two studies, contribution to the overall knowledge base, and recommendations for future research

Findings from the First Study

The first study, *Predictive Variables of Substance Use Among Women Who Have Sex with Women*, presented two research questions. The first research question looked at the predictability of four variables, including age, annual household income, race, and history of depression (see Appendix B), on alcohol use in a sample of WSW. The second research question looked at the predictability of the same variables on tobacco use in the same sample of WSW. This study yielded the following results: (a) The variables of age and history of depression were found to be predictive of alcohol use in the sample of WSW, and (b) the variable of race was found to be predictive of tobacco use in the sample of WSW.

Following data-cleaning procedures, the multiple regression analyses included a total of 509 WSW for inclusion in the first regression regarding alcohol use. Initial bivariate correlations indicated alcohol use was negatively associated with the predictor variables of age ($r = -0.215, p < .05$) and history of depression ($r = -0.104, p < .05$). The additional predictor variables of race ($r = 0.019, p > .05$) and annual household income ($r = -0.021, p > .05$) were not significantly associated with the criterion variable of alcohol use (see Table C1). The variables of age and history of depression were found to be significant predictive variables of alcohol use. Specifically, both variables had a negative, or inverse, association with alcohol use, meaning that as age within the sample increased, alcohol use decreased. Likewise, as the response value for the depression question increased (yes, history of depression = 1, no, history of depression = 2), alcohol use also decreased.

Following data-cleaning procedures, the second multiple regression analysis contained a total of 114 WSW. Initial bivariate correlations indicated a significant association between the variable of race ($r = -0.216, p < .05$) and tobacco use. Additional variables of age ($r = 0.072, p > .05$), annual household income ($r = 0.003, p > .05$) and history of depression ($r = -0.113, p > .05$) were not found to be significantly associated with tobacco use. Multiple regression analysis indicated race was a significant predictor of tobacco, (see Table C2). This result implied that within the sample of WSW, respondents who identified as White were more likely to report tobacco use than those that identified as non-White.

Limitations from the First Study

The first study contained many limitations, primarily including issues around generalizability, method of participant recruitment and sample size, focus on participant sexual behavior as inclusion criteria, and limitations associated with the statistical tool of analysis, multiple regression. Although utilizing a public-access database from NYC provided a significantly large population from which to sample, limitations still arise with regard to generalization to other populations. The annual sample population for the NYCCHS is randomly drawn via randomizing telephone software. However, as this survey is only open to residents of NYC, there exist logical parameters around study outcomes.

While an argument may be made for generalizing results to other major cities in the northeastern part of the United States, such as Boston, Massachusetts, or Philadelphia, Pennsylvania, it stretches the limits of this study to generalize results to smaller communities or more rural sections of the country. Regional differences are also a strong possibility for other major cities located in the Midwestern, southern, or western parts of the United States. Results should therefore be interpreted with caution and not taken as generalizable to the entire population of WSW or other female sexual minorities with the United States.

Another important limitation exists around participation recruitment for the NYCCHS. Due to surveys being conducted strictly via telephone, participation is limited only to NYC residents with regular access to a landline or cell phone. This restriction likely ruled out thousands of NYC residents for possible participation. Residents with limited access to a phone, such as those who used cell phones with prepaid minutes, or

those without the financial or other means to obtain a phone, were excluded from possible selection.

Additionally, as a total of 547 WSW were included in the total sample size prior to data-cleaning procedures, this study is overpowered. Overpowered studies can be problematic in that there exists an increased chance of finding a statistically significant result even when none is present (Hochster, 2008).

The age range for participation for the NYCCHS also only includes residents over the age of 18. This does not capture data from younger populations, including adolescents, who have been shown to demonstrate increased rates of substance use (Choquet et al., 2004; Merline et al., 2004).

Utilizing sexual behavior, and not sexual identity or sexual orientation as is more common in counseling literature, presents additional limitations. As anticipated, there was a significant overlap of sexual behavior and sexual identity with approximately 52% of the study population identifying as lesbian. However, approximately 30% identified as heterosexual and 15% as bisexual, and the remaining 3% either did not answer the question or stated they were not sure how they identified. Inclusion for the current study was therefore not limited to women who exclusively have sex with other women. The diversity of sexual identity and, assumedly, sexual behavior in the sample population of WSW does not indicate the ability to generalize study findings to the complexities of the broader population of female sexual minorities or heterosexually identified women who may engage in same-sex sexual behavior.

Finally, as with any one statistical procedure, the multiple regression technique used for data analysis presents its own limitations. Multiple regression analysis is used to

determine relationships, correlations, and predictability among and between variables. While this is a powerful technique, it does not speak to, or indicate, any causal relationship between or among variables. Within the current study, for example, history of depression was found to be a significant predictor of alcohol use within the sample of WSW. However, this does not permit us to say a history of depression causes alcohol use or that alcohol use causes depression.

Discussion of the First Study

Overall, the findings of this study supported a significant amount of the current literature on problematic substance use in relation to female sexual minorities, including lesbian and bisexually identified women. In relation to the first research question, age and history of depression were found to be significant predictors of alcohol use within the sample of WSW. Age was found to have an inverse relationship with alcohol use, meaning that as age increased in the sample, alcohol use tended to decrease. This outcome supported a good amount of literature on both sexual minority as well as heterosexual populations indicating higher rates of alcohol use among adolescents and young adults (Choquet et al., 2004; Hughes & Eliasson, 2002).

Depression is one the most common mental health diagnoses associated with alcohol use. The significant results for the variable of history of depression were somewhat anticipated and support a large body of research on the interaction between depression and alcohol (Burns, Teeson, & O'Neill, 2005; Foulds, Adamson, Boden, Williman, & Mulder, 2015). While prevalence rates of depression in WSW are currently unknown, the results of the current study indicate the frequency of alcohol use among

those diagnosed with depression may not be too far off from those within the general population of women in the United States.

The second research question only yielded a positive result for the variable of race being a significant predictor of tobacco use. Race also had a negative correlation with tobacco use. As the response value for race increased (White or Caucasian = 1, Black or African American = 2, Hispanic or Latino = 3, etc.) tobacco use decreased. Therefore within the sample population, White- or Caucasian-identified WSW were more likely to use tobacco than other racial identities. While prevalence rates of tobacco use in the United States show women who identify as White as one of the groups using the most tobacco, American Indians, Alaska Natives, and women who identify with two or more races maintain the highest rate of tobacco use in the country (National Survey on Drug Use and Health, 2013). It is important to note that no women included in the sample population of WSW were known to identify as American Indian or Alaska Native as this category was not an option for racial identity.

Recommendations Based on the First Study

The results of this study provide several implications and recommendations for future research. Overall, it is clear that more research is needed on the interaction of sexual behavior, sexual identity, and substance use. Because this mix of topics is rarely studied in combination with each other, qualitative research may provide more insight into the experience, for example, of a heterosexually identified woman who also reports same-sex behavior and endorses elevated use of alcohol.

From a treatment perspective, these results call for counselors and counselor educators to be more open in inquiring about not just client sexual identity but also past

relationships. Heteronormative assumptions are common, especially when relating to women who are married to a male partner, who are currently partnered with a male, or who do not present in such a way to fit visually masculine stereotypes of a lesbian. The diversity of sexual identity alone contained in this study population calls for treatment facilities to become more comfortable and sensitive in offering a format for clients to share past and current sexual history.

Finally, further research appears to be needed in exploring the issue of tobacco use among racial identities that were not included in the current sample population. Specifically, American Indian and Alaska Native women who report same-sex partners bear further exploration on levels of tobacco use.

Findings from the Second Study

Findings from the second study, *Interpersonal Violence and Substance Use Among Women Who Have Sex with Women*, indicated a significant difference in alcohol use between WSW who also reported experiencing interpersonal violence and WSW who did not report experiencing interpersonal violence. A total of 92 respondents were included over the span of all research questions, with 7 reporting the experience of interpersonal violence and 84 not reporting interpersonal violence. Following data cleaning procedures, 3 *t*-tests for independent means were conducted to determine if significant differences existed between the respective sample groups.

Three research questions guided this study. The first research question was: Among WSW who also report alcohol use within the last 30 days, does a difference exist in the mean number of alcoholic drinks consumed between WSW who report interpersonal violence and WSW who do not report interpersonal violence? The second

research question was: Among WSW who report lifetime use of alcohol, does a difference exist in the mean number of alcoholic drinks consumed between WSW who report interpersonal violence and WSW who do not report interpersonal violence? The third research question was: Among WSW who report any current tobacco use, does a difference exist in the mean number of cigarettes smoked per day between WSW who report interpersonal violence and WSW who do not report interpersonal violence?

The first research question included a total of 59 respondents, 4 of whom reported interpersonal violence and 44 who did not. Results from the first research question showed a significant difference in mean number of drinks consumed between WSW who reported experiencing interpersonal violence ($M = 3.6, SD = 4.16$) and WSW who did not report experiencing interpersonal violence ($M = 0.49, SD = 0.59$); conditions $t(57) = 5.338, p = 0.0000$. The second research question that included WSW who reported lifetime use of alcohol ($n = 92$) also found a significant difference between WSW who reported the experience of interpersonal violence ($M = 2.0, SD = 3.50$) and WSW who did not report experiencing interpersonal violence ($M = 0.30, SD = 0.53$); conditions $t(89) = 4.229, p = 0.0001$.

Results from the third research question included a total of 17 respondents, 2 of whom reported experiencing interpersonal violence and 15 who did not. No significant difference was found in relation to tobacco use between WSW who reported interpersonal violence ($M = 5.1, SD = 6.91$) and WSW who did not report interpersonal violence ($M = 5.2, SD = 4.37$); conditions $t(15) = -0.025; p = 0.980$.

Limitations of the Second Study

As with any research, this study contains several limitations. First, it should be noted that the study data for this research come from an annual survey based out of NYC. Drawing from such a diverse, yet regionally exclusive, dataset from one large metropolitan area has many benefits but also limits the ability to generalize study findings to other communities and areas of the country and the world. Particularly, it is assumed that smaller towns, rural areas, and even larger cities in other regions of the United States would contain respective cultural, social, and environmental factors that differ significantly from those of NYC. It is therefore recommended that results be interpreted with caution.

Second, the NYCCHS is strictly a telephone survey that provides limitations in terms of sampling. In the survey year 2008, only NYC residents with landline phones were included for possible selection to take the survey. Residents with cell phones only were not included for consideration until 2009. Understandably, this requirement for survey participation presented a barrier for truly obtaining a random sample of NYC residents. The landline or cell phone requirement likely excluded a significant number of individuals living in NYC who, most likely, were low- or no-income individuals who may be dealing with issues such as homelessness or unemployment, the high cost of housing, or working lower-wage jobs, which may impact the ability to have regular telephone service. This exclusion also likely inhibited participation from a number of individuals from immigrant populations and communities and communities of color, and persons who were undocumented.

Third, participation in the NYCCHS is limited to residents over the age of 18. This requirement provides for the inclusion of late teens and young adults, but does not

include adolescents or youth populations, which have shown higher rates of alcohol and tobacco use and associated high risk behaviors (Merline et al., 2004). This limits the ability to speak to the issue of alcohol and tobacco use in younger populations of WSW as they relate to the results of this study.

The fourth limitation is the decision to focus on sexual behavior in women as inclusion for study participation. While using sexual behavior provided a unique and interesting opportunity to obtain a diverse sample in terms of sexual identity, with participants identifying as lesbian or gay, bisexual, and heterosexual, the findings of this study should not be translated to a broad base of female sexual minorities. There is a limited ability to speak directly to the interaction of sexual identity as potentially its own unique variable impacting study results.

The fifth limitation includes the use of the *t*-test as the tool for data analysis. The *t*-test is only able to compare means and does not reflect individual data. For example, we can only say there is a difference in the mean number of alcoholic drinks consumed between WSW who reported interpersonal violence and WSW who did not report interpersonal violence. As this was a two-tailed *t*-test, we also can only say there was a difference in means. However, due to the small sample size, visual observation indicates that WSW who also report interpersonal violence have an overall higher mean number of alcoholic drinks consumed than WSW who did not report interpersonal violence. Additionally, the results from the first and third research questions were underpowered due to small sample sizes. Underpowered tests can increase the chance of either a false positive, or committing a Type I error, or a false negative, or committing a Type II error.

Underpowered studies can also run the risk of inflating effect sizes and can lend themselves difficult to replicate (Gervais, Jewell, Najle, & Ng, 2015).

Discussion of the Second Study

The results of the second study endorse previous research findings indicating a strong relationship between the experience of interpersonal violence, including intimate partner violence and sexual assault, and elevated levels of alcohol and other substance use (Livingston, 2011; O'Leary & Schumacher, 2003; Testa, Livingston, & Leonard, 2003). In terms of the first and second research questions, results proved significant in finding a difference in mean number of drinks between WSW who also reported interpersonal violence and WSW who did not report interpersonal violence. While more research is greatly needed on the interaction of these variables within populations of female sexual minorities, these results also align closely with a small body of literature reporting elevated use of alcohol within populations of gay and lesbian women who have experienced interpersonal violence (Eaton et al., 2008).

While there are likely several possibilities as to why the results proved significant for the first and second research questions, one possibility is the utilization of alcohol as a coping strategy for past trauma (Dixon, Leen-Feldner, Ham, Feldner, & Lewis 2009; Vujanovic, Bonn-Miller, & Marlatt, 2011). It is important to note that while motivation for alcohol use centering on coping has been a well-documented occurrence, it has not yet been ascertained that alcohol use always comes secondary to a traumatic experience. Alcohol use has also been found to be a significant risk factor for potentially traumatic experiences including interpersonal violence (Reingle, Jennings, Connell, Businelle, & Chartier, 2014).

The third research question did not find a significant difference in the amount of tobacco used by WSW who also reported interpersonal violence and the amount used by WSW who did not report interpersonal violence. While past surveys of gay and lesbian populations have shown elevated rates of tobacco use compared to heterosexual peers (Cochran, 2001; Gruskin et al., 2001), the interacting effect of trauma on tobacco use with the sexual minority population, as well as the general population, is still unclear. While clinical populations with PTSD have demonstrated higher levels of tobacco use, the experience of trauma by itself has not been shown to be significantly associated with heavier use of tobacco (Fu et al., 2007). More research is needed in this area to better clarify the role of traumatic experiences with tobacco utilization among sexual minority populations.

Recommendations Based on the Second Study

The findings of the second study produce several implications and recommendations for areas of future research. One recommendation is further exploration of the mitigating factor of trauma on alcohol use within female sexual minority individuals. For example, while the results of this study proved significant for alcohol use, there is still much to be look at in terms of the question of why. Why did WSW in the sample population who reported interpersonal violence endorse higher drinking levels? Did those in the sample population contain additional risk factors, such as family history of alcoholism or other substance use that could not be included in the current study due to limitations of the survey instrument?

On the other side, did the non-significant group contain any similarities in terms of protective factors of problematic alcohol use, such as stronger social supports, lack of

family history of alcoholism, or a later age of onset of alcohol use? Asking these questions within the context of a female sexual minority population could help better inform not only more needed research but also more culturally specific clinical practice, assessment, and effective intervention. Additionally, future research on tobacco use in populations of WSW who report trauma or other interpersonal violence would benefit from a sample more inclusive of other racial identities.

Thematic Link Between Studies and Contribution to Knowledge Base

There are several thematic links between the two studies presented in this dissertation. Both studies have contributed to the limited research base on a frequent “invisible minority” of WSW. While lesbian and bisexual women still lag behind other demographic groups as research populations of interest, WSW are a widely unknown sample. Likely victims to heteronormative assumptions based upon surface variables such as current sexual partners or even physical appearance, the studies presented in this dissertation provide valuable information on the serious health risk of alcohol and tobacco use within this understudied population. These articles have also sought to increase awareness of issues and concerns of female sexual minority populations and clients as they relate to substance use and substance abuse.

Next, both articles are consistent with multicultural counseling competencies and social justice advocacy goals within the counseling, counselor education, and supervision profession. Finally, sexual behavior is more commonly studied within the context of public health and the health professions. The research articles presented in this document have sought to bring public-health-related data and information in an accessible way to the counseling, counselor education, and supervision audience. The results of these

studies indicate more counseling and counseling related research would benefit from exploring sexual behavior among various populations in addition to sexual identity.

Future Research

The results of these studies emphasize the importance of future research based not only on sexual identity but also on sexual behavior. Medical and public-health-related research has moved more in the direction of including sexual behavior, rather than sexual identity, as an important variable in examining topics such as risk factors for disease transmission and prevalence rates of drug use and HIV, and primarily focused on these topics among male populations. While a focus exclusively on sexual behavior is not without controversy, the studies contained in this dissertation do indicate a possible greater need to be more inclusive of sexual behavior as an important component in the counseling and counselor-education fields.

While counselors are encouraged to inquire about things such as family history, past romantic relationships, and even sexual orientation during clinical assessment and throughout the counseling relationship, sex and sexuality are often still treated as taboo. One area of future study could be an exploration of counselors' or counseling students' comfort level with inquiring about and discussing client sexuality and sexual history. The results of these studies indicate counselors, counseling students, and counseling clients would benefit from deeper inquiry about sexual history outside of a mere question of sexual orientation followed by a plethora of assumptions regarding sexual behavior.

Given that the current study population of WSW boasted nearly 30% of women who identified as heterosexual but reported a sexual history with women, further research on the discrepancy between sexual identity and sexual behavior within female

populations appears greatly warranted. Finally, external validity of the current study results would be increased with replication utilizing public health data from other cities and towns across the United States or in other parts of the world.

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APPENDICES

Appendix A:
Copy of IRB Approval Document

 Institutional Review Board Office of Research Integrity Oregon State University 8308 Kerr Administration Building, Corvallis, OR 97331-2140 Telephone (541) 737-8008 irb@oregonstate.edu http://research.oregonstate.edu/irb		RESEARCH DETERMINATION	
Date of Notification	06/11/2015		
Study ID	6904		
Study Title	Substance Use Among Women Who Have Sex with Women		
Person Submitting Form	Cort Dorn-Medeiros		
Principal Investigator	Dr. Cass Dykeman		
Study Team Members	Cort Dorn-Medeiros		
Funding Source	None	Proposal #	N/A
PI on Grant or Contract	N/A	Cayuse #	N/A

The above referenced submission was reviewed by the OSU Institutional Review Board (IRB).

DETERMINATION: IRB REVIEW NOT REQUIRED

The above referenced proposal was reviewed by the OSU Institutional Review Board (IRB) Office. The IRB has determined that your project, as submitted, DOES NOT meet the definition of research involving human subjects under the regulations set forth by the Department of Health and Human Services 45CFR46.102.

OSU IRB review is not required.

Please note that amendments to this project may impact this determination.

The federal definitions and guidance used to make this determination may be found at the following links:

[Research](#)

[Human Subject](#)

[Institutional Engagement](#)

Appendix B:

Demographic and Behavioral Information of Sample

Total Frequencies of Predictor and Behavior Variables in Regression Analyses for all Years of the New York Community Health Survey 2008 - 2013

<u>Demographic Variables:</u>	<u>WSW</u>
Age	
18 - 21	16
22 - 25	22
26 - 30	48
31 +	457
Refused or Did not Know	4
Annual Household Income	
< 100% poverty rate (PR)	97
100 - <200% PR	73
200 - < 400% PR	62
400 - < 600% PR	94
> 600% PR	153
Refused or Did not Know	68
Race	
White non-Hispanic	206
Black or African American	136
Hispanic or Latino	167
Asian or Pacific Islander	19
Other	19
Refused or Did not Know	0
<u>Behavioral Variable:</u>	
History of Depression	
Yes	174
No	366
Refused or Did not Know	7

Total n = 547

Appendix C:

Data Tables

Table C1.

Correlational Matrix: Predictor Variables and Alcohol Use

	<i>age - demog1</i>	<i>newrace</i>	<i>povertygroup</i>	<i>tolddepression</i>	<i>averagedrink</i>
<i>age - demog1</i>	1				
<i>newrace</i>	-0.250	1			
<i>povertygroup</i>	0.194	-0.316	1		
<i>tolddepression</i>	0.050	0.062	0.105	1	
<i>averagedrink</i>	-0.215	0.019	-0.021	-0.104	1

Total n = 509

Table C2.

Correlational Matrix: Predictor Variables and Tobacco Use

	<i>age - demog1</i>	<i>newrace</i>	<i>povertygroup</i>	<i>tolddepression</i>	<i>numberperdaya</i>
<i>age - demog1</i>	1				
<i>newrace</i>	0.217612234	1			
<i>povertygroup</i>	0.109147925	-0.344	1		
<i>tolddepression</i>	0.10556727	-0.088	0.183	1	
<i>numberperdaya</i>	0.072101434	-0.216	0.003	-0.113	1

Total n = 114