

EXAMINING LEVELS OF SOCIAL SUPPORT, CONCEALMENT AND
DISCLOSURE AND HETEROSEXISM AS HEALTH INDICATORS

IN SEXUAL MINORITY WOMEN WHO SMOKE

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DEDICATION

“It always seems impossible until it’s done.”

Nelson Mandela

Dedicated with love to Beth, Sophie, and Ella.

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I salute the women who participated in this study, without their contributions this work could not have occurred. Thank you to the community key leaders who helped with recruitment strategies, especially Lory Masters and Karen McCrocklin, thank you for doing *all* that you do. I am grateful for the courage of people like Hayden and other LGBTQ people living their truth with pride every day and making this world a better place.

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ABSTRACT

DE'AN OLSON ROPER

EXAMINING LEVELS OF SOCIAL SUPPORT, CONCEALMENT AND
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SEXUAL MINORITY WOMEN WHO SMOKE

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Recent evidence suggests self-identified sexual minority women (SMW) smoke at higher rates than gay men and heterosexual women. A limited amount of research for this disparity points to factors that include tobacco company targeted marketing, genetic differences, gender-based metabolic differences, coping styles such as identity concealment, social support, and stigma related stress. This cross-sectional online study aimed to examine the relationship of social support, concealment, and disclosure of sexual identity, experiences of heterosexism and internalized smoking stigma as health indicators in SMW smokers and non-smokers. Recruitment through various social media sites such as Facebook, Reddit, employer organizations and community centers produced 260 cisgender SMW who met study criteria. The majority of respondents were white, the average age was 44, with average incomes of \$60,000 and most had a college degree. Two-thirds identified as lesbian and one third were bisexual. There were no differences in smoking status and smoking rates between lesbian and bisexual smokers. Smoking prevalence for the sample was 19.2%, and 55% had smoked at least 100 cigarettes in their lifetime. Of those that smoked, 54% were every day smokers, and 46% smoked

some days. Smokers, when compared to non-smokers, reported higher rates of distress on experiences of heterosexism, but showed no difference in social support, and identity concealment and disclosure. Age was associated with both disclosure, and concealment of identity, the intensity of daily heterosexist experiences and smoking stigma regardless of smoking status. Younger SMW experienced higher degrees of distress related to daily heterosexist experiences, but sexual identity of lesbian or bisexual was not significant for this variable. This outcome suggests minority stress processes factor into early sexual identity development. The prominence of age as a significant correlation to multiple variables should be noted for future studies of SMW. Recommendations include reducing sexual minority stigma through early prevention efforts targeting structural stigma with health promotion and advocacy efforts. Smoking cessation programs should assess levels of sexual minority stress in participants and tailor cognitive interventions that increase coping skills in stigmatizing environments. Lastly, health educators are urged to design prevention programs targeting young SMW that intervene on multiple levels of the environment. Sexual identity development milestones and the interaction of minority stress processes should inform these efforts.

TABLE OF CONTENTS

	Page
DEDICATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
Chapter	
I. INTRODUCTION	1
Study Purpose	2
Theoretical Foundation	2
Research Questions	3
Hypothesis	3
Delimitations	3
Limitations and Assumptions	4
Definition of Terms	4
Review of the Literature	5
Methodology	7
Sampling Procedures	7
Data Collection	8
Measures	9
Data Analysis	12
Importance of the Study	12
II. REVIEW OF THE LITERATURE	14
Overview of Smoking	15
Historical Perspective	16
Nicotine Addiction	18
Gender and Nicotine Addiction	20
Cessation	21
Health Impact	21
Smoking Prevalence Rates	23
Overall Prevalence	23
Sexual Minority Stress theory	26

Stigma	27
Stress	28
Discrimination.....	28
Sexual Minority Women and Smoking.....	29
Defining Sexual Identity.....	29
Social Support.....	31
Concealment	32
Heterosexism.....	33
Summary.....	34
III. METHODOLOGY	36
Population and Sample	37
Protection of Human Subjects	38
Data Collection	38
Measures	39
Smoking.....	39
Sexual Identity	39
Social Support.....	39
Outness (Concealment and Disclosure).....	40
Discrimination and Stress	40
Data Analysis	41
IV. RESULTS	43
Demographics	43
Independent Variables	46
Relationships Between Variables	49
Instrument Reliability	52
Correlation	52
V. CONCLUSIONS AND RECOMMENDATIONS	60
Summary Of Findings.....	61
Research Questions and Hypothesis	62
Research Question One.....	62
Research Question Two	63
Research Question Three	64
Research Question Four	65
Hypotheses.....	66
Additional Variables of Consideration	67
Age and Smoking.....	67
Implications & Discussion.....	67
Minority Stress.....	67

Sexual Identity	69
Contribution	71
Implications for Heath Educators	71
Sexual Minority Youth	71
Sexual Minority Adults.....	72
Limitations and Conclusion	73
REFERENCES	77
APPENDICES	87
A. Smoking Status	97
B. Sexual Identity and Demographics	99
C. Nebraska Outness Scale.....	101
D. Daily Heterosexist Experiences Questionnaire.....	103
E. Multidimensional Scale of Perceived Support.....	107
F. Internalized Smoking Stigma Instrument	109
G. Recruitment Letter	111
H. IRB Exemption Letter.....	113
I. Curriculum Vitae	115

LIST OF TABLES

Table	Page
1. Frequencies and Percentages of Categorical Demographic Variables.....	46
2. Independent Variables Frequencies and Percentages	47
3. Dependent Variables Means and Standard Deviations	49
4. Frequencies and Percentages of Age and Sexual Identity	50
5. Frequencies of Smoking Behaviors by Sexual Minority Identity.....	51
6. Frequencies of Smoking Behaviors by Sexual Minority Identity.....	51
7. Cronbach’s Alpha. Reliability for Dependent Variable Measures.....	52
8. Pearson’s Product Moment for Dependent Variables.....	54
9. Pearson’s Product Moment Correlation Analysis for Age with Dependent Measures	54
10. Means and Standard Deviations for Smoking Status with Daily Experiences of Heterosexism (DHEQ), Multidimensional Scale of Perceived Social Support (MSPSS), Concealment (NOS- Concealment) and Disclosure (NOS-Disclosure) of sexual identity.....	56
11. Concealment and Disclosure between Lesbian and Bisexual Smokers	57
12. Means and Standard Deviations for Smoking Stigma and Smokers Compared to Previous Smokers.....	58
13. Spearman’s Correlation with Smoking Status and Daily Experiences of Heterosexism (DHEQ), Multidimensional Scale of Perceived Social Support (MSPSS), Concealment (NOS-Concealment) and Disclosure (NOS-Disclosure) of Sexual Identity	59

CHAPTER I

INTRODUCTION

Tobacco related mortality rates are higher than deaths from alcohol, AIDS, car crashes, illegal drugs, and suicide combined (U.S. Department of Health and Human Services [USDHHS], 2014). Public health efforts have been effective in decreasing tobacco use in the last 50 years; yet smoking remains the number one cause of preventable deaths in the US (USDHHS, 2014). The last few decades of surveillance denotes downward trends in smoking behaviors, with men experiencing higher cessation success than women (Thun et al., 2013). However, among self-identified sexual minorities, prevalence rates are 30.8% compared to the heterosexual prevalence rate of 20.5% (Agaku, King, & Dube, 2014). Furthermore, researchers agree, sexual minority women (SMW) smoke at a rate 2 to 3 times higher than heterosexual women (Boehmer, Miao, Linkletter & Clark, 2012; Bryant & Bowman, 2014; Fallin, Goodin, Lee & Bennett, 2015; Fredriksen-Goldsen, Kim, Barkan, Balsam, & Mincer, 2010).

A majority of health research with sexual minority populations compiles aggregate data for both men and women, often homogenizing their experiences and needs (Hequembourg & Brallier, 2009). Yet, SMW experience distinct gender-related discriminatory experiences compared to those of sexual minority men (Hequembourg, & Brallier, 2009; Szymanski & Henrichs-Beck, 2014). Empirical studies often overlook specific gender experiences of SMW for reasons such as research bias, limited sampling related to population visibility, and structural discrimination in national federal funding

priorities (Coulter, Kenst, Bowen, & Scout, 2014). Consequently, a significant gap exists as it relates to health research in SMW. Correspondingly, research related to the disproportionate rates of smoking in SMW is critically deficient.

Study Purpose

This study aimed to examine the relationship of social support, concealment of sexual identity, experiences of heterosexism and perceived smoking stigma as health indicators in SMW who smoke. These specific indicators have not been explored exclusively in SMW (Blosnich, Lee & Horn, 2013; Jackson & Mohr, 2016; Matthews, Hotton, DuBois, Fingerhut, & Kuhns, 2011; Graham et al., 2011).

Theoretical Foundation

Minority stress model posits sexual minorities experience unique and persistent discriminatory experiences that interact on different levels of the social, interpersonal and larger community levels of the environment and as such are entrenched in the social and cultural fabric of the majority environment (Blosnich, Farmer, Lee, Silenzio, & Bowen, 2014; Frost, Lehavot & Meyer, 2015; Meyer, 2003). Constructs of the minority stress model include, managing the stress of social stigma, internalized homophobia as a result of chronic heterosexism experiences, and navigating risky environments by concealment of sexual minority identity (Meyer, 2003). The external and internal efforts of managing these unique stressors are individually expressed as smoking risk behaviors or expecting rejection of social support (Blosnich et al., 2013; Meyer, 2003).

Research Questions

The research questions for this study were; 1) how do the levels of social support, concealment of sexual identity, daily experiences of heterosexism, and smoking stigma vary for SMW who smoke 2) do differences in levels of social support, concealment of sexual identity, daily experiences of heterosexism, and smoking stigma contribute to disproportionate rates of smoking?

Hypothesis

H₀: There is no statistically significant difference in levels of social support, sexual identity concealment, heterosexist experiences, and smoking stigma between SMW smokers and non-smokers.

H₀: There is no significant difference in levels of social support, sexual identity concealment, heterosexist experiences, and smoking stigma between Lesbian and Bisexual smokers.

H₀: There is no significant difference in levels of social support, sexual identity concealment, heterosexist experiences, smoking stigma, and rate of smoking for SMW.

H₀: There is no statistically significant correlation between levels of social support, concealment of identity, daily heterosexist experiences, and smoking stigma and SMW smoking status.

Delimitations

The study sample included self-identified SMW women over age 17, who reside in the US. The sample also included both smokers and non-smokers.

Limitations and Assumptions

As a cross-sectional design, the study used a purposive sampling strategy, which presented a limitation of generalizability of results to the larger population (Creswell, 2009). Significant methodological changes would be required to overcome issues of generalizability (Graham et al., 2011). Participants were assumed to provide honest responses to all survey items; participants also had to understand English and navigate the online survey instruments.

Definition of Terms

Smoking – the inhalation of combustible tobacco, cigarettes in particular for this study.

Sexual Minority – sexual identity, behavior, or attraction differs from majority population.

Social Support – feeling cared for by a close loved one, feeling valued and respected, and a shared sense of belonging and mutual communication.

Outness – the degree of openness of one’s sexual identity, operating on a continuum of disclosure and concealment.

Concealment – intentionally hiding or not disclosing sexual orientation identity to others.

Heterosexism – stigmatizing experiences of discrimination in which heterosexuality is perceived as the norm or assumed without question.

Smoking Stigma – internalized negative labels and shame regarding smoking as well as external experiences of social distancing related to smoking status.

Review of the Literature

Those who smoke have shortened lifespans by more than 10 years as compared to those who never smoked (Jha et al., 2013). Despite progress in the last 50 years, smoking remains the number one cause of preventable deaths in the U.S., more specifically women are catching up to men concerning the health impacts of smoking (USDHHS, 2014). For example, the latest Surgeon General Report on Smoking indicates for the first time, women have surpassed men in the mortality rates of chronic obstructive pulmonary disease (COPD), and they face 10 times the risk of developing lung cancer than they did 50 years ago (USDHHS, 2014). These gender based smoking trends appear to be related to increased prevalence rates in women, while men's smoking prevalence rates decreased, simultaneously recent research revealed biological and genetic differences in the metabolism of nicotine (Carter et al., 2015; USDHHS, 2014; Thun et al., 2013).

As previously stated, recent studies indicate differences in smoking rates found in sexual minority (SM) groups as compared to non-SM groups (Cochran, Bandiera & Mays, 2013; Conron, Mimiaga, & Landers, 2010; Fallin et al., 2015; Matthews et al., 2014). These studies indicate SMW smoke at rates 2 to 3 times higher than their heterosexual peers (Cochran et al., 2001; Conron et al., 2010; Fallin et al., 2015; Matthews et al., 2014). Although limited population studies exist detailing the health disparities of sexual minorities, a few national substantial studies have documented disparities in asthma, cardiovascular risk, diabetes and disability (Conron, Mimiaga, & Landers, 2010; Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013; Kim & Fredriksen-Goldsen, 2012; Ward, Jostl, Galinsky, & Dahlhamer, 2015). Cardiovascular

risk and asthma are directly linked to smoking (USDHHS, 2014). A study by Conron (2010) found lesbians and bisexual women were more likely than heterosexuals to report high cardiovascular risks. Lesbians experience 1.6 times the risk and bisexual women experience 2.2 times the risk as compared to straight women (Conron et al., 2010). Kim and Fredriksen-Goldsen, (2012) found Hispanic lesbian and bisexual women experienced lifetime asthma rates of 20% compared to a national average of 9% in heterosexual women.

The predominant theory for SMW smoking disparities is based on the minority stress model (Blosnich et al., 2013; Meyer, 2003). Minority stress model proposes the causal pathway for SM disproportionate smoking disparities is attributed to the experience of unique external discriminatory stressors and internal subjective experiences of inequality and discrimination as a result of SM status (Blosnich et al., 2013; Gruskin, Byrne, Altschuler, & Dibble, 2009; Meyer, 2007). These stressors may be expressed in decreased social support and or increased stress processes caused by hypervigilance to threatening situations if sexual orientation identity is disclosed (Blosnich et al., 2013; Fingerhut, Peplau, & Gable, 2010; Hatzenbuehler, 2009). Although most minority groups are marginalized and experience environmental stressors, those who are ethnic/racial minority group members are traditionally raised in a family and/or community that typically provides social modeling for dealing with stress related to marginalization (Meyer, 2003; Meyer, Schwartz, & Frost, 2008). Sexual minorities most likely are raised in heterosexually dominated families and communities, which does not allow for the inoculation and social learning of coping with sexual orientation stressors

within families; frequently concealment of identity is the earliest coping skill utilized (Lehavot & Simoni, 2011). Concealment further isolates and attenuates coping skills and active solicitation of social support (Hatzenbuehler, 2009).

Methodology

Sampling Procedures

The survey sample size goal was 400 respondents (Krejcie & Morgan, 1970; Vanhoorhis & Morgan, 2007). Projecting sample size is desirable in research design because it allocates adequate power to demonstrate difference, and association; strategically planning sample size allows for confidence that study results will not be a result of chance (Krejcie & Morgan, 1970; Noordzij, Dekker, Zoccali, & Jager, 2011; Vanhoorhis & Morgan, 2007). Proposed population parameters, confidence levels, and confidence intervals provide a rule of thumb for determining sample size (Krejcie & Morgan, 1970;). Multiple authors, including Vanhoorhis and Morgan (2007), illustrate a typical table indicating reasonable sample sizes for specific types of analysis (Krejcie & Morgan, 1970).

Dependent variables proposed for this study were continuous data and included, social support, heterosexist experiences, disclosure, and concealment of identity and smoking stigma. Using a confidence level of 95% and significance level of .05 ($p = .05$), a priori power analysis indicated with a lower medium effect size range of 246 participants were needed for this study (Krejcie & Morgan, 1970; Vanhoorhis & Morgan, 2007). In order to account for incompleteness of questions or ineligible demographics such as male gender or under age 18, a strategy to over recruit respondents was implemented, and was

achieved with a total of 360. Finally, increasing the size the sample decreases the chances of a Type II error, accepting the null hypothesis in error (Leedy & Ormrod, 2013). Yet, this increases the chances of a Type I error, incorrectly rejecting the null hypothesis (Leedy & Ormord, 2013).

Researchers have noted probability sampling among sexual minorities is difficult due to the nature of the hidden population (Binson, Blair, Huebner & Woods, 2007; Meezan & Martin, 2012; Meyer & Wilson, 2009; Graham et al., 2011). Suggestions for sampling procedures for SM groups include reliance on community venues and social networks (Meyer & Wilson, 2009). As such, recruitment of study participants entailed sending tailored emails and study announcements to various sexual minority based organizations, social media posts, and professional contacts. Example groups were LGBT CenterLink Programs, which are a collective of more than 150 LGBT community centers. Other groups included the Mautner Project based in Washington, DC, Lesbian Health Initiative of Houston, University LGBTQ student groups, and LGBTQ employer networking groups. Specialized lesbian and bisexual sub groups of Reddit and Facebook were tapped. Key sexual minority community leaders who are high utilizers of social media sites such as Facebook and Twitter were petitioned for assistance with assistance in distribution of the survey link to their followers.

Data Collection

This quantitative study was a cross-sectional survey design (Leedy & Ormrod, 2013). The survey consisted of validated instruments presented as a web based questionnaire and was accessible by using a web link. The survey linked to PsychData, a

secure online research tool meeting IRB standards and is used by Texas Woman's University to conduct web based survey research (PsychData, n.d.).

Measures

Standard demographics were collected; age, gender, race/ethnicity, level of education, income, and area of residence defined by zip code to discern regional differences. Other key variables included sexual identity. Defining the IV sexual identity is essential for various reasons (Sell, 2007). The literature does not define a clear and standard definition for sexual identity (Graham et al., 2011). Subsequently, studies with sexual minorities may find different outcomes based on the study definitions of sexual identity (Graham et al., 2011; Savin-Williams, 2006). Risk behaviors have been reported to change over the life course between bisexual women and lesbians, moreover sexual identity shifts in SMW as adult developmental milestones are reached (Boehmer, et al., 2012; Graham et al., 2011). For example, a study by Boehmer (2012) found the effect of sexual identity was stronger on smoking behaviors for bisexual women for those under age 50; when compared to those over age 50, lesbians were described as having a stronger sexual orientation effect on the odds ratio of being a current smoker when compared to their bisexual counterparts. Consequent to sexual identity development differences, the IV sexual minority status was assessed by choosing, one of the following categorical variables, only lesbian/gay, mostly lesbian/gay, bisexual, mostly heterosexual, only heterosexual/straight, other. Categories only lesbian/gay were collapsed into one category identified as lesbian, all other choices were coded as bisexual. Final analysis excluded endorsements for only heterosexual/straight and other.

World Health Organization Framework Convention on Tobacco Control Smoking and the national surveys conducted by the Centers for Disease Control and Prevention guided smoking questions (Global Adult Tobacco Survey Collaborative Group [GATS], 2011). Three core questions determined smoking status. First respondents were asked if they had smoke 100 cigarettes in a lifetime. Rates of smoking were determined by asking if current smokers smoked every day or some days. Finally, respondents were asked to identify if they were previous smokers and then identify as some day or every day smokers (GATS, 2011).

Meidlinger and Hope (2014) posited that concealment, rather than disclosure, is more closely aligned with the navigation of the effects of minority stress, in that it is an intentional act protecting identity stigma and discrimination. The Nebraska Outness Scale (NOS) measured constructs of concealment and disclosure as subscales with 10 items respectively. The NOS measures percent of concealment and disclosure to each family, friends, co-workers and strangers (Meidlinger & Hope, 2014). Each of the subscales had good internal reliability and predictive validity when compared to other scales such as Outness Inventory (Meidlinger & Hope, 2014; Jackson & Mhor, 2016). Concealment was found to have good predictability to social support and minority stress constructs (Meidlinger & Hope, 2014; Jackson & Mhor, 2016).

Intensity of minority stress experiences was measured using the Daily Heterosexist Experiences Questionnaire (DHEQ) (Balsam, Beadnell, & Molina, 2013). This instrument was developed and validated for use in diverse SM populations and has demonstrated good validity and reliability (Balsam et al., 2013). In a systematic review

of 162 studies measuring discrimination against sexual minorities, the DHEQ was found to be the only one that was psychometrically sound in 5 content areas including, reliability factor structure, content validity, construct validity and criterion related validity ($\alpha = .86$ to $\alpha = .76$) (Morrison, Bishop, Morrison, & Parker-Taneo, 2016). Pearson's correlation with DHEQ subscales and psychosocial adjustment showed acceptable for construct validity with scores ranging from $r = .33$ to $r = .54$. The DHEQ is a measure of the degree of distress resulting from the experience of discrimination, using a Likert scale from 0 to 5, or choose to skip the question (Balsam et al., 2013). The scale is comprised of 50 total questions, however six questions related to worry about HIV/AIDS and safe sex were not included, as they do not readily relate to SMW.

Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS), the scale was originally developed by Zimet, Dahlem and Farley (1988). The MSPSS assessed social support in the areas of family, friends, and significant other using a Likert scale of 1 to 7. Previous studies indicated excellent overall internal reliability ($\alpha = .91$) and construct validity (Lannert, 2014; Zimet, Dahlem, Zimet, & Farley, 1988).

Smoking stigma was measured using the Internalized Stigma of Smoking Inventory (ISSI) (Brown-Johnson et al., 2015). Self-stigma, felt-stigma and enacted stigma are the three constructs of the ISSI. Data analysis in previous studies by Brown and colleagues indicated good reliability for each construct and Cronbach alpha of 0.83 for overall internal reliability.

Data Analysis

Statistical analysis to determine differences in means between groups were applied in data analysis to determine relationships between the dependent variables, disclosure, social support and discrimination and independent variables of smoking status and sexual identity. For simple correlations between variables, a Pearson's product-moment correlation coefficient was calculated (Field, 2013). It is important to note correlational statistics do not imply causality (Leedy & Ormrod, 2013). Independent samples *t*-test determined differences between smokers and non-smokers (Field, 2013). In addition, factorial analysis of variance (ANOVA) statistics were calculated to determine how variables were interrelated between groups based on smoking rate (Field, 2013).

Importance of the Study

Minority stress theory is frequently used to explain high smoking rates among SMW (Blosnich et al., 2013; Gruskin et al., 2009; Meyer, 2007). SMW must negotiate unique discriminatory environments on a daily basis as a result of the intersectionality of gender and a stigmatizing sexual identity minority status (Friedman & Leaper, 2010; Hequembourg & Brallier, 2009). Typical coping responses may include the choice of concealment of sexual identity, or engagement in risk behavior such as smoking (Meyer, 2003). Despite concealment as a coping response to discriminatory experiences, studies indicate those SMW who come out may enjoy a more robust social support system for a stigmatized identity (Kwon, 2013; Quinn, Williams & Weisz, 2015) this increased social support may augment positive coping, helps to buffer stress and decrease risk behaviors (Kwon, 2013; Quinn, Williams & Weisz, 2015). On the other hand, the acceptance of

smoking as a cultural norm may reduce smoking stigma (Gruskin et al., 2009; Matthews et al., 2011). There were no studies found by this investigator that examined health indicators of social support, concealment and disclosure of sexual identity and daily discriminatory experiences, and smoking stigma of SMW smoker and non-smokers and between lesbian and bisexual smokers. Furthermore internalized smoking stigma has not been investigated in sexual minority groups. This study helped to further elucidate the role of sexual identity concealment and disclosure and heterosexism experiences as health indicators between SMW who smoke and those who do not. Equally important, the data from this study demonstrated similar outcomes with other studies for the role of social support among SMW who smoke. A large portion of sexual minority research examines variables by gender and also at times, reducing SMW to a combination of lesbian and bisexual women which does not allow for assessment of between group analysis (Hequembourg & Brallier, 2009). This investigation contributed to the literature of the study of SMW between groups. Lastly, this study helps to extend the role of minority stress theory as it relates specifically to smoking in SMW populations.

CHAPTER II

REVIEW OF THE LITERATURE

SMW smoke up to 2 to 3 times the rates of heterosexual women (Boehmer et al., 2012; Fallin et al., 2015; Fredriksen-Goldsen et al., 2013). Reasons for the disproportionate rates are not fully explained in the literature but may be attributable to unique minority stressors resulting in social stigma. Meyer (2003) describes distinctive stressors, such as stigma-based discrimination as distal stressors. Accordingly, a reaction to these experiences creates a proximal stress response such as concealing sexual identity. Managing these distal and proximal stressors, strains adaptive coping skills and depletes needed resources for healthy and effective responses (Blosnich et al., 2013; Meyer, 2003). Other individual determinates for SMW smoking rates include the biology of addiction and the role of genetics, for example younger smokers get more addicted sooner and women find it harder to quit than men due to biological differences (Benowitz, 2009; Hartz et al., 2012). Furthermore, tobacco company advertising has a history of creating tailored messages that appeal directly to SMW subsequently creating a social environment where smoking is acceptable and even complementary to SMW identity (Smith & Malone, 2003; Smith, Offen & Malone, 2005).

This literature review begins with a brief historical overview of smoking and a summary of how the business of tobacco influenced smoking trends in women and sexual minorities. It includes a summary of tobacco addiction and how nicotine affects women and men. Chapter 2 also reviews smoking prevalence rates and health effects. Finally,

through the lens of minority stress theory, the review examines the unique perspective of SMW experiences navigating intersecting identities through socially constructed stigma and discrimination and responses of concealment and resulting seeking social support.

Overview of Smoking

Tobacco related mortality rates are higher than deaths from AIDS, alcohol, car crashes, illegal drugs, and suicide combined (USDHHS, 2014). Public health efforts have been effective in decreasing tobacco use in the last fifty years; yet smoking remains the number one cause of preventable deaths in the United States (USDHHS, 2014).

Smoking has been shown to significantly contribute to 21 diseases, including lung cancer, COPD, 6 types of heart disease, and 12 specific cancers (Carter et al., 2015). Despite the health consequences, those who quit smoking before the age of 40 can decrease their risk of mortality caused by smoking by 90% (Jha et al., 2013). Smoking among men has decreased at a steady rate since the 1950's, and women's rates only recently began declining, this decline was directly influenced by industry targeted marketing efforts (Thun et al., 2013). Consequently, women, for the first time, are now expected to die of COPD at higher rates compared to men (Carter et al., 2015; USDHHS, 2014). Furthermore, the mortality risks of smoking related deaths are now relatively equal between men and women (Carter et al., 2015; USDHHS, 2014). Finally, many marginalized populations consistently demonstrate higher rates of smoking than others do; this includes SMW with one of the highest prevalence rates of smoking (Bryant & Bowman, 2014).

Historical Perspective

Early tobacco makers were leaders in marketing efforts that helped to shape social attitudes and behaviors toward cigarette smoking. These efforts were especially salient among gender and racial minority groups (Drabble, 2000; Smith, Thomson, Offen, & Malone, 2008; Smith, Offen & Malone, 2006; USDHHS, 2014). Before 1920, men primarily used tobacco; it was against cultural norms for women to smoke and was considered vulgar or crude (USDHHS, 2014). By 1890, a consortium of tobacco competitors formed the American Tobacco Company. The company had solved the problem of efficiency and price by perfecting mass production of the cigarette, paving the way for focused energy and efforts into growing their cigarette customer base using targeted marketing and advertising efforts (USDHHS, 2014; USDHHS, 2012).

As a result of successful tailored tobacco messaging, women's smoking rates increased 28% during the years 1924 to 1965 (Pollay et al., 1996; USDHHS, 2001). The 2001 Surgeon General's Report on Women and Smoking systematically demonstrated a correlation between Tobacco promotional expenditures and increased prevalence rates of female smokers. Advertising efforts by late 1920, and throughout the remaining four decades, capitalized on the cultural trends of women's emerging independence and equality in the US (Pollay et al., 1996; USDHHS, 2001). American women associated smoking with an attitude of independence, rebellion, and sexuality (USDHHS, 2001). Moreover, advertising positioned smoking as a weight management and mood regulation consumer product for women (USDHHS, 2001; Samet, Yoon, & World Health Organization [WHO], 2010). Hence, tobacco marketing shaped smoking attitudes and

fashion of the modern woman in the first half of the 20th century (Pollay et al., 1996; USDHHS, 2001).

In the late 1990's, tobacco companies groomed smoking norms and values in sexual minority communities using marketing tactics learned in the previous century. On the heels of the women's movement of the 1960's and 1970's, the equal rights movement for gays and lesbians was gaining momentum (Dilley, Spigner, Boysun, Dent, & Pizacani, 2008). Within another decade, gay men were protesting for recognition of AIDS and funding for a disease that was quickly an epidemic and also one that vehemently reinforced sexual minority stigma (Stevens, Carlson, & Hinman, 2004). Not wanting to offend their mainstream consumer base, tobacco companies initially were slow to be affiliated with LGBT groups (Smith, & Malone, 2003; Stevens et al., 2004). Nonetheless, boycotts organized by AIDS activists were pivotal in opening the door to tobacco corporation's awareness of a new consumer population that was increasingly becoming a powerful and brand loyal patron (Stevens et al., 2004). Tobacco advertising exploited a powerful theme close to the heart of the LGBT movement; messages communicated that smoking was a legal, personal and private choice, an argument that resonated among sexual minorities (Smith et al., 2005; Stevens et al., 2004).

SMW were targeted specifically using tailored and subtle messaging. The Virginia Slims brand sported printed advertising depicting two women on a fishing trip dressed in short shorts and fishing jackets, the statement was "Women aren't opposed to a line - it just all depends on what's attached to it" (Washington, 2002). Other print cigarette advertising for lucky cigarettes illustrated 2 women almost kissing and the

banner underneath states “*I* choose” (National LGBT Tobacco Control Network.org., n.d.). Another print advertisement used in Canada, showed two women unclothed and bed covers seductively draped over parts of their bodies, the caption read “Catch a Buz, it’s only naughty the first time” (Buz being the name of the cigarette brand) (National LGBT Tobacco Control Network.org., n.d.).

Tobacco found successful marketing efforts by way of sponsoring and supporting LGBT events and fundraisers, making it appear as if they were partnered with the equal rights movement through their messaging. LGBT leaders felt they had arrived as a viable customer base to be reckoned with and soon equal rights would be realized. As a result of this support, the sexual minority community experienced validation and felt recognized as a powerful consumer group; this helped to ameliorate feeling invisible and decrease perceived social stigma of sexual minority identity (Smith et al., 2008). The industry financially supported equal rights events with sponsorships and advertising in the LGBT community for almost 3 decades (Diley et al., 2008; Drabble, 2000; Smith et al., 2005; Stevens, et al., 2004). Tobacco targeted marketing and courting of the LGBT community helped to solidify the normalization of smoking in a vulnerable population that experienced isolation, stigma, discrimination and craved legitimacy by way of social acceptance and visibility (Smith et al., 2008; Stevens et al., 2004).

Nicotine Addiction

Smoking is clearly a health risk behavior, and like most risk behaviors, it is complex and impacted by dynamic and every-changing influences at different levels in the environment. Using an ecological perspective, interdependent environmental factors

effect smoking initiation, continuance, and cessation. These factors include the intersection of individual biology and coping characteristics, with interpersonal dynamics of stigma and identity management among social support systems like friends and family. Additionally, targeted messaging help to shape attitude, desire, and opportunity for smoking. Smoking cigarettes creates an addiction to nicotine in the individual, yet larger sociological external environmental factors act on individual levels to mediate the addiction.

The nicotine found in tobacco leaves is a highly addictive substance. It can cause both physiological and psychological addiction (Benowitz, 2010). Emerging research supports individual genetic predisposition theories as an etiology of nicotine addiction (Benowitz, 2010; Hartz et al., 2012; Hiemstra, Kleinjan, van Schayck, Engels, & Otten, 2014). These theories are still under investigation, but there is strong indication that specific genetic markers are associated with early onset of smoking behavior and later nicotine addiction (Hiemstra et al., 2014; Schnoll, Johnson, & Lerman, 2007). An extensive collaborative meta-analysis study examined a particular allele, and its relationship to early onset smoking and heavy smoking, measured by cigarettes per day (CPD) and found a strong association with genetic vulnerability to heavy smoking (Hartz et al., 2012).

With the ingestion of nicotine, the brain becomes adapted to the neurochemical changes and rewards with the ingestion of nicotine. When tobacco is smoked, nicotine is absorbed by the lungs and reaches the brain within 6-7 seconds, there it binds with nicotinic cholinergic receptors, and the result is a release of neurotransmitters (Benowitz,

2010). Dopamine is one of the neurotransmitters released. Dopamine is responsible for pleasurable feelings and motivational drives in human behavior. The mesolimbic system, corpus striatum and the frontal cortex of the brain are all involved in the nicotine triggered dopamine release. With repeated exposure, the sites in the brain that bind with the nicotine begin to increase in number, while older nicotine binding sites may become desensitized. These chemical processes associated with dopamine and other chemical releases are surmised to be one of the significant mechanisms in the nicotine addiction cycle (Herman, DeVito, Jensen, & Sofuoglu, 2014). Once tolerance is developed, withdrawal symptoms will emerge and create powerful cravings to use nicotine to alleviate these symptoms. Some research demonstrates gender differences and genetic inheritability in nicotine addiction (Benowitz, 2009; Blum et al., 2015; Herman et al., 2014).

Gender and Nicotine Addiction

Early prevalence studies supported differences in gender and nicotine addiction without an understanding of the underlying mechanisms that produced these differences (Benowitz, 1998). Gender differences in nicotine are explained by new evidence supporting the physiological processes involved in smoking (Carpenter et al., 2014; Smith et al., 2015). Nicotine metabolism plays a role in nicotine regulation and in potential cessation attempts and successes (al'Absi, Nakajima, Allen, Lemieux, & Hatsukami, 2015). Women metabolize nicotine more quickly than men, which serve to increase their smoking behaviors in order to mediate the withdrawal symptoms (al'Absi et al., 2015; Benowitz, 2010). Faster metabolism also creates more severe and acute

withdrawal symptoms as well as contributes to a decreased frequency of successful cessation (al'Absi et al. 2015; Benowitz, 2010). Studies show strong environmental cues and more intense cravings are associated with women's smoking behaviors; whereas men's smoking behaviors are related more to the management of the nicotine levels in their systems (Benowitz, 2010; Carpenter et al., 2014; Doran, 2014; Saladin et al., 2012; Schnoll et al., 2007). These social and environmental cues may be more prevalent in SMW as they frequently socialize in bar establishments where the behavior of smoking is reinforced among their sexual minority peers (Gruskin et al., 2009; Matthews et al., 2011).

Cessation

Smoking behaviors and cessation efforts of men and women differ, and it is posited that nicotine metabolism is central to the theory of gender differences (al'Absi et al., 2015; Benowitz, 2009). Smoking behaviors of women are associated with strong environmental cues and more intense cravings; whereas men's smoking behaviors are related more to the management of the nicotine levels in their systems (al'Absi et al., 2015; Benowitz, 2010; Carpenter et al., 2014; Doran, 2014; Saladin et al., 2012; Schnoll et al., 2007). These findings potentially point to reasons women have lower quit rates of smoking and higher prevalence of smoking in the population than in past years (Benowitz, 2010; Thun et al., 2013).

Health Impact

Inhalation of smoke from cigarettes delivers more than 7000 chemicals via the bloodstream to arteries and then to every organ in the human body including lead,

formaldehyde and butane (USDHHS, 2010; US Department of Food and Drug Administration [FDA], 2012). These chemicals injure organs at the cellular level; additional damage occurs when the next cigarette is smoked within a short time period (UDHHS, 2010). Historically the chemical content of cigarettes has changed as well as the design (USDHHS, 2014). Through filter and style designs cigarette manufacturers have increasingly found more effective methods for the dispensing of nicotine to the body; some of these design changes force deeper inhalation, consequently delivering more smoke to the lungs (USDHHS, 2014). As product changes have occurred over time, smokers have become more addicted; consequently disease rates have increased and trends begin to appear. With the previously mentioned targeted marketing efforts toward women, rates of smoking increased significantly until the 1980s, while men's rates began to decline during the same decade (Ahmed et al., 2014; Thun et al., 2013). This shift in women's prevalence rates helps to explain how women have caught up to men's disease rates attributable to smoking (Peters, Huxley, & Woodward, 2013; Thun et al., 2013).

Women face ten times the risk of developing lung cancer than they did 50 years ago (USDHHS, 2014). According to the American Lung Association (2011), women's relative risk of developing lung cancer and cardiovascular disease are now equal to that of men. Cohort studies report that women's risk of lung cancer in the 1960s increased from 2.73 to 25.66 when compared to their contemporaries (Thun et al., 2013). The latest Surgeon General's report on Smoking (2014) has announced that women have now surpassed men in the mortality rates of COPD, (USDHHS, 2014). Conversely, published

literature regarding the direct health outcomes of smoking in SMW populations is virtually non-existent.

Cancer registries and databases, as well as the National Cancer Institute do not collect sexual identity data (Burkhalter et al., 2016). This lack of surveillance leaves a gap in the Tobacco health disparities literature, and further illustrates the invisibility of SMW. As Ward et al. write, (2015) additional research is needed in the study of chronic diseases among sexual minority populations because many of the smaller studies contradict each other, and there are no national surveys or studies that can be used in linking tobacco health outcomes to SMW prevalence data. As such, one can extrapolate that health implications related to women smoking would then also exist similarly within SMW populations. Consequently, the implications of this research deficient are significant; there may be protective factors, other health promoting behaviors, or unknown paired risky behaviors that could affect health disparity rates in SMW.

Smoking Prevalence Rates

Overall Prevalence

According to the Centers for Disease Control and Prevention (CDC), men smoke at rates of about 18.8% and women smoke at a rate of 14.8% (CDC, 2014). Additional data from the same source indicates smoking declines significantly after age 65 to 8.5%, with the highest prevalence rate of 20% for age group 25-44 years (CDC, 2014). The CDC (2014) reports those with lower education and incomes trend toward higher smoking. In contrast, a national cohort study published in the New England Journal of Medicine, used a 50 year cohort study with three groups and found that eventually

education levels of contemporary smokers is more equally distributed (Thun et al., 2013). This trend marks another pattern in temporal changes of the effects of smoking and smoking risk factors. The National Adult Tobacco Study (NATS) in 2009-2010 estimated that the highest rates of 27.8% occurred among Other, non-Hispanic groups (Ahmed et al., 2014). This group, Other, non-Hispanic is comprised of those who self-identify as American Indian, Alaska Native, Native Hawaiian, or Pacific Islander. Black, non-Hispanic rates were 20.9% and White, non-Hispanic 19.7% (Ahmed et al., 2014; King, Dube, & Tynan, 2012).

As outlined earlier in the chapter, smoking behaviors and those who smoke have been influenced significantly by tailored messaging to specific target markets (USDHHS, 2001). Researchers recently have examined smoking rates and disease rates by distinguishing trends of smoking by age cohorts (Carter et al., 2015; USDHHS, 2014; Thun et al., 2013). Age cohort studies help to explain why women have caught up to the same smoking disease rates as men. Researchers report, contemporary “women smoke like men and die like men” (Thun et al., 2013, p. 363). In other words, women’s rates of smoking initiation did not level off until the 1980’s whereas; men’s smoking rates began to decrease the previous decade (Thun et al., 2013). As the cohort ages, mortality and disease rates for women begin to catch up to similar levels as men relatively (Thun et al., 2013).

Despite large cohort studies, researchers have yet to study in depth differences of risk rates and disease prevalence for sexual minorities (SM) prospectively. There are few national studies that include sexual orientation as a demographic (Conron et al.,

2010, Mimiaga, & Landers, 2010). Those that added the demographic have only done so in the more recent decade (Mayer et al., 2008). State behavioral risk factor surveillance surveys are not generalizable to larger populations however 6 states have included sexual orientation (Fredriksen-Goldsen et al., 2013). When compiled and reviewed, these state surveys and several smaller non-generalizable studies exist and point to similar results, SMW smoke at higher rates than their heterosexual peers (King et al., 2012; Fallin et al., 2015; Greenwood & Gruskin, 2007).

Sexual Minorities Smoking Prevalence

The NATS survey included the demographic of sexual orientation; LGB as compared to heterosexuals had prevalence rates of 32.8% (95% CI) and 19.5% (95% CI) respectively (Ahmed et al., 2014; King et al., 2012). A secondary analysis of the same national survey looked at smoking characteristics of LGB adults (Fallin et al., 2015). This analysis indicated statistical significance in the age of first use among women stratified by sexual orientation. Self-identified Bisexual women and Lesbians smoked at earlier ages than heterosexual women (Fallin et al., 2015). Bisexual smoked earlier than all other women (Fallin et al., 2015). The mean age of Bisexual women for their first cigarette was 14.61; Lesbians was 15.36 compared to heterosexual women with a mean age of 16.57 (Fallin et al., 2015). Earlier and smaller studies of smoking rates by sexual orientation measured similar disparities of 25.3% for self-identified Lesbians and 33.2% for Gay men (Greenwood & Gruskin, 2007).

An aggregate study for years of 2001-2008 of the Massachusetts Behavioral Risk Factor Surveillance Survey illustrates a similar story of smoking disparities among sexual

minority groups (Conron et al., 2010). This study indicates 26.3% prevalence rates of current smoking among Lesbians and 36.9% among Bisexual women (Conron et al., 2010). More Lesbians were former smokers than Bisexual women with rates of 31.8% and 23.8% respectively (Conron et al., 2010).

A more in-depth perspective of comparing SMW within group differences, signals that Bisexual women compared to Lesbians face increased risk for earlier age of onset of smoking, persistent smoking and fewer quit attempts or successes (Boehmer et al., 2012; Fallin et al., 2015; Fredriksen-Goldsen et al., 2010).

Sexual Minority Stress Theory

It is hypothesized that sexual minorities' health disparities and increased risk behaviors are a result of the unique and distinctive experiential stress related to daily discriminatory experiences (Meyer, 2003). Minority stress theory proposes that the sexual minority person is exposed to cultural and social experiences that increase personal stress and tax coping responses; these stressors are chronic, unique and occur above and beyond every day stressors (Blosnich et al., 2014, Frost et al., 2015; Hsieh & Ruther, 2016; Meyer, 2003). Meyer (2003) states the stressful experiences are a persistent part of the larger social environmental influences, and are entrenched in the social and cultural fabric of the environment (Blosnich et al., 2014, Frost et al., 2015; Meyer, 2003). Key constructs supporting the minority stress model include, stress of social stigma, discrimination, and concealment of sexual orientation identity (Meyer, 2003).

Stigma

Stigma is linked to health disparities among various minority groups and can be experienced as a result of external or internal processes (Hatzenbuehler, Slopen, & McLaughlin, 2014; Sue, 2010; Sutin, English, Evans, & Zonderman, 2014). Family and cultural values can create shame and internalized stigma while assorted legal policies create structural stigma forcing sexual minorities to live in hiding, and navigate chronic stressful events (Blosnich et al., 2014; Hatzenbuehler, Jun, Corliss & Austin, 2013; Lehavot & Simoni, 2011; Meyer, 2003; Sue, 2010). Additionally, overt discrimination including violence, victimization, and less overt bias, such as assumed heterosexuality lead to stigmatization (Blosnich et al., 2014; Lannert, 2014; Lehavot & Simoni, 2011; Meyer, 2003). Examples of recent societal and structural stigma include homosexuality listed as a mental illness, marriage rights, and military policy. Until 1973, homosexuality was listed as a mental illness in the psychiatric literature and was not completely removed until 1987 (Sue, 2010). Studies show that states with early marriage rights had lower health disparities among sexual minorities than those that did not support marriage rights (Obergefell v. Hodges, 2015). “Don’t ask, don’t tell” was the U.S. military policy for sexual minorities from 1994 until it’s repeal in 2011 (Sue, 2010).

Structural stigma experienced in the social environment of discrimination has been demonstrated to have a biological effect on cortisol levels and has been linked to smoking behaviors (Hatzenbuehler et al., 2013; Hatzenbuehler et al., 2014). Along the same lines, smoking has been linked to the stress of perceived gender discrimination and hostile environments among women but not men (Sutin et al., 2014).

Stress

Stress is associated with smoking as well as disparate health outcomes in the literature (Gruskin et al., 2009; Niaura, Shadel, Britt, & Abrams, 2002; Thoits, 2010). According to minority stress theory (MST), among sexual minorities, environmental stress is a primary factor explaining health disparities and risk behaviors (Meyer, 2003). Meyer (2003) links, MST to the additional stressors experienced as a result of the inequities found in the social environment. The theorist extends the construct of stress to the anticipation and expectation of discrimination and oppression, which increases vigilance, a stress arousal state that is easily measured physically (Meyer, 2003; Monroe, 2008). Lastly, the outcome of the oppressive experience is an internalization of stigma and minority identity that impinges and taxes individual coping skills (Meyer, 2003).

Discrimination

Although the U.S. Supreme Court recently upheld same sex marriage, potential avenues of discrimination still exist including protection for employment and housing (Obergefell v. Hodges, 2015; Human Rights Campaign [HRC], n.d.). There are no federal laws for housing protection and only 21 states currently have laws protecting these rights (HRC, n.d.). Although most all minority groups are marginalized and experience environmental stressors, those who are ethnic or racial minority group members are traditionally raised in families and or communities that provide social modeling for dealing with stress related to oppression and marginalization (Meyer, 2003; Meyer et al., 2008). Sexual minorities typically are raised in heterosexually dominated families and communities and does not allow for the inoculation and social learning of

coping with sexual orientation stressors within families; frequently concealment of identity is the earliest coping skill utilized (Lehavot & Simoni, 2011). This concealment only serves to further isolate and create stress, which can impact effective coping skills. Studies point out that sexual minority groups experience discrimination, and minority stress, with added strain as a result of not being recognizable as a sexual minority unless self-identified as such (Buffie, 2011).

Sexual Minority Women and Smoking

Defining Sexual Identity

Studies with sexual minorities may have different outcomes and certainly different implications based on how the participants are identified as a sexual minority (Przedworski, McAlpine, Karaca-Mandic, & VanKim, 2014). The National Institute Of Medicine defines sexual orientation as a relational construct (Graham et al., 2011). The definition identifies biological sex and the romantic attraction to others of the same sex and also includes acting on behaviors of attraction. These behaviors include one in which human needs are met sexually and or through romantic relationships in relation to those of the same sex and result in create an identity of sexual orientation. Three multidimensional concepts are implicit in this definition; these are identified as attraction, behavior and identity (Graham et al., 2011). Other studies define sexual orientation in similar terms such as attraction, desire, and behavior (Graham, et al., 2011). National surveys and larger CDC state Behavioral Risk Factor Surveillance Surveys appear to use the more discrete self-identifying categories as previously mentioned (LGBT) (Fredriksen-Goldsen et al., 2013); whereas, smaller and or qualitative studies seem to use

the multidimensional constructs of desire, attraction and behavior (Gates, 2011; Everett, & Mollborn, 2013). Still other studies identify sexual orientation by asking participants to choose adjectives such as mostly heterosexual or mostly homosexual, or only lesbian/gay (Bostwick, Hughes, & Everett, 2015). Those who identify as having same-sex behaviors do not always identify with a sexual minority label as an identity, and this produces opposing study results than when SMW are reduced to discrete categories (Przedworski et al., 2014).

These multiple methods of describing the variable of sexual identity are important for various reasons. First, risk behaviors have been demonstrated to change over the life course between Bisexual women and Lesbians (Boehmer et al., 2012). For example, the effect of sexual identity was stronger on smoking behaviors for Bisexual women for those under age 50. When compared to those over age 50, Lesbians were described as having a stronger sexual orientation effect on the odds ratio of being a current smoker than their Bisexual counterparts (Boehmer et al., 2012). Farmer (2013) found in their data analysis that as the sexual orientation label was narrowed to those who identified as Lesbian or Bisexual rather than having had sex with the same gender, risks for cardiovascular disease increased (Farmer, Jabson, Bucholz, & Bowen, 2013). Parks, Hughes, and Werkmeister-Rozas (2009) argue that using self-identification for sexual identity measurement is helpful in sexual minority research in which the focus is on experiences of social context and risk factors. The argument is based on the availability of participants and as a result of being out or self-labeling and their lived experiences as a

sexual minority. As outlined, the definition of sexual orientation is an important core component of research with SMW.

Social Support

Although, LGBT people face unique social bias and discrimination challenges, research has also identified personal coping skills and strengths result in resiliency in the face of these social stigma challenges (Chamberland & Saewyc, 2012; Fredriksen-Goldsen et al., 2013; Wexler, DiFluvio, & Burke, 2009; Zimmerman, Darnell, Rhew, Lee, & Kaysen, 2015). A common response to these unique challenges is to seek others that are similar in an effort to connect, cope, and decrease stress (Leibel, Lee, Goldstein, & Ranney, 2011). Socializing in a sexual minority bar establishment has long been a safe place for stress relief where sexual minorities can be comfortable and come out of hiding (Leibel et al., 2011). At the interpersonal level, socializing with those who are similar helps to create a sense of belonging, increases social support and may buffer against minority stress (Meyer, 2003; Lehavot, 2012). At the same time, bar establishments may reinforce smoking behaviors, some research indicates that disclosure and connections to the LGBT community may be protective factors against smoking (Legate, Ryan, & Weinstein, 2012; Matthews et al., 2011; Lehavot & Simoni, 2011; Quinn et al., 2015). In other words, the emotional connection and social support perceived by those who are identified with a positive image of the LGBT community and who are not concealing their sexual orientation, may serve to support stronger coping skills (Legate et al., 2012; Lehavot & Simoni, 2011; Quinn et al., 2015).

Yet, other researchers surmise that adopting the identity of the minority culture as a coping mechanism may also include a normalization or acceptance of smoking, especially with social attendance at drinking establishments (Leibel et al., 2011; Matthews et al., 2011). Qualitatively, younger SMW report feeling peer pressure to smoke and indeed use smoking to fit in and also cope with the stressors of coming out, discrimination and stigma (Gruskin et al., 2009; Youatt, Johns, Pingel, Soler, & Bauermeister, 2015).

Concealment

SMW may face daily experiences of harassment at the intersection of gender and sexual identity (Szymanski & Henrick-Beck, 2014). Stigma is rooted in heteronormative social values and can create difficult employment and social situations can because of the assumption of heterosexuality (Hequembourg & Brallier, 2009). For example, a common incident includes heterosexual men making romantic overtures toward women and not respecting boundaries when SMW tell them they are not interested in a sexual or romantic relationship (Hequembourg & Brallier, 2009). These situations leave SMW in a quandary about navigating concealment or coming out as well as rebuffing unwanted flirtations (Lehavot & Simoni, 2011). At times, coming out in this situation can increase the pressure and become harassment (Hequembourg & Brallier, 2009.) These experiences are unique and tax the coping responses of the individual as they frequently navigate stigmatizing events (Meyer, 2003).

Nevertheless, some research studies indicate the level of disclosure is associated with a higher sense of well-being for LGBT persons as a result of social support

mechanisms (Legate et al., 2012). Other studies indicate social support and disclosure are linked to increased coping skill and less depressive symptoms among SMW (Tabaac, Perrin, & Trujillo, 2015). However, a majority of these studies are homogenous by design and make assumptions that SMW and sexual minority men have similar experiences.

Concealment is somewhat of a conundrum for SMW. Not identifying as a sexual minority may create less risk in terms of potential discrimination yet it also isolating and limits opportunities for social support (Eliason & Fogel, 2015; Sue, 2010; Zimmerman, Darnell, Rhew, Lee, & Kaysen, 2015). Coming out to supportive others, especially family members can have a positive effect on health status and risk behaviors; conversely negative responses to revealing sexual identity reinforces stressors and is correlated to increased risk behaviors such as drinking and smoking (Matthews, Cesario, Ruiz, Ross, & King, 2017; Rothman, Sullivan, Keyes, & Boehmer, 2012).

Heterosexism

Heterosexism is the presumption of heterosexuality, and is more recently become a more subtle form of discrimination (Sue, 2010). It can appear as unconscious bias, such as devaluing a same sex marriage or relationship as not as valuable as a heterosexual relationship (Sue, 2010). Proposed legislation such as proposals to defend “traditional” marriage is overtly heterosexist. Heterosexism is implicit in language, for example statements like you don’t look like a lesbian, implying lesbian identity is a non-normative identity (Sue, 2010). Many healthcare organizations still maintain paperwork that includes questions pertaining to husband or wives (Bradford & Van Wagenen, 2013).

Heterosexism is evident in the lack of professional research studies related to SMW. Between 1990 and 2010 less than .01% of research Pub Med published studies were found to include or define SMW, and many of those did not discuss separate findings apart from sexual minority men (Bradford & Van Wagenen, 2013). Heterosexism is the daily or chronic experience of otherness implicit in language, policy, and often employment situations. With the internalization of stigma and the chronic stress of negotiating sexual minority identities, some SMW begin to anticipate discriminatory experiences as a result of facing heterosexism in their daily lives (Meyer, 2003; Meyer, 2007).

Summary

Research reviewed in this chapter indicates that SMW smoke disproportionately more than their peers and the causal pathways are complex and are influenced at multiple environmental levels. SMW smoking disparities are likely explained using an ecological model and Minority Stress theory (Lehavot & Simoni, 2011; Meyer, 2003; Meyer, 2007). The Ecological framework indicates there are multiple determinants that interact at different levels of the social, interpersonal and macro levels of the lived experience of a stigmatized group (Sallis, Owen, & Fisher, 2008). Within the perspective of the individual levels, the biology of addiction is experienced differently for women than for men (Benowitz, 2010). Minority stress theory suggests social support, concealment and disclosure, and experiences of discrimination are interpersonal and community level factors that may influence smoking in SMW (Meyer, 2003; Meyer et al., 2008). Lastly, use of targeted and tailored messaging by tobacco companies appears to have contributed

to disparities in SMW smoking rates by normalizing smoking (Dilley et al., 2008; Drabble, 2000; Smith et al., 2005; Stevens et al., 2004).

Gaps in the literature include inconsistent measures for the construct of sexual orientation, which makes it difficult to compare studies for more robust significance. Additional limitations are related to smaller sample sizes, and many surveys that are published use state data, which cannot be generalized to larger populations. Another gap is the lack of analysis for within group differences between lesbians and bisexuals. In reviewing the literature, studies that analyzed bisexuals and lesbians combined the data because sample sizes are small, and therefore, the two groups are collapsed together to recognize effect. Finally, studies comparing minority stress variables specific to SMW and calculating within group differences do not exist, to the best knowledge of this researcher.

CHAPTER III

METHODOLOGY

This study was a correlational cross-sectional quantitative survey design. Cross-sectional designs are studies in which data is collected from participants during a discrete period of time (Leedy & Ormrod, 2013). Cross-sectional studies are helpful for identifying the relationship of exposure and outcomes at a specific time, and are well suited for chronic disease study (Carneiro, Howard, & Bailey, 2011; Creswell, 2009; Leedy & Ormod, 2013). However, limitations include the inability to state a direct cause and effect of variables to outcomes because confounding variables may potentially account for outcomes, and exposure to chronic health determinates is more accurately studied in longitudinal studies (Carneiro et al., 2011; Leedy & Ormod, 2013).

Cross-sectional designs are relatively inexpensive and efficient and are a common design in health studies for chronic outcomes (Carneiro et al., 2011; Creswell, 2009; Leedy & Ormod, 2013). It is suitable for less studied topics because it allows for the potential identification and association or narrowing of health determinants to potential outcomes (Creswell, 2009; Leedy & Ormod, 2013). Correlational studies allow for the identification of an association or a relationship of one variable to another (Creswell, 2009; Leedy & Ormod, 2013). Similar to cross sectional designs, cause and effect cannot be stated due to the lack of a control group (Creswell, 2009; Leedy & Ormod, 2013).

Population and Sample

The study used a purposive sampling technique for a web-based survey. Sexual minority study participants are difficult to find, and recruiting a random probability sample is only realistic with large national public funded surveys (Binson et al., 2007). Historically, early research of sexual minorities focused on clinical populations of those who entered psychotherapy and other counseling and support services because the participants were an available sample and easier to access (Rothblum, 2007). Thus, past research samples were clinical based samples, which created serious methodological issues related to non-random samples. This methodological issue led to the continuation of pathologizing sexual minorities (Binson et al., 2007). When the HIV epidemic emerged in the gay men's community, most research on sexual minority populations was focused on men who have sex with men (Rothblum, 2007). More recently, a few national population health studies have included questions of sexual identity, however these studies are not without methodological issues due to how sexual identity is measured (Binson et al., 2007; Conron et al., 2010; Przedworski et al., 2014). For example, the 2000 US Census included one question about living with a same sex partner (Smith & Gates, 2001). This measure did not include LGBT people who were self-identified as LGBT and single (Smith & Gates, 2001). Purposive sampling outreach strategies for this study consisted of sending tailored email solicitations and online outreach activities to LGBT CenterLink Programs, which consist of more than 150 LGBT nationally linked community centers. Additional survey solicitation included LGBT affiliated Churches, social organizations, and employer networking groups. Key community leaders were

contacted and requested to distribute the study link using social media sites such as Facebook and Twitter.

A power analysis for an effect size of lower-moderate for each of the research questions was completed. The *t*-tests calculation required the most participants of 260, ANOVA calculations would need 246, and a Correlation analysis would need 193. Adding 20% for potential invalid or incomplete responses, a total sample of 312 participants was the study goal. Data collection occurred from March 2018 to June 2018.

Protection of Human Subjects

The Texas Woman's University Institute Review Board (IRB) reviewed the research proposal according to University protocols. The study was confidential, the population was not an identified vulnerable group, and the topic was not considered sensitive, therefore exemption status was granted (Protocol # 19994). Before entering the survey (clicking continue tab) informed consent was provided; participants were informed the study was confidential, potential risks were outlined, and no compensation was provided. Entering the survey constituted informed consent.

Data Collection

Data collection was comprised of measurement tools available as web based questionnaires. The study was accessible by using a web link or by scanning a QR barcode. The link connected the survey respondent to PsychData, which is a secure online research tool that meets IRB standards and is authorized for use by Texas Woman's University to conduct web based survey research (PsychData, 2018)

Measures

Demographics gathered included; age, sex, race/ethnicity, level of education, income, plus area of residence defined by zip code to discern regional differences.

Smoking

Participants were asked a series of questions about their smoking behaviors to determine current smoking status and rate of smoking as every day or some day smoking (Fallin et al., 2015). A current smoker was defined as someone who had smoked at least 100 cigarettes in their lifetime and report currently smoking every day or some days (Fallin et al., 2015). Those who were previous smokers, or non-smokers were included in the sample to compare differences in variables to those who smoke.

Sexual Identity

Sexual identity was assessed by choosing, one of the following categorical variables, only lesbian/gay, mostly lesbian/gay, bisexual, mostly heterosexual, only heterosexual/straight, other. Those who chose heterosexual/straight were excluded from analysis for this study. Those who endorsed mostly lesbian/gay or bisexual or mostly heterosexual were aggregated and identified as bisexual. The variable for lesbian was made up of those who endorsed only lesbian/gay.

Social Support

Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988). The MSPSS assesses social support in the areas of family, friends, and significant other using a likert type scale of 1 to 7. It has good reliability and validity in multiple studies (Lannert, 2014; Zimet et al., 1988). A

Cronbach's alpha statistic determined the instrument's reliability within the sample population of this study.

Outness (Concealment and Disclosure)

Outness has recently been studied more in-depth and some studies indicate differences in effect for concealment versus disclosure of sexual orientation identity, especially as these constructs relate to social support and stress (Legate et al., 2012; Jackson & Mohr, 2016; Meidlinger & Hope, 2014; Quinn et al., 2015). Meidlinger and Hope (2014) discussed the significance of concealment compared to disclosure as significant to the minority stress process. Meidlinger and Hope (2014) argue that a standardized instrument is needed for research with sexual minorities. Consequently, they developed the Nebraska Outness Scale (NOS), which measures constructs of concealment and disclosure. The instrument is constructed using a scale of 0% to 100% and asks participants to what degree they share their sexual identity (disclosure) and to what degree they avoid disclosing their sexual identity (concealment). Each of the subscales, concealment and disclosure, has good internal reliability and predictive validity (Meidlinger & Hope, 2014). Additionally, previous research indicates that there are no statistical differences in outcomes among gender with the instrument (Meidlinger & Hope, 2014).

Discrimination and Stress

The degree of minority stress experiences was measured using the Daily Heterosexist Experiences Questionnaire (DHEQ) (Balsam et al., 2013). This instrument

has shown good validity and reliability when applied in studies with diverse LGBT populations and (Balsam et al., 2013). In a systematic review of 162 studies measuring discrimination against sexual minorities, the DHEQ was found to be the only measure that was psychometrically sound in 5 content areas including, reliability factor structure, content validity, construct validity and criterion related validity (Morrison et al., 2016). The DHEQ assesses the degree of distress resulting from the experience of discrimination, using a Likert-type scale from 0 = *did not happen/not applicable to me*, to 5 = *it happened, and it bothered me EXTREMELY* (Balsam et al., 2013). The instrument has nine subscales and is comprised of 50 total questions. Degrees of distress can be measured by specific topics with subscales that included, vigilance, victimization, isolation, discrimination and harassment, gender expression, vicarious trauma, family of origin, parenting, and HIV/AIDS. All subscales were used with the exception of HIV/AIDS, as the topic does not readily relate to SMW.

Data Analysis

Descriptive and inferential statistics were calculated to determine relationships between the dependent variables of disclosure, and concealment, social support, heterosexist discrimination experiences, smoking stigma and the independent variables of smoking status, smoking rate and sexual identity. All data analysis was conducted using IBM SPSS Statistics for Windows, 25 (SPSS 25.0). Independent *t*-tests were conducted to compare the mean score for two IV groups when the data was continuous (Field, 2013). One-way analysis of variance (ANOVA) was conducted to compare the

mean score for IV's with 3 or more groups with continuous data (Field, 2013). For simple correlations between variables, a Pearson's product-moment correlation coefficient was calculated for continuous data (Field, 2013).

CHAPTER IV

RESULTS

This quantitative study set out to examine differences in stressors specific to sexual minorities and SMW as they relate to smoking behaviors. Independent variables were defined as SMW identity (lesbian or bisexual), current smoking status (smoker or non-smoker), and smoking rate (every day, some days, not at all). Dependent variables consisted of instruments to measure distal and proximal factors associated with sexual minority stress (Meyer, 2003; Hatzenbuehler, 2009). DHEQ (Balsam et al., 2013) and the Multidimensional Scale of Perceived Social Support Scale (MSPSSS) (Zimet, et al., 1988). Proximal stressors defined as concealment were measured by the NOS (Meidlinger & Hope, 2014). To assess smoking stigma in SMW the Internalized Smoking Stigma Scale Inventory (ISSI) (Brown-Johnson et al., 2015) was utilized.

Descriptive Analysis

Demographics

Primary raw data was extracted from PsychData and loaded into SPSS 25.0 for statistical analysis. A total of 342 participants attempted to complete the online survey. Study criteria required participants to be at least age 18, self-identify as a sexual minority and female as recorded on their original birth certificate. Of the total 342 responses, 81 were removed for failing to meet study inclusion criteria or did not complete 50% or more of the survey questions. The total sample for final analysis consisted of 260 cases ($N = 260$).

Descriptive analysis calculated participant's mean, range and standard deviation for age, which ranged from 19 to 72 years old ($M = 44.43$, $SD = 13.45$). Frequencies of demographics were calculated, including region identified by zip code, education, household income, ethnicity, and sexual identity. Final sample participants were from 26 different states; zip codes were grouped together to create 5 regions. The regional distribution was fairly distributive with the exception of the Southwest region which included Texas with the highest count ($n = 128$), and the Northeast ($n = 13$) with the lowest count. The remaining regions were Southeast ($n = 28$), Midwest ($n = 28$), West ($n = 38$) and twenty-five zip codes were unknown location. A majority of the sample identified as White non-Latina/Hispanic (79.50%, $n = 205$) and lesbian (67.3%, $n = 175$). African American/Black represented 6.20% ($n = 16$), White Latina Hispanic were 4.70% ($n = 12$), Latina Hispanic were 4.30% ($n = 11$), Asian/Pacific Islander were 3.50% ($n = 9$) and American Indian/Alaska Native were 1.90% ($n = 5$). More than one-third of the sample indicated an annual household income of more than \$100,000 (34.60%, $n = 89$), and almost half reported a graduate or postgraduate degree ($n = 119$, 45.95%). A majority of the sample reported full time employment ($n = 186$, 71.80%). More than two-thirds identified as only lesbian/gay/queer ($n = 175$, 67.30%) and the remaining identity choices of mostly lesbian/gay/queer, bisexual, and mostly heterosexual were collapsed into one category titled bisexual ($n = 85$, 32.70%). Table 1 illustrates sample demographics.

Table 1.

Frequencies and Percentages of Categorical Demographic Variables

	<i>N</i> = 260	%
Region		
Northeast	13	5.00
Southeast	28	10.80
Midwest	28	10.80
Southwest	128	49.20
West	38	14.60
Unknown/Missing	25	9.60
African American/Black	16	6.20
American Indian/Alaska Native	5	1.90
Asian/Pacific Islander	9	3.50
Latina/Hispanic & White Latina/Hispanic	23	8.80
White non-Latina/Hispanic	205	78.80
Income		
Less than \$20,000	17	6.5
\$20,001-\$40,000	38	14.6
\$40,001-\$60,000	38	14.6
\$60,001-\$80,000	33	12.7
\$80,001, \$100,000	42	16.2
Over \$100,000	89	34.2
Education		
High School Degree or Equivalent	12	4.62
Some College but no degree	44	16.92
Associate Degree	14	5.38
Bachelor Degree	70	26.92
Graduate Degree & Post Graduate	119	45.77
Employment		
Employed-full time	186	71.50
Employed-part time	11	4.20
Student	16	6.20
Unemployed	9	3.50
Other (please specify)	37	14.20
Sexual Identity		
Lesbian	175	67.30
Bisexual	85	32.69

Note. Frequencies not equaling 260 and percentages not equaling 100% reflect missing data.

Independent Variables

Independent variables (IV) were smoking status, smoking rate, and sexual identity. Questions about smoking were based on the CDC's National Health Interview Survey for tobacco research (CDC, 2011). Two questions were used to assess smoking status (smoker and non-smoker) and smoking rate (every day, some days, and non-smoker). Participants were first asked if they had smoked 100 cigarettes in their lifetime, and then asked if they currently smoke every day, some days, or not at all. Those who smoked 100 cigarettes and endorsed smoking every day or some days were current smokers and the remaining portion were non-smokers. More than half of the respondents reported smoking 100 cigarettes in their lifetime ($n = 143, 55\%$). Current smokers were 50 (19.2%), of those 50 smokers, 27 reporting smoking every day (54% of current smokers) and 23 reporting smoking some days (46% of current smokers). A smoking prevalence rate of 19.2% was calculated using the IV smoker status. See Table 2 for frequencies and percentages of smoking status and smoking rates.

Table 2.

Independent Variables Frequencies and Percentages

	<i>N = 260</i>	<i>%</i>
Smoked 100 cigarettes lifetime	143	55%
Current Smokers	50	19.2%
Non-Smokers	210	80.7%
Smoking rate		
Every day smoker	27	10.5%
Some day smokers	23	8.9%
Do not currently smoke	208	80.6%

Dependent Variables

Data for dependent variables (DV) were collected using validated measures. Each measure used Likert scale responses creating ordinal level data for analysis. The mean, standard deviation, and range were calculated as well as a boxplot graph for visual inspection of outliers for each of the dependent variables. The MSPSS assessed perceived social support using a 7-point Likert scale. The scale ranged from 1 = *strongly disagree* and 7 = *strongly agree*. Higher scores indicate a feeling of stronger social support. Two sample questions were “My friends really try to help me” and “I get the emotional support and help I need from my family”. The instrument consists of three subscales for assessing support from family, friends and significant others. The overall sample mean score was 5.52, which is rated as a high score according to the instrument authors ($n = 260, M = 5.52, SD = 1.27$) (Zimet et al., 1988). In other words, the participant’s average score for perceived social support level was between strongly agree and very strongly agree.

The NOS was used to assess sexual identity disclosure (outness) and nondisclosure (concealment) (Meidlinger & Hope, 2014). Questions asked participants what percentage of various people in their lives they believed were aware of their sexual identity (disclosure) and, with whom in their lives they avoided the topic of their sexual identity (concealment). Response choices were 0% to 100%. In data analysis, 0% was coded as 1 and 100% coded as 11. Each subscale, disclosure, and concealment was calculated separately. The sample mean for disclosure was 8.50 ($n = 258, M = 8.50, SD 2.11$) and the mean for concealment was 3.99 ($n = 259, M = 3.99, SD 2.63$).

Interpretation of the disclosure mean indicates the population sample on average is out to 85% of people and the same group also conceals their identity from 40% of people.

Experiences with heterosexist discrimination were collected using the DHEQ (Balsam et al., 2013). The DHEQ consists of several subscales assessing one's degree of feelings related to stigmatizing and heterosexist based experiences with isolation, victimization, parenting, vicarious trauma, harassment, family of origin, vigilance, and gender expression. Choices of responses varied on a 6-point Likert scale indicating the *experience did not happen to me* coded as 1, *it happened but didn't bother me* coded as 2, and four additional intensity choices of it happened and the degree to which it was bothersome (a little bit to extremely bothered). The mean, standard deviation, and range were calculated as well as a boxplot graph for visual inspection of outliers. The boxplot illustrated several outliers and one extreme outlier by visual inspection; as a result, responses were recoded and collapsed into five ordinal categories. Two options, *it bothered me a little bit* and *it bothered me moderately* were collapsed thereby reducing the scale from 1 to 5. The recoding reduced the outliers to four with no extreme outliers and the new mean for the collapsed responses was 1.85 ($n = 260, M = 1.85, SD = .52$). This recoding and new mean was acceptable for deeper analysis with the four outliers.

Lastly, to assess internalized smoking stigma among SMW, the Internalized Smoking Stigma Inventory (ISSI) was used (Brown-Johnson et al., 2015). The instrument is constructed with 3 subscales of self-stigma, felt stigma and discrimination. Questions are related to negative thoughts and experiences associated with smoking. Example items include "smoking has spoiled my life", and "I am embarrassed or

ashamed I am a smoker.” Using a 4-point Likert scale, responses ranged from *strongly disagree* = 1, *disagree* = 2, *agree* = 3 and *strongly agree* = 4. Higher scores indicate higher levels of internalized stigma and perceived discrimination related to smoking. The sample mean was calculated for current smokers ($n = 50$, $M = 1.96$, $SD = .59$). Table 3 illustrates the mean and standard deviation for each of the dependent variables.

Table 3.

Dependent Variables Means and Standard Deviations

	<i>N</i>	<i>Mean</i>	<i>SD</i>	Range	
				Min	Max
MSPSS	260	5.52	1.27	1	7
NOS - Disclosure	258	8.5	2.11	1	11
NOS - Concealment	259	3.99	2.63	1	10.6
DHEQ	260	1.85	0.521	1	4.39
ISSI (smokers)	50	1.96	0.594	1	3.31

Preliminary Analysis

Relationships Between Variables

Crosstabulations using Pearson’ chi-square and Cramer’s V tests were conducted to examine the relationship between age and sexual identity, as well as age and smoking rates and smoking status. As shown in Table 4, there was a significant relationship between age and identity, and the relationship is moderately strong as indicated by the Cramer’s V statistic ($X^2 = 27.43$, Cramer’s $V = .327$, $p = .01$).

Table 4.

Frequencies and Percentages of Age and Sexual Identity

	Lesbian		Bisexual		Total		X^2	p	V
	N	%	N	%	N	%			
18-30 years	21 _a	12.20	26 _b	30.60	47	18.30	27.43	.001	.327
31-40 years	31 _a	18.00	28 _b	32.90	59	23.00			
41-50 years	46 _a	26.70	9 _b	10.60	55	21.40			
51-60 years	50 _a	29.10	15 _b	17.60	65	25.30			
61 and older	24 _a	14.00	7 _a	8.20	31	12.10			
Total	172	100.00	85	100.00	257	100.00			

Each subscript letter denotes a subset of SMW Identity categories whose column proportions do not differ significantly from each other at the .05 level

Assessing for an association between age and smoking behaviors, Crosstabulations using chi-square and Cramer's V analysis demonstrated significance for age and smoking status as well as age and smoking 100 cigarettes in a lifetime. This finding indicates a significant relationship between younger women smoking at higher rates than older women $X^2 = 17.91, p = .01$, Cramer's $V = .187$. However, the relationship is somewhat weak. Table 5 illustrates the data for smoking behaviors by age groups. Crosstabulations using chi-square and Cramer's V analysis demonstrated no significance for a relationship between smoking behaviors and sexual identity. Table 6 illustrates the frequencies and percentages of smoking behaviors by sexual identity.

Table 5.

Frequencies of Age and Smoking behaviors and Age

	Every day		Smoke some Days		Do Not Smoke		Total		X^2	p	V
	n	%	n	%	n	%	n	%			
									17.91	.01	.187
18-30 years	6 ^{a, b}	24.00	9 ^b	39.10	30 ^a	14.50	45	17.60			
31-40 years	6 ^a	24.00	7 ^a	30.40	46 ^a	22.20	59	23.10			
41-50 years	8 ^a	32.00	3 ^a	13.00	44 ^a	21.30	55	21.60			
51-60 years	3 ^{a, b}	12.00	1 ^b	4.30	61 ^a	29.50	65	25.50			
61 and older	2 ^a	8.00	3 ^a	13.00	26 ^a	12.60	31	12.20			
Total	25	100	23	100	207	100	255	100			

Note. Each subscript letter denotes a subset of Smoking categories whose column proportions do not differ significantly from each other at the .05 level.

Table 6.

Frequencies of Smoking behaviors by Sexual Minority Identity

	Lesbian		Bisexual		Total		X^2	p
	n	%	n	%	n	%		
Current Smoking Status								
Smoker	33	18.90	17 ^a	20.00	50	19.20	0.048	0.826
Non-Smoker	142	81.10	68 ^a	80.80	210	80.80		
Smoking Rate							0.130	0.937
Smoke Every Day	18 ^a	18.60	9 ^a	19.60	27	18.90		
Smoke Some Days	15 ^a	15.50	8 ^a	17.40	23	16.10		
Not at all	142	81.10	66 ^a	79.50	208	80.60		

Note. Each subscript letter denotes a subset of Smoking categories whose column proportions do not differ significantly from each other at the .05 level.

Instrument Reliability

Reliability statistics calculate the internal consistency of measures. Consistency in measurement is important for study replication and allows for more accurate comparisons across investigations. Cronbach's Alpha statistic was computed to determine internal consistency for each of the measures used. Scores between .7 and .8 are considered acceptable, .8 to .9 are good, and $\alpha \geq .9$ are excellent. All scores for each DV produced reliability scores within the acceptable to good range. Table 7 outlines Cronbach's Alpha scores for each instrument.

Table 7.

Cronbach's Alpha. Reliability for Dependent Variable Measures

	Cronbach's Alpha α	Cronbach's Alpha based on standardized items	<i>N</i> of Items
MSPSS	0.933	0.934	12
DHEQ	0.900	0.899	44
NOS-Disclosure	0.791	0.813	5
NOS-Concealment	0.813	0.817	5
ISSI	0.954	0.958	13

Correlation

Pearson's product moment correlation analysis was calculated to determine an association between each of the dependent variables. Correlation analysis also indicates the strength of a relationship with scores closer to +1 or -1 representative of the strongest correlation. A negative correlation indicates an inverse relationship specifying that as one variable increases the other decreases. A positive correlation signifies each variable

increases in the same direction. The Daily Heterosexist Experiences Questionnaire (DHEQ) proved to be correlated with significance to each of the other instruments. A positive correlation between smoking stigma and heterosexist experiences was demonstrated; as heterosexist experiences increase smoking stigma increases. However, this correlation is only slightly moderate ($r = .293, p = .001$). The same holds true for the significant relationship between an increase in heterosexist experiences and an increase in concealing identity ($r = .261, p = .01$). Social support was significant with heterosexist experiences, however the relationship was negligible ($r = -.104, p = .05$). Heterosexist experiences and disclosure showed a small significant inverse correlation ($r = -.133, p = .05$). This finding signifies as heterosexist experiences decrease there would be an increase in disclosure. As would be expected, the concealment and disclosure findings resulted in a significant inverse moderate correlation ($r = -.469, p = .01$). As one is less out, concealment would increase, as these are closely related constructs. Lastly, there was a significant relationship between disclosure and social support, although the strength of the relationship is slight ($r = .163, p = .05$). Table 8 illustrates the correlation analysis with each of the dependent variable scales.

Pearson's product moment correlation was calculated to determine if there is a relationship between each of the dependent variables with age. Age was significant with four out of the five measures. Disclosure scale had the strongest relationship with age ($r = .295, p = .01$). This result indicates older participants were more out than younger participants. As age increases heterosexist experiences decreases, although significant, this finding is a slight correlation ($r = -.193, p = .01$).

Table 8.

Pearson's Product Moment for Dependent variables

	DHEQ	MPSSS	NOS-Concealment	NOS-Disclosure	ISSI
DHEQ		-0.104	.261**	-.133*	.293**
MSPSS			-0.106	.163*	-0.079
NOS-Concealment				-.469**	0.012
NOS-Disclosure					0.004

* Correlation is significant at the 0.05 level (2-tailed). ** Significant at the 0.01 level (2-tailed).

With regard to age and identity concealment and disclosure, the results support a relationship between younger women concealing their identity ($r = -.207, p = .01$) and older women being more out ($r = .295, p = .01$). There was a minimal inverse relationship between age and smoking stigma ($r = -.138, p = .05$). Table 9 illustrates Pearson's Product moment calculations for all the measures with age.

Table 9.

Pearson's Product Moment Correlation Analysis for Age with Dependent Measures

Age	DHEQ	NOS-C	NOS- D	MSPSS	ISSI
-	-.193**	-.207**	.295**	-.090	-.138*

Primary Analysis

Statistical analysis of the data was conducted to answer the following four research questions: 1) how do the levels of daily experiences of heterosexism, perceived social support, concealment and disclosure of sexual identity, and internalized smoking stigma vary for SMW who smoke and those who do not smoke?; 2) is there a difference between lesbian and bisexual smokers in the levels of daily experiences of heterosexism, perceived social support, concealment and disclosure of sexual identity, and internalized

smoking stigma?; 3) is there a difference in smoking rates (every day, some days, not at all) for SMW as it relates to daily experiences of heterosexism, social support, perceived concealment and disclosure of sexual identity, and internalized smoking stigma?; 4) and is there a correlation between levels of daily experiences of heterosexism, perceived social support, concealment and disclosure of sexual identity, and internalized smoking stigma and SMW smoking status (smokers and non smokers)?

It was first hypothesized there would be a difference between smokers and non-smokers on each of the measures of daily experiences of heterosexism, social support, concealment and disclosure of sexual identity. An independent samples *t* Test is used to compare the means of two groups, in this case smokers and non-smokers. The following assumptions are required and were met for this sample: a) observations within each group were independent from each other, b) dependent variable is approximately normally distributed within each population c) the variances of the dependent variable in each population were equal. The independent (categorical) variable should have approximately the same number of observations in each group. The heterosexist experiences scale was significant at the $p = .05$ level. As shown in Table 10, results indicate smokers scored higher indicating they were bothered more by experiences with heterosexism than were non-smokers ($t(258) = 1.95, p = .05, d = .31$). Although, the finding was statistically significant, an effect size of $d = .31$ is a relatively small to moderate effect in practice. No other measures were significant for smokers and non-smokers.

Table 10.

Means and Stand Deviations for Smoking Status with Daily Experiences of Heterosexism (DHEQ), Multidimensional Scale of Perceived Social Support (MSPSS), Concealment (NOS- Concealment) and Disclosure (NOS-Disclosure) of Sexual Identity.

		<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
DHEQ	Smokers	50	1.98	0.51	1.95	0.052	0.31
	Non-Smokers	210	1.82	0.52			
MSPSS	Smokers	50	5.31	1.26	-1.29	.195	0.20
	Non-Smokers	210	5.57	1.27			
NOS-Concealment	Smokers	50	3.87	2.24	-.364	.716	0.06
	Non-Smokers	209	4.02	2.71			
NOS- Disclosure	Smokers	50	8.64	2.04	.520	.603	0.08
	Non-Smokers	208	8.46	2.13			

The second hypothesis set out to examine differences between lesbians and bisexuals who smoke. Using the IV smoking status, and the IV SMW identity, a new dichotomous IV was created representing lesbian smokers and bisexual smokers. An independent samples t-Test was conducted to compare the means of the DV on the two groups, lesbians who smoke and bisexuals who smoke. All assumptions previously outlined were met. Table 11 shows significant results for concealment and disclosure with regard to identity and smoking. Concealment was significant at the $p = .05$ level. Lesbian smokers scored higher on the disclosure scale ($n = 33$, $M = 9.22$, $SD = 1.47$) than bisexual smokers ($n = 17$, $M = 7.5$, $SD = 2.53$). Bisexual smoker's scores were higher on the concealment scale ($n = 17$, $M = 4.75$, $SD = 2.09$) than scores for lesbian smokers ($n = 33$, $M = 3.42$, $SD = 2.21$). The Cohen's d effect size indicates how practical or the

importance in the difference of the two means. The effect size of identity concealment was moderate and the disclosure effect size stronger. It appears that there is not only statistical significance but also practical significance between the scores of lesbian and bisexual smokers.

Table 11.

Concealment and Disclosure between Lesbian and Bisexual Smokers

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Concealment				-2.048	.046	.62
Lesbian	33	3.42	2.21			
Bisexual	17	4.75	2.09			
Disclosure (equal variances not assumed)				2.58	.017	.83
Lesbian	33	9.22	1.47			
Bisexual	17	7.50	2.53			

The third hypothesis examined differences in the rate of smoking (every day, some days, not at all) in SMW on measures of daily heterosexism experiences, concealment of identity, perceived social support, and smoking stigma. Analysis of Variance (ANOVA) is computed when examining differences in means for a variable with 3 or more groups. In this case, the research question examined mean differences between every day smokers, some day smokers, and non-smokers to determine a difference in their scores on the DV. In addition, smoking stigma was assessed with every day smokers, some day smokers, and previous smokers. All assumptions were met including the examination of outliers and DV equal distribution within groups. ANOVA results showed there was no significant difference for smoking rates and heterosexist experiences, social support or identity concealment and disclosure. However, smoking stigma was found significant ($F_{2, 111} = 7.22, p = .001$) among every day smokers,

some day smokers, and previous smokers. Post hoc Tukey HSD analysis indicated the difference was between previous smokers and every day smokers. Previous smokers reported significantly lower smoking stigma ($M = 1.44, SD = .67$) compared to that of current every day smokers ($M = 2.00, SD = .67$). Table 12 provides data for the ANOVA statistic results.

Table 12.

<i>Means and Deviations for Smoking Stigma and Smokers Compared to Previous Smokers</i>					
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
				7.223	0.001
Every Day Smoker	27	2.0051	0.67547		
Some Day Smoker	23	1.6341	0.50486		
Previous Smoker	64	1.4414	0.67816		

Lastly, the fourth hypothesis investigated the relationship of smoking status with the daily experiences of heterosexism, perceived social support, smoking stigma, disclosure, and concealment of sexual identity. A Spearman’s Rho correlation was calculated and results indicated a significant correlation at $p = .05$ level for smoking status with experiences of heterosexism ($r = -.149, p = .05$). Table 13 shows Spearman’s correlation results for all of the DV scales with smoking status.

Table 13.

Spearman's Correlation with Smoking Status and Daily Experiences of Heterosexism (DHEQ), Multidimensional Scale of Perceived Social Support (MSPSS), Concealment (NOS- Concealment) and Disclosure (NOS-Disclosure) of Sexual Identity.

	Correlation Coefficient	
	r	p
DHEQ	-.149*	0.016
MSPSS	0.106	0.088
NOS- Concealment	-0.007	0.912
NOS- Disclosure	-0.033	0.601

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Summary

After primary analysis, the final study sample of primary data provided frequencies of demographics and smoking behaviors. A mix of parametric and non-parametric calculations was conducted as appropriate to the level of data. Flexibility of sexual identity data and smoking behaviors allowed for calculating differences between lesbians and bisexuals and their smoking behaviors as well as their scores on measures of minority stress constructs. Pearson's product moment correlations analysis, independent *t*-tests, and one-way ANOVA's were calculated across the IV's and DV's and provided data for significance in relationships between variables and significance in differences between groups. Chapter Five will outline an interpretation of analysis results and recommendations for health educators and program development professionals to better tailor smoking cessation and tobacco education for sexual minority women.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This study aimed to examine the relationship of experiences of heterosexism, perceived social support, concealment and disclosure of sexual identity, and internalized smoking stigma as health indicators in sexual minority women (SMW) who smoke. These specific indicators have not been explored exclusively in SMW (Blosnich et al., 2013; Jackson & Mohr, 2016; Matthews et al., 2011; Graham et al., 2011). A preponderance of research related to health disparities and risk behaviors among sexual minorities aggregates gay men, bisexuals and lesbians for data analysis (Hequembourg & Brallier, 2009). A majority of studies fail to elucidate the differences in the lived experiences of sexual minority females and males (Bradford & Van Wagenen, 2013; Hequembourg & Brallier, 2009; Szymanski & Henrichs-Beck, 2014). As such, the current study specifically focused on SMW and measured minority stress indicators (heterosexist experiences, social support, concealment and disclosure of identity, and smoking stigma) in an effort to explore differences between SMW who smoke and those who do not smoke. This chapter will briefly summarize the statistical findings as they relate to the research questions and hypotheses, followed by a discussion of the research questions and hypotheses, implications for research, recommendations for health studies and limitations of the current study.

Summary of Findings

Facebook, Reddit, Twitter, LGBT employer groups, SMW social media groups, and professional contacts were the primary recruitment sources for this online survey. A total of 260 respondents met study criteria, with each participant self-identifying as a sexual minority woman and reporting female as the sex on the original birth certificate. A majority of the study participants averaged 44 years of age, identified as white, were highly educated, and reported average household incomes above \$60,000.

Approximately two-thirds of participants endorsed their sexual identity as lesbian only ($n = 175$) and nearly one-third identified as bisexual ($n = 85$). Results were calculated to determine differences between IV's smoking and sexual identity and DV's of heterosexist experiences, social support and concealment and disclosure of sexual identity. Smoking stigma was also measured in current versus previous SMW smokers.

Results of the primary analysis partially supported the first hypothesis that there would be a significant difference between smokers and non-smokers with regard to minority stress indicators. Primary analysis partially supported the second hypothesis for a difference between lesbian smokers and bisexual smokers and each of the minority stress indicators. Analysis provided partial statistical support for the third hypothesis, which examined the differences between minority stress indicators and smoking rates (every day smokers, some day smokers, and non-smokers). In addition, smoking stigma was significant between previous smokers, every day, some day smokers. The fourth hypothesis was partially supported with a finding of correlation between heterosexist experiences and smoking status.

Research Questions and Hypothesis

Research Question One

This investigation sought to evaluate for differences between SMW smokers and non-smokers on measures of daily heterosexist experiences, perceived social support, sexual identity concealment, and disclosure. Smokers scored higher than non-smokers on their emotional responses to heterosexism. There was no difference for disclosure and concealment between smokers and non-smokers, and no difference for overall perceived social support between SMW smokers and non-smokers.

The initial finding that smokers scored higher on their emotional responses to heterosexism is congruent with MST and with the well accepted tenet that smokers use tobacco to cope with life stressors (Gruskin et al., 2009; Niaura et al., 2002; Thoits, 2010). However, consistent with minority stress theory (Meyer, 2003), smokers who experience stronger negative emotional responses to heterosexism would be expected to show decreased social support and increased rates of concealment. Yet, no significant differences in perceived social support and concealment were identified between smokers and non-smokers. The lack of effect between smoking status and perceived social support may be related to community connectedness, and potentially indicates smoking is not stigmatized by SMW. Similar to sexual identity, smoking is socially stigmatized, as a result embracing one stigmatizing identity may effect embracing another. In other words, sexual minorities who are more out may embrace a rebel or outsider type attitude and therefore reject smoking stigma (Evans-Polce, Castaldelli-Maia, Schomerus, & Evans-Lacko, 2015). Further support for this position is demonstrated by research from Kuyper

and Bos (2016) who found the act of concealment in sexual minority young adults did not explain an increase in mental health problems. Sivadon, Mathews, and David (2014) found similar results in Midwest sexual minority smokers, suggesting social support was not associated with smoking behaviors; however, psychological stress was significant. Finally, further investigation of the mediating factors related to smoking and social support would provide insight regarding the salience of social support as a protective mechanism.

Research Question Two

To explore differences between sexual identities, the following research question was asked: Is there a difference between lesbian and bisexual smokers in the levels of daily experiences of heterosexism, social support, concealment and disclosure of sexual identity, and internalized smoking stigma? Results demonstrated bisexual smokers hid their identity more often than lesbian smokers. Conversely, lesbian smokers were more out than bisexual smokers. There were no significant differences between lesbian and bisexual smokers for social support, emotional responses to heterosexism, and internalized smoking stigma. The indication that bisexuals are more closeted is supported in limited research studies that specifically focus on bisexual identities as compared to more narrow sexual identity labels such as lesbian, gay or heterosexual (Bostwick et al., 2015). In this study, smokers who identify as bisexual were more likely to be closeted but did not demonstrate decreased social support or stronger reactions to distal discriminatory stressors as compared to their lesbian peers. These findings indicate a bisexual smoker who is more closeted does not necessarily experience less social

support or increased stress responses related to heterosexist experiences when compared to lesbian smokers. Furthermore, social support and heterosexism stressors were not different for lesbians who were out as compared to closeted bisexual smokers. This finding is supported by other investigations that reported no association between social support and smoking behaviors (Balsam et al., 2013; Sivadon et al., 2014). The findings of this study suggest that concealment of bisexual identity is an outcome of age and identity development as opposed to distressing heterosexist experiences, as posited by minority stress theory (Meyer, 2003). This supposition will be explored further in the discussion section of this chapter.

Research Question Three

This researcher proposed that stressors and social support along with disclosure and levels of concealment might differ for those who smoke every day compared to those who smoke some days and those who do not smoke. In exploring this phenomenon, the following research question was asked: How does smoking rate (every day, some days, not at all) vary for SMW as it relates to daily experiences of heterosexism, social support, concealment and disclosure of sexual identity, and internalized smoking stigma? A one-way ANOVA was conducted to determine if there were differences on the dependent variables for every day smokers, some day smokers, and non-smokers. ANOVA was calculated to determine if internalized smoking stigma differed for every day smokers and some day smokers and previous smokers. There were no significant between groups differences, in terms of intensity of experiences with heterosexism, disclosure, and social support. Reasons for this lack of significance may be related to the lack of sensitivity in

categories of smoking rates and nicotine craving. The connection between stress, desire to smoke, dependence and smoking frequency is a complex pathway of multiple factors (Buchmann et al., 2010; Mckee et al., 2011). Those factors include reward, motivation, nicotine dependency (daily smokers), biological response to stress, pleasure and intensity (inhalation) of smoking (Buchmann et al., 2010; Childs & de Wit, 2010; Mckee et al., 2011). Studies find that stress induces craving and desire, however the increased frequency of smoking is not always demonstrated (Buchmann et al., 2010; Childs & de Wit, 2010; McKee et al., 2011). More explicitly, defined smoking habits and cravings might uncover differences on measures of discriminatory experiences and social support or identity concealment.

Every day smokers and some day smokers did not differ in rates of internalized smoking stigma, however previous smokers reported less smoking stigma than current smokers. This finding that previous smokers experience less stigma is not surprising since they have quit smoking.

Research Question Four

The last research question asked if there is a correlation with smoking status and daily experiences of heterosexism, social support, identity concealment, and disclosure. Findings indicated no association between smoking status and perceptions of social support, identity disclosure, and concealment. However, there was an association between smoking status and daily heterosexist experiences. This finding was expected after a significant difference was found between smokers and non-smokers with regard to heterosexist experiences.

Considering that population research on smoking is linked to psychological stress, a significant relationship between stressful discriminatory experiences and smoking status was expected (Purnell et. al., 2012). Although, the other two variables of identity concealment and disclosure and perceived social support did not show a correlation with smoking status; this finding confirms similar results by Sivadon et al. who found, among Midwest adult sexual minorities, no relationship of concealment and disclosure and social support to smoking behaviors (Sivadon et al., 2014).

Hypotheses

Four null hypotheses were analyzed in relation to the research questions.

H₀ 1: There is no statistically significant difference in levels of social support, sexual identity concealment, heterosexist experiences, and smoking stigma between SMW smokers and non-smokers. This null hypothesis was partially supported.

H₀ 2: There is no significant difference in levels of social support, sexual identity concealment, heterosexist experiences, and smoking stigma between Lesbian and Bisexual smokers. This null hypothesis was partially supported.

H₀ 3: There is no significant difference in levels of social support, sexual identity concealment, heterosexist experiences, smoking stigma and rate of smoking for SMW. This null hypothesis was partially supported.

H₀ 4: There is no statistically significant correlation between levels of social support, concealment of identity, daily heterosexist experiences, and smoking stigma and SMW smokers and nonsmokers. Correlation statistics generated no significance for two of the three dependent variables, therefore the null hypothesis was partially supported.

Additional Variables of Consideration

Age and Smoking

National tobacco control studies demonstrate that younger people smoke at higher rates (Jamal et al., 2018). Similarly, the current study findings indicate age plays a statistically significant role in smoking status and sexual identity as well as measures of concealment and heterosexist experiences, regardless of smoking status. Consistent with previous research (Boehmer et al., 2012; Graham et al., 2011) younger SMW were more likely to smoke than older SMW. With regard to smoking and identity, bisexual smokers' average age was 30 ($M = 30$) and lesbian smokers average age was 43 ($M = 43$). Interestingly, younger SMW who smoked concealed their identity at higher rates and were less out than older SMW who smoked.

Implications and Discussion

Minority Stress

Earlier research by Flaskerud and Winslow (1998) supported that social support was low for disenfranchised groups such as sexual minorities and posited that a lack of support contributed to smoking behaviors. Additional studies report minority stress limits social support and creates isolation in older sexual minorities (Kuyper & Fokkema, 2010). Although multiple studies correlate social support with distress and mental health, more recent research finds no significant effect of social support or concealment on smoking behaviors (Sivadon et al., 2014). Despite recent contradictions, minority stress is the most noted theory for the explanation of higher smoking rates in SMW (Graham et al., 2011; Greenwood & Gruskin, 2007; Hatzenbuehler, 2009). A majority of

investigations study multiple factors such as mental health and substance use along with smoking. The current quantitative study is one of the first to explore the relationship of smoking with minority stress constructs, specifically among SMW and between SMW groups. Similar to Selvidge, Matthews, and Bridges (2008), this investigation does not fully support minority stress theory in SMW. This investigator posits the intersectionality of gender (Bowleg, 2008) may play a more significant role in SMW smoking and health disparities than the process of minority stress. Support for this suggestion is found in the differences between sexual minority stigmatizing experiences for men and women. Gay men report more experiences of violence and discrimination related to sexual identity (Herek, 2009; Hequembourg & Brallier, 2009; Meidlinger & Hope, 2014) and women report more experiences related to sexual advances by heterosexual men (Hequembourg & Brallier, 2009).

Smoking status and social support were not significantly related between smokers, however bisexual smokers were more closeted. It appears increased stigma among bisexuals in this study may be explained by an alternative to minority stress. The process for concealment for bisexuals differs from concealment efforts for lesbians, as evidenced by results from studies focused on disaggregating data between bisexuals and lesbians and gay men (Hequembourg & Brallier, 2009; Robinson, Sanches, & MacLeod, 2016). A qualitative study by Hequembourg and Brallier (2009) revealed some concealment in bisexuals is related to an attempt to assimilate with an identified community rather than hide. Robinson and colleagues posit internalized biphobia may differ from homophobia (Robinson et al., 2016).

Sexual Identity

Sexual identity is a socially constructed developmental process and the measurement is as complex as the developmental process itself. Current literature describes milestones of sexual orientation and sexual identity development in terms of attraction, behavior, romantic relationships and the process of adopting a sexual minority identity (Katz-Wise et al., 2017). Maturity of the sexual identity processes usually occurs during adolescence (Katz-Wise et. al., 2017). Early influences related to decreased family support and threats to positive identity messages can serve to increase risks for younger sexual minorities (Katz-Wise et. al., 2017). These situational and temporal threats may increase sensitivity to stress reactions and decreased cognitive capacity to make good decisions. Simultaneously, while navigating this complex identity development and potential situational stressors, adolescents are exposed to tailored messages about smoking. In light of these factors, the trajectory of higher smoking rates among younger sexual minorities is explicated (Jamal et al., 2018; Corliss et al., 2012).

Findings from this study support the observations of age and smoking as previously described. Smokers experienced higher rates of distress with regard to heterosexism, but not to social support or concealment and disclosure. In alignment with multiple studies, the data finds bisexuals were younger and more closeted (Balsam & Mohr, 2007; Boehmer et al., 2012; Martos, Nezhad, & Meyer, 2015; Meidlinger & Hope, 2014). The study sample also indicates bisexuals smoke at a younger age. Concealment may not be related to smoking behaviors, however, it may be illustrative of the developmental process of identity fluidity during early adulthood. Concealment of

bisexual identity may be a result of changing majority cultural norms, and exploration of self (Baldwin et al., 2017). More researchers are calling for the adoption of categories of identity that reflect the fluidity of identity development such as mostly heterosexual or mostly lesbian along with bisexual and lesbian (Baldwin et al., 2017; Vrangalova & Savin-Williams, 2012). However, it should be pointed out that these additional categories might reflect more sexual behavior and attraction rather than sexual minority identity. As a result, identifying as bisexual or mostly heterosexual may be less important to identity than those who identify as lesbian only (Kuyper & Bos, 2016).

Cultural norms of SMW communities embrace smoking as part of an outsider identity. The lack of significance for scores on the internalized smoking stigma instrument indicates this supposition needs further investigation. Women's smoking is associated with strong environmental cues and more intense cravings, whereas men's smoking behaviors are related more to the management of the nicotine levels in their systems (Carpenter et al., 2014; Smith et al., 2015). These social and environmental cues to smoke may be reinforced in SMW as they socialize among their peers. Efforts to relieve the stress of a stigmatizing identity may include community gathering with like-group members. If the community environment is accepting of smoking, the behavior is reinforced as a coping mechanism and becomes internalized as part of the minority identity. A qualitative study described younger SMW smoked to fit in with their peer groups, and older SMW reported early smoking was an attempt to manage sexual minority stigma and later in life resolved the associated identity stressors

(Gruskin et al., 2009). These qualitative themes and statements are illustrative of the data results from this study.

Contribution

This study aimed to examine the relationship of social support, concealment and disclosure of sexual identity, experiences of heterosexism and perceived smoking stigma as health indicators for SMW who smoke and those who do not smoke. This study is among the first to specifically collect data related to these particular variables of minority stress in SMW. The results extend the literature on bisexual identity and concealment, and confirm that age and sexual identity developmental milestones may be related to smoking behaviors. In addition, the findings support a small but growing area of literature that illustrates sexual minority theory is not a fully robust explanation for minority stress processes and smoking behaviors in SMW.

Implications for Health Educators

Sexual Minority Youth

Given the process of identity development and the situational threats to identity that may occur from stigmatizing experiences for sexual minorities, it is incumbent on health educators to intervene at multiple levels of the environment. Advocates for tobacco control have made great strides, however youth continue to start smoking early, creating a stronger chance of lifelong addiction. Prevention efforts should begin in elementary schools and at-risk communities. Other macro interventions include health campaigns that create safe spaces and promote positive messages about sexual identity development that reduce the stigma of sexual minority identity. Researchers have

demonstrated that changes in structural stigmas, such as legal protections for employment, housing, and marriage impact health outcomes and risks on sexual minorities (Hatzenbuehler et al., 2013). Health promotion programs can influence this structural stigma as well as changes in legal policies.

Sexual Minority Adults

In adult sexual minority communities, these study results support the strong possibility that a smoking identity is acceptable and perhaps even empowering as an outsider status. Recommendations from this study include the development of a health promotion program that tailors messages about empowering the outsider status identity paired with positive health outcomes. Furthermore, utilizing community-based participatory research (CBPR) would be an effective methodology for proposing tobacco cessation messaging that addresses smoking in SMW communities. In their text, Northridge, McGrath, and Krueger (2007) report CBPR lessons learned from early HIV/AIDS activism illustrate that community action and mobilization can result in powerful programs that bring awareness to issues of life and death, uncover financial support, and move mountains through community voice and advocacy.

Lastly, the data indicates smokers experience increased distress in heterosexism experiences as compared to non-smokers, and these smokers are likely younger. Consequently, health educators need a deep understanding about chronic exposure to situational threats to identity and the depletion of cognitive capacity and energy to make positive health decisions. This understanding is key to designing effective health promotion programs for SMW. Smoking cessation programs should assess the level of

internalized stigma of sexual minority participants and tailor cognitive interventions that assist with identifying maladaptive thinking and reactions to stressful environments. These interventions should shore up emotional regulation skills that are sensitive to cultural norms for SMW.

Limitations and Conclusion

Similar to other studies focused on hidden sexual minorities, several limitations do not allow for generalizability to larger SMW populations (Meezan & Martin, 2012). Recruitment efforts and the use of a web-based survey are likely responsible for the lack of racial and income diversity in the sample, as most respondents were highly educated white women. It is likely that data outcomes regarding heterosexism distress, concealment and identity, social support and smoking stigma would differ with a more diverse population sample. Disclosure may also be overrepresented due to the nature of the outreach to lesbian and bisexual women's social media groups and to LGBTQ employer groups.

Timing of the study also coincided with the politicization of Facebook and “fake news.” The role this phenomenon played in intention to complete the survey is difficult to predict, although recruitment was not exclusive to Facebook. At the launch of the study, response patterns were clear when key community leaders and popular personalities shared the post, the number of responses was boosted during the following hour. This approach using key community leaders may have provided legitimacy to the request during a highly negative public perception of Facebook. Future online surveys may choose to ask how the respondent found out about the survey as a method for

tracking effectiveness and gaining insight into intention to complete the survey. Self reported data is an additional factor inhibiting the generalizability of the study results. The data results were not confirmed by alternative data collection such as personal interviews or open-ended survey questions used to triangulate the data.

Temporal factors have been documented to affect studies for sexual minorities due to fast-paced culturally changing dynamics around sexual identity (Martin & D'Augelli, 2009). A limitation of cross-sectional designs is the findings are based on a snapshot in time rather than over longer periods. Given the current political climate, structural stigma and minority stress are likely higher than in the previous years. Consequently, a longitudinal study would provide a more robust picture of the effects of minority stress and the link to smoking behaviors. The prominence of age as a significant correlation to multiple variables should be noted for future studies of SMW. Recommendations include the use of a sensitive tool for determination of sexual identity milestones, as these developmental periods appear to play a role in situational threats to identity and thus affect minority stress.

Summary

In summary, the aim of this study was to examine health indicators of social support, identity concealment, unique discriminatory experiences, and smoking stigma in SMW. As SMW continue to smoke at high rates while other group's smoking rates decrease, it is incumbent on researchers to uncover specific indicators that will aid in designing effective smoking cessation and prevention programs. As this investigation was focused only on SMW, it fills a gap in existing research; additionally, few studies

investigate differences between SMW. This focus extends the research on the disparities experienced by bisexual women concerning higher rates of discriminatory distress and concealment, regardless of smoking status. Recommendations for further evaluation of age and identity maturation within this context would provide a greater understanding of the etiology of health disparities in SMW.

The results of this investigation support previous research with regard to the correlation of age and smoking. In addition, smokers experienced higher degrees of discriminatory stress experiences than non-smokers. This finding supports the portion of minority stress theory related to distal stressors. Yet, the lack of difference between smokers and non-smokers for social support and concealment does not support proximal stressors of minority stress theory. However, one of the most relevant findings that emerge from the data is that younger bisexual women were found to experience higher rates of discriminatory distress and concealment, regardless of smoking status.

Consequently, recommendations for the study of young SMW and their experiences of identity development and their coping in stigmatizing environments should be a focus for health researchers.

REFERENCES

- Agaku, I. T., King, B. A., & Dube, S. R. (2014). Current cigarette smoking among adults—United States, 2005-2012. *Morbidity and Mortality Weekly Report*, *63*(2), 29-34.
- Ahmed, J., Agaku, I. T., O'Connor, E., King, B. A., Kenemer, J. B., & Neff, L. (2014). Current cigarette smoking among adults—United States, 2005–2013. *MMWR Morb Mortal Wkly Rep*, *63*, 1108-12.
- al'Absi, M., Nakajima, M., Allen, S., Lemieux, A., & Hatsukami, D. (2015). Sex differences in hormonal responses to stress and smoking relapse: a prospective examination. *Nicotine & Tobacco Research*, *17*(4), 382-389.
- American Lung Association. (2011). Trends in tobacco use. American Lung Association, Research and Program Services, Epidemiology and Statistics Unit. Retrieved from <https://www.lung.org/assets/documents/research/tobacco-trend-report.pdf>
- Baldwin, A., Schick, V. R., Dodge, B., van Der Pol, B., Herbenick, D., Sanders, S. A., & Fortenberry, J. D. (2017). Variation in sexual identification among behaviorally bisexual women in the Midwestern United States: Challenging the established methods for collecting data on sexual identity and orientation. *Archives of Sexual Behavior*, *46*(5), 1337-1348.
- Balsam, K. F., Beadnell, B., & Molina, Y. (2013). The Daily Heterosexist Experiences Questionnaire: Measuring minority stress among lesbian, gay, bisexual, and transgender adults. *Measurement and Evaluation in Counseling and Development*, *46*(1), 3-25.

- Balsam, K. F., & Mohr, J. J. (2007). Adaptation to sexual orientation stigma: A comparison of bisexual and lesbian/gay adults. *Journal of Counseling Psychology, 54*(3), 306.
- Benowitz, N. L. (2009). Pharmacology of nicotine: addiction, smoking-induced disease, and therapeutics. *Annual Review of Pharmacology and Toxicology, 49*, 57-71.
- Benowitz, N. L. (2010). Nicotine addiction. *New England Journal of Medicine, 362*(24), 2295-2303.
- Benowitz, N. L., & Hatsukami, D. (1998). Gender differences in the pharmacology of nicotine addiction. *Addiction Biology, 3*(4), 383-404.
- Binson, D., Blair, J., Huebner, D. M., & Woods, W. J. (2007). Sampling in surveys of lesbian, gay, and bisexual people. In I. Meyer & M. Northridge (Eds.), *The Health of Sexual Minorities* (pp. 375-418). Boston, Massachusetts: Springer.
- Blosnich, J. R., Farmer, G. W., Lee, J. G., Silenzio, V. M., & Bowen, D. J. (2014). Health inequalities among sexual minority adults: evidence from ten US states, 2010. *American Journal of Preventive Medicine, 46*(4), 337-349.
- Blosnich, J., Lee, J. G., & Horn, K. (2013). A systematic review of the aetiology of tobacco disparities for sexual minorities. *Tobacco Control, 22*(2), 66-73.
- Blum, K., Thanos, P. K., Oscar-Berman, M., Febo, M., Baron, D., Badgaiyan, R. D., ... & Dushaj, K. (2015). Dopamine in the brain: Hypothesizing surfeit or deficit links to reward and addiction. *Journal of Reward Deficiency Syndrome, 1*(3), 95.

- Boehmer, U., Miao, X., Linkletter, C., & Clark, M. A. (2012). Adult health behaviors over the life course by sexual orientation. *American Journal of Public Health, 102*(2), 292-300.
- Bostwick, W. B., Hughes, T. L., & Everett, B. (2015). Health behavior, status, and outcomes among a community-based sample of lesbian and bisexual women. *LGBT Health, 2*(2), 121-126.
- Bowleg, L. (2008). When Black+ lesbian+ woman ≠ Black lesbian woman: The methodological challenges of qualitative and quantitative intersectionality research. *Sex Roles, 59*(5-6), 312-325.
- Bradford, J., & Van Wagenen, A. (2013). Research on the health of sexual minority women. In M. Goldman, R. Trosi, & K. Rexrode (Eds.), *Women and Health* (pp. 77-91). London: Academic Press.
- Brown-Johnson, C. G., Cataldo, J. K., Orozco, N., Lisha, N. E., Hickman III, N. J., & Prochaska, J. J. (2015). Validity and reliability of the internalized stigma of smoking inventory: An exploration of shame, isolation, and discrimination in smokers with mental health diagnoses. *The American Journal on Addictions, 24*(5), 410-418.
- Bryant, L. O., & Bowman, L. (2014). Tobacco use among sexual minorities. *New Directions for Adult and Continuing Education, 2014*(142), 63-72.
- Buchmann, A. F., Laucht, M., Schmid, B., Wiedemann, K., Mann, K., & Zimmermann, U. S. (2010). Cigarette craving increases after a psychosocial stress test and is

- related to cortisol stress response but not to dependence scores in daily smokers. *Journal of Psychopharmacology*, 24(2), 247-255.
- Buffie, W. C. (2011). Public health implications of same-sex marriage. *American Journal of Public Health*, 101(6), 986-990.
- Burkhalter, J. E., Margolies, L., Sigurdsson, H. O., Walland, J., Radix, A., Rice, D., ... & Cahill, S. (2016). The National LGBT Cancer Action Plan: A White Paper of the 2014 National Summit on Cancer in the LGBT Communities. *LGBT Health*, 3(1), 19-31.
- Carpenter, M. J., Saladin, M. E., Larowe, S. D., McClure, E. A., Simonian, S., Upadhyaya, H. P., & Gray, K. M. (2014). Craving, cue reactivity, and stimulus control among early-stage young smokers: Effects of smoking intensity and gender. *Nicotine & Tobacco Research : Official Journal of the Society for Research on Nicotine and Tobacco*, 16(2), 208-215. doi:10.1093/ntr/ntt147 [doi]
- Carneiro, I., Howard, N., & Bailey, L. (Eds.). (2011). *Introduction to Epidemiology*. England: McGraw-Hill Education.
- Carter, B. D., Abnet, C. C., Feskanich, D., Freedman, N. D., Hartge, P., Lewis, C. E., ... & Jacobs, E. J. (2015). Smoking and mortality—beyond established causes. *New England Journal of Medicine*, 372(7), 631-640.
- Centers for Disease Control and Prevention (CDC). (2011). Global adult tobacco survey collaborative group. Tobacco questions for surveys: A subset of key questions from the global adult tobacco survey (GATS). *Atlanta, GA*, 41.

- Centers for Disease Control and Prevention (CDC). (2014). Smoking and tobacco use. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/
- Chamberland, L., & Saewyc, E. (2012). Stigma, vulnerability, and resilience: The psychosocial health of sexual minority and gender diverse people in Canada. *Canadian Journal of Community Mental Health, 30*(2), 1-5.
- Childs, E., & De Wit, H. (2010). Effects of acute psychosocial stress on cigarette craving and smoking. *Nicotine & tobacco research, 12*(4), 449-453.
- Cochran, S. D., Bandiera, F. C., & Mays, V. M. (2013). Sexual orientation–related differences in tobacco use and secondhand smoke exposure among US adults aged 20 to 59 years: 2003–2010 national health and nutrition examination surveys. *American Journal of Public Health, 103*(10), 1837-1844.
- Cochran, S. D., Mays, V. M., Bowen, D., Gage, S., Bybee, D., Roberts, S. J., ... & White, J. (2001). Cancer-related risk indicators and preventive screening behaviors among lesbians and bisexual women. *American Journal of Public Health, 91*(4), 591.
- Conron, K. J., Mimiaga, M. J., & Landers, S. J. (2010). A population-based study of sexual orientation identity and gender differences in adult health. *American Journal of Public Health, 100*(10), 1953-1960.
- Corliss, H. L., Wadler, B. M., Jun, H. J., Rosario, M., Wypij, D., Frazier, A. L., & Austin, S. B. (2012). Sexual-orientation disparities in cigarette smoking in a longitudinal cohort study of adolescents. *Nicotine & Tobacco Research, 15*(1), 213-222.

- Coulter, R. W., Kenst, K. S., & Bowen, D. J., & Scout (2014). Research funded by the national institutes of health on the health of lesbian, gay, bisexual, and transgender populations. *American Journal of Public Health, 104*(2), e105-e112.
- Creswell, J. W. (2009). *Research design, qualitative, quantitative, and mixed method approaches*. Thousand Oaks California: Sage Publications.
- Dilley, J. A., Spigner, C., Boysun, M. J., Dent, C. W., & Pizacani, B. A. (2008). Does tobacco industry marketing excessively impact lesbian, gay and bisexual communities?. *Tobacco Control, 17*(6), 385-390.
- Doran, N. (2014). Sex differences in smoking cue reactivity: Craving, negative affect, and preference for immediate smoking. *The American Journal on Addictions, 23*(3), 211-217.
- Drabble, L. (2000). Alcohol, tobacco, and pharmaceutical industry funding: Considerations for organizations serving lesbian, gay, bisexual, and transgender communities. *Journal of Gay & Lesbian Social Services, 11*(1), 1-26.
- Eliason, M. J., & Fogel, S. C. (2015). An ecological framework for sexual minority women's health: Factors associated with greater body mass. *Journal of Homosexuality, 62*(7), 845-882.
- Evans-Polce, R. J., Castaldelli-Maia, J. M., Schomerus, G., & Evans-Lacko, S. E. (2015). The downside of tobacco control? Smoking and self-stigma: a systematic review. *Social Science & Medicine, 145*, 26-34.
- Everett, B., & Mollborn, S. (2013). Differences in hypertension by sexual orientation among US young adults. *Journal of Community Health, 38*(3), 588-596.

- Fallin, A., Goodin, A., Lee, Y. O., & Bennett, K. (2015). Smoking characteristics among lesbian, gay, and bisexual adults. *Preventive Medicine, 74*, 123-130.
- Farmer, G. W., Jabson, J. M., Bucholz, K. K., & Bowen, D. J. (2013). A population-based study of cardiovascular disease risk in sexual-minority women. *American Journal of Public Health, 103*(10), 1845-1850.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Thousand Oaks, California: Sage Publications.
- Fingerhut, A. W., Peplau, L. A., & Gable, S. L. (2010). Identity, minority stress and psychological well-being among gay men and lesbians. *Psychology & Sexuality, 1*(2), 101-114.
- Flaskerud, J. H., & Winslow, B. J. (1998). Conceptualizing vulnerable populations health-related research. *Nursing Research, 47*(2), 69-78.
- Fredriksen-Goldsen, K. I., Kim, H. J., Barkan, S. E., Balsam, K. F., & Mincer, S. L. (2010). Disparities in health-related quality of life: a comparison of lesbians and bisexual women. *American Journal of Public Health, 100*(11), 2255-2261.
- Fredriksen-Goldsen, K. I., Kim, H. J., Barkan, S. E., Muraco, A., & Hoy-Ellis, C. P. (2013). Health disparities among lesbian, gay, and bisexual older adults: results from a population-based study. *American Journal of Public Health, 103*(10), 1802-1809.
- Friedman, C., & Leaper, C. (2010). Sexual-minority college women's experiences with discrimination: Relations with identity and collective action. *Psychology of Women Quarterly, 34*(2), 152-164.

- Frost, D. M., Lehavot, K., & Meyer, I. H. (2015). Minority stress and physical health among sexual minority individuals. *Journal of Behavioral Medicine, 38*(1), 1-8.
- Gates, G. J. (2011). How many people are lesbian, gay, bisexual and transgender?. *UCLA: The Williams Institute*. Retrieved from <https://escholarship.org/uc/item/09h684X2>
- Global Adult Tobacco Survey Collaborative Group [GATS]. (2011). *Tobacco questions for surveys: A subset of key questions fro the global tobacco survey*. Atlanta, Georgia: Centers for Disease Control and Prevention.
- Graham, R., Berkowitz, B., Blum, R., Bockting, W., Bradford, J., de Vries, B., ... & Makadon, H. (2011). The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding. Washington, DC: The National Academies Press. <https://doi.org/10.17226/13128>.
- Greenwood, G. L., & Gruskin, E. P. (2007). LGBT tobacco and alcohol disparities. In *The Health of Sexual Minorities* (pp. 566-583). Boston, Massachusetts: Springer.
- Gruskin, E. P., Byrne, K. M., Altschuler, A., & Dibble, S. L. (2009). Smoking it all away: Influences of stress, negative emotions, and stigma on lesbian tobacco use. *Journal of LGBT Health Research, 4*(4), 167-179.
- Hartz, S. M., Short, S. E., Saccone, N. L., Culverhouse, R., Chen, L., Schwantes-An, T. H., ... & Chen, X. (2012). Increased genetic vulnerability to smoking at CHRNA5 in early-onset smokers. *Archives of General Psychiatry, 69*(8), 854-860.

- Hatzenbuehler, M. L. (2009). How does sexual minority stigma “get under the skin”? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707.
- Hatzenbuehler, M. L., Jun, H. J., Corliss, H. L., & Austin, S. B. (2013). Structural stigma and cigarette smoking in a prospective cohort study of sexual minority and heterosexual youth. *Annals of Behavioral Medicine, 47*(1), 48-56.
- Hatzenbuehler, M. L., Slopen, N., & McLaughlin, K. A. (2014). Stressful life events, sexual orientation, and cardiometabolic risk among young adults in the United States. *Health Psychology, 33*(10), 1185.
- Herek, G. M. (2009). Hate crimes and stigma-related experiences among sexual minority adults in the United States: Prevalence estimates from a national probability sample. *Journal of Interpersonal Violence, 24*(1), 54-74.
- Herman, A. I., DeVito, E. E., Jensen, K. P., & Sofuoglu, M. (2014). Pharmacogenetics of nicotine addiction: Role of dopamine. *Pharmacogenomics, 15*(2), 221-234.
- Hequembourg, A. L., & Brallier, S. A. (2009). An exploration of sexual minority stress across the lines of gender and sexual identity. *Journal of Homosexuality, 56*(3), 273-298.
- Hiemstra, M., Kleinjan, M., van Schayck, O. C., Engels, R. C., & Otten, R. (2014). Environmental smoking and smoking onset in adolescence: the role of dopamine-related genes. Findings from two longitudinal studies. *PloS One, 9*(1), e86497.
- Hsieh, N., & Ruther, M. (2016). Sexual minority health and health risk factors: Intersection effects of gender, race, and sexual identity. *American Journal of Preventive Medicine, 50*(6), 746-755.

- Human Rights Campaign (HRC). (n.d.). State maps of laws and policies. Retrieved from <https://www.hrc.org/state-maps/housing>
- Jackson, S. D., & Mohr, J. J. (2016). Conceptualizing the closet: Differentiating stigma concealment and nondisclosure processes. *Psychology of Sexual Orientation and Gender Diversity, 3*(1), 80.
- Jamal, A., Phillips, E., Gentzke, A. S., Homa, D. M., Babb, S. D., King, B. A., & Neff, L. J. (2018). Current cigarette smoking among adults—United States, 2016. *Morbidity and Mortality Weekly Report, 67*(2), 53.
- Jha, P., Ramasundarahettige, C., Landsman, V., Rostron, B., Thun, M., Anderson, R. N., ... & Peto, R. (2013). 21st-century hazards of smoking and benefits of cessation in the United States. *New England Journal of Medicine, 368*(4), 341-350.
- Katz-Wise, S. L., Rosario, M., Calzo, J. P., Scherer, E. A., Sarda, V., & Austin, S. B. (2017). Endorsement and timing of sexual orientation developmental milestones among sexual minority young adults in the Growing Up Today Study. *The Journal of Sex Research, 54*(2), 172-185.
- Kim, H. J., & Fredriksen-Goldsen, K. I. (2012). Hispanic lesbians and bisexual women at heightened risk or health disparities. *American Journal of Public Health, 102*(1), e9-e15.
- King, B. A., Dube, S. R., & Tynan, M. A. (2012). Current tobacco use among adults in the United States: Findings from the National Adult Tobacco Survey. *American Journal of Public Health, 102*(11), e93-e100.

- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610.
- Kuyper, L., & Bos, H. (2016). Mostly heterosexual and lesbian/gay young adults: Differences in mental health and substance use and the role of minority stress. *The Journal of Sex Research, 53*(7), 731-741.
- Kuyper, L., & Fokkema, T. (2010). Loneliness among older lesbian, gay, and bisexual adults: The role of minority stress. *Archives of Sexual Behavior, 39*(5), 1171-1180.
- Kwon, P. (2013). Resilience in lesbian, gay, and bisexual individuals. *Personality and Social Psychology Review, 17*(4), 371-383.
- Lehavot, K. (2012). Coping strategies and health in a national sample of sexual minority women. *American Journal of Orthopsychiatry, 82*(4), 494.
- Lehavot, K., & Simoni, J. M. (2011). The impact of minority stress on mental health and substance use among sexual minority women. *Journal of Consulting and Clinical Psychology, 79*(2), 159.
- Lannert, B. K. (2014). Traumatogenic processes and pathways to mental health outcomes for sexual minorities exposed to bias crime information. *Trauma, Violence, & Abuse 16*(3), 291-298.
- Leedy, P. D., & Ormrod, J. E. (2013). *Practical Research Planning and Design*. New Jersey: Pearson Merrill Prentice Hall.
- Legate, N., Ryan, R. M., & Weinstein, N. (2012). Is coming out always a “good thing”? Exploring the relations of autonomy support, outness, and wellness for lesbian,

- gay, and bisexual individuals. *Social Psychological and Personality Science*, 3(2), 145-152.
- Leibel, K., Lee, J. G., Goldstein, A. O., & Ranney, L. M. (2011). Barring intervention? Lesbian and gay bars as an underutilized venue for tobacco interventions. *Nicotine & Tobacco Research*, 13(7), 507-511.
- Martos, A. J., Nezhad, S., & Meyer, I. H. (2015). Variations in sexual identity milestones among lesbians, gay men, and bisexuals. *Sexuality Research and Social Policy*, 12(1), 24-33.
- Martin, J. I., & D'Augelli, A. R. (2009). Timed lives: Cohort and period effects in research on sexual orientation and gender identity. In W. Meezan & J. Martin (Eds.), *Handbook of research with lesbian, gay, bisexual, and transgender populations*, (pp. 190-207). New York: Routledge.
- Matthews, A. K., Cesario, J., Ruiz, R., Ross, N., & King, A. (2017). A qualitative study of the barriers to and facilitators of smoking cessation among lesbian, gay, bisexual, and transgender smokers who are interested in quitting. *LGBT Health*, 4(1), 24-33.
- Matthews, A. K., Hotton, A., DuBois, S., Fingerhut, D., & Kuhns, L. M. (2011). Demographic, psychosocial, and contextual correlates of tobacco use in sexual minority women. *Research in Nursing & Health*, 34(2), 141-152.
- Matthews, A. K., Riley, B. B., Everett, B., Hughes, T. L., Aranda, F., & Johnson, T. (2014). A longitudinal study of the correlates of persistent smoking among sexual minority women. *Nicotine & Tobacco Research : Official Journal of the Society*

for Research on Nicotine and Tobacco, 16(9), 1199-1206. doi:10.1093/ntr/ntu051

[doi]

- Mayer, K. H., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and gender minority health: What we know and what needs to be done. *American Journal of Public Health*, 98(6), 989-995.
- McKee, S. A., Sinha, R., Weinberger, A. H., Sofuoglu, M., Harrison, E. L., Lavery, M., & Wanzer, J. (2011). Stress decreases the ability to resist smoking and potentiates smoking intensity and reward. *Journal of psychopharmacology*, 25(4), 490-502.
- Meezan, W., & Martin, J. I. (Eds.). (2012). *Research methods with gay, lesbian, bisexual, and transgender populations*. New York: Routledge.
- Meidlinger, P. C., & Hope, D. A. (2014). Differentiating disclosure and concealment in measurement of outness for sexual minorities: The Nebraska Outness Scale. *Psychology of Sexual Orientation and Gender Diversity*, 1(4), 489.
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674.
- Meyer, I. H. (2007). Prejudice and discrimination as social stressors. In *The health of sexual minorities* (pp. 242-267). Springer, Boston, MA.
- Meyer, I. H., Schwartz, S., & Frost, D. M. (2008). Social patterning of stress and coping: Does disadvantaged social statuses confer more stress and fewer coping resources?. *Social Science & Medicine*, 67(3), 368-379.

- Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. *Journal of Counseling Psychology, 56*(1), 23.
- Monroe, S. M. (2008). Modern approaches to conceptualizing and measuring human life stress. *Annual Review of Clinical Psychology, 4*, 33-52.
- Morrison, T. G., Bishop, C. J., Morrison, M. A., & Parker-Taneo, K. (2016). A psychometric review of measures assessing discrimination against sexual minorities. *Journal of Homosexuality, 63*(8), 1086-1126.
- National LGBT Tobacco Control Network. (n.d.). I choose [Online image]. Retrieved September 1, 2018, from <https://www.lgbttobacco.org/files/CatchABuz.pdf>
- National LGBT Tobacco Control Network. (n.d.). I choose [Online image]. Retrieved September 1, 2018, from <https://www.lgbttobacco.org/files/i%20choose.gif>
- Niaura, R., Shadel, W. G., Britt, D. M., & Abrams, D. B. (2002). Response to social stress, urge to smoke, and smoking cessation. *Addictive Behaviors, 27*(2), 241-250.
- Noordzij, M., Dekker, F. W., Zoccali, C., & Jager, K. J. (2011). Sample size calculations. *Nephron Clinical Practice, 118*(4), c319-c323.
- Northridge, M. E., McGrath, B. P., & Krueger, S. Q. (2007). Using community-based participatory research to understand and eliminate social disparities in health for lesbian, gay, bisexual, and transgender populations. In *The health of sexual minorities* (pp. 455-470). Springer, Boston, MA.
- Obergefell v. Hodges, No. 14-556 (U.S. June 26, 2015). Retrieved from http://www.supremecourt.gov/opinions/14pdf/14-556_3204.pdf

- Parks, C. A., Hughes, T. L., & Werkmeister-Rozas, L. (2009). Defining sexual identity and sexual orientation in research with lesbians, gay men, and bisexuals. *Handbook of research with lesbian, gay, bisexual, and transgender populations*, (pp. 71-99). New York: Routledge.
- Peters, S. A., Huxley, R. R., & Woodward, M. (2013). Smoking as a risk factor for stroke in women compared with men. *Stroke*, *44*(10), 2821-2828.
- Pollay, R. W., Siddarth, S., Siegel, M., Haddix, A., Merritt, R. K., Giovino, G. A., & Eriksen, M. P. (1996). The last straw? Cigarette advertising and realized market shares among youths and adults, 1979-1993. *The Journal of Marketing*, *60*(2), 1-16.
- Przedworski, J. M., McAlpine, D. D., Karaca-Mandic, P., & VanKim, N. A. (2014). Health and health risks among sexual minority women: An examination of 3 subgroups. *American Journal of Public Health*, *104*(6), 1045-1047.
- Psychdata. (2018). *About Us*. Retrieved from <https://www.psychdata.com/content/aboutus.asp>
- Purnell, J. Q., Peppone, L. J., Alcaez, K., McQueen, A., Guido, J. J., Carroll, J. K., Morrow, G. R. (2012). Perceived discrimination, psychological distress, and current smoking status: Results from the Behavioral Risk Factor Surveillance System Reactions to Race module, 2004– 2008. *American Journal of Public Health*, *102*, 844-851.
- Quinn, D. M., Williams, M. K., & Weisz, B. M. (2015). From discrimination to internalized mental illness stigma: The mediating roles of anticipated

- discrimination and anticipated stigma. *Psychiatric Rehabilitation Journal*, 38(2), 103.
- Robinson, M., Sanches, M., & MacLeod, M. A. (2016). Prevalence and mental health correlates of illegal cannabis use among bisexual women. *Journal of Bisexuality*, 16(2), 181-202.
- Rothblum, E. D. (2007). From science fiction to computer-generated technology: Sampling lesbian, gay, and bisexual individuals. In *The health of sexual minorities* (pp. 442-454). Boston, Massachusetts: Springer.
- Rothman, E. F., Sullivan, M., Keyes, S., & Boehmer, U. (2012). Parents' supportive reactions to sexual orientation disclosure associated with better health: Results from a population-based survey of LGB adults in Massachusetts. *Journal of Homosexuality*, 59(2), 186-200.
- Saladin, M. E., Gray, K. M., Carpenter, M. J., LaRowe, S. D., DeSantis, S. M., & Upadhyaya, H. P. (2012). Gender differences in craving and cue reactivity to smoking and negative affect/stress cues. *The American Journal on Addictions*, 21(3), 210-220.
- Sallis, J. F., Owen, N., & Fisher, E. (2008). Ecological models of health behavior. In K. Glanz, B. Rimer, & K. Viswanath (Eds.). *Health behavior: Theory, research, and practice* (pp. 43-64). San Francisco, California: John Wiley & Sons.
- Samet, J. M., Yoon, S. Y., & World Health Organization. (2010). Gender, women, and the tobacco epidemic/edited by Jonathan M. Samet and Soon-Young Yoon. In *Gender, Women, and the Tobacco Epidemic*. Editors Samet, J. M. and Yoon, S.

- Savin-Williams, R. C. (2006). Who's gay? Does it matter?. *Current Directions in Psychological Science*, 15(1), 40-44.
- Schnoll, R. A., Johnson, T. A., & Lerman, C. (2007). Genetics and smoking behavior. *Current Psychiatry Reports*, 9(5), 349-357.
- Sell, R. L. (2007). Defining and measuring sexual orientation for research. In I. Meyer & M. Northridge (Eds.). *The health of sexual minorities* (pp. 355-374). Boston, Massachusetts: Springer.
- Selvidge, M. M., Matthews, C. R., & Bridges, S. K. (2008). The relationship of minority stress and flexible coping to psychological well being in lesbian and bisexual women. *Journal of Homosexuality*, 55(3), 450-470.
- Sivadon, A., Matthews, A. K., & David, K. M. (2014). Social integration, psychological distress, and smoking behaviors in a Midwest LGBT community. *Journal of the American Psychiatric Nurses Association*, 20(5), 307-314.
- Smith, D. M., & Gates, G. J. (2001). Gay and Lesbian Families in the United States: Same-Sex Unmarried Partner Households. A Preliminary Analysis of 2000 United States Census Data. Retrieved from <https://files.eric.ed.gov/fulltext/ED457285.pdf>
- Smith, P. H., Kasza, K. A., Hyland, A., Fong, G. T., Borland, R., Brady, K., ... & McKee, S. A. (2015). Gender differences in medication use and cigarette smoking cessation: Results from the International Tobacco Control Four Country Survey. *Nicotine & Tobacco Research*, 17(4), 463-472.

- Smith, E. A., & Malone, R. E. (2003). The outing of Philip Morris: Advertising tobacco to gay men. *American Journal of Public Health, 93*(6), 988-993.
- Smith, E. A., Offen, N., & Malone, R. E. (2005). What makes an ad a cigarette ad? Commercial tobacco imagery in the lesbian, gay, and bisexual press. *Journal of Epidemiology & Community Health, 59*(12), 1086-1091.
- Smith, E. A., Offen, N., & Malone, R. E. (2006). Pictures worth a thousand words: noncommercial tobacco content in the lesbian, gay, and bisexual press. *Journal of Health Communication, 11*(7), 635-649.
- Smith, E. A., Thomson, K., Offen, N., & Malone, R. E. (2008). "If you know you exist, it's just marketing poison": Meanings of tobacco industry targeting in the lesbian, gay, bisexual, and transgender community. *American Journal of Public Health, 98*(6), 996-1003.
- Stevens, P., Carlson, L. M., & Hinman, J. M. (2004). An analysis of tobacco industry marketing to lesbian, gay, bisexual, and transgender (LGBT) populations: Strategies for mainstream tobacco control and prevention. *Health Promotion Practice, 5*(3_suppl), 129S-134S.
- Sue, D. W. (2010). *Microaggressions in everyday life: Race, gender, and sexual orientation*. New Jersey: John Wiley & Sons.
- Sutin, A. R., English, D., Evans, M. K., & Zonderman, A. B. (2014). Perceived sex discrimination amplifies the effect of antagonism on cigarette smoking. *Nicotine & Tobacco Research, 16*(6), 794-799.

- Szymanski, D. M., & Henrichs-Beck, C. (2014). Exploring sexual minority women's experiences of external and internalized heterosexism and sexism and their links to coping and distress. *Sex Roles, 70*(1-2), 28-42.
- Tabaac, A. R., Perrin, P. B., & Trujillo, M. A. (2015). Multiple mediational model of outness, social support, mental health, and wellness behavior in ethnically diverse lesbian, bisexual, and queer women. *LGBT Health, 2*(3), 243-249.
- Thoits, P. A. (2010). Stress and health: Major findings and policy implications. *Journal of Health and Social Behavior, 51*(1_suppl), S41-S53.
- Thun, M. J., Carter, B. D., Feskanich, D., Freedman, N. D., Prentice, R., Lopez, A. D., ... & Gapstur, S. M. (2013). 50-year trends in smoking-related mortality in the United States. *New England Journal of Medicine, 368*(4), 351-364.
- U.S. Department of Food and Drug Administration [FDA]. (2012). Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke: Established List. Retrieved from <https://www.fda.gov/TobaccoProducts/Labeling/RulesRegulationsGuidance/ucm297786.htm>
- U.S. Department of Health and Human Services [USDHHS]. (2014). The health consequences of Smoking—50 years of progress: A report of the surgeon general. *Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.*

- U.S. Department of Health and Human Services [USDHHS]. (2001). Women and smoking: A report of the Surgeon General. *Washington, DC: US Government Printing Office.*
- U.S. Department of Health and Human Service [USDHHS]. (2010). How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease. *Rockville, MD, U.S. Department of Health and Human Services, Public Health Service, Office of Surgeon General.* Retrieved from http://www.surgeongeneral.gov/library/tobaccosmoke/report/full_report.pdf.
- Van Voorhis, C. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology, 3*(2), 43-50.
- Vrangalova, Z., & Savin-Williams, R. C. (2012). Mostly heterosexual and mostly gay/lesbian: Evidence for new sexual orientation identities. *Archives of Sexual Behavior, 41*(1), 85-101.
- Ward, B. W., Joestl, S. S., Galinsky, A. M., & Dahlhamer, J. M. (2015). Peer Reviewed: Selected Diagnosed Chronic Conditions by Sexual Orientation: A National Study of US Adults, 2013. *Preventing Chronic Disease, 12.*
- Washington, H. A. (2002). Burning love: big tobacco takes aim at LGBT youths. *American Journal of Public Health, 92*(7), 1086-1095.
- Wexler, L. M., DiFluvio, G., & Burke, T. K. (2009). Resilience and marginalized youth: Making a case for personal and collective meaning-making as part of resilience research in public health. *Social Science & Medicine, 69*(4), 565-570.

- Youatt, E. J., Johns, M. M., Pingel, E. S., Soler, J. H., & Bauermeister, J. A. (2015). Exploring young adult sexual minority women's perspectives on LGBTQ smoking. *Journal of LGBT Youth, 12*(3), 323-342.
- Zimmerman, L., Darnell, D. A., Rhew, I. C., Lee, C. M., & Kaysen, D. (2015). Resilience in community: A social ecological development model for young adult sexual minority women. *American Journal of Community Psychology, 55*(1-2), 179-190.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30-41.

APPENDIX A
SMOKING STATUS

Smoking Status

1. Do you currently smoke tobacco on a daily basis, less than daily, or not at all?

Daily

Less than daily

Not at all

Don't know

2. Have you smoked tobacco daily in the past?

Yes

No

Don't know

3. In the past, have you smoked tobacco on a daily basis, less than daily, or not at all?

Daily

Less than daily

Not at all

Don't know

APPENDIX B
SEXUAL IDENTITY AND DEMOGRAPHICS

Sexual Identity

Do you consider yourself:

- Only lesbian/gay
- Mostly lesbian/gay
- Bisexual
- Mostly heterosexual
- Only heterosexual/straight

Demographics

1. Age
 - 18-24
 - 25-44
 - 45-64
 - 65+
2. Zip code of primary residence _____
3. Education
 - Less than High School Degree
 - High School Degree or Equivalent
 - Some College but no degree
 - Associate Degree
 - Bachelor Degree
 - Graduate Degree
 - Post Graduate Degree
4. Income Level
 - \$25,000 or less per year
 - \$26,000 to \$50,000 per year
 - \$51,000 to \$75,000 per year
 - \$76,000 to \$100,000 per year
 - Over \$100,000 per year
5. Please describe your race/ethnicity
 - African American/Black
 - American Indian/Alaska Native
 - Asian/Pacific Islander
 - Latina/Hispanic
 - White Latina/Hispanic
 - White non-Latina/Hispanic
 - Two or More races

APPENDIX C
NEBRASKA OUTNESS SCALE (NOS)

Nebraska Outness Scale (NOS)

(NOS-D) Circle what percent of the people in this group do you think are aware of your sexual orientation (meaning they are aware of whether you consider yourself straight, gay, etc)?

- 1. Members of your immediate family (e.g., parents and siblings)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 2. Members of your extended family (e.g., aunts, uncles, grandparents, cousins)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 3. People you socialize with (e.g., friends and acquaintances)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 4. People at your work/school (e.g., coworkers, supervisors, instructors, students)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 5. Strangers (e.g., someone you have a casual conversation with in line at the store)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

(NOS-C) Circle how often do you **avoid** talking about topics related to or otherwise indicating your sexual orientation (e.g., not talking about your significant other, changing your mannerisms) when interacting with members of these groups?

- 1. Members of your immediate family (e.g., parents and siblings)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 2. Members of your extended family (e.g., aunts, uncles, grandparents, cousins)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 3. People you socialize with (e.g., friends and acquaintances)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 4. People at your work/school (e.g., coworkers, supervisors, instructors, students)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 5. Strangers (e.g., someone you have a casual conversation with in line at the store)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

APPENDIX D

DAILY HETEROSEXIST EXPERIENCES QUESTIONNAIRE

Daily Heterosexist Experiences Questionnaire

If you have had the experiences listed below in the last year, write the corresponding number using the scale of 0-5 to rate these experiences or Skip.

0 = *did not happen/not applicable to me*

1 = *it happened, and it bothered me NOT AT ALL*

2 = *it happened, and it bothered me A LITTLE BIT*

3 = *it happened, and it bothered me MODERATELY*

4 = *it happened, and it bothered me QUITE A BIT*

5 = *it happened, and it bothered me EXTREMELY*

SKIP

1. Difficulty finding a partner because you are LGBT.
2. Difficulty finding LGBT friends.
3. Having very few people you can talk to about being LGBT.
4. Watching what you say and do around heterosexual people.
5. Hearing about LGBT people you know being treated unfairly.
6. Hearing about LGBT people you don't know being treated unfairly.
7. Hearing about hate crimes (e.g., vandalism, physical or sexual assault) that happened to LGBT people you don't know.
8. Being called names such as "fag" or "dyke"
9. Hearing other people being called names such as "fag" or "dyke".
10. Hearing someone make jokes about LGBT people.
11. Family members not accepting your partner as a part of the family.
12. Your family avoiding talking about your LGBT identity.
13. Your children being rejected by other children because you are LGBT.

14. Your children being verbally harassed because you are LGBT.
15. Feeling like you don't fit in with other LGBT people.
16. Pretending that you have an opposite-sex partner.
17. Pretending that you are heterosexual.
18. Hiding your relationship from other people.
19. People staring at you when you are out in public because you are LGBT.
20. Feeling invisible in the LGBT community because of your gender expression.
21. Being harassed in public because of your gender expression.
22. Being harassed in bathrooms because of your gender expression.
23. Being rejected by your mother for being LGBT.
24. Being rejected by your father for being LGBT.
25. Being rejected by a sibling or siblings because you are LGBT.
26. Being rejected by other relatives because you are LGBT.
27. Being verbally harassed by strangers because you are LGBT.
28. Being verbally harassed by people you know because you are LGBT
29. Being treated unfairly in stores or restaurants because you are LGBT
30. People laughing at you or making jokes at your expense because you are LGBT
31. Hearing politicians say negative things about LGBT people.
32. Avoiding talking about your current or past relationships when you are at work.
33. Hiding part of your life from other people.
34. Feeling like you don't fit into the LGBT community because of your gender expression.

35. Difficulty finding clothes that you are comfortable wearing because of your gender expression.
36. Being misunderstood by people because of your gender expression.
37. Being treated unfairly by teachers or administrators at your children's school because you are LGBT.
38. People assuming you are heterosexual because you have children.
39. Being treated unfairly by parents of other children because you are LGBT.
40. Difficulty finding other LGBT families for you and your children to socialize with
41. Being punched, hit, kicked, or beaten because you are LGBT.
42. Being assaulted with a weapon because you are LGBT.
43. Being raped or sexually assaulted because you are LGBT.
44. Having objects thrown at you because you are LGBT.

APPENDIX E

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need. 1 2 3 4 5 6 7
2. There is a special person with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
3. My family really tries to help me. 1 2 3 4 5 6 7
4. I get the emotional help and support I need from my family. 1 2 3 4 5 6 7
5. I have a special person who is a real source of comfort to me. 1 2 3 4 5 6 7
6. My friends really try to help me. 1 2 3 4 5 6 7
7. I can count on my friends when things go wrong. 1 2 3 4 5 6 7
8. I can talk about my problems with my family. 1 2 3 4 5 6 7
9. I have friends with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
10. There is a special person in my life who cares about my feelings. 1 2 3 4 5 6 7
11. My family is willing to help me make decisions. 1 2 3 4 5 6 7
12. I can talk about my problems with my friends. 1 2 3 4 5 6 7

APPENDIX F
INTERNALIZED STIGMA OF SMOKING INVENTORY

Internalized Stigma of Smoking Inventory

Strongly Disagree (1), Disagree (2), Agree (3), Strongly Agree (4).

1. I feel like I am out of the place in the world because I am a smoker.
2. People discriminate against me because I am a smoker.
3. I am embarrassed or ashamed that I am a smoker
4. I feel inferior to others who are not smokers
5. I don't socialize as much as I used to because my smoking might make me look
“abnormal”
6. People often treat me disrespectfully just because I am a smoker.
7. I am disappointed in myself for being a smoker.
8. Being a smoker has spoiled my life
9. I avoid certain social situations because I am a smoker
10. People who have never smoked could not possibly understand me
11. People ignore me or take me less seriously just because I am a smoker.
12. Nobody would be interested in getting close to me because I am a smoker.
13. Others think that I can't achieve much in life because I am a smoker.

APPENDIX G
RECRUITMENT LETTER

Hello,

My name is De'An Roper and I am a doctoral student at Texas Woman's University. I am conducting a research study under the guidance of Dr. Kimberly Parker. The purpose of the study is to examine factors that may contribute to higher smoking rates in women who identify as lesbian, gay or bisexual. You do not have to be a smoker to participate in the study.

Women are often left out of health research; and lesbians, gay women and bisexuals are left out even more often. Your participation in this study will assist us in helping to contribute to the knowledge of an under-researched group and help to make health related smoking messages and quit methods more effective for women who do not identify as heterosexual. You do not have to be a smoker or a previous smoker to participate. The questions should take about 10-12 minutes of your time.

In order to qualify to participate:

- You must self identify as **not-heterosexual**, for example you would describe yourself as something like lesbian, bisexual, gay female, a little bit lesbian, as long as you do not identify yourself as only heterosexual.
- You must be 18 years or older.
- You must be able to read English.

Please note:

- Participation in the study is voluntary.
- You may withdraw from the survey at any time.
- There is a potential risk of loss of confidentiality in all email, downloading and internet transactions.
- The Texas Woman's University Institutional Review Board has approved this study.

If you do not meet criteria for the study please forward this to others you may know that meet the specified criteria.

Thank you in advance for your participation. Your contribution is important and valued.

Please click on the link below and you will be taken to the online survey.

[LGBTQ Womens Health Survey](#)

For questions about the study please contact the Principle Investigator, De'An Roper at droper@twu.edu

Sincerely,

De'An Roper

APPENDIX H
IRB APPROVAL LETTER



Institutional Review Board

Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3378
email: IRB@twu.edu
<http://www.twu.edu/irb.html>

DATE: March 8, 2018

TO: Ms. De'An Roper
Health Studies

FROM: Institutional Review Board (IRB) - Denton

Re: *Exemption for Examining Levels of Social Support, Concealment and Disclosure, Heterosexism, and Smoking Stigma as Health Indicators in Sexual Minority Women who Smoke (Protocol #: 19994)*

The above referenced study has been reviewed by the TWU IRB (operating under FWA00000178) and was determined to be exempt from further review.

If applicable, agency approval letters must be submitted to the IRB upon receipt PRIOR to any data collection at that agency. Because a signed consent form is not required for exempt studies, the filing of signatures of participants with the TWU IRB is not necessary.

Although your protocol has been exempted from further IRB review and your protocol file has been closed, any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Kimberly Miloch, Health Studies
Dr. Kimberly Parker, Health Studies
Graduate School

APPENDIX I
CURRIULUM VITAE

De'An Olson Roper, LCSW

dolson.lcsw@gmail.com
214-676-7920

EDUCATION & LICENSE

Doctoral Candidate, PhD Health Studies
Texas Woman's University, Dec 2018

Licensed Clinical Social Worker & Supervisor
Texas, # 23146

Master of Science Social Work
University of Texas Arlington, 1994

Bachelor of Social Work, Magna Cum Laude
Texas Woman's University, 1992

TEACHING EXPERIENCE

University of Texas at Arlington,
School of Social Work, Adjunct Instructor

Sep 2000 - Dec 2009
Jan 2018 to present

Human Behavior & the Social Environment
Research Methodologies
Child Development
Social Work Practice III- Macro Practice

Individual & Community Mental Health
Direct Social Work Practice
Perspectives in Mental Health

PROGRAM EXPERIENCE

- Substance Use Disorders Assessment & Treatment
- Intensive Outpatient Program Substance Use Treatment
- Residential Treatment for Substance Abuse
- Complex Criminal Justice & Co-Occurring Disorders
- Forensic Assertive Community Treatment (FACT teams)
- Psychiatric Inpatient Assessment & Treatment
- Clinical Training & Supervision
- LGBTQ Counseling & Community Health Services
- Non-profit Management & Volunteer Development
- HIV Community Education & Prevention
- Grant Writing & Contract Management
- Women's Mentoring Programs

PROFESSIONAL EMPLOYMENT

Transicare Inc.

Jan 2017- Present

Vice President Clinical Operations

- Key organizational leader for innovative program development, implementation and clinical staff training, to impact community systems of care utilized by individuals with chronic severe and persistent mental illness, high risk criminogenic needs and significant substance use disorders
- Increased consumer base by 60% in first 6 months
- Increased community services delivered by teams by 50%

Phoenix House of Texas, Inc.

Aug 2015 – Jan 2017

Vice President Clinical, Judicial Programs

Nov 2011- Aug 2015

Program Director

- Lead, stabilize and secure contract for Bed Substance Abuse Treatment Program with 360 beds
- Key leader with development team to secure new contract, increasing residential beds by 62%
- Member, National Clinical Transformation Team, Member of National Clinical Steering Committee
- Invited Participant on Dallas County Community Justice Task Force Committee, 2012, 2014
- Psychological Associates Q4 Leadership Graduate, 2015

- Adapt of Texas** **Jan 2008 – Aug 2011**
Program Director, Residential Substance Abuse Treatment
- Recruited to develop and implement all substance use & co-occurring program services and operations, including billing processes for Medicaid Managed Care and County funder, vendor management, coordination with Dallas County jail system, collaboration of delivery of care with Community Corrections and Community Supervision Department, outcome tracking and program evaluation
 - Responsible for community partnership with Parkland Memorial Hospital reducing medical transportation by more than 50%
 - Successful completion and re-entry rate of 90%
- PsyMed** **Sept 2006 -Jan 2008**
Clinician, Private Integrated Behavioral Healthcare Company
- Produced educational tools and behavioral evaluative data for surgical clearance, follow up and ongoing post-surgical aftercare
 - Shaped clinical programming for behavioral change around pharmaceutical management of insomnia
- De'An Olson, LCSW** **Jan 1999 – Jun 2014**
Private Practice
- Provide Psychotherapy services to Adults and Adolescents
 - Clinical Supervision for mental health professionals seeking advanced license
 - Facilitate Workplace Critical Incident Debriefing for Workers Assistance Program, EAP services
 - Medical Social Work, contractor
- Charter Haven Hospital** **Jan 1999-Feb 2000**
Director of Social Services and Youth Services
- Provide senior leadership and direction for a multi-disciplinary team in a psychiatric hospital with 28 beds and partial hospitalization program
- Director of Needs Assessment and Referral**
- Manage department of 8 assessment coordinators in a fast paced psychiatric 24-hour emergency room to triage and admit to appropriate level of care during roll out of NorthStar Managed Medicaid system.
- Performance Consulting International** **Apr 1998-Jan 1999**
HealthCare Consultant and Trainer
- Project manager for JCAHO accreditation for leading Cancer Center
 - Developed healthcare training curriculum utilizing instructional design theory
- Oak Lawn Community Services** **Jan 1992- Apr 1998**
Vice President Gay & Lesbian Services
Director of Education and Volunteer Services
Coordinator of Women's Programs
- Senior Leader in community service organization; services for HIV health, outreach and education, volunteer management, community assessment and program design, community counseling
 - Leadership in program development, implementation and evaluation for services including LGBT adult outpatient counseling, IOP substance abuse treatment, prevention and intervention of substance abuse and HIV/AIDS
 - New program development; LGBT teen hotline, Lesbian Mentoring program and state grant for substance abuse prevention targeting women and children
 - Federal and state grants and contract management and leadership of Minority Outreach HIV Education, including Deaf & Hard of Hearing HIV Education Outreach program
 - Intensive partnership with OLCS board of directors in strategic planning
 - Managed Volunteer Director who was responsible for LifeWalk 5k fundraiser, multiple special events and 200-500 volunteers
 - Fundraising, event planning and grant writing responsibilities

PROFESSIONAL PRESENTATIONS

- Adolescent Symposium of Texas Mental Health Association of Dallas, 2013 *Does LGBTQ Status Make a Difference Today?*
- Texas Correctional Office on Offenders with Medical or Mental Illness Advisory Board, Austin TX July 2009. May, T. Hawk, S. Olson, D. *Supervision and Treatment for Mentally Ill Offenders.*
- Texas Corrections Association, Mid Winter Conference, Austin TX 2009. May, T. Olson, D. *Dual Disorders Residential Treatment Center: An Evidence Based Approach.*
- Texas Corrections Association, Mid-Winter Conference, Austin TX 2008. May, T., Freeman, V. Olson, D. *Dual Disorders Residential Treatment: Women's Issues in DDC Program Wilmer Tx.*
- National Association of Social Workers State Conference, Corpus Christi, TX 1994. Hunter, S., Shannon, C., Olson, D. *Lesbian and Gay Couples: Implications for Practice.*
- Texas First: HIV State Conference, Irving, TX 1993 *Grief and Bereavement Among People Surviving HIV/AIDS.*
- National Gay and Lesbian Health Conference, Houston, TX 1993 *Grief and Bereavement in the Lesbian and Gay Community.*

HEALTH COMMUNICATION

- BITS, Bytes, eHealth & mHealth: Where Technology Meets Healthcare,**
Health Studies student blog project. <http://frontpagegirlstwu.blogspot.com/>
- Phoenix House Training video,** "Did You Know...LGBTQ Awareness?" October 31, 2016. Retrieved from <https://www.youtube.com/watch?v=lOPSlq66V9U>
- Supporting Inmates Outside the Prison Doors,** Friday July 25, 2014. retrieved from <http://www.phoenixhouse.org/news-and-views/our-perspectives/supporting-inmates-outside-the-prison-doors/>

COMMUNITY WORK

Board of Directors:

- The Dallas Way, Secretary, Executive Committee (2015 - current)
- St. Christopher's Montessori School, Board Secretary (2005 - 2006)
- Uncommon Legacy, Board of Directors (1999 - 2002)

Training – Cultural Competence, working with Transgender clients in care, (2018)

Nexus, Recovery, Dallas TX

Train the Trainer – SAMHSA ATTC scholarship, (2016) Addiction technology Transfer Center of Excellence for Minority Young Men Who Have Sex with Men (YMSM) and other Lesbian, Gay, Bisexual, and Transgender (LGBT) populations (YMSM+LGBT CoE.)

Extra Mile Award Recipient, (1999) Community Dallas Tx

Co-Producer of video, (1998) *Experience Strength and Hope; Experiences of LGBT persons in Substance Abuse Treatment*, Karen McCrocklin, Big Hair Productions. Documentary of LGBT personal experiences in substance abuse treatment, Oak Lawn Community Services, Dallas Tx

MEMBERSHIPS

National Association of Social Workers

American Public Health Association

- Abstract Reviewer Alcohol Tobacco and Substance Abuse section (2016)
- Abstract Reviewer Digital Storytelling (2018)

GLMA Health Professionals Advancing LGBTQ Equality (2016- present)

FBI Citizens Academy Graduate, 2008

Dallas Independent Volleyball Association