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A Daily Diary Investigation of Discrimination and Binge Eating Among Lesbian Women

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**A DAILY DIARY INVESTIGATION OF DISCRIMINATION AND BINGE
EATING AMONG LESBIAN WOMEN**

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ABSTRACT

A DAILY DIARY INVESTIGATION OF DISCRIMINATION AND BINGE EATING AMONG LESBIAN WOMEN

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Lesbian women may experience discrimination because of their gender and their sexual orientation termed sexism and heterosexism, respectively. Both sexism and heterosexism are associated with increased psychological distress and negative affect among lesbian women. Furthermore, preliminary evidence suggests that heterosexism is associated with binge eating among lesbian women. However, the relationship between discrimination and binge eating has received limited empirical examination. This study examined associations between sexism and heterosexism, negative affect, and binge eating using a daily diary methodology. Participants were recruited online through social media and LGBT organizations after completing an online eligibility survey with measures of demographics, binge eating, social isolation, and lesbian and feminist identity. A sample of thirty eligible women (i.e., 18-30 year old lesbian women who reported binge eating in the past week) completed daily measures of sexism, heterosexism, negative affect, and binge eating for 10 days. Hierarchical linear modeling revealed that daily sexism was associated with daily negative affect, and, daily negative affect was associated with daily binge eating. Similarly, daily heterosexism was related to daily negative affect, and, daily negative affect was related to daily binge eating. Positive lesbian identity (i.e., identity affirmation) moderated the relationship between daily heterosexism and daily binge eating, such that, high identity affirmation strengthened the relationship between

heterosexism and binge eating. Aspects of feminist identity did not moderate the relationship between daily sexism and daily binge eating. Neither social support nor social isolation moderated the relationship between daily heterosexism and daily binge eating. These results demonstrate the negative impact that heterosexism and sexism have on binge eating in daily life among lesbian women.

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This dissertation is dedicated to my family.

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CHAPTER I

INTRODUCTION

Critical health disparities in obesity (Boehmer, Bowen, & Bauer, 2007; Conron, Mimiaga, & Landers, 2010) and binge eating (Austin et al., 2009) exist between lesbian and heterosexual women. Although society's stigmatization of sexual minority individuals and associated minority stress has been suggested as one possible contributor to these disparities (Institute of Medicine [IOM], 2011), the underlying mechanisms connecting minority stress and binge eating are not well understood. In a recent study examining antecedents to binge eating among lesbian women, minority stress (e.g., discrimination, internalized homophobia, expectations of rejection) was directly and indirectly associated with binge eating in lesbian and bisexual women (Mason & Lewis, 2015). Similarly, in focus groups lesbian women mentioned that minority stress and depression hindered their ability to eat healthy (Roberts, Stuart-Shor, & Oppenheimer, 2010). Furthermore, lesbian women potentially experience two major types of discrimination (i.e., sexism and heterosexism). Research suggests that experiencing multiple forms of discrimination is related to poorer health outcomes than experiencing a single form of discrimination (Grollman, 2012). Therefore, based on these preliminary cross-sectional findings connecting minority stress and maladaptive eating patterns, the next step is to utilize more sophisticated research methodology to increase our understanding of discrimination and binge eating among lesbian women. The purpose of the proposed study was to examine the association between two forms of discrimination (i.e., sexism and heterosexism) and binge eating among lesbian women using a daily diary methodology.

Binge Eating

Eating disorders generally involve maladaptive eating patterns and/or disturbances in eating including binge eating. According to the Diagnostic and Statistical Manual 5th Edition (DSM-5; American Psychiatric Association, 2014), binge eating involves eating abnormally high quantities of food in a short period of time with an associated loss of control over eating. The three primary eating disorders are anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED). AN symptoms include being severely underweight, an intense drive for thinness, disordered eating, and a greatly distorted body image (National Association of Anorexia Nervosa and Associated Disorders [ANAD], 2011). Symptoms of BN include periods of binge eating followed by some sort of compensatory behavior (e.g., purging, excessive exercise, and/or use of laxatives). BED symptoms include engaging in binge eating, but with no compensatory behaviors. BED is the most prevalent eating disorder (Hudson, Hiripi, Pope, & Kessler, 2007) with an estimated prevalence between 2% and 5% (de Zwaan, 2001). Binge eating symptoms that occur with BED and BN are more frequent among women compared to men (Hudson et al., 2014). Individuals who engage in binge eating do not always meet criteria to be diagnosed with BED or BN. Davis (2013) argues that binge eating is an addictive behavior that occurs on a spectrum from low levels of binge eating to a clinically diagnosable eating disorder.

Negative consequences of binge eating. Engaging in binge eating is associated with a myriad of negative mental health consequences. Among women, binge eating and depressive symptoms demonstrated a bi-directional relationship. That is, depressive symptoms predicted the onset of binge eating and binge eating predicted the onset of

depressive symptoms (Skinner, Haines, Austin, & Field, 2012). Additionally, obese individuals who engaged in binge eating reported greater major depression, panic disorder, phobia, and alcohol dependence compared to obese individuals who did not engage in binge eating (Bulik, Sullivan, & Kendler, 2002). Also, binge eating was significantly associated with depressive symptoms and attention deficit hyperactivity disorder (ADHD) symptomatology among obese women (Nazar et al., 2014) and social anxiety among obese men and women seeking treatment (Sawaoka, Barnes, Blomquist, Masheb, & Grilo, 2012).

Binge eating is also related to negative physical health. Using data from a survey of 36,284 adolescents, those with diabetes mellitus were more likely to report binge eating than adolescents without diabetes mellitus (Neumark-Sztainer, Story, Toporoff, Cassuto, Resnick, & Blum, 1996). Also, obese individuals who engaged in binge eating reported significantly greater health dissatisfaction and more major medical conditions compared to obese individuals who did not engage in binge eating (Bulik et al., 2002).

Negative consequences of BED. BED is related to both physical and psychiatric morbidity including obesity, impaired functioning, and poor physical health (Wilfley, Wilson, & Agras, 2003). Also, BED is often associated with other psychiatric conditions, notably mood and anxiety disorders (de Zwaan, 2001; Pagoto, Bodenlos, Kantor, Gitkind, Curtin, & Ma, 2007; Wilfley et al., 2003). In fact, 51% of individuals with BED and 63% of individuals with BN have sought treatment for an emotional problem in their lifetime (Hudson et al., 2007). In addition, approximately 30 percent of participants in weight loss programs meet criteria for BED (Ghaderi, 2010) and between 25% and 32% of patients undergoing gastric bypass surgery report BED (Green, Dymek-Valentine, Pytluk, le

Grange, & Alverdy, 2004). In addition, failure to address BED when treating obesity may lead to less than optimal treatment outcomes (Wilfley et al., 2003). For example, Yanovski (2002) reported that obese individuals who engaged in binge eating were more likely to drop out of treatment and to regain weight.

Models of binge eating. Several prominent theories have been proposed to explain binge eating: the affect regulation model (Polivy & Herman 1993), the restraint model (Polivy & Herman, 1985), and the escape from self-awareness theory (Heatherton & Baumeister, 1991). The affect regulation model of binge eating hypothesizes that individuals engage in binge eating to cope with negative affect. A recent meta-analysis of ecological momentary assessment studies of negative affect and binge eating supported the affect regulation model (Haedt-Matt & Keel, 2011). For example, in a self-monitoring diary study, episodes of binge eating were preceded by negative affect and negative affect decreased during the binge eating episode exemplifying the affect regulation model (Deaver, Miltenberger, Smyth, Meidinger, & Crosby, 2003). However, negative affect rose again after the binge eating episode which departs from the affect regulation model suggesting that although individuals engage in binge eating for affect regulation, binge eating is not successful at reducing negative affect after the binge eating episode. The restraint model of binge eating posits that individuals engage in binge eating as a result of restricting their caloric intake (i.e., dietary restraint). For instance, dietary restraint prospectively predicting increases in bulimic symptoms among adolescent girls (Stice, 2001). Evidence suggests that both the affect regulation model and the restraint model sufficiently explain binge eating (Haedt-Mat & Keel, 2011; Stice, 2001).

A third theory explaining binge eating is the escape from self-awareness theory (Heatherton & Baumeister, 1991). The escape from self-awareness theory proposes that individuals engage in binge eating in order to escape from self-awareness. Essentially, individuals choose to avert their attention from themselves and focus attention on food (i.e., a stimulus). In a test of the escape from self-awareness theory among women, Blackburn, Johnston, Blampied, Popp, and Kallen (2006) found that aversive self-awareness was associated with increased negative affect, and negative affect was associated with increased cognitive narrowing, and, finally, increased cognitive narrowing was associated with increased binge eating. Cognitive narrowing represented the “escape” from self-awareness.

Summary. Binge eating is a serious problem that is associated with many adverse outcomes. It is important to reduce binge eating to improve population health and well-being. We have ample knowledge of the negative effects of binge eating as well as models and pathways that explain the underlying mechanisms that lead to binge eating behaviors among the general population. Furthermore, some research suggests that lesbian women engage in more binge eating than heterosexual women (Austin et al., 2009). Yet, disparities in binge eating, and the contributing mechanisms underlying this disparity among lesbian women have received little attention to date.

Prevalence of Binge Eating among Lesbian Women and Comparisons to Heterosexual Women

Prevalence. The few studies reporting prevalence estimates of BED, BN, and binge eating among lesbian women have relied on convenience samples. For example, in a convenience sample of lesbian women recruited via lesbian, gay, bisexual, and

transgender (LGBT) organizations, 1.5% of lesbian women reported current BN and 6.5% reported objective binge eating episodes once a week (Heffernan, 1998). In another convenience sample of lesbian women, 1% of lesbian women reported BN, 13.3% reported lifetime BN, and 5.4% reported BED (Heffernan, 1996). In addition, in a study of lesbian and bisexual women in New York City, 4.6% and 5.6% of lesbian and bisexual women reported lifetime full syndrome BN and subclinical BN respectively; and 4.6% and 6.2% reported lifetime full syndrome binge eating and subclinical binge eating respectively (Feldman & Meyer, 2007). Furthermore among a national sample of 1,925 lesbian women, 68% indicated having sometimes or often engaged in overeating and 4% indicated having engaged in overeating then vomiting (Bradford, Ryan, & Rothblum 1994).

The aforementioned studies demonstrate that binge eating is prevalent among lesbian women; however, there are some important limitations. The studies were all from convenience samples (samples gathered through LGBT-related organizations and events and snowball sampling), so the prevalence rates may not be accurate or generalizable. Also, some studies combined lesbian and bisexual women together, which reduces understanding of differences in prevalence between lesbian and bisexual women. Differences between lesbian and bisexual women in mental health and disordered eating have been reported (Austin et al., 2009; Bostwick, Boyd, Hughes, & McCabe, 2010). Thus, it is important to study these groups separately.

Comparison to heterosexual women. Eating disorders including AN, BN, and BED appear to affect lesbian and bisexual women at similar or higher rates as heterosexual women. Hudson and colleagues (2007) reported estimates of eating

disorders among the general population of women age 18 or older using data from the National Comorbidity Survey Replication: 0.9% of women reported lifetime AN, 1.5% reported lifetime BN, 3.5% reported lifetime BED, and 4.9% reported any binge eating; and 0.5% reported past 12 month BN, 1.6% reported past 12 month BED, and 2.5% reported past 12 month binge eating.

In comparison, based on the prevalence rates reviewed among lesbian and bisexual women (Feldman & Meyer, 2007; Heffernan, 1996, 1998), prevalence of AN among lesbian women appears to be lower with published prevalence rates of 0-0.49%, BN seems to be more prevalent among lesbian and bisexual women with rates between 0.98-13.3%, and BED seems to be more prevalent among lesbian and bisexual women with rates between 4.6-5.4%. Therefore, research suggests that lesbian and bisexual women are equally and possibly more likely to experience BN or BED, but may be less likely to experience AN.

Research has also compared lesbian women and heterosexual women on disordered eating behaviors. Striegel-Moore, Tucker, and Hsu (1990) found that lesbian women reported more binge eating as compared to heterosexual women in two comparison groups, however results did not reach significance, possibly due to low sample sizes. Lesbian adolescents were marginally more likely to report binge eating and ever having been told that they had an eating disorder by a healthcare provider than heterosexual women, but they were not more likely to report purging than heterosexual women (Austin et al., 2009). Also, women with same-sex experiences at baseline reported higher bulimic symptoms at a 5-year follow-up than women with only opposite-sex experiences (Wichstrom, 2006). In addition, lesbian and bisexual women reported

marginally more lifetime full syndrome BN, binge eating, and any eating disorder and subclinical binge eating than heterosexual women (Feldman & Meyer, 2007). Given that lesbian women may engage in more binge eating than heterosexual women, identifying factors associated with binge eating among lesbian women is necessary.

Correlates of Binge Eating among Lesbian Women

Psychosocial (i.e., affective, coping, and social) variables are associated with binge eating among lesbian women. Affective variables included mood and anxiety as well as body image concerns and shame. Lesbian and bisexual women with an eating disorder were significantly more likely to have a mood disorder than lesbian and bisexual women without an eating disorder (Feldman & Meyer, 2010). Also, among lesbian and bisexual women, bulimic symptoms and binge eating were significantly associated with increased depressive symptoms, increased negative affect, and lower self-esteem (Davids & Green, 2011; Joshua, 2002; Mason & Lewis, 2015; Yean et al., 2013). In addition, lesbian women who engaged in binge eating reported a greater urge to eat associated with anxiety, anger, and depression and were more likely to use food as a distraction, for comfort, and to reduce anxiety compared to lesbian women who did not engage in binge-eating (Heffernan, 1996, 1998). Joshua (2002) added that binge eating was associated with body image concerns among lesbian women, and Heffernan (1996) found that binge eating frequency was associated with current-ideal weight discrepancy.

Social and coping factors are also related to binge eating among lesbian and bisexual women. For example, more social support and satisfaction with social support were associated with lower binge eating and bulimic symptoms among lesbian women (Joshua, 2002) and increased social support was associated with lower disordered eating

(i.e., scores on the Eating Attitudes Test, which measures behaviors and attitudes consistent with eating disorders) among lesbian and bisexual women (Swearingen, 2006). In addition, among lesbian and bisexual women, increased social isolation and emotion-focused coping were associated with increased binge eating (Mason & Lewis, 2015). Overall, correlates of binge eating among lesbian women are similar to correlates of binge eating among heterosexual women. However, recent research has begun to examine the relationship between unique stressors associated with a sexual minority identity (e.g., discrimination) and binge eating.

Discrimination

Discrimination is “unfair treatment by others on the basis of one’s social group membership” (Grollman, 2012, p. 200). A person may be the target of discrimination for a variety of reasons such as race, ethnicity, gender, sexual orientation, or weight. A population-based survey found that 33.5% of adults experienced major lifetime discrimination and 60.9% of adults experienced day-to-day discrimination (Kessler, Mickelson, & Williams, 1999). Although much of the research investigating experiences of discrimination has focused on racial, ethnic, and gender discrimination, a relatively smaller, but emerging literature focuses on LGBT individuals’ experiences of discrimination. For example, LGBT individuals report more discrimination compared to heterosexual individuals, even after controlling for age, race/ethnicity, sex, educational attainment, income, and marital or cohabiting status (Mays & Cochran, 2001). In fact in one study, over 60% of LGBT adults reported past year and lifetime discrimination (McCabe, Bostwick, Hughes, West, & Boyd, 2010). In a meta-analysis of studies examining discrimination (including studies that examine any type of discrimination such

as race/ethnicity, sexual orientation, etc.), Pascoe and Smart Richman (2009) found a link between experiences of discrimination and negative mental health, negative physical health, and unhealthy behaviors. In addition, the relationship between discrimination and negative health behaviors was stronger among women compared to men. Two forms of discrimination that are particularly salient among lesbian women include sexism (i.e., gender discrimination) and heterosexism (i.e., sexual orientation discrimination).

Sexism. Pharr (2007) broadly defined sexism as the “system by which women are kept subordinate to men” (p. 168). Sexism can involve overt, and sometimes violent, acts such as sexual harassment and rape. However, it can also involve more subtle acts including discrimination and prejudice. Furthermore, structural barriers contribute to sexism including the “glass ceiling” (i.e., the invisible barrier that stops women from promotion to top corporate positions; Barreto, Ryan, & Schmitt, 2009).

Heterosexism. Heterosexism is the term used to describe “any ideological system that denies, denigrates, and stigmatizes any nonheterosexual form of behavior, identity, relationship, or community” (Herek, 1992, p. 89). Heterosexism may involve serious acts such as victimization, violence, and hate crimes as well as less violent acts such as discrimination and harassment because of sexual orientation. Furthermore, LGB individuals may experience discrimination due to gender nonconformity as well (Gordon & Meyer, 2008). In addition, LGB individuals may also experience structural discrimination such as not having the right to marry and not being protected against employment or housing discrimination. All of the aforementioned forms of discrimination can occur in many contexts of LGB individuals’ lives including by family and friends, the workplace, and society in general.

Discrimination and Mental and Physical Health

Discrimination is damaging to both mental and physical health (Krieger, 2000). For example in a population study of adults, day-to-day discrimination and lifetime discrimination were both associated with increased odds of generalized anxiety and major depression (Kessler et al., 1999). Furthermore, experiencing multiple forms of discrimination is even more detrimental to health (Grollman, 2012). Specifically, a clear link has been demonstrated between sexual minority women's experience of discrimination and poor mental and physical health. A host of studies demonstrate that discrimination among sexual minority women was associated with more distress, physical symptoms, negative affect, and perceived stress (Kelleher, 2009; Lewis, Derlega, Griffin, & Krowinski, 2003; Szymanski, 2006). Using data from the National Survey of Midlife Development in the United States (MIDUS), Mays and Cochran (2001) concluded that discrimination may be an underlying factor contributing to psychiatric disorders and psychological distress among lesbian, gay, and bisexual (LGB) individuals.

Two prominent forms of discrimination that may be experienced by lesbian women include sexist and heterosexist discrimination (discrimination due to gender and sexual orientation, respectively). Experiencing both sexist and heterosexist discrimination have a more deleterious effect on health than only experiencing one or the other. For example, Szymanski and Owens (2009) found that experiences of sexism and heterosexism had an additive effect on reports of psychological distress. That is, sexism and heterosexism each explained unique variance in psychological distress among lesbian women. In addition among LGB adults, experiencing multiple forms of discrimination

was associated with the highest likelihood of reporting substance abuse disorders (McCabe et al., 2010).

The overwhelming majority of the research on discrimination and health (especially sexism and heterosexism) utilizes cross-sectional designs in which variables are measured at the same time point. Cross-sectional research is valuable for determining relationships among variables but cannot offer information about the directionality of relationships and is limited by recall bias. Intensive longitudinal studies (e.g., daily diary, ecological momentary assessment) collect data over multiple time points during several days, weeks, or months, and remedy some of the limitations of cross-sectional studies (Bolger, Davis, & Rafaeli, 2003). For example, daily diary studies provide increased ecologically valid data as assessments occur in participants' natural environment (Iida, Shrout, Laurenceau, & Bolger, 2012). In addition, assessments are relatively unobtrusive and measure variables close to when they were experienced. Although the daily diary methodology has been applied to the study of discrimination and health, such approaches represent a small portion of the empirical literature compared to cross-sectional investigations.

In the following review of sexism and heterosexism and health, cross-sectional studies and daily diary studies are discussed separately. Because of the strengths of daily diary studies (e.g., repeated assessment in participants' natural environment, increased ecological validity, limiting retrospective reporting bias, and examination of within [daily] relationships between variables) daily diary studies provide slightly different information than cross-sectional research. That is, daily diary studies offer insight into how variables are associated at the daily level rather than just the person level. For

example, a daily association between discrimination and negative affect would mean that on days when discrimination occurs, negative affect occurs as well. In comparison, a cross-sectional association between discrimination and negative affect would mean that people who report discrimination, also report negative affect. All in all, cross-sectional studies allow conclusions to be drawn about relationships between variables only at the person level whereas daily diary studies allow conclusions about relationships between variables at the daily level as well. Daily diary studies do not allow firm conclusions about the directionality of relationships, however,

Sexism and psychological health. Perceived sexist discrimination is associated with increased psychological distress among women (Corning, 2002; Hurst & Beesley, 2013; Landrine, Klonoff, Gibbs, Manning, & Lund, 1995) and, specifically, lesbian women (Szymanski & Henrichs-Beck, 2014; Szymanski & Owens, 2009). Also, women who reported more gender discrimination were more likely to report both lifetime and recent drug use (Ro & Choi, 2010). Additionally, sexism was associated with smoking and binge drinking among female college students (Zucker & Landry, 2007) and post-traumatic stress disorder symptoms among a community sample of women (Berg, 2006). Extending cross-sectional findings, results from a daily diary study of women, showed that experience of daily sexist events was associated with more negative mood and lower self-esteem (Swim, Hyers, Cohen, & Ferguson, 2001). Thus, sexism is related to negative outcomes generally and in women's daily lives.

Heterosexism and psychological health. Meyer (2003) introduced the minority stress model that contends that sexual minorities who experience sexual minority stress such as discrimination, internalized homophobia (i.e., negative feelings and shame due to

sexual orientation), and stigma consciousness (i.e., expectations of rejection due to sexual orientation) are at risk for negative mental and physical health outcomes. For example, sexual minority stress has been linked to a host of negative outcomes including depression and distress (Kelleher, 2009; Lewis et al., 2003; Newcomb & Mustanski, 2010), substance abuse problems (Lehavot & Simoni, 2011), and intimate partner violence (IPV; Balsam & Szymanski, 2005). In addition, past year experience of heterosexism was directly associated with smoking, alcohol use, and other substance use among sexual minority women (Lehavot & Simoni, 2011). Similarly, past year and lifetime experience of discrimination was associated with having a substance use disorder in the past year in a LGB sample (McCabe et al., 2010). Also, lesbian women who experienced heterosexist events in the workplace reported more health problems and lower job satisfaction (Smith & Ingram, 2004).

Although most of the research on heterosexism has been cross-sectional, in a daily diary study of LGB individuals, daily heterosexism was associated with increased anger and anxiety (Swim, Johnston, & Pearson, 2009). Similarly, another daily diary study of lesbian women uncovered that daily identity devaluation (i.e., having to keep one's feelings about being a lesbian a secret to avoid making others uncomfortable) was associated with poorer well-being and slightly higher depressive symptoms (Beals & Peplau, 2005). Cross-sectional research demonstrates that lesbian women experience both heterosexism and sexism that are separately and additively related to greater psychological distress. Several daily diary studies have also established the association between sexism and heterosexism and negative psychological health demonstrating the damaging effect of discrimination in daily life or everyday discrimination. It appears that

sexism and heterosexism may be important underlying factors of negative psychological health among lesbian women. In addition, the daily diary findings show that discrimination may be an important precipitating factor to the use of maladaptive coping behaviors (e.g., binge eating, alcohol use) via increased daily negative affect in daily life.

Discrimination and Binge Eating

Although empirical research has not directly examined the association between discrimination and binge eating, there is some support for this relation. For example, White and Black heterosexual women diagnosed with binge eating disorder reported more discrimination than healthy and psychiatric comparison groups (Striegel-Moore et al., 2002). Also, controlling for body mass index (BMI), weight stigmatization was associated with increased binge eating among bariatric patients (Almeida, Savoy, & Boxer, 2011). Furthermore, researchers have posited that eating disorders are partially caused by women's unequal status in society (Carmen, Russo, & Miller, 1984). Given associations between discrimination and binge eating and the deleterious effects of heterosexism on lesbian women, researchers have also begun to examine how discrimination is related to binge eating among lesbian women.

Mason and Lewis (2015) found that lifetime workplace discrimination, harassment and victimization, and other discrimination were positively associated with binge eating ($r_s = .21, .14, \text{ and } .18$ respectively) among lesbian and bisexual women in a cross-sectional study. In addition, some evidence suggests that other sexual minority stressors associated with discrimination are related to binge eating. For examples, lower connectedness to the lesbian community was significantly associated with increased bulimic symptoms (Joshua, 2002) and increased internalized homophobia and stigma

consciousness were associated with more binge eating among lesbian and bisexual women (Mason & Lewis, 2015). Thus, heterosexist discrimination and other sexual minority stressors are related to binge eating, but we know less about how and when minority stressors are associated with binge eating.

Discrimination, negative affect, and binge eating. As previously discussed, one of the well-established explanations for binge eating is to regulate negative affect (Polivy & Herman, 1993). Cross-sectional support exists for the association between negative affect and binge eating and discrimination and binge eating among lesbian women (Mason & Lewis, 2015). Increased negative affect may be triggered by stressors in one's life, including experiencing discrimination (Wilkinson, 1999). For example, in daily diary studies of lesbian, gay, and bisexual men and women, sexual orientation discrimination was associated with increased anger and anxiety (Swim, et al., 2009) and increased psychological distress (Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009). Furthermore, among lesbian women specifically, gender and sexual orientation discrimination each accounted for unique variance in psychological distress (Szymanski & Owens, 2009). However, Mason and Lewis (2015) did not find support for negative affect as a mediator between lifetime discrimination and binge eating. The authors proposed that support for the mediational relationship may not have been found because lifetime discrimination was measured instead of more recent discrimination.

Moderators of the relationship of discrimination and binge eating. In a review of discrimination studies, Pascoe and Smart Richman (2009) found evidence that social support and group identity were often moderators of the relationship between discrimination and mental and physical health. Guided by their review, Pascoe and Smart

Richman (2009) developed a model of the relationship between discrimination and health. The model posits that perceived discrimination is associated with maladaptive health behaviors and negative mental and physical health and social support, group identification, and coping are moderators of these relationships.

Similarly, Meyer (2003) also theorized that sexual minority stressors, specifically discrimination, are associated with adverse mental health outcomes and there are important variables that may moderate the relationship between sexual orientation discrimination and negative health outcomes (Meyer, 2003). Two important protective or moderating variables identified by Meyer include social resources (e.g., social support) and characteristics of minority identity (e.g., positive group identification). Meyer's model specifically focused on sexual minority discrimination whereas Pascoe and Smart Richman's (2009) model was based on multiple types of discrimination.

Social resources are general processes (such as support or isolation), whereas group identity is specifically related to the type of discrimination being examined (e.g., heterosexism and sexual minority identity, sexism and feminist identity). Both models converge to demonstrate that social resources and group identity may moderate the relationship between discrimination and mental and physical health outcomes. For example, individuals who experience discrimination but have social support may be less likely to engage in binge eating. Similarly, those who report more discrimination and have positive group identification may engage in less binge eating.

Social support and social resources. Social resources are a key predictor of positive mental health (Thoits, 2011). Accordingly, there is a clear association between increased social resources and better mental health outcomes among lesbian women. For

instance, social isolation was associated with more negative affect (Mason & Lewis, 2015). In addition, social support was associated with fewer depressive symptoms and less anxiety among sexual minority women (Lehavot & Simoni, 2011; McGregor, Carver, Antoni, Weiss, Yount, & Ironson, 2001; Szymanski, Chung, & Balsam, 2001) and increased well-being among LGB adults (Balsam & Mohr, 2007). Furthermore, social constraints (i.e., difficulty talking about sexual orientation) with friends and family were associated with increased psychological distress among lesbian women (Lewis, Milletich, Mason, & Derlega, 2014). The ability to talk to friends, family, and intimate partners about ones' sexual identity was associated with less internalized homophobia, intrusive thoughts, and physical symptoms when lesbian women reported high levels of stigma consciousness (Lewis, Derlega, Clarke, & Kuang, 2006).

The buffering hypothesis suggests that social support is an ameliorative process that can buffer the negative effects of psychosocial stress (Cohen & McKay, 1984). Even with the promise of minority stress theory as an aid to understand lesbian women's experiences, there has been little research examining social factors as moderators of the discrimination-mental health relationship among sexual minorities. It is possible that this is a result of publication bias. That is, research has been conducted but null results have been found. As a result, the research has not been published. Also, due to the difficulty of recruiting sexual minorities for research, many studies may not have had adequate power to conduct moderation analyses.

Research examining social factors as a moderator of discrimination and mental health in other groups may yield helpful information. Social support buffered the effect of perceived age discrimination on life satisfaction among older, primarily male police

officers (Redman, & Snape, 2006). Among Latino youth, social support buffered the effect of discrimination on academic well-being (DeGarmo & Martinez, 2006). In addition, spousal support buffered the effect of discrimination on depressive symptoms among African-American men (McNeil, Fincham, & Beach, 2014). These studies offer some support for the buffering effect of social support on discrimination and negative outcomes in other populations, which may extend to sexist and heterosexist discrimination among lesbian women.

Group identity/characteristics of minority identity: LGB identity. Characteristics of sexual minority identity include prominence and integration of sexual identity (Meyer, 2003). Furthermore, Mohr and Kendra (2009) added that LGB identity is a multidimensional construct and can include both negative and positive features. A more positive and integrated LGB identity is associated with more positive mental health outcomes. For example, increased identity achievement (i.e., investigating and understanding LGB identity) and identity affirmation (i.e., attachment and pride regarding LGB identity) were associated with fewer depressive symptoms, less anxiety, and higher self-esteem among lesbian and gay adults (Ghavami, Fingerhut, Peplau, Grant, & Wittig, 2011). In addition, positive LGB identity was related to better psychosocial well-being and fewer depressive symptoms among LGB adults (Kertzner, Meyer, Frost, & Stirratt, 2009). In contrast, negative aspects of identity such as internalized homonegativity (i.e., shame due to sexual identity) and concealment of sexual identity are associated with more negative mental health outcomes (Mason & Lewis, 2015). In a test of the buffering impact of LGB identity among lesbian and gay individuals, positive LGB identity buffered the negative effects of perceived stigma, but

not discrimination, on depressive symptoms (Fingerhut, Peplau & Gable, 2010).

A daily diary found that LGB identify weakened the relationship between daily heterosexist events and well-being (Swim et al., 2009). Therefore, LGB identity was actually a risk factor for negative mental health in daily life. Consistent with this opposing finding, researchers have hypothesized that experiences that disrupt one's self-identity or that threaten one's self-concept are related to more distress and emotional difficulties (Burke, 1991; Thoits, 1991). Clearly, more research is needed to determine how a positive LGB identity may be related to mental health in daily life.

Group identity/characteristics of minority identity: Feminist identity. Downing and Roush (1985) proposed five stages of feminist identity development. Stage 1 is passive acceptance which involves acceptance of traditional gender roles. Stage 2 is revelation which is characterized by questioning of traditional gender roles. Stage 3 is embeddedness-emanation which comprises closeness to other women and being cautious around men. Stage 4 is synthesis which involves developing a positive feminist identity; thus, "transcending traditional gender roles and evaluating men on an individual basis." (Fischer et al., 2000, p. 16). Finally, Stage 5 is active commitment and is defined by commitment to social change. Thus, synthesis and active commitment represent a positive feminist identity.

Aspects of a positive feminist identity, including synthesis and active commitment, are associated with more positive mental health. For example, both synthesis and active commitment were significantly correlated with psychological well-being (Saunders & Kashubeck-West, 2006); synthesis, but not active commitment, was associated with less interpersonal sensitivity (Fischer & Good, 2004). Specifically among

lesbian and bisexual women, internalized homophobia was negatively correlated with synthesis and active commitment (Szymanski, 2004) and feminist self-identity (Haines et al., 2008). Related to eating and similar concerns, synthesis but not active commitment was associated with less disordered eating (Sabik & Tylka, 2006) and feminist identity was associated with less body surveillance and shame (Hurt et al., 2007).

In addition to a direct relationship with mental health, feminist identity may buffer the effect of sexism on negative mental health (Landrine & Klonoff, 1997). An integrated feminist identity is protective by aiding women in perceiving sexist events as others' fault rather than their own, by empowering women, and by decreasing the negative impact of sexist events (Landrine & Klonoff, 1997). An empirical investigation supported aspects of feminist identity (i.e., synthesis and active commitment) as buffers of the relationship between sexist events and disordered eating among college women (Sabik & Tylka, 2006).

The Present Study

Research has demonstrated that lesbian women engage in more binge eating than heterosexual women (Austin et al., 2009). Yet, a significant gap in the literature exists regarding explanations for this increased binge eating. To date it is known that discrimination and other minority stressors are associated with binge eating among lesbian and bisexual women (Mason & Lewis, 2015). The current study proposes that discrimination is a stressor experienced by lesbian women and is salient in explaining increased negative affect, and in turn, increased binge eating. This prediction draws from the affect regulation model, which suggests that individuals engage in binge eating to regulate negative affect (Polivy & Herman, 1993). More sophisticated research in this

area is urgently needed in order to improve lesbian women's health and reduce disparities. The current study proposes several mediated model and moderated models of the relationship between discrimination and binge eating.

Utilization of daily diary methodology. From the limited literature, it is known that people who report discrimination also report binge eating, but it is unclear how discrimination and binge eating are related in daily life. This study used a daily diary methodology, an intensive longitudinal design, which involves participants completing daily surveys of experiences, feelings, and behaviors within a specified timeframe (e.g., weeks or months). Because daily diary studies assess experiences over the course of several days, weeks, or months in participants' natural environment, daily diary studies effectively measure "life as it is lived" (Bolger et al., 2003, p. 597). Assessment within the natural environment also increases the ecological validity of the data (Iida et al., 2012). Additionally, daily diary methodology permits examination of the relationships among variables (e.g., discrimination, negative affect, and binge eating) for each individual, as well as across individuals and over a short period of time, which allows us to isolate the within person (daily) and between person effects of variables.

Since there are few daily diary studies of discrimination among lesbian women and no studies of binge eating among lesbian women, using daily diary methodology for data collection will extend the current, limited, cross-sectional results in this body of literature. In addition, daily diary methodology is an important next step in this area of research because it permits different conclusions to be drawn about the relationship between discrimination, negative affect, and binge eating. For example, recent discrimination is more strongly associated with negative mental health than lifetime

discrimination (Pascoe & Smart Richman, 2009). Thus, it is possible that daily experiences of discrimination may be more deleterious than lifetime experiences of discrimination and produce more negative affect and binge eating. Also, the daily relationships between discrimination, negative affect, and binge eating will be able to be assessed which will capture the day-to-day variability in relationships between these variables. Finally, the daily diary methodology permits examination of discrimination and other variables as they are experienced reducing recall bias, which can threaten validity as well as attenuate relationships (Reis & Gable, 2000).

Rationale for participant selection. Self-identified lesbian women ages 18-30 who reported engaging in binge eating were recruited to participate in the daily diary study. There is evidence that minority stress, mental health, and binge eating severity varies as a function of sexual identity (i.e., lesbian vs. bisexual; see Austin et al., 2009; Bostwick, Boyd, Hughes, & McCabe, 2010; Cochran & Mays, 2009). Also, the 2011 Institute of Medicine report asserts that it is important to not combine sexual minority subgroups (i.e., lesbian, bisexual) together as differences between subgroups will be obscured. Thus, the current study focused on the experiences of lesbian identified women.

Little is known about the prevalence of binge eating among lesbian women and especially how the prevalence differs by age. However, the age of onset of binge eating and associated disorders is most common during adolescence and young adulthood (Hudson et al., 2007). Furthermore, Austin and colleagues (2009) found that, among adolescent and young adult lesbian women, the highest prevalence of binge eating occurred at around 18 years old with prevalence rates for lesbian and heterosexual

women becoming more similar through young adulthood (Austin et al., 2009). One possible explanation for this convergence is that integration of one's lesbian identity over time may have a positive influence on psychological health (Rosario, Hunter, Maguen, Gwadz, & Smith, 2001). This demonstrates that ages 18-25 years may be a particular risky period for binge eating among lesbian women. Stemming from these findings, only women 18-30 years were eligible to participate in the study in order to obtain a sample that reported enough binge eating to allow for statistical analysis.

Study aims. The proposed models are primarily derived from minority stress theory, the affect regulation model, and Pascoe and Smart Richman's discrimination-health model. As a result, the proposed models include a test of both mediation and moderation separately. This study was guided by three specific aims and associated hypotheses.

Aim 1: To examine the relationships among discrimination (i.e., both heterosexism and sexism), negative affect, and binge eating among lesbian women using daily diary methodology (see Figure 1). Aim 1a hypothesized that daily experiences of sexism would be associated with greater daily negative affect, and in turn negative affect will be associated with greater daily binge eating. Aim 1b hypothesized that daily experiences of heterosexism would be related to greater daily negative affect, and in turn negative affect will be related to greater daily binge eating.

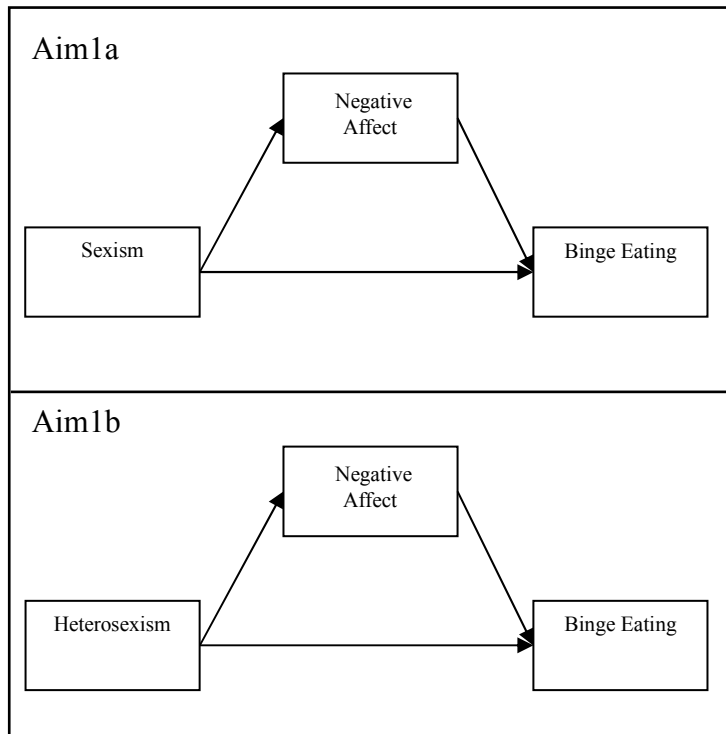


Figure 1. Hypothesized models for Aim 1

Aim 2: To examine group identity as a moderator of the relationship between discrimination and binge eating (see Figure 2). Aim 2a hypothesized that a positive lesbian identity would buffer the effect of daily heterosexist discrimination on daily binge eating. Aim 2b hypothesized that a feminist identity would buffer the effect of daily sexist discrimination on daily binge eating.

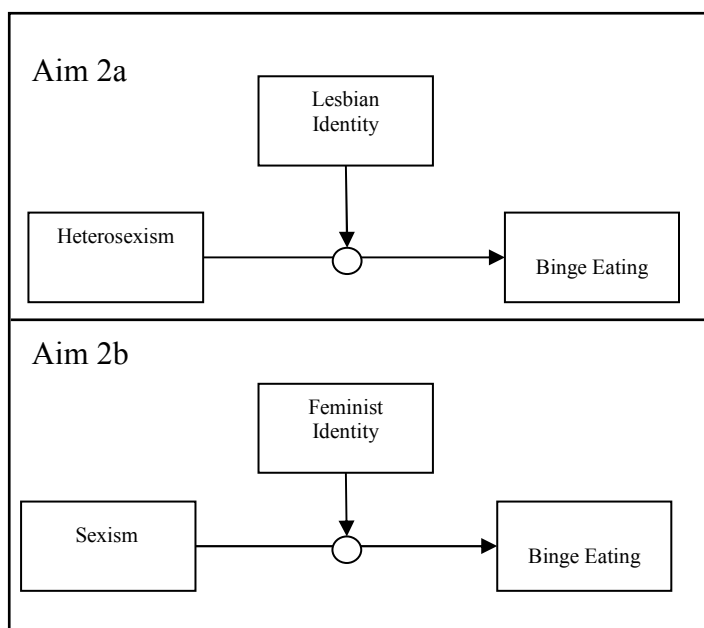


Figure 2. Hypothesized models for Aim 2

Aim 3: To examine social resources (i.e., social support and social isolation) as moderators of the relationship between discrimination and binge eating (see Figure 3). Aim 3a hypothesized that social support from family and friends would moderate the relationship between heterosexist discrimination and binge eating. Aim 3b hypothesized that social isolation would moderate the relationship between heterosexist discrimination and binge eating. Aim 3c hypothesized that social support from family and friends would moderate the relationship between sexist discrimination and binge eating. Aim 3d hypothesized that social isolation would moderate the relationship between sexist discrimination and binge eating.

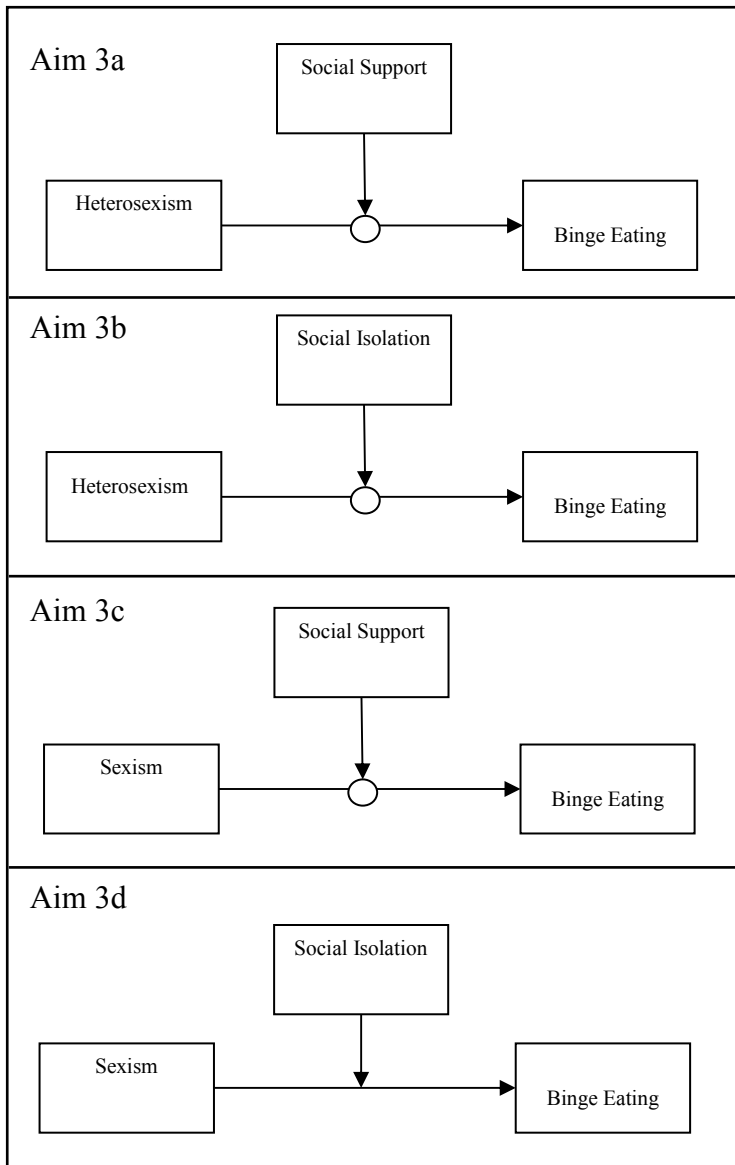


Figure 3. Hypothesized models for Aim 3

CHAPTER II

METHOD

Participants

Interested participants ($N = 996$) started the baseline survey. Participants who did not meet qualifications (i.e., woman, lesbian, and age 18-30) were not able to continue the survey ($n = 125$). Four-hundred thirty-three women completed the baseline survey. About 28% of women ($n = 121$) were eligible for the daily diary study. The majority (78.5%) indicated they would be interested in participating. Thirty-nine lesbian women began participating in the daily diary study. Only data for women who completed at least two days of daily diaries were used for a total sample for analyses of 30. See Figure 4 for a flowchart of the recruitment process. Demographic characteristics of the sample are displayed in Table 1. The mean self-reported body mass index (BMI) of the sample was 27.97 kg/m^2 ($SD = 8.02$), which means that the average woman was overweight (i.e., $25 \leq \text{BMI} \leq 29.9$). The mean current-ideal weight discrepancy was -34.78 pounds ($SD = 33.46$), which means that, on average, women would like to lose about 35 pounds. At baseline, participants reported binge eating on 1.87 days ($SD = 2.03$) in the past week. Most participants (82.8%) reported engaging in no compensatory behaviors (e.g., vomiting, laxative use).

Recruitment. Participants were recruited online using Facebook advertising and through lesbian, gay, bisexual, and transgendered (LGBT) centers and listservs. The majority of participants, however, were reached through Facebook (81%). Facebook permitted access of a large nationwide pool of lesbian women. The advertisement was shown on profiles that indicated being “female,” “18-30,” and “interested in women

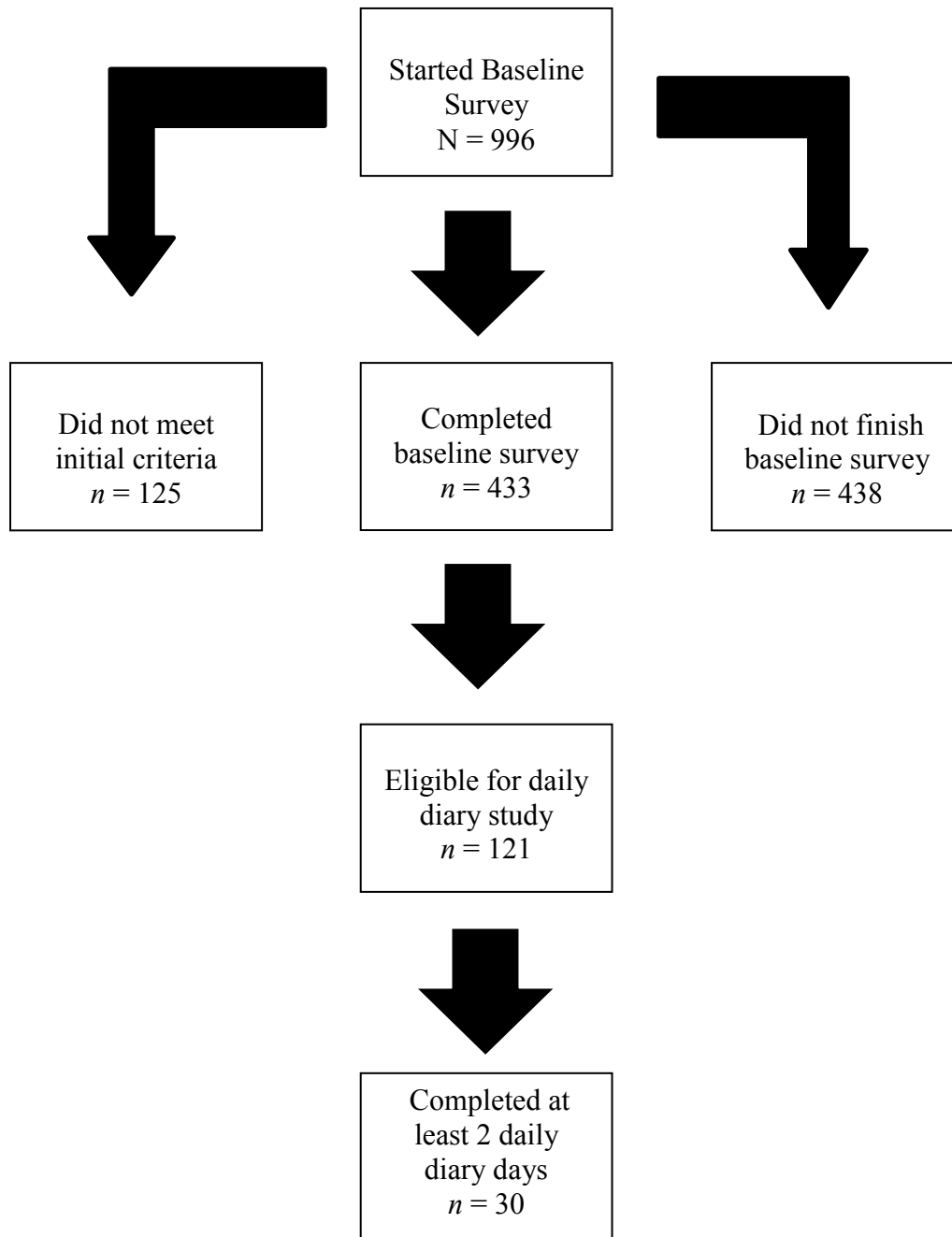


Figure 4. Flowchart of participant recruitment

Table 1

Demographic Variables

Variable	<i>N</i>	%
Ever diagnosed with an eating disorder		
Yes	7	23.3
No	23	76.7
Age		
18-25	20	66.7
26-30	10	33.3
Latin/Hispanic Origin		
Yes	2	6.7
No	28	93.3
Race		
White	26	86.7
Other	1	3.3
Multiracial	2	6.7
Missing	1	3.3
Education		
High school	3	10.0
Some college	8	26.7
Associate's degree	6	20.0
Bachelor's degree	8	26.7
Master's degree	4	13.3

Table 1 Continued

Variable	<i>N</i>	%
Doctoral degree	1	3.3
Urbanicity		
Urban	15	50.0
Suburban	11	36.7
Rural	4	13.3
Lifetime sexual behavior		
Women only	11	36.7
Women and men	15	50.0
Have not had sex	4	13.3
Past year sexual behavior		
Women only	21	70.0
Women and men	2	6.7
Have not had sex	7	23.3
Sexual attraction		
Only women	11	36.7
Mostly women	18	60.0
Equally men and women	1	3.3
Relationship status		
Single, not dating	9	30.0
Single, in a casual relationship	4	13.3
Partnered, in a casual relationship	2	6.7

Table 1 Continued		
Variable	<i>N</i>	%
Partnered, in a committed relationship	11	36.7
Partnered, married or in a civil union	4	13.3
Openness		
In the closet most of the time	5	16.7
Half-in and half-out	2	6.7
Out of the closet most of the time	10	33.3
Completely out of the closet	13	43.3

only” who lived in the U.S. This recruitment strategy is unlikely to reach individuals without internet access or a Facebook page. Also, because individuals had to indicate being interested in women only on their profile, women who were not somewhat open about their sexual orientation may not have been reached. However, this is true of the majority of research with lesbian women (Meyer & Wilson, 2009). Furthermore, in previous research conducted using online and Facebook recruitment methods, lesbian women reported sexual minority stressors including discrimination and concealment of sexual identity (Mason & Lewis, 2015; Mason, Gargurevich, & Lewis, 2015).

Women interested in participating in the survey completed pre-screening measures assessing binge eating in the past week as well as a variety of other measures. There were two ways a woman could be eligible for the study. First, women who reported at least one binge eating episode in the past week were eligible to participate. An episode

of binge eating was defined as both consuming a subjective large amount of food in a short period of time and experiencing a loss of control over eating. Second, women completed items from the Eating Disorder Inventory – Bulimia Scale and Eating Disorder Diagnostic Scale at baseline (see Appendix I). Women responded to these items using a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Women who endorsed at least one of the 11 items on the high end of the response scale (i.e., 6 or 7) were eligible for the study.

Measures

The measures that follow are presented in the following order: (1) Eligibility screening questionnaire; (2) Baseline (Level 2) measures; (3) Daily (Level 1) measures.

Eating behaviors questionnaire (see Appendix A). To screen participants for study eligibility, participants were given a 7-day matrix where they indicated (yes/no) as to whether they consumed a large amount of food in a short period of time and experiencing a loss of control over eating separately for each day. A binge eating episode would be represented by a day in which “yes” was indicated for both consuming a large amount of food in a short period of time and experiencing a loss of control over eating. Those who indicated engaging in binge eating were asked if they ever used a compensatory behavior afterwards (e.g., vomiting, laxatives).

Demographic questionnaire (see Appendix B). At baseline participants completed a demographic questionnaire assessing sexual orientation, age, race, height, weight, income, state of residence, previous eating disorders, and educational level. Also, level of outness (i.e., disclosure of sexual orientation) was assessed.

Social Support (see Appendix C). The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988) was used to measure social support from friends and family, and a special person at baseline. The MSPSS was completed at baseline. Participants responded to 12-items on a Likert scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). The four item Friends (e.g., “I can count on my friends when things go wrong”) and four item Family (e.g., “My family really tries to help me”) subscales were used for the current study. Validity is evidenced by negative relationships with depression and anxiety (Zimet et al., 1988). Higher scores indicated more perceived social support from friends and family. The Cronbach’s alphas for the current study were .94 for support from friends and .90 for support from family.

Lesbian identity (Appendix D). The Identity Affirmation subscale of The Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011) assessed positive lesbian identity at baseline. The Identity Affirmation subscale was completed at baseline. Responses range from 1 (*disagree strongly*) to 6 (*agree strongly*). The three items are, “I am glad to be an LGB person,” “I’m proud to be part of the LGB community,” and “I am proud to be LGB.” In a validation study of the LGBIS, Mohr and Kendra (2009) found that the Identity Affirmation subscale of the LGBIS demonstrated adequate internal consistency (Cronbach’s alpha = .89) and six week test-retest reliability ($r = .91$). Further, the Identity Affirmation subscale was negatively correlated with internalized homonegativity and measures of negative affect and positively correlated with identity importance and connection to the LGB community demonstrating adequate validity (Mohr & Kendra, 2009). The Cronbach’s alpha in the current study was .88.

Feminist identity (see Appendix E). Feminist identity was measured with the

Feminist Identity Composite (FIC; Fischer et al., 2000) at baseline. The scale was created by combining items from the “cluster revised” version of the Feminist Identity Scale (Rickard, 1987) and items from the Feminist Identity Development Scale (Bargad & Hyde, 1991). The FIC contains a total of 39 items divided between five subscales including Passive Acceptance, Revelation, Embeddedness-Emanation, and Synthesis, and Active Commitment. The current study used the Synthesis (i.e., positive feminist identity) and Active Commitment (i.e., commitment to social change and equality for women) subscales. The two subscales were completed at baseline. Participants respond to items on a 5-point Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). The synthesis and active commitment subscales demonstrated adequate internal consistency with Cronbach’s alpha of .71 and .81 respectively (Fischer et al., 2000). In a validation study of the FIC, Fischer et al. (2000) found adequate convergent validity of the FIC with significant correlations with sexist events, identity development, and involvement in women’s organizations. The Cronbach’s alphas for the current study were .78 for synthesis and .76 for active commitment.

Perceived sexism and heterosexism (see Appendix F). Daily sexism and heterosexism were assessed separately with the Everyday Discrimination Scale (EDS; Williams, Yu, Jackson, & Anderson, 1997) in the daily diaries. The EDS measures nine types of discrimination on a day-to-day basis including: people acting as if they are better than you; people acting as if you are not smart; people acting as if they are afraid of you; being treated with less courtesy than others; being treated with less respect than others; receiving poorer service than others at restaurants or stores; people acting as if you are dishonest; being called names or insulted; and being threatened or harassed. Historically,

after participants complete the EDS, they indicate the perceived reason for the discriminatory experiences from a checklist, including gender, race, sexual orientation, etc. For the current study, this question was not asked, because we are specifically interested in the impact of gender and sexual orientation discrimination. Instead, participants completed two forms of the scale. They completed the scale framed to capture discrimination based on gender (i.e., being a woman) and again to capture discrimination based on sexual orientation (i.e., being a lesbian). Respondents indicated on a six point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*) the degree with which each discriminatory act occurred on each day. For example, “Today, I was treated with less courtesy than others [because of my gender/sexual orientation].” Two items were mistakenly omitted from the gender discrimination measure (i.e., people act as if you are not smart and people act as if you are dishonest). The EDS was summed to create a total gender discrimination score for each day and total sexual orientation discrimination for each day. The EDS is positively associated with perceived stigma and externally-rated prejudice events among LGB adults showing evidence for construct validity (Frost, Lehavot, & Meyer, 2013). The EDS has demonstrated adequate reliability in a sample of LGB individuals with a Cronbach’s alpha of .85 (Gordon & Meyer, 2007). The Cronbach’s alphas for the current study were .92 and .87 for sexual orientation discrimination and gender discrimination, respectively.

Negative affect (see Appendix G). The Short Positive and Negative Affect Schedule (S-PANAS; Mackinnon, Jorm, Christensen, Korten, Jacomb, & Rodgers, 1999) was used to measure daily negative affect in the daily diaries. The S-PANAS included five negative affect items (i.e. distressed, upset, shame, nervous, and afraid). Participants

rated each item daily on a scale ranging from 1 (*very slightly/not at all*) to 4 (*extremely*). The items were summed to create a negative affect score for each day. The S-PANAS has been used previously with lesbian women (Lewis et al., 2014). Among lesbian women, the PANAS was associated with increased rumination and decreased social support showing evidence for predictive and discriminant validity (Lewis et al., 2014). Reliability estimates of the PANAS were adequate in a sample of LGB individuals ($\alpha = .90$; Hatzenbuehler et al., 2009) and lesbian women ($\alpha = .84$; Lewis et al., 2014). Furthermore, the PANAS is frequently used to measure negative affect in daily diary (Hatzenbuehler et al., 2009) and momentary (Heron, Scott, Sliwinski, & Smyth, 2014) studies. The Cronbach's alpha for the current study was .89.

Social isolation (see Appendix H). Daily social isolation was measured by the Friendship Scale (FS; Hawthorne, 2006) in the daily diaries. The FS includes six items measuring social isolation. Participants rated each item daily on a scale ranging from 1 (*almost always*) to 5 (*not at all*). After recoding, the items were summed to create a social isolation score for each day with higher scores indicating more social isolation. The FS has been previously used in daily diary research (Mason, Heron, Braitman, & Lewis, 2015). The FS has also been used previously with lesbian and bisexual women (Mason & Lewis, 2015). Mason and Lewis (2015) reported adequate reliability ($\alpha = .84$). Predictive validity was demonstrated by significant correlations between the FS and negative affect among lesbian and bisexual women (Mason & Lewis, 2015). Furthermore, Hawthorne (2006) also found evidence for construct validity of the FS with a correlation between the FS and the social dimension of the World Health Organization Quality of Life scale ($r = .44$). The Cronbach's alpha for the current study was .78.

Binge eating (see Appendix I). Daily binge eating was measured with items from the Eating Disorder Inventory - Bulimia Scale (EDIB) and the Eating Disorder Diagnostic Scale (EDDS) in the daily diaries. Similar to Sherry and Hall (2009), only the items measuring the behavioral components of binge eating (e.g., consumption of food) were used. Items were used from the EDIB (4 items) and EDDS (7 items) to assess binge eating and were modified for a daily timeframe. These items have been used in previous daily diary studies to assess binge eating (Mason et al., 2015; Sherry & Hall, 2009). A sample item from the EDIB is, “Today I ate until I was stuffed.” The response options consist of a Likert scale ranging from 1 (*strongly disagree*) and 7 (*strongly agree*). The EDIB and EDDS items were summed to create one binge eating score for each day. Sherry and Hall (2009) reported that this measure of binge eating was positively associated with dietary restraint and depressive affect evidencing predictive validity. In addition, this measure of binge eating was significantly associated with daily negative affect among college students (Mason et al., 2015). The Cronbach’s alpha for the current study was .96.

Procedure

The project was reviewed and approved by the university Institutional Review Board. All participants were treated in accordance with the American Psychological Association guidelines for the ethical treatment of research subjects. Potential participants were required to read an informed consent document and their decision to continue the survey after reading the informed consent document indicated their consent to enroll in the study.

Participants who met eligibility criteria (i.e., age 18-30, self-identified as lesbian,

reported binge eating episode in the past week, and were willing to commit to a 10 day data collection process) were eligible to enter the study. In the baseline survey, participants completed measures of: (1) demographics, (2) positive LGB identity, and (3) overall perceived social support. During the eligibility questionnaire, participants who indicated engaging in binge eating episode received a description of the daily diary study. These participants were asked if they were interested in participating in the daily diary study. Respondents who decided to participate in the daily diary study chose to receive messages about the daily diary study by either text or email, and they entered their corresponding phone number or email address.

Respondents who chose to participate in the daily diary study received the first survey the next day; this survey included a unique numerical identifier that they inputted when completing the daily surveys to ensure anonymity. Data were collected through a secure website that could be accessed through any computer, phone, or tablet web interface. Each day, participants completed the daily measures. In the daily diary study, participants completed measures of daily (1) discrimination, (2) negative affect, (3) social isolation, and (4) binge eating daily for the following 10 days. Participants were instructed to complete the daily diaries nightly between 8pm and 2am. Responses were time stamped to ensure that participants completed the survey at the correct time interval. For completing the baseline survey, participants were eligible to enter a raffle for a \$50 Amazon.com gift card or one of five \$10 Amazon.com gift cards. For the daily diary study, participants received \$1 per day (maximum \$10).

CHAPTER III

RESULTS

Descriptive Statistics

The 30 women who completed the entire study were compared to the 403 women who completed the baseline survey but were not eligible for the daily diary study, did not participate, or dropped out on demographic variables and the baseline measures. The women who completed the study reported significantly more days of binge eating, $t(431) = 7.22, p < .001$; less social support from friends, $t(423) = -2.16, p = .03$; and less social support from family, $t(424) = -2.67, p = .008$. Also, the 30 women who completed the entire study were compared to the 91 women who were eligible for the daily diary study but did not participate or dropped out after completing 1 day on demographic variables and the baseline measures. The women who completed the study reported significantly less social support from family, $t(118) = -2.91, p = .004$.

A total of 185 diaries were collected from the 30 participants. All diaries were completed within one hour of the instructed time (8pm-2am), suggesting prompt completion of the surveys. All individuals completed at least two diary days. The mean number of days completed was 6.17 (range 2 - 10). One third of participants completed at least half of the diaries. The expectation-maximization (EM) algorithm was used to impute missing data at the item level using SPSS version 21. Then, items on each measure were summed to create the composite scores. Listwise deletion was used if an entire scale was missing. "Strongly disagree" was chosen for all 11 binge eating items on 25.1% of days. No participant chose "strongly disagree" for all 11 binge eating items on all diary days. Twenty-six percent of the variance in binge eating was accounted for by

the clustering, i.e., attributable to person variation ($ICC = .26$).

Descriptive statistics of all variables are displayed in Table 2. The means for the level 1 variables within the range of the scale were 1.73 for sexism (range 1 - 6), 1.59 for heterosexism (range 1 - 6), 2.52 for negative affect (range 1 - 5), 3.33 for social isolation (range 1 - 5), and 2.48 for binge eating (range 1 - 7). Thus, the means for heterosexism, sexism, and binge eating fell at the lower end of their respective response scales demonstrating relatively low levels of these characteristics in the sample. Although eligibility criteria required some binge eating at baseline, a low level of binge eating was expected as this was a non-eating disordered sample. The means for the level 2 variables within the range of the scale were 4.94 for affirmation (range 1 - 6), 4.10 for synthesis (range 1 - 5), 4.03 for active commitment (range 1 - 5), 3.67 for social support from family (range 1 - 7), and 4.83 for social support for friends (range 1 - 7). The means for affirmation, synthesis, and active commitment fell at the upper end of their respective response scales demonstrating relatively high levels of these characteristics in the the sample. The skewness values for all variables were less than the cutoff value for extreme skewness ($> \pm 2$).

Data Analytic Strategy

Hierarchical linear modeling (HLM) is a statistical technique that allows researchers to analyze nested data (Aguinis, Gottfredson, & Culpepper, 2013). HLM is superior to other statistical techniques when data are nested because it accounts for shared variance in the data and accurately estimates slopes for various hierarchical levels. Because of these advantages, HLM was used to analyze the data using Mplus version 7.3

(Muthen & Muthen, 2014). In the present study, the daily assessments (level 1) were nested within participants (level 2).

Table 2.

Descriptive Statistics of Study Measures

	<i>M (SD)</i>	Possible Range	Skewness
Level 1			
Sexism	12.12 (6.66)	7 – 42	1.54
Heterosexism	14.27 (7.67)	9 – 54	2.00
Negative affect	12.60 (5.59)	5 – 25	.74
Social isolation	19.79 (5.71)	6 – 30	-.25
Binge eating	27.22 (18.82)	11 – 77	1.27
Level 2			
Identity affirmation	14.83 (3.44)	3 – 18	-1.00
Synthesis	36.86 (5.32)	9 – 45	-.35
Active commitment	28.24 (4.18)	7 – 35	-.36
Social support - family	14.67 (6.49)	4 – 28	-.42
Social support - friends	19.33 (5.98)	4 – 28	-.94

HLM permits examination of two levels of data: within-subjects (level 1) and between-subjects (level 2). Therefore, HLM allows the investigation of within-subjects repeated measures gathered daily for individuals and between-subjects measures gathered at one time point. Daily measurements of discrimination, negative affect, social isolation, and

binge eating are level 1 variables and lesbian identity, feminist identity, and social support are level 2 variables.

Level 1 predictors were person-mean centered in order to isolate the within subjects effect and level 2 predictors were grand-mean centered (Hofmann & Gavin, 1998). Level 1 variables can be set to have a fixed slope, which examines if there is an effect of the predictor on the outcome, or a random slope, which examines if the slope of the predictor on the outcome varies across level 2 units (individuals in the current study). After setting a slope to be random, researchers can examine if level-2 (person) predictors explain the varying slope of the level 1 predictor, termed a cross-level interaction. A strong advantage of HLM is that it allows for missing data points in the repeated-measures portion of the study (i.e., missing days of the survey).

Data Analyses

Aim 1a: Sexism, negative affect, and binge eating. Aim 1a focused on the relationship among sexism, negative affect, and binge eating. The hypothesized model was fit using HLM (see Figure 4). The predictors for all slopes were set to be fixed and random slopes were not examined as the variability of the slopes was not of interest. Sexism and negative affect were entered as predictors of binge eating and sexism was entered as a predictor of negative affect. Sexism was significantly associated with negative affect ($B = .16$, $SE = .05$, $p = .001$) and marginally associated with binge eating ($B = .46$, $SE = .26$, $p = .07$). Negative affect was significantly associated with binge eating ($B = .74$, $SE = .37$, $p = .04$). Although path a and path b (see Figure 4) were significant (i.e., test of joint significance), the formal test of the indirect effect was marginally significant (Estimate = .12, $SE = .07$, $p = .09$). Therefore, sexism was

associated with greater negative affect, and in turn, negative affect was associated with greater binge eating. Results demonstrated a trend for negative affect as a mediator of the relationship between sexism and binge eating. In sum, the data provided partial support for Aim 1a. Daily sexism was related to greater daily negative affect, and in turn, daily negative affect was related to greater daily binge eating.

Aim 1b: Heterosexism, negative affect, and binge eating. Aim 1b focused on the relationship among heterosexism, negative affect, and binge eating. The hypothesized model was fit using HLM (see Figure 5). The predictors for all slopes were set to be fixed and random slopes were not examined as the variability of the slopes was not of interest. Heterosexism and negative affect were entered as predictors of binge eating and heterosexism was entered as a predictor of negative affect. Heterosexism was significantly associated with negative affect ($B = .12$, $SE = .05$, $p = .02$) and binge eating ($B = .47$, $SE = .23$, $p = .05$). Negative affect was significantly associated with binge eating ($B = .77$, $SE = .33$, $p = .02$). Although path a and path b (see Figure 5) were significant (i.e., test of joint significance), the formal test of the indirect effect was marginally significant (Estimate = .09, $SE = .06$, $p = .10$). Therefore, heterosexism was associated with greater negative affect, and in turn, negative affect was associated with greater binge eating. Results demonstrated a trend for negative affect as a mediator of the relationship between heterosexism and binge eating. In sum, the data provided partial support for Aim 1b. Daily heterosexism was associated with greater daily negative affect, and in turn, daily negative affect was associated with greater daily binge eating.

Aim 2a: Positive lesbian identity as a moderator of the relationship between heterosexism and binge eating. Aim 2a focused on positive lesbian identity (level 2) as

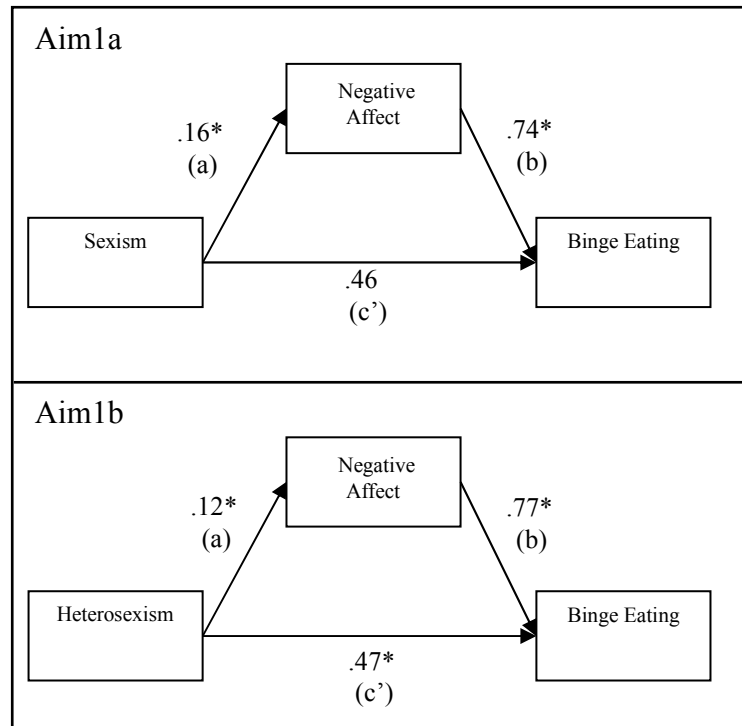


Figure 5. Fitted models for Aim 1. Unstandardized beta coefficients are presented. * $p < .05$

a moderator of the relationship between heterosexism (level 1) and binge eating. Aim 2a hypothesized that a positive lesbian identity would buffer the effect of daily heterosexist discrimination on daily binge eating (Figure 2). Heterosexism was entered as a predictor of binge eating. Because Aim 2a hypothesized a cross-level interaction, the slope for heterosexism was set to random. Ordinarily, researchers should first check to make sure that there is significant variance in the random slope before examining the cross-level interaction.

However, because this was an a priori prediction and power could be a potential problem with finding significant variance in the random slope, Aguinis and colleagues

(2013) recommended proceeding to analyze the cross-level interaction, regardless of the p value of the random slope variance. As such, the cross-level interaction was examined even if there was not significant variance in the random slope. Identity affirmation was entered as a predictor of binge eating as well as the random slope for heterosexism. Identity affirmation was not significantly associated with binge eating ($B = -.55$, $SE = .64$, $p = .39$). The variance component for the heterosexism random slope was not significant ($B = .66$, $SE = .48$, $p = .17$). The cross-level interaction for heterosexism and identity affirmation was significant ($B = .16$, $SE = .08$, $p = .05$). The interaction is displayed in Figure 6. High identity affirmation strengthened the relationship between heterosexism and binge eating. For women with higher affirmation, experiencing heterosexism was more strongly associated with binge eating. Aim 2a was not supported by the data. Positive lesbian identity (i.e., identity affirmation) moderated the relationship between daily heterosexism and daily binge eating in the opposite than what was expected. High identity affirmation strengthened the relationship between heterosexism and binge eating.

Aim 2b: Feminist identity as a moderator of the relationship between sexism and binge eating. Aim 2b focused on feminist identity (level 2) as a moderator of the relationship between sexism (level 1) and binge eating. Aim 2b hypothesized that a feminist identity would buffer the effect of daily sexist discrimination on daily binge eating. Sexism was entered as a predictor of binge eating. Because Aim 2b hypothesized a cross-level interaction, the slope for sexism was set to random. Similar to Aim 2a, the

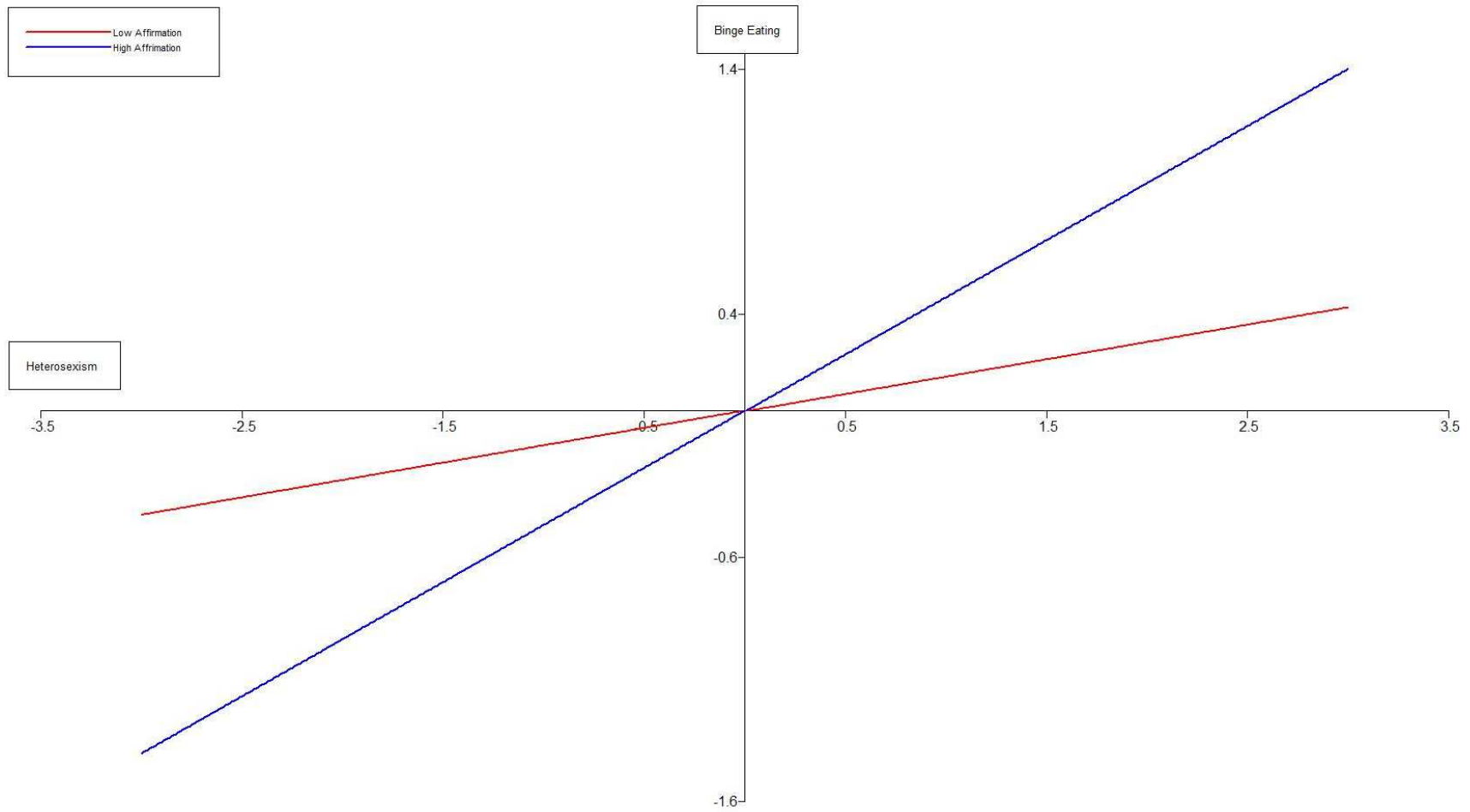


Figure 6. Interaction between heterosexism and identity affirmation predicting binge eating.

cross-level interaction was examined even if there was not significant variance in the random slope.

Synthesis and active commitment were entered as predictors of binge eating as well as the random slope for sexism. Synthesis was significantly associated with less binge eating ($B = -.81$, $SE = .41$, $p = .05$), and active commitment was marginally significantly associated with more binge eating ($B = .89$, $SE = .51$, $p = .08$). The variance component for the sexism random slope was not significant ($B = .15$, $SE = .55$, $p = .78$). The cross-level interactions for sexism and synthesis ($B = .14$, $SE = .08$, $p = .10$) and sexism and active commitment ($B = .01$, $SE = .10$, $p = .90$) were not significant. Neither synthesis nor active commitment moderated the relationship between sexism and binge eating. The data did not provide support for Aim 2b. Although aspects of feminist identity did not moderate the relationship between daily sexism and daily binge eating, synthesis was directly related to decreased binge eating and active commitment was marginally directly related to increased binge eating.

Aim 3a: Social support as a moderator of the relationship between heterosexism and binge eating. Aim 3a focused on social support from family and friends (level 2) as moderators of the relationship between heterosexism (level 1) and binge eating. Aim 3a hypothesized that increased social support from family and friends would buffer the effect of daily heterosexist discrimination on daily binge eating. Heterosexism was entered as a predictor of binge eating. Because Aim 3a hypothesized a cross-level interaction, the slope for heterosexism was set to random. Similar to Aim 2a, the cross-level interaction was examined even if there was not significant variance in the random slope.

Social support from family and social support from friends were entered as separate predictors of binge eating and the random slope for heterosexism. Neither social support from family ($B = .37, SE = .36, p = .30$) nor social support from friends ($B = -.32, SE = .38, p = .39$) were significantly associated with binge eating. The variance component for the heterosexism random slope was not significant ($B = .51, SE = .73, p = .49$). The cross-level interactions for heterosexism and social support from family ($B = .09, SE = .07, p = .23$) and heterosexism and social support from friends ($B = -.10, SE = .07, p = .14$) were not significant. Neither social support from family nor social support from friends moderated the relationship between heterosexism and binge eating. Thus, there was not support for Aim 3a.

Aim 3b: Social isolation as a moderator of the relationship between heterosexism and binge eating. Aim 3b focused on social isolation (level 1) as a moderator of the relationship between heterosexism (level 1) and binge eating. Aim 3b hypothesized that higher social isolation would moderate the effect of daily heterosexual discrimination on daily binge eating. The interaction was created by multiplying heterosexism and social isolation scores. The slopes for the predictors and the interaction were set to fixed. Random slopes were not examined as the variability of the slopes was not of interest. Heterosexism, social isolation, and their interaction were entered as predictors of binge eating. Heterosexism was significantly associated with greater binge eating ($B = .60, SE = .24, p = .01$), but social isolation was not significantly associated with binge eating ($B = -.25, SE = .31, p = .42$). The interaction was not significant ($B = .06, SE = .05, p = .24$). Social isolation did not moderate the relationship between heterosexism and binge eating. Thus, there was not support for Aim 3b.

Aim 3c: Social support as a moderator of the relationship between sexism and binge eating. Aim 3c focused on social support from family and friends (level 2) as moderators of the relationship between sexism (level 1) and binge eating. Aim 3c hypothesized that increased social support from family and friends would buffer the effect of daily sexist discrimination on daily binge eating. Sexism was entered as a predictor of binge eating. Because Aim 3c hypothesized a cross-level interaction, the slope for sexism was set to random. Similar to Aim 2a, the cross-level interaction was examined even if there was not significant variance in the random slope.

Social support from family and social support from friends were entered as separate predictors of binge eating and the random slope for sexism. Neither social support from family ($B = .38, SE = .36, p = .29$), nor social support from friends ($B = -.34, SE = .38, p = .37$) were significantly associated with binge eating. The variance component for the sexism random slope was not significant ($B = .18, SE = .42, p = .67$). The cross-level interactions for sexism and social support from family ($B = -.02, SE = .06, p = .78$) and sexism and social support from friends ($B = -.03, SE = .05, p = .55$) were not significant. Neither social support from family nor social support from friends moderated the relationship between sexism and binge eating. Thus, there was not support for Aim 3c.

Aim 3d: Social isolation as a moderator of the relationship between sexism and binge eating. Aim 3d focused on social isolation (level 1) as a moderator of the relationship between sexism (level 1) and binge eating. Aim 3d hypothesized that increased social isolation would moderate the effect of daily sexist discrimination on daily binge eating. The interaction was created by multiplying sexism and social isolation

scores. The slopes for the predictors and the interaction were set to fixed. Random slopes were not examined as the variability of the slopes was not of interest. Sexism, social isolation, and their interaction were entered as predictors of binge eating. Sexism was significantly associated with greater binge eating ($B = .63$, $SE = .28$, $p = .02$), but social isolation was not significantly associated with binge eating ($B = -.16$, $SE = .31$, $p = .61$). The interaction was not significant ($B = .03$, $SE = .05$, $p = .57$). Social isolation did not moderate the relationship between sexism and binge eating. Thus, there was not support for Aim 3d.

Summary of Findings

The data provided partial support for Aim 1a and Aim 1b. Daily sexism was related to greater daily negative affect, and in turn, daily negative affect was related to greater daily binge eating. The test of the indirect effect was marginally significant. Daily heterosexism was associated with greater daily negative affect, and in turn, daily negative affect was associated with greater daily binge eating. Daily heterosexism also was significantly associated with binge eating after controlling for negative affect. The test of the indirect effect was marginally significant. Therefore, there is mixed evidence for daily negative affect as a mediator of the relationship between daily sexism or daily heterosexism and binge eating.

Aim 2a was not supported by the data. Positive lesbian identity (i.e., identity affirmation) moderated the relationship between daily heterosexism and daily binge eating in the opposite than what was expected. High identity affirmation strengthened the relationship between heterosexism and binge eating. Yet, the data did not provide support for Aim 2b. Although aspects of feminist identity did not moderate the relationship

between daily sexism and daily binge eating, synthesis was directly related to decreased binge eating and active commitment was marginally directly related to increased binge eating.

There was not support for Aim 3a, Aim 3b, Aim 3c, or Aim 3d. Social support from family and friends did not moderate the relationship between daily heterosexism and daily binge eating. Social isolation did not moderate the relationship between daily heterosexism and daily binge eating. Social support from family and friends did not moderate the relationship between daily sexism and daily binge eating. Social isolation did not moderate the relationship between daily sexism and daily binge eating. Finally, social support from family, social support from friends, and social isolation were not directly related to binge eating in any of the analyses.

CHAPTER IV

DISCUSSION

Because binge eating and related disorders are important health concerns among lesbian women, the goal of this study was to examine how two forms of discrimination, sexism and heterosexism, are related to binge eating among lesbian women in daily life. Research has shown that discrimination is associated with negative health outcomes, including binge eating, among lesbian women (Lehavot & Simoni, 2011; Mason & Lewis, 2015). Guided by the minority stress model (Meyer, 2003), Pascoe and Smart Richman's discrimination and health model, and the affect regulation model (Polivy & Herman, 1993), three aims were examined in the current study. The first aim examined the relationship among discrimination (both heterosexism and sexism), negative affect, and binge eating. The second aim examined group identity as a moderator of the relationship between discrimination and binge eating. The third aim examined social resources (i.e., social support and social isolation) as moderators of the relationship between discrimination and binge eating.

Discrimination, Negative Affect, and Binge Eating

Aim 1a hypothesized that daily experiences of sexism would be associated with greater daily negative affect, and in turn negative affect would lead to greater daily binge eating. Aim 1b hypothesized that daily experiences of sexism would be associated with greater daily negative affect, and in turn negative affect would lead to greater daily binge eating. The results of Aim 1a and 1b showed that daily sexism and heterosexism, separately, were associated with daily negative affect, and in turn, daily negative affect was associated with binge eating. Only daily heterosexism was still associated with binge

eating after controlling for daily negative affect. The statistical tests of the indirect effect for negative affect as a mediator of heterosexism and binge eating and sexism and binge eating were marginally significant. Given that the tests of joint significance were demonstrated and the trends toward significance for the indirect effects, the indirect effects likely would have been significant for both aims with a larger sample size. `

Consistent with the affect regulation model (Polivy & Herman, 1993), negative affect was positively related to binge eating, which evidences that lesbian women may engage in binge eating to cope with feelings of negative affect. Also, according to the present study, daily experiences of sexism and heterosexism were associated with feelings of negative affect. Thus, negative affect related to binge eating may likely, in part, be associated with sexist or heterosexist experiences among lesbian women. This pattern of results is similar to an ecological momentary assessment study of women with bulimia nervosa in which momentary negative affect mediated the relationship between momentary stressful events and binge eating (Goldschmidt et al., 2014). The results of the present study demonstrate that sexism and heterosexism are specific daily stressors experienced by lesbian women that may lead to feelings of negative affect and binge eating.

In contrast, a recent empirical model of binge eating among lesbian and bisexual women did not find support for negative affect as mediator of the relationship between *lifetime* heterosexist discrimination and binge eating (Mason & Lewis, 2015). These conflicting findings may be explained by the differential time frames in which heterosexist discrimination was assessed. Associations between lifetime discrimination and mental health problems are much smaller than associations between more recent or

daily discrimination and mental health problems (Pascoe & Smart Richman, 2009). It appears that a lifetime measure of heterosexism in the previous study (Mason & Lewis, 2015) may have been too distal to apply to the affect regulation model because affect regulation occurs in a shorter timeframe (i.e., daily or momentary). Based on the results of the current study, daily or momentary negative affect appears to be the appropriate temporal mediator for the discrimination-binge eating association.

The current study also revealed that daily heterosexism was related to binge eating after controlling for negative affect. Theoretically, besides creating negative affect, experiences of daily heterosexism could potentially cause unwanted awareness to oneself as a lesbian woman. Thus, especially in women who hold negative opinions of themselves as a lesbian (e.g., high in internalized homophobia) or who may be “closeted,” women may engage in binge eating to escape from these realizations, as described by the escape from self-awareness hypothesis of binge eating (Heatherton & Baumeister, 1991). Consistent with this theory, experiencing discrimination may provoke a desire to escape from self-awareness. Other research posits that experiencing heterosexism could lead lesbian women to monitor their appearance in order to “pass” as heterosexual with the goal of reducing further heterosexism (Brewster et al., 2014). This appearance monitoring could lead to internalization of sociocultural beauty norms, body surveillance, and body shame (Brewster et al., 2014), which are strongly associated with disordered eating (McKinley & Hyde, 1996; Mintz & Betz, 1988).

LGB Identity as a Moderator of Heterosexism and Binge Eating

Aim 2a hypothesized that a positive lesbian identity would buffer the effect of daily heterosexist discrimination on daily binge eating. Positive LGB identity moderated

the association between daily heterosexism and binge eating but in the opposite direction from the a priori prediction. That is, for lesbian women who reported a more positive LGB identity, daily heterosexism was *more strongly* related to binge eating. This finding departs from theoretical notions that having a strong LGB identity would be a great source of resilience against negative outcomes (Meyer 2003; Pascoe & Smart Richman, 2009). However, this finding is consistent with a daily diary study of LGB individuals, which found that a stronger LGB identity weakened the relationship between heterosexist events and well-being (Swim et al., 2009). It appears that lesbian women who have a more positive lesbian identity may be more negatively affected by daily heterosexism. Heterosexist events may create distress by disrupting lesbian women's positively held view of their identity (Burke, 1991). Moreover, lesbian women with a positive LGB identity may experience more negative emotions when being the target of heterosexism which in turn could lead to binge eating as a coping mechanism. It is possible that over time lesbian women with a positive LGB identity are able to process heterosexism more effectively, but daily heterosexism appears to have a greater effect on these women.

Also, a more positive LGB identity is associated with greater LGB social support (Bregman, Malik, Page, Makynen, & Lindahl, 2013; Riggle, Mohr, Rostosky, Fingerhut, & Balsam, 2014). The buffering effect associated with a positive LGB identity may actually derive from increased integration into the LGB community or more social support from the LGB community rather than identity per se. In essence, a more positive LGB identity may be related to more distress in response to heterosexism, but LGB-related social support may allow one to cope with heterosexism. Therefore, it is important to disentangle these two constructs in future research studies. Riggle et al. (2004) argued

that positive LGB identity is a multifaceted construct (e.g., self-awareness, authenticity, intimate relationships, belonging to the LGBT community, and commitment to social justice). Each of these important aspects of LGB identity may have differing relationships with binge eating and differing potential as buffers of heterosexism. Given the multifaceted nature of positive LGB identity as well as the multiple measures that may be used to assess positive LGB identity, more research is needed to examine the complex question of how and when LGB identity may buffer heterosexist discrimination.

Feminist Identity as a Moderator of Sexism and Binge Eating

Aim 2b hypothesized that a feminist identity would buffer the effect of daily sexist discrimination on daily binge eating. It was expected that lesbian women whose feminist identity reflected synthesis (i.e., a positive feminist identity) and active commitment (i.e., commitment to social change) would be able to utilize these resources to cope more effectively with experiences of daily sexism. Neither synthesis nor active commitment buffered the effect of sexism on binge eating. That is, the relationship between daily sexism and binge eating did not depend on one's feminist identity.

These results are inconsistent with previous findings in a cross-sectional study that synthesis and active commitment buffered the association of sexism on disordered eating (measured with the Eating Attitudes Test, which assesses behaviors and attitudes consistent with eating disorders) among college women (Sabik & Tylka, 2006). Because Sabik and Tylka (2006) used a cross-sectional design of lifetime and past-year sexist events and current disordered eating, it may be that feminist identity buffers the long-lasting effects of sexism on disordered eating rather than the immediate effects. Also, Sabik and Tylka (2006) used a general measure of disordered eating, which includes

items consistent with binge eating, but also many items measuring other eating attitudes and behaviors (e.g., dieting, drive for thinness, purging). Thus, feminist identity may have more of a buffering effect against sexism on other disordered eating behaviors, opposed to binge eating.

It may also be the case that current results for lesbian women differ from Sabik and Tylka's (2006) previous findings that were based on a general college sample in which sexual identity was not assessed and/or reported. That is, feminist identity may not buffer the effect of sexism on disordered eating for lesbian women in the same way it does for heterosexual women. In addition to sexism, lesbian women experience heterosexism. Research has shown that experiencing multiple forms of discrimination is associated with more adverse outcomes (Grollman, 2012). Therefore, feminist identity might only be a buffer when sexism is experienced alone. However, it is likely that experiences of sexism and heterosexism may be conflated. As a result, it may be difficult for participants to discern the precise reason for a discriminatory act (gender, sexual orientation, something else). Thus, identifying with the lesbian feminism movement may be more of a buffer to sexism for lesbian women than feminism alone. Another possible explanation for the nonsignificant moderation could be that there was not enough variance in experiences of sexism to detect the cross-level interaction.

Although no buffering effects were found, a significant main effect of feminist identity on binge eating occurred. Greater synthesis was associated with less binge eating. That is, women who reported rejecting traditional gender roles and evaluating men carefully and appropriately engaged in less binge eating. Greater active commitment was marginally associated with more binge eating. That is, women involved in feminist social

change efforts marginally engaged in more binge eating. A meta-analysis reported that synthesis and active commitment were protective factors against body image concerns, disordered eating, and internalization of societal beauty norms (Murnen & Smolak, 2009). Synthesis appears to be an important protective factor for lesbian women against disordered eating, and specifically binge eating likely through fewer body image concerns and less internalization of the societal thin ideal. The marginally significant finding for active commitment conflicts with previous research and should be interpreted with caution. However, one possible explanation is that as lesbian women who participate in social change efforts for women are reminded of inequalities faced by women and sexual minorities. These experiences may create additional stress that increase maladaptive eating. Future research with a larger sample of lesbian women is necessary to clarify the association among sexist discrimination, feminist identity and binge eating.

Social Support and Isolation as Moderators of Discrimination and Binge Eating

Aims 3a and 3c hypothesized that social support from family and friends would moderate the relationship between heterosexism and sexism and binge eating. Social support did not predict binge eating. Neither did social support from family nor social support from friends buffer the effect of sexism or heterosexism on binge eating.

Although social support is often beneficial in assisting with coping with stress (Cohen, 2004; Lepore Ragan, & Jones, 2000), Pascoe and Smart Richman (2009) reported mixed evidence for the ameliorative effect of social support against discrimination. Like many of the studies in Pascoe and Smart Richman's review, the current study also found a null effect. Social support was measured as a between subjects variable; in order to buffer the effects of daily discrimination, it may be important to have individuals to talk and discuss

issues as they occur. Thus, social support may need to be measured as a within subjects variable. Or, it may be that LGB-specific or gender-specific social support, opposed to general social support, buffers the negative effect of heterosexism on binge eating.

Aims 3b and 3d hypothesized that daily social isolation would moderate the relationship between daily heterosexism and sexism and binge eating. Daily social isolation did not moderate the effect of daily sexism or heterosexism on binge eating. According to these results, daily sexism and heterosexism have similar effects on binge eating regardless of the level of social isolation on that day. The main effect for social isolation was also non-significant. Therefore, social isolation does not seem to have an impact on binge eating on a daily basis. Given that the majority of research examining social isolation, especially among sexual minorities, has been cross-sectional, it may be that more enduring social isolation (i.e., general social isolation) would have a greater effect on binge eating opposed to daily occurrences of social isolation. For example, positive associations have been found between social isolation and binge eating (Mason & Lewis, 2015) and social isolation, distress, and alcohol use (Lewis, Mason, Winstead, Gaskins, & Irons, 2015) in cross-sectional studies of lesbian and bisexual women.

Social isolation in this study was conceptualized as a moderator, a variable that affects the strength of the association between two other variables, in this case discrimination and binge eating (Baron & Kenny, 1986). Hatzenbuehler (2009) suggests that social isolation may also be conceptualized as a mediator of stigma-related stressors and psychopathology. For example, a daily diary study of LGB individuals found evidence for daily social isolation as a mediator between daily minority stress and negative affect (Hatzenbuehler et al., 2009). Although daily social isolation was not

related to binge eating in the current study, previous research does show that social isolation is associated with more negative affect in daily life. It is possible that social isolation may be a contributor to increased negative affect in daily life, which in turn would be associated with more binge eating. Consistent with this assertion, a cross-sectional study of lesbian and bisexual women showed that negative affect mediated the relationship between social isolation and binge eating (Mason & Lewis, 2015).

Clinical and Public Health Implications

Clinical implications. The results demonstrated that daily heterosexism and sexism are associated with negative affect and binge eating. Given that binge eating symptoms are associated with a myriad of psychiatric disorders (Hudson et al., 2007) and poor psychosocial functioning (Wilfley, Wilson, & Agras, 2003), this study underscores the need for clinical providers to understand and assess heterosexism and sexism among lesbian women. Clinicians need to understand the experiences that lesbian women undergo as a women as well as a sexual minority often termed a “dual identity” (Fingerhut, Peplau, & Ghavami, 2005). Healthcare providers must feel comfortable in discussing both gender-related and sexual identity-related experiences with lesbian-identified clients due to the strong impact of heterosexism and sexism on their psychological health. Providing adaptive coping and social resources may help clients manage discrimination that they are experiencing in more constructive ways (Mason & Lewis, 2015). Ultimately, it is important to increase healthcare providers’ cultural competence in working with lesbian clients in order to reduce health disparities and improve lesbian women’s health.

Because the experiences of daily sexism and heterosexism are related to binge eating, treatment that focuses on daily experiences may be particularly useful. For example, a novel treatment for bulimia nervosa, integrative cognitive-affective therapy, (ICAT), was recently developed and shown to be efficacious for bulimia nervosa (Wonderlich et al., 2014). ICAT is a comprehensive psychotherapy that addresses momentary relationships between maintenance variables (e.g., negative affect) and bulimic symptoms (e.g., binge eating). The current study found that experiences of discrimination and negative affect are related to binge eating in lesbian women's daily lives. Therefore, ICAT may be a promising treatment to consider for lesbian women presenting with binge eating and other bulimic behaviors. Adapting the existing ICAT by incorporating culturally-tailored components relevant to lesbian women's experiences may be associated with even greater treatment outcomes. Specifically, addressing the role of daily sexism and heterosexism and binge eating may be an important addition to ICAT and other therapies.

Public health implications. Obesity is one of the greatest current public health concerns in the U. S. (Borrell & Samuel, 2014). Research has shown that obesity impacts lesbian women disproportionately to heterosexual women (Mason & Lewis, 2014b). Because there is a strong association between binge eating and obesity (de Zwaan, 2001), addressing binge eating among lesbian women may be useful for reducing obesity among this population. The findings of this study can be used by public health stakeholders to reduce the disparity in obesity among this group by developing preventions and interventions for binge eating that address the impact of discrimination. This study adds to the long history of research demonstrating the negative impact of discrimination on

lesbian women's health (see Meyer, 2003 and Lick, Durso, & Johnson, 2013 for reviews). In fact, Hatzenbuehler, Phelan, and Link (2013) note that stigma is a central cause of health disparities. Moreover, Coulter, Kenst, Bowen, and Scout (2014) concluded that lack of National Institutes of Health funding contributes to these ongoing health disparities. Given the most research conducted with sexual minority populations uses cross-sectional designs, the results of this study demonstrate the utility of using a novel daily diary method to collect important information that can contribute to reducing health disparities in an underserved and understudied population. Daily diary studies will allow researchers to learn more about the daily experiences of sexual minorities. For example, what types of sexual minority stressors are experienced on a daily basis and how often are they experienced? In addition, we can learn more about the negative effects of daily experiences of sexual minority stressors (e.g., unhealthy eating, alcohol use, smoking) that may be associated with negative health.

Study Strengths

This study used a daily diary methodology to examine the daily experiences of a difficult to reach, marginalized group. Consequently, this study offers insight into lesbian women's daily experiences of discrimination, negative affect, and binge eating. This study is the first to provide evidence consistent with the affect regulation model of binge eating among lesbian women using daily diaries. Also, the study showed that daily heterosexism and sexism are relevant stressors related to binge eating among lesbian women. Ultimately, the daily diary methodology used in this study extends the mostly cross-sectional literature on the effects of discrimination in lesbian women. Because little is known about predictors of binge eating among lesbian women, this study will be an

important addition to the extant literature. Additionally, only lesbian women participated in this study, so important differences between sexual identity subgroups were not obscured. Therefore, the results are not confounded by sexual identity.

Study Limitations

Although the results of the current study offer a contribution to the existing literature, several limitations must be noted. Lesbian women are a difficult population to recruit for research. This challenge was multiplied by conducting a daily diary study with recruitment constraints (e.g., reporting disordered eating in the past week) and limited incentives. As a result, the desired sample size was not obtained and, consequently, the study was likely underpowered. In order to detect mediation (indirect) effects as well as cross-level interactions, more participants (level 2 units) were likely needed (Aguinis et al., 2013; Fritz & MacKinnon, 2007). Mathieu, Aguinis, Culpepper, & Chen, 2012). Thus, failure to find indirect effects and cross-level interactions may have been due to low power, not because the effects did not exist (i.e., Type II error). Because of low power, it is with caution that non-significant effects are interpreted as true null effects.

Also, all daily measures were assessed at the same time on each day, so it is important to be cautious in making causal inferences from these data. It is possible many of the relationships between variables in the study are bi-directional. For example, in the study, negative affect was used as a predictor of binge eating although binge eating may have caused negative affect as well.

The study participants were generally open about their sexual identity and displayed rather low levels of daily heterosexism and sexism. Women who are less out may not be as likely to complete a survey related to sexual identity. In addition, the

measure used to assess daily sexism and heterosexism (i.e., modified versions of the Everyday Discrimination Scale) may not adequately assess daily heterosexist and sexist experiences and events. In the future, researchers may want to use measures that assess various heterosexist and sexist hassles and microaggressions (i.e., subtle, and sometimes unintentional acts of heterosexism, that occur in daily interactions such as use of heterosexist language; Nadal et al., 2011) which may occur more frequently on a daily basis such as use of heterosexist or sexist language. Finally, as this was a community sample, the behavior of interest, binge eating, occurred relatively infrequently, on no more than half of the days assessed during the course of the study. In addition, women who participated and completed the daily diary study reported less social support from family than women who did not participate or dropped out. Thus, the results of this study may not generalize to other lesbian women with more social support.

Future Directions

Since heterosexism and sexism are associated with binge eating on a day-to-day basis, it is imperative in the future to conduct ecological momentary assessment (EMA) studies of sexism and heterosexism and binge eating. EMA is a relatively unobtrusive methodological tool that collects data in people's natural environments and close to actual experiences (real-time). In EMA protocols, participants can receive signals or alarms throughout the day in which they complete measures of thoughts, experiences, and behaviors that recently occurred. This process continues for a short duration (e.g., several days or weeks). Using an EMA approach, researchers can examine experiences closer to their occurrence which makes a stronger case for causal relationships between variables. For example, variables may be measured multiple times on the same day and researchers

can examine changes in variables occurring on the same day. However, because there is usually still some time delay, EMA findings still cannot assume causality. In addition, more objective measures of binge eating (e.g., Eating Disorder Examination) should be used that would allow researchers to determine if factors such as discrimination and negative affect precede objectively-measured of binge eating.

Given that there was still an association between daily heterosexism and binge eating after controlling for negative affect, future research should examine other possible mediators of the association between heterosexism and binge eating. Body shame and dissatisfaction are other variables that have been shown to mediate the relationship between minority stress and disordered eating in cross-sectional studies (Brewster & Velez, 2014; Haines et al., 2008; Watson, Grotewiel, Farrell, Marshik, & Schneider, 2015) and may be worth including in future intensive longitudinal research studies. In addition, other models of binge eating such as the restraint and escape from self-awareness model may partially explain the association between heterosexism and binge eating.

Other stressors related to sexual identity should also be studied in future intensive longitudinal studies. For example, stigma consciousness (i.e., expectations of rejection) and gay-rejection sensitivity (i.e., sensitivity to future gay-related rejection) are damaging stressors associated with negative mental health (Mason & Lewis, 2015; Pachankis, Goldfried, & Ramrattan, 2008). Stigma consciousness and gay-rejection sensitivity are independent of actual discriminatory experiences, so they may be more common in daily life. Also, other types of social support, such as LGB community social support, as well as other aspects of positive lesbian identity could be examined as potential buffering factors. Finally, future research should examine the relationship between discrimination

and binge eating among other sexual minority women, sexual minority men, and other age groups.

Conclusion

This study was one of only several to date that recruited sexual minority participants for intensive longitudinal research. Although sexual minorities are a difficult population to recruit for research, it is imperative that continued efforts are directed at conducting daily studies with this group to learn more about the daily lives of sexual minority individuals. The study offers support for the affect regulation model (Polivy & Herman, 1993) and minority stress model (Meyer, 2003) among lesbian women in daily life. Results showed that daily heterosexism and sexism were related to increased negative affect, and in turn, negative affect was related to binge eating suggesting that lesbian women may use binge eating to cope with negative affect. Moreover, this study provides preliminary evidence that there are unique stressors (i.e., heterosexism, sexism) that lesbian women experience that are associated with binge eating. The study also found that high identity affirmation strengthened the relationship between heterosexism and binge eating such that a positive LGB identity may make discriminatory events more salient and upsetting with eventual increased binge eating. Overall, daily sexism and heterosexism experienced by lesbian women may partially explain disparities in binge eating.

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Appendix A

Eating Behaviors Questionnaire

1. Please think about your eating over the PAST WEEK. For each day, indicate if you rapidly consumed an excessive amount of food with an experience of loss of control at least ONCE on that day.

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY

2. If you engaged consumed an excessive amount of food with an experience of loss of control in the past week, did you engage in any compensatory behaviors such as laxative used, vomiting, or excessive exercise.

3. Have you ever been told by a doctor or mental health professional that you have an eating disorder?

4. If yes, which disorder(s)?

-Anorexia Nervosa

-Bulimia Nervosa

-Binge Eating Disorder

-Other

Appendix B

Demographic Questionnaire

Age (in years): _____

What is your height? ____ ft ____ in

What is your weight? ____ lbs

Are you of Hispanic, Latin, or Spanish Origin?

____ YES ____ NO

Please indicate your racial group:

- White alone
- Black or African American alone
- American Indian and Alaska Native alone
- Asian alone
- Native Hawaiian and Other Pacific Islander alone
- Some Other Race alone
- Two or more races

Check the category that best describes your occupation:

- Managerial/Professional
- Technical/Sales/Administrative
- Service
- Farming, Forestry, Fishing
- Mechanical, Construction, Production
- Machine Operation, Labor
- Student
- Homemaker
- Unemployed
- Retired

Years of Education: _____

(12 = high school grad; 16= college grad):

What state do you current reside in? _____

The city/community/town in which I live is:

- Urban
- Suburban
- Rural

How do you define your sexual identity? Would you say that you are:

- only homosexual/lesbian
- mostly homosexual/lesbian
- bisexual
- mostly heterosexual
- only heterosexual
- other (specify): _____.

Age (in years) at which you first wondered about your sexual orientation _____

During the past year, with whom have you had sex?

- women only
- women and men
- men only

With whom have you had sex **in your lifetime**?

- women only
- women and men
- men only

Which of the following best describes who you are sexually attracted to?

- only women
- mostly women
- equally men and women
- mostly men
- only men

Relative to other lesbian/gay individuals, I

- am definitely in the closet.
- in the closet most of the time.
- half-in and half-out.
- out of the closet most of the time.
- completely out of the closet.

How open are you about your sexual preference/orientation? (Circle one)

- I work very hard to hide it.
- I don't want people to know.
- I selectively tell people I trust.
- I am not too worried about people knowing.
- I never hesitate to tell people.

Appendix C

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.

“1” if you Very Strongly Disagree

“2” if you Strongly Disagree

“3” if you Mildly Disagree

“4” if you are Neutral

“5” if you Mildly Agree

“6” if you Strongly Agree

“7” if you Very Strongly Agree

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

Appendix D

Lesbian, Gay, Bisexual Identity Scale

For each of the following questions, please mark the response that best indicates your current experience as an LGB person. Please be as honest as possible: Indicate how you really feel now, not how you think you should feel. There is no need to think too much about any one question. Answer each question according to your initial reaction and then move on to the next.

Strongly Disagree
Disagree
Disagree Somewhat
Agree Somewhat
Agree
Agree Strongly

1. I prefer to keep my same-sex romantic relationships rather private.
2. If it were possible, I would choose to be straight.
3. I'm not totally sure what my sexual orientation is.
4. I keep careful control over who knows about my same-sex romantic relationships.
5. I often wonder whether others judge me for my sexual orientation.
6. I am glad to be an LGB person.
7. I look down on heterosexuals.
8. I keep changing my mind about my sexual orientation.
9. I can't feel comfortable knowing that others judge me negatively for my sexual orientation.
10. I feel that LGB people are superior to heterosexuals.
11. My sexual orientation is an insignificant part of who I am.
12. Admitting to myself that I'm an LGB person has been a very painful process.
13. I'm proud to be part of the LGB community.
14. I can't decide whether I am bisexual or homosexual.
15. My sexual orientation is a central part of my identity.
16. I think a lot about how my sexual orientation affects the way people see me.
17. Admitting to myself that I'm an LGB person has been a very slow process.
18. Straight people have boring lives compared with LGB people.
19. My sexual orientation is a very personal and private matter.
20. I wish I were heterosexual.
21. To understand who I am as a person, you have to know that I'm LGB.
22. I get very confused when I try to figure out my sexual orientation.
23. I have felt comfortable with my sexual identity just about from the start.
24. Being an LGB person is a very important aspect of my life.
25. I believe being LGB is an important part of me.
26. I am proud to be LGB.
27. I believe it is unfair that I am attracted to people of the same sex.

Appendix E

Feminist Identity Composite

Instructions: The statements listed below describe attitudes you may have toward yourself as a woman. There are no right or wrong answers. Please express your feelings by indicating how much you agree or disagree with each statement.

Strongly Disagree

Disagree

Neutral

Agree

Agree Strongly

Active Commitment

1. I am very committed to a cause that I believe contributes to a more fair and just world for all people.
2. I want to work to improve women's status
3. I am willing to make certain sacrifices to effect change in this society in order to create a nonsexist, peaceful place where all people have equal opportunities.
4. It is very satisfying to me to be able to use my talents and skills in my work in the women's movement.
5. I care very deeply about men and women having equal opportunities in all respects.
6. I feel that I am a very powerful and effective spokesperson for the women's issues I am concerned with right now.
7. On some level, my motivation for almost every activity I engage in is my desire for an egalitarian world.

Synthesis

1. I choose my "causes" carefully to work for greater equality for all people.
2. I owe it not only to women but to all people to work for greater opportunity and equality for all.
3. I feel like I have blended my female attributes with my unique personal qualities.
4. I am proud to be a competent woman.
5. I have incorporated what is female and feminine into my own unique personality.
6. I enjoy the pride and self-assurance that comes from being a strong female.
7. As I have grown in my beliefs I have realized that it is more important to value women as individuals than as members of a larger group of women.
8. I evaluate men as individuals, not as members of a group of oppressors.
9. I feel that some men are sensitive to women's issues.

Appendix F

Everyday Discrimination Scale

Never
Rarely
Sometimes
Often

1. Today, you were treated with less courtesy than other people are because of your sexual identity.
 2. Today, you were treated with less respect than other people are because of your sexual identity.
 3. Today, you received poorer service than other people at restaurants or stores because of your sexual identity.
 4. Today, people acted as if they think you are not smart because of your sexual identity.
 5. Today, people acted as if they are afraid of you because of your sexual identity.
 6. Today, people acted as if they think you are dishonest because of your sexual identity.
 7. Today, people acted as if they're better than you are because of your sexual identity.
 8. Today, you were called names or insulted because of your sexual identity.
 9. Today, you were threatened or harassed because of your sexual identity.
-
1. Today, you were treated with less courtesy than other people are because of your gender.
 2. Today, you were treated with less respect than other people are because of your gender.
 3. Today, you received poorer service than other people at restaurants or stores because of your gender.
 4. Today, people acted as if they think you are not smart because of your gender.
 5. Today, people acted as if they are afraid of you because of your gender.
 6. Today, people acted as if they think you are dishonest because of your gender.
 7. Today, people acted as if they're better than you are because of your gender.
 8. Today, you were called names or insulted because of your gender.
 9. Today, you were threatened or harassed because of your gender.

Appendix G

Positive and Negative Affect Scale

<u>Negative Affect</u>					
<i>Today I felt:</i>					
1. Distressed	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely
2. Upset	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely
3. Shame	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely
4. Nervous	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely
5. Afraid	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely

Appendix H

Friendship Scale

1. It has been easy to relate to others.	Almost always	Most of the time	About half the time	Occasionally	Not at all
2. I felt isolated from other people.	Almost always	Most of the time	About half the time	Occasionally	Not at all
3. I had someone to share my feelings with.	Almost always	Most of the time	About half the time	Occasionally	Not at all
4. I found it easy to get in touch with others when I needed to.	Almost always	Most of the time	About half the time	Occasionally	Not at all
5. When with other people, I felt separate from them.	Almost always	Most of the time	About half the time	Occasionally	Not at all
6. I felt alone and friendless.	Almost always	Most of the time	About half the time	Occasionally	Not at all

Appendix I

Binge Eating Scales

Answer each question by circling the appropriate number. Please respond to each item as honestly as possible; remember, all of the information you provide will be kept strictly confidential. When completing this questionnaire, "eating binge," "binge eat," etc. refer to the rapid and uncontrollable consumption of a large amount of food in a short period of time, usually less than two hours.

1. Today, I felt that I ate what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances.	Strongly disagree	2	3	4	5	6	Strongly agree
2. Today, I felt a loss of control when eating (felt like I couldn't stop eating or control what or how much I was eating).	Strongly disagree	2	3	4	5	6	Strongly agree
3. Today, I ate much more rapidly than normal	Strongly disagree	2	3	4	5	6	Strongly agree
4. Today, I ate until I felt uncomfortably full.	Strongly disagree	2	3	4	5	6	Strongly agree
5. Today, I ate large amounts of food when I didn't feel physically hungry.	Strongly disagree	2	3	4	5	6	Strongly agree
6. Today, I ate alone because I was embarrassed by how much I was eating	Strongly disagree	2	3	4	5	6	Strongly agree
7. Today, I stuffed myself with food.	Strongly disagree	2	3	4	5	6	Strongly agree
8. Today, I went on an eating binge where I felt that I could not stop.	Strongly disagree	2	3	4	5	6	Strongly agree
9. Today, I thought about binging (overeating).	Strongly disagree	2	3	4	5	6	Strongly agree
10. Today, I ate moderately in front of others and stuffed myself when they were gone.	Strongly disagree	2	3	4	5	6	Strongly agree
11. Today, I ate or drank in secrecy.	Strongly disagree	2	3	4	5	6	Strongly agree

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