DISCRIMINATION AND PERCEIVED STRESS IN SEXUAL AND GENDER MINORITIES:

SELF-ESTEEM AS A MODERATING FACTOR

Alexandra Elizabeth Wike, B.A., M.A.

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APPROVED:

Mark Vosvick, Major Professor

Charles Guarnaccia, Committee Member

C. Ed Watkins, Committee Member

Victor Prybutok, Committee Member

Vicki Campbell, Chair of the Department of
Psychology

Mark Wardell, Dean of the Toulouse Graduate
School

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Sexual and gender minorities are subjected to discrimination and stigmatization which increase vulnerability to psychological co-morbidities (Mays & Cochran, 2001). The mechanisms through which discrimination contributes to distress in lesbian, gay, bisexual and transgender (lgbt) communities can be partially elucidated through the minority stress model. The minority stress model argues that minorities are subjected to negative societal attitudes and discrimination that results in excessive psychosocial stress related to their minority position, which is distinct from daily stress. Meyer's minority stress model is supported by social stress theories and data linking discrimination to stress in lgb samples. Researchers suggest that self-esteem buffers the negative effects of adverse experiences but tests of the moderating effect of self-esteem on the discrimination-distress relationship in ethnic and gender minorities yielded mixed results. Szymanski found that self-esteem moderates the relationship between discrimination and psychological distress in a male sexual minority sample, but this has never been tested in a gender-balanced sexual minority sample. We hypothesized that higher levels of self-esteem are associated with lower overall perceived stress in lgbt adults, and that self-esteem acts differentially in lgbt populations to moderate perceived discrimination. We found that discrimination, self-esteem and the interaction effect between discrimination and self-esteem accounted for 53 percent of the total variance in perceived stress scores, $\Delta R^2 = .38$; adj. $R^2 = .53$, $F(12, 133) = 14.47$, $p < .001$. When we tested whether self-esteem moderated the relationship between discrimination and stress, discrimination was positively related to stress,

$\beta = .13$, $t(144) = 2.14$, $p < .05$, and self-esteem was negatively related to stress, $\beta = -.63$, $t(144) = -10.26$, $p < .001$. The interaction between self-esteem and discrimination positively correlated with stress, $\beta = .14$, $t(144) = 2.29$, $p < .05$. Our findings suggest that self-esteem may alleviate the impact of discrimination on perceived stress, which has important implications for interventions designed to reduce stress in lgbt communities.

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CHAPTER 1

INTRODUCTION

Recent population-based surveys of the United States (U.S.) estimate that there are approximately 9 million lesbian, gay, bisexual and transgender (LGBT) individuals who comprise 3.8% of the population in the U.S. (Gates, 2011). The American Community Survey (ACS) estimated that Texas has 579,968 LGBT residents, making it the fourth-largest LGBT statewide population in the nation (Gates, 2006). Analyses of 2008-2009 census data revealed that the number of self-reported same-sex couples is growing at nearly three times the rate of the general population (Gates, 2010). Purported growth in the number of same-sex cohabiting couples may be a product of greater perceived acceptance of sexual minorities and increased comfort in disclosure of cohabitation, rather than an accurate reflection of LGBT population growth.

Accurate estimates of the number of LGBT people in the U.S. are near unattainable, as the U.S. Census does not include an item to report sexual orientation and only offers a dichotomous measure of sex (male and female), which precludes researchers from determining the size of the LGBT communities living in the U.S. Current estimates of the number of LGBT people living in the U.S. are extrapolated from the ACS, an annual survey of the social and economic needs of communities (Gates, 2006).

The ACS includes questions on each person living in the household and their relationship to the head of household (typically referred to as Person 1). Respondents are asked to categorize their relationship to Person 1 into 1 of 15 categories. Only 2 of the categories refer to romantic partnerships: “husband or wife” and “unmarried partner” (U.S. Census Bureau, 2013).

Extrapolating data from these questions is fraught with error because a number of same-sex couples identify as husband and wife and respond as such in the ACS, and the U.S. Census Bureau identifies such responses as errors (O'Connell & Lofquist, 2009; U.S. Census Bureau, 2013a). In 1990, 2000 and 2010, the U.S. Census Bureau reported altering data on biological sex and relationship status because of responses that they identified as discrepant. The fact that these alterations occurred over the past three censuses suggests that the U.S. Census Bureau may need to make revisions to the ACS in order to accurately estimate the number of LGBT people in the U.S. The Fenway Institute, a preeminent interdisciplinary research institution focused on LGBT health, suggests that researchers assess sexual orientation by asking participants to select one of the following descriptors to indicate how they think of themselves (lesbian, gay or homosexual; straight or heterosexual; bisexual; something else; or don't know) (Bradford, Cahill, Grasso, & Makadon, 2012).

The ACS does not currently include an explicit measure of sexual orientation, and extrapolating data from questions on sex and relationship status is not accurate for several reasons: not all people in same-sex partnerships identify as LGBT, it does not account for single LGBT people or LGBT people who do not live together and there is no way to assess rates of bisexuality. Further, there is no way to attain population estimates or even extrapolate estimates for transgender and transsexual people, as the U.S. census only reports biological sex. Because population studies (such as the U.S. Census and the National Health Interview Survey) do not assess sexual orientation, it is difficult to identify potential health disparities across sexual orientation and the full range of gender (Binson, Blair, Huebner, & Woods, 2007).

A dearth of literature on psychosocial variables in LGBT communities exists. Of the articles in the Medline database, only 0.1% focus on LGBT individuals and a majority of these articles are disease-specific and gender-biased (Boehmer, 2002). These findings indicate that sexual minorities are underrepresented as research participants. Meyer (2001) noted that limited data on LGBT communities (and subsequent difficulty demonstrating that health disparities exist) influences the federal government in its decision to include LGBT health topics in federally funded health initiatives. Sell and Becker (2001) note that lack of data on LGBT health makes it difficult to raise awareness and allocate resources to address LGBT health concerns. The lack of data on LGBT communities has implications for understanding LGBT mental health and designing interventions that appropriately address the needs of this population. Our goal is to examine psychosocial variables responsive to psychosocial interventions in order to improve mental health and well-being in LGBT individuals.

Lesbian, Gay, Bisexual and Transgender

Richard Freiherr von Krafft-Ebing, an Austro-German psychiatrist, studied sexual practices during the late 19th century and published one of the earliest books on same-sex sexual practices. In *Psychopathia Sexualis* Krafft-Ebing introduces the term “homosexual,” which he defines as a “constitutional malady” and an “aberration of the sexual instinct” (Krafft-Ebing, 1894, p. vii). He further states that sexual practices between two people of the same sex are “abnormal” and indicate the presence of a “neuro-psychopathic state” (Krafft-Ebing, 1894, p. 225).

The first edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-I*; American Psychiatric Association, 1952) included “homosexuality” as a mental disorder, and referred to it as a “sociopathic personality disturbance.” This diagnosis remained in the *DSM-II* (American Psychiatric Association, 1968), but was eliminated and replaced with a new diagnosis (“sexual orientation disturbance,” SOD) in a seventh printing in 1973. The revised seventh printing of the *DSM-II* was influenced by the burgeoning gay rights movement, the Stonewall Riots and gay activism present at the American Psychiatric Association’s (APA) annual meetings from 1970 to 1972. In addition, APA could no longer ignore the growing number of publications and books from varied fields (anthropology, ethology and psychology) on the commonality of same-sex sexual behavior across cultures and evidence that mental adjustment was statistically similar across sexual orientation (Ford & Beach, 1951; Hooker, 1957).

Terminology

For the purpose of clarification, we define terms that are used in this paper: gay, lesbian, bisexual, transgender, sexual minority, gender minority, majority, coming out and out. Some of these terms are suggested by GLAAD (formerly known as the Gay & Lesbian Alliance Against Defamation), an organization that promotes acceptance and equality for sexual and gender minorities and emphasizes the importance of terminology when discussing LGBT topics. The word “homosexual” is not used in this paper because it is connected to the notion that sexual minorities are inherently diseased and/or disordered by nature of their sexual orientation (GLAAD, 2010). Instead, we use the terms gay and lesbian to describe people who are attracted to members of the same sex. Bisexual describes people who are attracted to

members of both sexes. Same-sex sexual activity is not a prerequisite of identification as gay, lesbian or bisexual (GLAAD, 2010).

The word transgender is used to describe people whose gender identity, expression and/or behavior is different than their assigned sex at birth (GLAAD, 2010; Mayer et al., 2008). Transgender may refer to people who identify as a transsexual, bigender and/or androgynous (Dean et al., 2000). Transgender individuals may identify as male-to-female (MTF) or female-to-male (FTM). Transgender does not denote sexual orientation. Transgender people are sometimes lumped in with lesbian, gay and bisexual people for research purposes, which leaves important group differences unaddressed. Participants who report their sexual orientation as “transgender” are not included in this study.

Participants who identify as transgender and report lesbian, gay or bisexual orientation are included in this study. This study sometimes refers to lesbian, gay and bisexual people as “sexual minorities” and transgender people as “gender minorities.” The word “majority” refers to the larger group that holds more social power relative to the minority group.

The decision to disclose sexual orientation is sometimes referred to as the decision to come out (Legate, Ryan, & Weinstein, 2012). The term coming out is adapted from the term coming-out party, in reference to the formal presentation of a debutante to society (Coming out, 2004). Being out refers to being open about sexual orientation. The coming out process does not occur all at once – some people may come out only to their best friend, and/or choose not to disclose their sexual orientation to certain people. Further, some people may only want to be out in certain circumstances and/or contexts. Coming out is a lifelong process because members of LGBT communities are confronted with the decision to disclose their sexual

orientation every time they form a new relationship. This study uses the term out to describe sexual minorities who have disclosed their sexual orientation to other people.

Study Outline

In the current study we first introduce our outcome variable: perceived stress. Meyer (1995) posited that minority stress is related to contrasts and comparisons between minority and majority group values and resultant conflict in the social environment. We seek to explore minority stress because researchers conceptualize minority stress as chronic and common amongst members of stigmatized groups (Meyer, 2003). We then explore discrimination. Sexual and gender minorities experience discrimination (Diaz, Ayala, Bein, Henne & Marin, 2001; Huebner, Rebchook, & Kegeles, 2004; Mays & Cochran, 2001), which influences negative psychological outcomes, specifically stress (Herek, Gillis, & Cogan, 1999; Meyer, 1995). Stress and discrimination are relevant to the well-being of sexual and gender minorities because they share a strong relationship and stress increases disease risk (Cohen, Janicki-Deverts, & Miller, 2007). Finally, we review our moderator: self-esteem. Self-esteem is positively associated with life satisfaction and negatively related to stigma, anxiety and depression in LGBT communities (Ghavami, Fingerhut, Peplau, Grant, & Wittig, 2011; Herek, Gillis, & Cogan, 2009). Researchers explored self-esteem as a potential moderator of the relationship between stress and negative health outcomes in heterosexual samples because they wanted to identify variables that may mitigate, or buffer, the negative effects of stress. Self-esteem moderates the relationship between negative experiences and stress (Corning, 2002; Szymanski, 2009) in gay men, but this has never been tested in lesbian and bisexual people. The end of the introduction includes a

review of our research question and hypotheses. We then review the methodology, including statistical analyses. We present our findings in the results sections, and discuss the implications of these findings in the discussion section. We also discuss the limitations of our study and suggestions for future direction.

CHAPTER 2

LITERATURE REVIEW

Perceived Stress in Minority Populations

Stress is a broad term and is not always used consistently in empirical literature. In fact, some researchers argue that inconsistent use of the term has rendered the word meaningless (Elliot & Eisdorfer, 1982). For the sake of clarity, the term stress is conceptualized here as a state in which environmental demands exceed the adaptive capacity of the individual (Cohen, Kessler, & Gordon, 1995). Cohen, Kamarck, and Mermelstein (1983) define perceived stress as the degree to which situations are appraised as stressful.

Perception of the event, its social characteristics, and its meaning to the individual are relevant variables in stress appraisal processes (Basowitz, Korchin, Persky, Grinker, 1955). Integral to the definition of perceived stress is the theory that the impact of stressful events is dependent on the person's appraisal and perception of the event as well as individual differences.

A growing body of literature explores stress that is unique to sexual and gender minorities. The minority stress model (Meyer, 1995; 2003) posits that stigmatization, discrimination and prejudice experienced by sexual minorities increase vulnerability to psychosocial stress, above and beyond stress related to daily hassles (Harrell, 2000; Meyer, 2003; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). This stress is nearly constant, and can result in the experience of chronic stress (Lewis, Derlega, Griffin, & Krowinski, 2003; Meyer, 2003). In a study of 204 lesbian, gay, bisexual and/or transgendered individuals (LGBT) researchers found that gay-related stress and life stress account for a significant proportion of variance in

depressive symptomatology. Furthermore, gay-related stress accounted for unique variance in depressive symptomatology, which supports the hypothesis that minority stress is distinct from generalized life stress and occurs above and beyond levels of generalized life stress (Lewis, Derlega, Griffin, & Krowinski, 2003).

As recently as the late 20th century, researchers of LGBT health equated disparities in the prevalence of psychopathology to sexual minority status, and failed to account for the complex stress processes that LGBT people endure (Bailey, 1999). Meyer's conceptualization of minority stress addressed the gaps in our understanding of stress processes in sexual minorities. According to Meyer (2003), minority stress is a type of social stress resulting from the conflict between culture and norms in majority and minority groups. Meyer posits that stress processes occur through distal and proximal conditions, where distal conditions refer to external objective events (e.g., hate crimes) and proximal refers to the meaning and value the person assigns to such events (i.e., internalization). The expectation of and vigilance towards distal events creates another layer of stress. Furthermore, some LGBT people may hide their sexual identity as a means of protection, which can lead to increased internalization of stigma and homophobia (Meyer, 2003; Smart & Wegner, 2000).

Understanding stress in sexual minorities is important because stress increases disease risk (Cohen, Janicki-Deverts, & Miller, 2007). Below, we explain the physiological process through which this occurs. Stress is also related to psychological outcomes such as mood and anxiety disorders, which are negative experiences in themselves, but are also linked to negative physiological processes. These findings indicate that stress is relevant to the well-being of sexual and gender minorities.

Stress and Disease Risk

The direct physiological effects of stress occur primarily through the hypothalamic-pituitary-adrenocortical axis (HPA) and the sympathetic-adrenal-medullary (SAM) system. When the body is faced with a stressful situation, the HPA and the SAM system are activated, resulting in secretion of adrenalin (epinephrine), norepinephrine, catecholamines, and cortisol. Overactivation of these systems results in chronic discharge of catecholamines and cortisol (Cohen, Janicki-Deverts, & Miller, 2007). Chronic excess catecholamine discharge can cause high blood pressure and increased heart rate, increased need for oxygen (Gorman & Sloan, 2000), myocardial lesions (Kassim, Clarke, Mai, Clyde, & Shakir, 2009) and ventricular arrhythmias (Samuels, 2007). Chronic excess cortisol discharge leads to cardiovascular disease, disease progression and mortality (Cohen et al., 2007; Krantz & Raisen, 2011; Vogelzangs et al., 2010). In people living with HIV/AIDS (PLWHA), stress is positively associated with non-adherence to medication regimes, disease progression and increased likelihood of developing an AIDS-related clinical condition (Chida & Vedhara, 2009; French et al., 2005; Leserman et al., 2002; Leserman, Ironson, O'Leirigh, Fordiani, & Balbin, 2008).

Stress and Mental Health

Stress is also associated with psychological symptomatology (e.g., depression) characterized by negative feelings (e.g., sadness, worthlessness, hopelessness, etc.) unpleasant in themselves. Researchers have identified a consistent dose-response relationship between stressful events and subsequent episodes of major depression (Hammen, 2005; Kessler, 1997; Mazure, 1998; Monroe & Simons, 1991) and estimate that up to 25% of people who have

experienced a stressful event develop depressive symptomatology (van Praag, de Koet, & van Os, 2004). Stress is predictive of the duration and relapse of major depression (Hammen, 2005; Mazure, 1998), which can lead to maladaptive coping responses and health behaviors such as tobacco, alcohol and substance use, poor nutrition, inadequate physical activity, risky sexual behaviors and irregular sleep patterns (Cohen & Williamson, 1988; Conway, Vickers, Ward, & Rahe, 1981; Pence et al., 2010). Negative affect is also a risk factor for chronic disease, including diabetes (Knol et al., 2006). In a sample of 245,404 participants from 60 different countries, researchers concluded that people who have a chronic disease and an affective disorder (e.g., chronic disease and depression) experience poorer health than those with depression alone, chronic disease alone and multiple chronic diseases (Moussavi et al., 2007). Researchers demonstrated that a bidirectional association exists between negative affect and cardiovascular disease (Penninx et al., 2001; Carney & Freedland, 2003; Van der Kooy et al., 2007). Negative affect also increases vulnerability to stroke (Everson, Roberts, Goldberg, & Kaplan, 1998; Jonas & Mussolino, 2000; Larson, Owens, Ford, & Eaton, 2001) and cancer (Penninx et al., 1998).

In addition, stress is associated with dysregulation of the HPA axis and neuronal processes associated with mood. Chronic stress results in the hypersecretion of cortisol, which causes systematic changes to the serotenergic system. Specifically, chronic stress decreases serotonin turnover, which increases vulnerability to anxiety and depression (Leonard & Myint, 2009).

Given Meyer's theory of LGBT minority stress and the negative effects of chronic stress, researchers should explore and understand LGBT stress as well as any protective factors which

may buffer against discrimination and prejudice-related stress.

Factors Related to Perceived Stress

Discrimination

Researchers studied the effects of harassment, rejection and discrimination in the context of race, ethnicity and religious affiliation. Researchers only recently began exploring the effect of discrimination on sexual minority groups (Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010; Herek, 2009). Discrimination is theoretically rooted in stigma - the negative attitude and relegation of inferiority and powerlessness towards a group of people who have different characteristics than the majority group. Discrimination is also related to heterosexism and homophobia, two terms that are often confused. Heterosexism is the belief that heterosexuality is superior to being gay, and is also sometimes referred to as sexual stigma (Herek, 2009). Homophobia is the fear and/or aversion to people who are gay (Berkman & Zinberg, 1997).

The presence of heterosexism in prominent social and religious institutions as well as the U.S. legal system buttresses negative societal attitudes towards sexual minorities and facilitates the perception that gay people are abnormal (Herek, Chopp, & Strohl, 2007). According to social identity theory, the societally constructed distinctions between sexual minorities and straight people are associated with the presence of heterosexism, characterized by covert and overt discrimination (Sumner, 1906). Early publications on sexual minorities and minority stress contribute to prejudice towards sexual minorities by equating sexual orientation with psychopathology, which is an oversimplification and does not account for the stress

processes endured by these populations. As late as 1999, researchers referred to psychopathology as a “consequence of the choice of a homosexual lifestyle” (Bailey, 1999, pp. 884).

Sexual minorities routinely encounter acts of discrimination – a sample of 147 LGBT individuals from San Francisco, CA reported 86 experiences of criminal victimization related to their orientation in the year previous to assessment, and 213 additional experiences since age 16 (Herek, Gillis, Cogan, & Glunt, 1997). This victimization was characterized by physical and sexual assault, assault with a weapon, murder of a loved one, mugging, robbery, vandalism and attempted property crime. Over 50% of the sample had experienced a hate crime in their lifetime. The researchers also assessed for experiences of verbal assault related to sexual orientation, and found that over 50% of respondents had been verbally assaulted since age 16. Respondents also reported threats against their life, having objects thrown at them and being spit on (Herek et al., 1997). Out of a larger sample of 2,259 LGBT people from San Francisco, California, 28% of gay respondents reported some type of criminal victimization related to their sexual orientation, including simple, aggravated and/or sexual assault (Herek et al., 1999). In a prevalence survey of 311 LGBT people from across the U.S., researchers found that 13% experienced physical assault and almost 15% experienced property crime related to their sexual orientation. Respondents also reportedly had objects thrown at them (12.5%) and were verbally assaulted (49.2%). Enacted stigma occurred most often against gay people, and all groups reported the experience of housing and employment discrimination (Herek, 2009a).

Discrimination and Stress

According to Meyer's theory of minority stress (1995), sexual and gender minorities endure chronic stress related to the discrimination, stigmatization and prejudice that they experience on a daily basis. Exposure to chronic stress increases vulnerability to psychological symptomatology such as anxiety and depression in LGBT samples (Friedman, 1999; Meyer, 1995). The chronic stress experienced by minority groups is specifically social in nature, and occurs through distal and proximal conditions. Distal conditions are objective events and social structures, whereas proximal conditions refer to an individual's appraisal and valuation of the distal condition. There is ample support for Meyer's theory, as researchers have demonstrated that sexual and gender minorities who experience day-to-day discrimination are more than twice as likely to endure a psychological disorder in comparison to the majority group (Cochran, Sullivan, & Mays, 2003; King et al., 2008; Mays & Cochran, 2001; Sandfort, de Graaf, Bijl, & Schnabel, 2001).

Factors that buffer the negative effects of discrimination include solidarity and cohesiveness with other members of the minority group (Kessler, Price, & Wortman (1985); Miller & Major, 2000). Minority group members are able to provide general support and comfort when members are faced with distal stressors and stigma (Jones et al., 1984). Fellow group members also assist each other in reappraisal of negative events, which changes the impact of such events and leads to empowerment (Garnets & Kimmel, 1991; Smith & Siegel, 1985). Social support is also related to self-esteem in that minority group members provide each other with acceptance and validation, which contribute to self-worth (Cohen & Wills, 1985). Indeed, researchers found that social support (specifically, having a close, confiding

relationship with one or more persons) builds self-esteem, which in turn buffers the effects of stress (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Self-esteem is also conceptualized as a buffer against negative life events (Longmore & DeMaris, 1997; Pearlin & Schooler, 1978; Spencer, Josephs & Steele, 1993; Thoits, 1994).

Self-Esteem

Self-esteem is defined as a person's evaluation of or attitude toward him- or herself (James, 1890). Other definitions of self-esteem include perception of self-worth and perceived deservingness of respect and liking (Kernis, 2003). Contemporary popular culture in North America favors the notion that high self-esteem is desirable because it is thought to be a wellspring of positive behaviors and outcomes (Baumeister, Campbell, Krueger, & Vohs, 2003). Psychological research and theory typically assume that high self-esteem is adaptive and associated with positive outcomes (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), and researchers even state that self-esteem is a fundamental human need (Allport, 1955; Baumeister, Heatherton, & Tice, 1993; Maslow, 1968; Rogers, 1961; Rosenberg, 1979; Solomon, Greenberg, & Pyszczynski, 1991; Taylor & Brown, 1988). Conversely, the theory that low self-esteem is the root of distress and dysfunction is a popular one in contemporary North American society, to the point that the last several decades are marked by a large movement to develop interventions and strategies to improve self-esteem (Baumeister, 2005; Leary, 1999).

Self-esteem is often conceptualized as a protective factor. Baumeister (1998) theorized that people with high self-esteem filter negative feedback in order to mitigate damage to self-worth. Others have posited that self-esteem is an indicator of emotional and identity stability

(Baumeister, 1998; Campbell, Chew, & Scratchly, 1991). Researchers demonstrated that individuals with high self-esteem are more likely to have control and mastery over their environment and utilize adaptive coping (e.g., positive reframing, instrumental coping) in comparison to people with low self-esteem (Rector & Roger, 1996). People with high self-esteem are also likely to discredit sources of negative feedback and draw on positive aspects of the self as a coping mechanism (Blaine & Crocker, 1993; Spencer et al., 1993; Steele, 1988). People with high self-esteem perceive themselves as attractive, intelligent and well-liked (Baumeister et al., 2003). They are more confident than low self-esteem people, especially after initial failure (McFarlin & Blascovich, 1981). They also tend to view themselves as changed for the better (even though evaluations indicate otherwise) (Ross, 2002; Wilson & Ross, 2001), superior and more likely than others to have successful futures (Brown, 1986; Campbell, 1986; Taylor & Brown, 1988).

A dominant theme in psychological theory is that people are motivated to maintain high levels of self-esteem (Crocker & Wolfe, 2001; Fein & Spencer, 1997; Horney, 1937; James, 1890; Kernis & Waschull, 1995; Sullivan, 1953; Tesser, 1988). Researchers even go as far as to say that Americans are preoccupied with the pursuit of self-esteem (Crocker & Park, 2004). Furthermore, people are motivated and prefer to believe good things about themselves (sometimes referred to as desired self-feelings and egotism) (Pelham, 1993) and most people have positive self-perceptions (Twenge & Campbell, 2008; venDellen, Bradfield, & Hoyle, 2010). In order to experience increases in self-esteem and corresponding positive feelings, people may seek validation of their self-worth in daily life, particularly in domains in which they are invested. Positive feedback results in positive affective states and increased self-worth and self-

esteem. When they receive feedback that challenges or threatens their desired self-feelings, discrepancy occurs between their current self-feelings of decreased self-worth and their desired self-feelings (vanDellen et al., 2010). Theories on self-regulation suggest that people are motivated to reduce discrepancies between their own self-perception and how others perceive them (Carver & Scheier, 1981; Higgins, 1987; Rothbaum, Weisz, & Snyder, 1982). Like self-regulation theories, self-verification theory posits that people are most comfortable when their perception of self and perceptions from others match, even if that perception is negative in nature (Swann, 2011).

Some people may respond to discrepant feedback by lowering their own expectations (i.e., desired self-feelings) in order to reduce the discrepancy and terminate the associated unpleasant state (Fitch, 1970; Swann, Griffen, Predmore, & Gaines, 1987). Conversely, some evidence exists that people with high self-esteem react aggressively to threats to their self-concept (Bushman et al., 2009). People operating in this mode may feel challenged to succeed and react with anxiety if they perceive any threat to their success (Crocker & Park, 2004). Although some researchers posit that people with low self-esteem are likely to become aggressive (Horney, 1950), prominent self-esteem researchers refute this finding. Baumeister and colleagues (1996) theorized that people with high self-esteem who experience threat to their self-esteem are more likely to become aggressive, and supported his theory with experimental evidence (Bushman & Baumeister, 1998).

Minority Self-Esteem

Self-esteem is related to identity development and self-concept. The development of

self-concept is related to the way others perceive us, also referred to as reflected appraisals. Researchers noted the importance of the looking-glass self – we imagine how others perceive us and their corresponding judgments of us, which directly influence our self-feelings (Cooley, 1956; Mead, 1934; Shrauger & Schoeneman, 1979). Based on this perspective, minority group members may experience negative self-feelings as a result of negative attitudes and regard from the majority group (Crocker & Major, 1989). Because some LGBT individuals hide their sexual identity to avoid discrimination and stigmatization (Meyer, 2003; Smart & Wegner, 2000), they may lack any affiliation with other members of their minority group and therefore experience social and emotional isolation (Grossman & Kerner, 1998) and subsequent low self-esteem (McNicholas, 2002). In an examination of group differences in levels of self-esteem between 87 heterosexual and 87 gay men, researchers found that gay men exhibit significantly lower levels of self-esteem than their heterosexual counterparts (Pachankis & Goldfried, 2006).

Research Question and Hypotheses

Researchers studied stress and buffering processes in the majority group and racial and ethnic minority groups extensively. However, little research exists on LGBT health and the potential ameliorative factors that may protect against the effects of discrimination and related stress. We believe that self-esteem moderates the relationship between discrimination and distress in LGBT communities.

Prior research found that individuals with high self-esteem have lower distress than those with lower self-esteem (Corning, 2002). We hypothesize that in an LGBT sample self-esteem shares a negative relationship with discrimination and stress, and stress is positively

related to discrimination. Further, we hypothesize that discrimination and self-esteem account for a significant portion of the variance in perceived stress, and self-esteem moderates the relationship between perceived stress and discrimination.

Implications

If these hypotheses are supported, the results will help to partially elucidate the complex relationship between discrimination and self-esteem, and the potential value of designing interventions to boost self-esteem and reduce stress in LGBT communities. We hope to better understand the degree to which high self-esteem is associated with decreased stress, and whether this relationship behaves differently in different contexts. Given society's focus on improving self-esteem (Baumeister et al., 2003; Baumeister, 2005; Leary, 1999), and evidence that high self-esteem is associated with sensitivity to threat (Crocker & Park, 2004), it is important to understand the complex relationship between discrimination, self-esteem, and perceived stress.

CHAPTER 3

METHOD

Participants

Participant recruitment targeted lesbian, gay, bisexual, and transgender (LGBT) community-based organizations in the Dallas Metroplex area via flyers, radio advertisements and online advertisements. Participants were recruited as part of a research project that sought to provide a current health picture of LGBT communities through assessment of health issues and associated psychosocial and behavioral factors. Inclusion criteria required participants to be 18 years of age or older, fluent in English, able to provide informed consent and self-identify as LGBT. Participants impaired due to substance intoxication were not included in the study. Signed informed consent was obtained from all participants prior to participation. Participants received \$25 for their participation in the study.

Using a stratified sampling method, we collected data from 146 LGBT people. The sample was composed of 91 (62.33%) European Americans, 18 (12.33%) African Americans, 18 (12.33%) Latino(a)s, 4(2.74%) Asian or Asian Americans and 15 (10.27%) individuals who reported mixed ethnic background. In terms of gender, our sample consisted of 74 (50.69%) females, 61 (41.78%) males, and 11 (7.53%) people who self-identified as transgender. On average, our sample had 14.9 (standard deviation = 4.8) years of education. A majority of our sample (128; 87.7%) reported that they were out. See Table 1 for a thorough breakdown of gender, sexual orientation, number of participants who are out and education by ethnic identity.

Table 1

Participant Demographics

	<i>N</i>	Gender	%	Sexual Orientation	%	% Out	Education M(SD)
European American	91	Male	40.7	Gay	33	91.2	15.0(4.2)
		Female	48.3	Lesbian	34		
		Transgender	11	Bisexual	33		
African American	18	Male	50	Gay	44.4	77.8	15.2(6.9)
		Female	50	Lesbian	16.7		
		Transgender	0	Bisexual	38.9		
Latino(a)	18	Male	33.3	Gay	33.3	72.2	14.4(4.3)
		Female	61.1	Lesbian	44.5		
		Transgender	5.6	Bisexual	22.2		
Asian American	4	Male	75	Gay	25	100	12.8(6.4)
		Female	25	Lesbian	0		
		Transgender	0	Bisexual	75		
Other ethnicity	15	Male	40	Gay	33.3	93.3	15.2(5.6)
		Female	53.3	Lesbian	46.7		
		Transgender	6.7	Bisexual	20		

Measures

Participants completed questions on demographic characteristics as well as questions assessing psychosocial and behavioral qualities.

Stress levels were measured with the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Appendix A), a 14-item scale that measures the degree to which life situations are appraised as stressful. The PSS is measured on a 5-point Likert-type scale. Responses ranged from 0 (*never*) to 4 (*very often*). Higher scores indicate higher perceived stress. Examples of items on this measure include “In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?” and

“In the last month, how often have you felt nervous and ‘stressed’?” The reported Cronbach’s alpha for the 14-item PSS ranged from .84 to .86. Test-retest reliability was .85, which suggests that assessment findings have some stability over time. Convergent and discriminant validity were established with measures of life events, social anxiety, depression, and physical symptomatology (Cohen, Kamarck, & Mermelstein, 1983).

Discrimination was reported by participants through the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006; Appendix B), a 14-item scale that assesses the frequency with which sexual minorities experience discrimination. The HHRDS is measured on a 6-point Likert-type scale. Responses ranged from 1 (*the event has never happened to you*) to 6 (*the event happened almost all the time; more than 70% of the time*). Higher scores indicate greater perceptions of discrimination. Examples of items on this measure include “In the past year, how many times have you been treated unfairly by strangers because you are LGBT?” and “In the past year, how many times have you been made fun of, picked on, pushed, shoved, hit, or threatened with harm because you are LGBT?” The reported internal consistency reliability coefficient (Cronbach’s alpha) for this measure was .90, which is consistent with previous research (Szymanski, 2006). Findings from an exploratory factor analysis (EFA) support the validity of the HHRDS (Szymanski & Owens, 2009). Convergent and discriminant validity were established through correlations with measures of depression, anxiety, interpersonal sensitivity, somatization, obsessive compulsiveness and psychological distress (Szymanski, 2006).

Self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Appendix C), a 10-items scale that assesses self-worth and self-acceptance. The RSES was

originally measured on a Guttman scale, but is more commonly measured on a 4-point likert-type scale. Responses ranged from 1 (*strongly agree*) to 4 (*strongly disagree*). Higher scores indicate higher self-esteem. Examples of items on this measure include “I feel that I’m a person of worth, at least on an equal plane with others,” and “On the whole, I am satisfied with myself.” The reported alpha reliabilities for the scale ranged from .77 to .88 (Dobson, Goudy, Keith, & Powers, 1979; Fleming & Courtney, 1984). Test-retest reliability ranged from .85 to .88, which indicates that the assessment findings have good stability over time. Convergent validity was established using the Coopersmith Self-Esteem Inventory and other measures of depression and anxiety (Coopersmith, 1967; Rosenberg, 1965).

Analyses

After cleaning the data, we checked for outliers and missing data. We ran an a priori power analysis to determine the sample size required. Based on previous literature (Szymanski, 2009), we anticipated a medium effect size for our results. We determined that 41 participants were required to achieve power of .80 (G*Power; Faul & Erdfelder, 1992).

We then conducted a principal component analysis (PCA). The PCA provides information on the structure of our three measures (the PSS, HHRDS and RSES). Specifically, we examined if the proposed structure of these measures holds true for samples that are unlike the normative group. These questions are important to address because psychosocial variables are influenced by sociocultural variables, and we must ensure that these measures are appropriate for use in sexual minority populations.

The PSS was originally normed on students at the University of Oregon and a smoking-cessation group being run at the University of Oregon. Researchers also established validity of the European Spanish version of the PSS in a Spanish sample (Remor, 2006) and a Mexican sample (Ramirez & Hernandez, 2007). However, as is the case with the RSES, there is little literature on the psychometric properties of the PSS in sexual minority samples.

The HHRDS was originally normed on European American lesbians, but researchers also established validity for the HHRDS in Asian American male and female sexual minorities. Szymanski (2006) conducted a factor analysis during the original development of the scale and suggests the three underlying dimensions exist (Harassment and Rejection, Workplace and School Discrimination and Other Discrimination) and one total scale score. We examined if these factors are present in our current sample.

Although the RSES is one of the most commonly used measures of self-esteem, researchers note that the measure was originally developed using a sample from a specific geographical location (Sinclair et al., 2010). Evidence exists that validity and structure of the RSES is replicable across culture (Schmitt & Allik, 2005), but little is known about how the measure behaves with sexual minority respondents.

After the PCA, histograms and quantile-quantile (QQ) plots were used to check each of our variables for normality. We used univariate analyses to gain a better understanding of what our data looks like and checked for ceiling or floor effects. We conducted bivariate analyses between gender, ethnicity, education, being out and our independent and dependent variables in order to detect significant relationships between these variables and test the hypotheses that self-esteem is negatively related to discrimination and stress and stress is positively related

to discrimination. We used a one way ANOVA to find out if discrimination, self-esteem and perceived stress vary significantly across gender (males, females and transgender), sexual orientation (lesbian, gay and bisexual) and ethnicity (European American, African American, Latino(a), Asian or Asian American and other ethnicities).

We used a regression analysis to test the hypotheses that a) discrimination and self-esteem account for a significant portion of the variance in perceived stress; and b) self-esteem moderates the relationship between discrimination and stress. Baron and Kenny (1986) provide guidelines for proper analytic techniques to test for moderation. The analysis required involves several steps: first, we centered the two variables involved in the interaction (discrimination and self-esteem) by subtracting the mean from the individual scores. Centering the variables involved in the interaction reduces multicollinearity inherent in computing the interaction term. Then we dummy coded categorical demographic variables (such as gender and ethnicity) and entered the demographic variables to be controlled for in the first block of the regression. The second and final block of the regression is comprised of the two independent variables (discrimination and self-esteem) and the interaction term. The variables were entered simultaneously into each block. We included tests of collinearity in the regression analysis (tolerance and variance inflation factor) to ensure that these statistics fall in the acceptable range. In an effort to determine the degree to which being out affects our model, we repeated the regression analysis a second time after excluding the 18 participants who reported that they were not out.

CHAPTER 4

RESULTS

Assumptions

We cleaned and examined our data to ensure that it met the assumptions of the proposed analyses. The QQ plot of the computed scores of the outcome variable (perceived stress) indicated that the data is normally distributed. The QQ plots of computed discrimination and self-esteem scores were positively and negatively skewed, respectively. Researchers note that self-esteem scales are not designed to yield symmetrical distributions, and North American samples (including lesbian, gay, bisexual, and transgender [LGBT] samples) typically produce distributions that are negatively skewed with means that occur as high as a full standard deviation above the scale midpoint (Baumeister, Tice, & Hutton, 1989; Morrison, 2011; Yakushko, 2005). The positive skew in the distribution of discrimination scores is possibly due to our sampling methodology, a limitation which is addressed in the discussion section. Scatterplots indicated that the relationship between the independent variables and the dependent variable were linear. A plot of the standardized residuals (the errors) by the regression standardized predicted value indicated that our data was homoscedastic.

Principal Component Analyses

We ran a principal component analysis on our three variables of interest (perceived stress, discrimination and self-esteem).

The Perceived Stress Scale (PSS) was normed on college students, and researchers demonstrated that the PSS is a valid measure of stress in ethnic minorities. The researchers

who developed the PSS originally conceptualized it as a one-dimensional measure of stress (Cohen, Kamarck, & Mermelstein, 1983). Exploratory factor analyses of the PSS suggest the presence of either a one- or two-factor structure (Mitchell, Crane, Kim, 2008; Ramirez & Hernandez, 2007). Researchers never explored the underlying structure of the PSS in sexual minorities. Principal component analysis (PCA) of PSS scores suggested the presence of three factors (see Table 2 for the component matrix).

Table 2

Component Matrix for the PSS

	Component		
	1	2	3
Item 7*	.798	-.193	.195
Item 2	.778	.071	.125
Item 10*	.767	-.127	-.184
Item 6*	.764	-.266	-.023
Item 1	.700	.285	.166
Item 9*	.698	.014	.197
Item 3	.685	.389	.022
Item 14	.669	.350	-.222
Item 11	.653	.219	.124
Item 8	.617	.165	-.357
Item 5*	.556	-.539	.248
Item 12	.025	.651	.396
Item 4*	.360	-.579	.267
Item 13*	.505	-.126	-.633

* reverse-coded item

The first factor is comprised of six items (Items 1, 2, 6, 7, 9 and 10) that exhibit no significant cross loadings. These items vary in regards to content. Although the first factor is relatively distinct, it is impossible to assign the remaining 8 items to either the second or third factor due

to cross loadings. The three factors accounted for 41, 12 and 7% of the variance, respectively, and in total accounted for approximately 60% of the total variation in all items. Given the cross-loadings evident in factors one and two, the PSS is best conceptualized as a one-dimensional measure when used with sexual minority samples.

The Heterosexist Harassment, Discrimination and Rejection Scale (HHRDS) was normed on European American lesbians (Szymanski, 2006) and researchers demonstrated that Szymanski's proposed structure (three factors: Harassment and Rejection (Items 8, 9, 10, 11, 12, 13 and 14), Workplace and School Discrimination (Items 1, 2, 3 and 7) and Other Discrimination (Items 4, 5 and 6)) holds true in Asian American sexual minorities. PCA of HHRDS scores suggested the presence of three factors. Items 4, 5 and 6 (which Szymanski (2006) refers to as Other Discrimination) loaded together on the first factor and did not exhibit significant cross-loadings. However, Items 3, 10 and 14 also loaded on to the first factor, meaning that the first factor consisted of items from all three of Szymanski's (2006) subscales. Items 1, 2, 7, 8, 11, 12 and 13 all exhibit significant cross loadings, and assigning any of these items to only one factor seems arbitrary (see Table 3 for the component matrix). Although three factors emerged during the development of this measure, the cross loadings evident in our data suggest that these factors are not distinct from each other. Our results suggest that the HHRDS subscales may not be as meaningful as the overall scale and the HHRDS is best conceptualized as one-dimensional in structure. The three factors accounted for 45, 12 and 8% of the variance, respectively, and in total accounted for approximately 65% of the total variation in all items.

Table 3

Component Matrix for the HHRDS

	Component		
	1	2	3
Item 5	.804	.000	-.243
Item 6	.745	-.093	-.101
Item 4	.738	-.124	-.243
Item 10	.721	.092	-.006
Item 9	.704	-.050	-.434
Item 14	.704	-.172	-.283
Item 3	.694	-.096	.298
Item 7	.640	-.373	.473
Item 2	.638	-.463	.454
Item 12	.608	.345	.113
Item 11	.596	.545	.248
Item 1	.590	-.481	-.154
Item 13	.564	.436	-.121
Item 8	.580	.611	.180

The Rosenber Self-Esteem Scale (RSES) was normed on participants from a single geographical location (Sinclair et al., 2010) and researchers demonstrated that the RSES is valid across culture (Schmitt & Allik, 2005). However, research on the underlying structure of the RSES in sexual minority samples does not exist. Rosenberg (1963) conceptualized his measure of self-esteem as one-dimensional in nature. PCA of RSES scores suggested the presence of two factors. Items 6, 7, 9, 3, 10 and 5 all loaded on factor one and did not exhibit significant cross loadings. Items 1, 2, 4 and 8 all had higher loadings on factor one and significant cross loadings on factor two (see Table 4 for the component matrix). The two factors accounted for 57 and 10% of the variance, respectively, and in total accounted for approximately 67% of the total

variation in all items. Because none of the ten items had higher loadings on factor two (in comparison to factor one), the RSES is best conceptualized as having one underlying dimension when used with sexual minority samples.

Table 4

Component Matrix for the RSES

	Component	
	1	2
Item 6	.855	-.040
Item 7	.855	-.046
Item 1	.779	.424
Item 9*	.776	-.260
Item 3*	.761	-.190
Item 10*	.743	-.273
Item 2	.708	.557
Item 5*	.703	-.209
Item 8*	.679	-.343
Item 4	.665	.419

*reverse-coded item

Univariates

The perceived stress scale has a possible range of 0 to 56 and, in our sample, an actual range of 6 to 44. The mean perceived stress score was 24.3 (standard deviation = 8.2). This scale demonstrated adequate reliability (Cronbach's $\alpha = .88$). The HHRDS has a possible range of 1 to 6 and, in our sample, an actual range of 1 to 4.5. The mean HHRDS score was 1.6 (standard deviation = .7). This scale demonstrated adequate reliability (Cronbach's $\alpha = .89$). The RSES has a possible range of 0 to 30 and, in our sample, an actual range of 6 to 30. The mean

RSES score was 21.8 (standard deviation = 5.8). This scale demonstrated adequate reliability (Cronbach's $\alpha = .91$).

Bivariates

The correlation between self-esteem and discrimination was trending but not significant ($r = -.15, p = .068$). Self-esteem and perceived stress were negatively correlated ($r = -.68, p < .001$). Discrimination and perceived stress were positively correlated ($r = .20, p < .05$). Because the distributions for self-esteem and discrimination were skewed, these correlations are subjected to attenuation (Baumeister, Tice, & Hutton, 1989).

We conducted *t*-tests to determine if there were significant differences between people who are out and people who are not out in our three variables of interest. All three Levene's tests for equality of variances indicated that the variances were not significantly different between people who are out and people who are not out. Perceived stress was not significantly different across the two groups ((out: $M = 23.9, SD = 8.0$) (not out: $M = 27.1, SD = 8.7$)), $t(144) = 1.53, p = .128$. Discrimination was not significantly different across the two groups ((out: $M = 1.6, SD = .7$) (not out: $M = 1.5, SD = .8$)), $t(144) = -.98, p = .328$. Self-esteem was not significantly different across the two groups ((out: $M = 22.1, SD = 5.9$) (not out: $M = 19.8, SD = 5.4$)), $t(144) = -1.61, p = .109$.

A one-way ANOVA indicated that there were no significant differences across gender (male, female and transgender) in our variables of interest. African American people reported significantly more stress ($M = 29.9, SD = 7.1$) than European Americans ($M = 23.3, SD = 8.2$), $F(4,$

141) = 3.17, $p < .05$. Gay people ($M = 22.0$, $SD = 7.8$) reported significantly less stress than bisexual people ($M = 26.9$, $SD = 7.3$), $F(2, 143) = 4.45$, $p < .05$.

Multivariates

Using a multiple regression analysis and controlling for demographics such as gender, ethnicity, income, education and being out, we found that discrimination and self-esteem accounted for 51% of the variance in perceived stress scores. The demographic variables accounted for 14% of the variance in outcome score, $\text{adj. } R^2 = .14$, $F(9, 136) = 3.52$, $p < .01$, and only income ($\beta = -.18$, $t(144) = -2.35$, $p < .05$), gender (female, $\beta = .19$, $t(144) = 2.33$, $p < .05$) and ethnicity (African American, $\beta = .24$, $t(144) = 2.98$, $p < .01$) were significant predictors of perceived stress. Discrimination and self-esteem accounted for an additional 36% of the variance in perceived stress scores, $\Delta R^2 = .36$, $\text{adj. } R^2 = .51$, $F(11, 134) = 14.84$, $p < .001$. Discrimination was not a significant predictor of perceived stress, $\beta = .09$, $t(144) = 1.48$, $p = .142$. Self-esteem was a significant predictor of perceived stress, $\beta = -.62$, $t(144) = -9.94$, $p < .001$. Measures of collinearity (i.e., tolerance and VIF) were in the acceptable range.

When we included the interaction effect in the multiple regression, discrimination, self-esteem and the interaction effect between discrimination and self-esteem accounted for 53% of the total variance in perceived stress scores, $\Delta R^2 = .38$; $\text{adj. } R^2 = .53$, $F(12, 133) = 14.47$, $p < .001$. Of the demographic variables controlled for, ethnicity (African American; $\beta = .24$, $t(144) = 2.98$, $p < .01$), gender (female; $\beta = .19$, $t(144) = 2.33$, $p < .05$), and income ($\beta = -.18$, $t(144) = -2.35$, $p < .05$) were significantly related to stress, accounting for 14% of the total regression effect, $\text{adj. } R^2 = .14$, $F(9, 136) = 3.52$, $p < .01$. When we tested whether self-esteem moderated

the relationship between discrimination and stress, discrimination was positively related to stress, $\beta = .13$, $t_{(144)} = 2.14$, $p < .05$, and self-esteem was negatively related to stress, $\beta = -.63$, $t_{(144)} = -10.26$, $p < .001$. The interaction between self-esteem and discrimination positively correlated with stress, $\beta = .14$, $t_{(144)} = 2.29$, $p < .05$ (see Table B.1 in Appendix B for a graphical representation of the interaction effect). Measures of collinearity (i.e., tolerance and VIF) were in the acceptable range.

The regression analysis was repeated after removal of the 18 participants who reported that they were not out. The demographic variables controlled for accounted for 14% of the variance in perceived stress, $\text{adj. } R^2 = .14$, $F(8, 119) = 3.55$, $p < .01$. The independent variables and the interaction term accounted for 53% of the total variance ($\text{adj. } R^2 = .53$) and 38% of the unique variance in perceived stress, $\Delta R^2 = .38$, $F(11, 116) = 14.17$, $p < .001$. Discrimination was positively related to stress, $\beta = .13$, $t_{(126)} = 2.07$, $p < .05$. Self-esteem was negatively related to stress, $\beta = -.62$, $t_{(126)} = -9.66$, $p < .001$. The interaction effect between discrimination and self-esteem was positively related to stress, $\beta = .14$, $t_{(126)} = 2.10$, $p < .05$.

Figure 1. Graphical display of the interaction.

CHAPTER 5

DISCUSSION

This study investigated the relationship between discrimination, self-esteem and perceived stress in a sample of lesbian, gay and bisexual people. It was hypothesized that self-esteem would be negatively correlated with discrimination and perceived stress, discrimination would be positively correlated with perceived stress and self-esteem and discrimination would account for a significant portion of the variance in perceived stress. We also hypothesized that self-esteem would moderate the relationship between discrimination and perceived stress.

Findings from the principal component analyses (PCAs) suggest that all three of our measures (the Perceived Stress Scale [PSS], the Heterosexist Harassment, Discrimination and Rejection Scale [HHRDS], and the Rosenberg Self-Esteem Scale [RSES]) are best conceptualized as one-dimensional in nature when used with samples of sexual minorities. The one-dimensional structure of the PSS and the RSES in our sample mimics the structure identified when these measures were developed with convenience samples (Cohen, Kamarck, & Mermelstein, 1983; Sinclair et al., 2010). The PSS and RSES are sufficient measures of general perceived stress and self-esteem in sexual minorities. However, research on sexual minorities would benefit from the development of measures of stress and self-esteem that address issues unique to sexual minorities (such as minority stress and identity development). When the HHRDS was normed and validated on a sample of lesbians, three separate factors (each representing a subscale) emerged (Szymanski, 2006). However, our findings suggest that these factors are not distinct from each other and the total scale score is the best measure of discrimination (as opposed to subscale scores) and appropriate for use in sexual minorities.

The negative relationship between discrimination and self-esteem was trending but not significant. Negative regard from the majority group influences self-feelings and the self-esteem of sexual minorities (Crocker & Major, 1989). LGB people who are not out may conceal their sexual identity (Meyer, 2003; Smart & Wegner, 2000) and subsequently lack affiliation with group members, which can lead to social and emotional isolation (Grossman & Kerner, 1998) and low self-esteem (McNicholas, 2002).

The negative relationship between self-esteem and stress was significant. This supports research findings in which self-esteem is conceptualized as a buffer (Brown & Harris, 1978; Zeigler-Hill, 2011). Researchers suggest that self-esteem buffers the negative impact of stress through coping processes (DeLongis et al., 1988; Bednar, Wells, & Peterson, 1989; Rector & Roger, 1996). People with high self-esteem exhibit greater confidence in their ability to cope with environmental demands (DeLongis et al., 1988) and are able to rely on general positive self-evaluations when singular dimensions of self are threatened (Linville, 1987). People with low self-esteem exhibit maladaptive ruminative coping behaviors, which are linked to increased stress (Rector & Roger, 1996).

The positive relationship between discrimination and perceived stress was significant. This relationship supports the minority stress model, which posits that regular exposure to negative societal attitudes, discrimination and prejudice results in chronic social stress related to minority identity (Harrell, 2000; Meyer, 2003; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). Minority stress is associated with disease risk (Chida & Vedhara, 2009; Cohen et al., 2007; Cohen, Janicki-Deverts, & Miller, 2007; French et al., 2005; Kassim et al., 2009; Krantz & Raisen, 2011; Leserman et al., 2002; Leserman et al., 2008; Samuels, 2007; Vogelzangs et al., 2010) and

increased vulnerability to psychopathology (Cochran, Sullivan, & Mays, 2003; King et al., 2008; Mays & Cochran, 2001; Sandfort, de Graaf, Bijl, & Schnabel, 2001).

After controlling for demographic variables related to stress, we found that discrimination and self-esteem accounted for 36% of unique variance in perceived stress. These findings mean that our model explains a significant portion of our outcome variable.

Examination of the beta weights indicates that changes in self-esteem are associated with greater changes in perceived stress in comparison to changes in discrimination. Our findings are supported by evidence that self-esteem is negatively associated with psychological (Lee, Joo, & Choi, 2013; Rector & Roger, 1997; Vacek, Coyle, & Vera, 2010, Wei et al., 2008) and physiological markers of stress (Liu, Wrosch, Miller, & Pruessner, 2014; Martens et al., 2010; O'Donnell, Brydon, Wright, & Steptoe, 2008. People with high self-esteem exhibit adaptive coping strategies in comparison to people with low self-esteem who are more likely to resist change and fail to adapt (Dumont & Provost, 1999; Parameswari, 2011).

Discrimination, self-esteem and the interaction effect between the two independent variables accounted for 53% of the variance in perceived stress. The interaction was significant, which means that the effect of discrimination on perceived stress significantly varies across different levels of self-esteem. As depicted in the graphical representation of the interaction effect, participants with high self-esteem reported lower stress in comparison to participants with medium and low self-esteem, which aligns with the theory that self-esteem mitigates the impact of negative life events on stress (Brown & Harris, 1978; Longmore & DeMaris 1997; Pearlin & Schooler 1978; Spencer, Josephs & Steele 1993; Thoits 1994; Zeigler-Hill, 2011).

Removal of the 18 participants who reported that they are not out did not alter our findings in any significant manner. However, the meaning of this result is limited by the small number of closeted participants in our overall sample.

Our findings suggest that health practitioners should ask sexual minority clients about their experience of prejudice, stigmatization and discrimination, as these minority stress processes are unique in sexual minorities and associated with negative psychological outcomes. The findings of our moderation analysis suggest that practitioners should be alert to sexual minority clients who have low self-esteem, as they are particularly vulnerable to negative psychological outcomes related to discrimination. Knowledge of the influence of self-esteem in discrimination-related stress processes is also useful to practitioners as they develop interventions designed to reduce stress in minority populations.

Future research would benefit from in-depth examination of the influence of appraisal style in the relationship between discrimination and stress. Researchers examined the influential role of appraisal in discrimination-related stress processes in ethnic minorities, but no similar research has been conducted in sexual minorities. Our findings also suggest that reactions to discrimination differ across different levels of self-esteem. Although people with high self-esteem experience lower stress in comparison to those with low self-esteem, they may appraise and process discrimination differently. An in-depth examination of the roles of appraisal style and self-esteem in sexual minorities would better inform the mechanisms through which self-esteem buffers stress processes.

Although these findings add significantly to the literature, limitations restrict the generalizability of the results. Our sample was obtained through non-probability sampling, a

method in which the probability of a person being included in the study is unknown. Non-probability sampling through community venues is common in research on l, g and b communities because these communities are less readily accessible for several reasons, including the non-visibility of their sexual minority status (Meyer & Wilson, 2009). This approach typically results in overrepresentation of certain groups and does not capture the full range of members of the target population. Specifically, we are only able to access sexual minorities who participate in the l, g and b communities, and we know that people who participate in the communities have different risk profiles than people who do not participate (Ramirez-Valles, 2002). Further, sexual minorities who are out are more likely to participate in our study in comparison to those who are not out, which means that the generalizability of our conclusions is limited by degree of outness. It is not possible to accurately estimate the degree of over- and under-representation, and therefore no way to adjust for this bias. This type of sampling should not be abandoned for these reasons, but generalizability is limited to lesbian, gay, bisexual and transgender people (LGBT) who participate in the community and/or attend community-based clinics and are out.

Our sampling methodology also has important implications for the magnitude of our results. Community members who are willing to attend community venues have different risk profiles than community members who are unwilling to attend and/or may be closeted, which raises the possibility that our results represent attenuated versions of the results we would obtain if we were able to capture the community as a whole.

The self-report measures used in this study are subject to social desirability. The tendency for North American samples to report high self-esteem suggests the possibility that

scores are affected by deliberate or unwitting self-enhancement (Krueger, 1998). Indeed, when researchers compared participants' self-esteem scores with scores on a social desirability scale, they concluded that self-esteem scores are partially contaminated by social desirability bias (Blascovich & Tornaka, 1991). Although self-report measures of self-esteem are heavily influenced by social desirability, they remain our best option as objective measures of self-esteem are still being developed and tested. Social desirability also affects our measures of discrimination and stress, as the use of denial as a coping mechanism may alter responses to these measures.

Because our data is cross-sectional and correlational in nature, causation cannot be inferred. Furthermore, we can only hypothesize about the directionality of the relationships between our variables of interest.

Future research will partially depend on the social perception and subsequent discrimination, stigma and prejudice towards sexual minorities living in the United States. Should the sociocultural attitudes towards sexual minorities change, we can hope to obtain larger and more representative probability samples of these communities, which would increase the generalizability of research findings. With larger samples, more stringent methodologies (such as control group designs) are possible and will allow for causal inferences. Further, findings from the PCAs strongly suggest the need for measures that are validated and normed on sexual minorities. Future research on self-esteem would be aided by a measure that is not only normed and validated on sexual minorities, but also captures different dimensions of self-esteem (e.g., defensive, inflated, narcissistic, genuine) and accounts for false presentation.

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APPENDIX A

PERCEIVED STRESS SCALE (COHEN, KAMARCK, & MERMELSTEIN, 1983)

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an “X” over the circle representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don’t try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

	0 Never	1 Almost Never	2 Sometimes	3 Fairly Often	4 Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?					
2. In the last month, how often have you felt that you were unable to control the important things in your life?					
3. In the last month, how often have you felt nervous and “stressed”?					
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?					
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?					
6. In the last month, how often have you felt confident about your ability to handle your personal problems?					
7. In the last month, how often have you felt that things were going your way?					
8. In the last month, how often have you found that you could not cope with all the things that you had to do?					

9. In the last month, how often have you been able to control irritations in your life?					
10. In the last month, how often have you felt that you were on top of things?					
11. In the last month, how often have you been angered because of things that happened that were outside of your control?					
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?					
13. In the last month, how often have you been able to control the way you spend your time?					
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

APPENDIX B

THE HETEROSEXIST HARASSMENT, DISCRIMINATION, AND REJECTION SCALE (SZYMANSKI, 2006)

Instructions: We are interested in your experiences with heterosexism/homophobia during the past year. For Items 1-14, please answer on a scale from 1 to 6:

	1 The event has never happened to you	2	3	4	5	6 The event happened almost all the time, more than 70% of the time
1. In the past year, how many times have you been treated unfairly by teachers or professors because you are LGBT?						
2. In the past year, how many times have you been treated unfairly by your employer, boss or supervisors because you are LGBT?						
3. In the past year, how many times have you been treated unfairly by your co-workers, fellow students or colleagues because you are LGBT?						
4. In the past year, how many times have you been treated unfairly by people in helping jobs (by doctors, nurses, psychiatrists, caseworkers, dentists, school counselors, therapists, pediatricians, school principals, gynecologists, and others) because you are LGBT?						
5. In the past year, how many times have you been treated unfairly by people in service jobs (by store clerks, waiters, bartenders, waitresses, bank tellers, mechanic and other) because you are LGBT?						
6. In the past year, how many times have you been treated unfairly by strangers because you are LGBT?						
7. In the past year, how many times were you denied a raise, a promotion, tenure, a good assignment, a job, or other such thing at work that you deserved because you are LGBT?						
8. In the past year, how many times have you been treated unfairly by your family because you are LGBT?						

9. In the past year, how many times have you been called a HETEROSEXIST name like dyke, lezzie, or other names?						
10. In the past year, how many times have you been made fun of, picked on, pushed, shoved, hit, or threatened with harm because you are LGBT?						
11. In the past year, how many times have you been rejected by family members because you are LGBT?						
12. In the past year, how many times have you been rejected by friends because you are LGBT?						
13. In the past year, how many times have you heard anti-lesbian/anti-gay/anti-bisexual remarks from family members?						
14. In the past year, how many times have you been verbally insulted because you were LGBT?						

APPENDIX C

ROSENBERG SELF-ESTEEM SCALE (ROSENBERG, 1965)

Instructions: Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	0 Strongly Agree	1 Agree	2 Disagree	3 Strongly Disagree
1. I feel that I am a person of worth, at least on an equal plane with others.				
2. I feel that I have a number of good qualities.				
3. All in all, I am inclined to feel that I am a failure.				
4. I am able to do things as well as most other people.				
5. I feel I do not have much to be proud of.				
6. I take a positive attitude toward myself.				
7. On the whole, I am satisfied with myself.				
8. I wish I could have more respect for myself.				
9. I certainly feel useless at times.				
10. At times I think I am no good at all.				

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