

Minority Stress, Masculinity, and Social Norms Predicting Gay Men's Health Risk Behaviors

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The authors examined the contributions of the minority stress model, traditional masculine gender roles, and perceived social norms in accounting for gay men's use of alcohol, tobacco, illicit drugs, and risky sexual practices. Three hundred fifteen gay men recruited from listserv communities completed measures assessing internalized homophobia, stigma, antigay physical attack, masculinity, and perceptions of normative health behaviors, along with health risk behaviors of alcohol use, illicit drug use, smoking, and high-risk sexual behaviors. Pearson correlations supported several hypotheses; social norms and masculinity variables were significantly related to health risk behaviors. Four multiple regression analyses indicated that masculinity and perceptions of social norms predicted health risk behaviors. Additionally, a significant interaction was found between minority stress and perceptions of social norms. The clinical implications of the findings, limitations, and suggestions for future research are discussed.

Keywords: health risk behavior, gay and homosexual men, minority stress, masculinity, social norms

Men in the United States engage in more health risk behaviors than women in almost every domain (Courtenay, 2000), and most studies report that gay men, on average, engage in riskier health behaviors than heterosexual men. For example, gay men have significantly greater prevalence rates of substance abuse and dependence compared with heterosexual men (Meyer, 2003). Gay men smoke tobacco at significantly higher rates (Greenwood et al., 2005), with 41.5% of gay men smoking compared with 23.9% of men in the general U.S. population (Centers for Disease Control and Prevention [CDC], 2006a). Gay men report significantly greater illicit drug use than heterosexual men (Cochran, Ackerman, Mays, & Ross, 2004), and although most gay men practice safe sex all or nearly all of the time (Dean et al., 2000), increases in STD and HIV infection rates for gay men are being reported (Elford, Bolding, & Sherr, 2002). In 2005, the number of new HIV/AIDS diagnoses among men who have sex with men in the United States was 11% higher than in 2001 (CDC, 2007).

Identifying factors that predict these health behaviors in gay men is important given that there are considerable psychological and physical health consequences associated with heavy alcohol use, cigarette smoking, illicit drug use, and sexual risk-taking behavior. Heavy drinking contributes to health problems, including accidental death, liver disease and cirrhosis, gastrointestinal cancers, heart disease, stroke, depression, and social problems such as violence (CDC, 2006b). Cigarette smoking is linked to several types of cancer as well as cardiovascular and respiratory diseases (CDC, 2004). Illicit drug use puts persons at risk for

developing anxiety and depression, increased criminal activity, and greater likelihood of disease and death from overdose or unsafe behaviors such as needle sharing (Substance Abuse and Mental Health Services Administration [SAMHSA], 2006). Finally, unprotected receptive anal intercourse (URAI) is identified as a high-risk sexual practice for HIV transmission to an uninfected person (CDC, 2007).

Sociocontextual Explanations of Gay Men's Health Behaviors

In describing these findings about gay men's health behaviors, we believe that cataloging group differences between gay men and other men in the general population is a useful beginning point, but we also recognize that it is critical to understand these group differences in a social context. What are needed are theoretical models that address the social context of gay men's lives in order to understand why health risk behaviors are likely to occur. The minority stress model is one long-standing area of empirical and theoretical inquiry that provides a foundation for understanding gay men's health behaviors. The cumulative work within this framework suggests that minorities who experience oppression from the dominant group in society are likely to experience stress as a result of this oppression, and therefore have higher rates of morbidity. This model has provided a scaffold for understanding the experiences of ethnic and racial minorities as well as members of the lesbian, gay, bisexual, and transgender (LGBT) communities (Brooks, 1981; Crocker & Major, 1989; Jones et al., 1984; Mirowsky & Ross, 1980, 1989; Pearlin, 1982; Rosenberg, 1979). Meyer's (1995, 2003) minority stress model is an extension developed from this larger theoretical framework that has sought to explain the mental and physical health concerns in the gay male population. This model posits that, "gay people, like members of other minority groups, are subjected to chronic stress related to this stigmatization" (Meyer, 1995, p. 38). He identifies internalized

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homophobia, expectations of stigma, and experiencing prejudicial events such as violence as sources of stress. *Internalized homophobia* is the degree to which a gay man internalizes the antigay sentiments of the larger heterosexual society and represents an internal form of stress (Gonsiorek, 1993; Meyer, 1995, 2003). Internalized homophobia has been linked to greater substance use (Glaus, 1988; Meyer & Dean, 1998), risky sexual behavior (Meyer & Dean, 1998), eating disorders (Williamson & Hartley, 1998), and suicidality (Remafedi, French, Story, Resnick, & Blum, 1998). *Expectation of stigma* is defined as experiences that produce the gay man's anticipation that he will be rejected and discriminated against by society because of his sexual orientation (Meyer, 1995, 2003). *Experiencing prejudicial events* is defined as experiences of verbal and physical violence due to a person's sexual orientation. Such antigay violence has obvious negative consequences ranging from developing posttraumatic stress disorder to the victims' sense of the world becoming insecure and themselves being vulnerable (Garnets, Herek, & Levy, 1990; Meyer, 1995). Meyer's (1995, 2003) minority stress model has been useful in explaining a number of health outcomes in lesbian and gay male populations, including suicidality, depression, workplace problems, substance abuse, and body image problems (Diaz, Ayala, Bein, Jenne, & Marin, 2001; Herek, Gillis, & Cogan, 1999; Kimmel & Mahalik, 2005; Meyer, 1995; Waldo, 1999). Therefore, this model might also be useful in predicting health risk behaviors in gay men coping with minority stress.

Because gay men's experiences reflect both being gay and being men (Kimmel & Mahalik, 2005), the gender socialization model might also be useful in explaining gay men's health risk behaviors. Some scholars suggest that men are more likely to engage in health risk behaviors because they experience pressures during gender role socialization that direct them away from self-care and encourage health risk behaviors as part of developing a masculine identity (Courtenay, 2001; Harrison, Chin, & Ficarrotto, 1992). For example, Bunton and Crawshaw (2002) observed that "a key element of 'hegemonic' masculinities is a direct rejection of bodily maintenance and self-care in order to assert masculinity. To 'be' or act like a man is to show a lack of concern for care of the self . . ." (p. 192).

Thus, the masculine ideal in the United States may produce increased risk taking, self-destructive behavior, and less concern about personal health (Courtenay, 2001). Research supports this link, finding that men who adopt traditional constructions of masculinity are more likely to engage in risky health practices (Mahalik, Burns, & Syzdek, 2007), including greater substance abuse of alcohol, tobacco, and illicit drugs (Blazina & Watkins, 1996; Liu & Iwamoto, 2007; Mahalik et al., 2003), and risky sexual behavior (Mahalik, Lagan, & Morrison, 2006; Pleck, Sonenstein, & Ku, 1994).

It is also the case that gay men's health behaviors are embedded in, and likely influenced by, the social norms they observe about health behaviors. Thus, a third theoretical model from which to approach gay men's social context is the social norms model. From a social psychology framework, perceptions of normative group behaviors guide and constrain individual behavior (Cialdini & Trost, 1999). People are influenced by their observations of others because the "social proof" these descriptive norms provide saves time and cognitive effort while giving guidance about behavior that is likely to be effective (Cialdini, 1993). A growing body of

evidence supports that perceptions of social norms relate to health behaviors. For example, research finds that perceptions of peer norms relate to alcohol use (Andrews, Tildesley, Hops, & Li, 2002; Baer, Stacy, & Larimer, 1991; Carey & Correia, 1997; Lo, 1995), tobacco use (Weiss & Garbanati, 2006), drug use (Kilmer et al., 2006; Page & Scanlan, 1999), and sexual behavior (Peterson & Bakeman, 2006; Winslow, Franzini, & Hwang, 1992).

A key to the social norms approach is identifying salient groups that provide normative information for individuals (Berkowitz, 2003; Borsari & Carey, 2003; Perkins, 2003). Because groups that are similar to an individual are viewed as most influential (Hornstein, Fisch, & Holmes, 1968), perceptions of normative health behaviors in other men may exert a particularly powerful influence on the health behaviors that individual men adopt (Korcuska & Thombs, 2003). Furthermore, research suggests that proximal reference groups are more influential on drinking behaviors than distal reference groups (Borsari & Carey, 2003; Korcуска & Thombs, 2003; Lewis & Neighbors, 2006). Applied to gay men's health behavior, perceptions of other men's health behavior—particularly male friends, family members, coworkers, and men in the gay community—should provide important information about health behaviors to adopt or not adopt. Supportive of this suggestion, Kelly et al. (1991) reported that trained popular opinion leaders in the gay male community who delivered safer-sex messages influenced significant reductions in HIV risk behaviors for gay men in their community.

Finally, we suggest that minority stress, masculinity, and perceptions of normative health behaviors may predict gay men's health risk behaviors through three interactive mechanisms. Specifically, the simultaneous presence of these factors may produce synergistic (vs. cumulative) consequences of harm. First, we posit a two-way interaction between minority stress and masculinity. For example, gay men experiencing higher levels of minority stress who are traditionally masculine should demonstrate a higher likelihood of engaging in health risk behaviors. Second, we posit a two-way interaction between minority stress and perceived social norms. For example, gay men experiencing high levels of minority stress are likely to engage in higher levels of health risk behaviors as they perceive health risk behaviors as normative in other men. Third, we posit a two-way interaction between masculinity and perceived social norms. To illustrate, traditionally masculine men who perceive that health risk behaviors are normative for men should be more likely to engage these behaviors.

Hypotheses

We hypothesized that when gay men experienced greater minority stress (i.e., internalized homophobia, perceived stigma, and antigay physical attack), conformed to traditional masculine gender roles, and perceived that health risk behaviors were normative in other groups of men that they would be more likely to abuse alcohol, use tobacco and illicit drugs, and engage in risky sexual practices. Additionally, we sought to determine whether the socio-cultural factors would operate as moderators in explaining gay men's health risk behaviors. We hypothesized that minority stress would moderate the relationship between masculinity and health risk behaviors as well as between social norms and health risk behaviors. We also hypothesized that masculinity would moderate the relationship between social norms and health risk behaviors.

Method

Participants

Participants were 315 gay men whose mean age was 45.99 years old ($SD = 12.33$). The majority of the sample identified as White ($n = 272, 86.3\%$); however, the participants also identified as Black or African American ($n = 15, 4.8\%$), Asian or Asian American ($n = 4, 1.3\%$), Latino or Hispanic ($n = 11, 3.5\%$), Native American ($n = 4, 1.3\%$), multiracial ($n = 5, 1.6\%$), and "other" ($n = 4, 1.3\%$). Most participants were single ($n = 151, 48\%$) as well as partnered in an open relationship ($n = 50, 16\%$); partnered in a monogamous relationship ($n = 64, 20\%$); or married, involved in a domestic partnership or civil union, or ceremonially committed ($n = 56, 18\%$). Participants' mean years "out" was 16 years ($SD = 13.74$). They reported their educational level as having some high school ($n = 8, 2.5\%$), a high school diploma or GED ($n = 23, 7.3\%$), some college ($n = 96, 30.5\%$), a bachelor's degree ($n = 102, 32.4\%$), a master's degree ($n = 57, 18.1\%$), or a doctoral degree ($n = 29, 9.2\%$). Participants' median income was \$50,000.

Measures

The Internalized Homophobia Scale (IHP; Martin & Dean, 1987). The IHP was developed based on the diagnostic criteria for ego-dystonic homosexuality as contained in the 3rd edition of the *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association (1980). It is a nine-item scale that asks participants the degree to which they concur with statements regarding being uncomfortable with one's homosexuality (e.g., "In the past year, how often have you thought that being gay was a personal shortcoming?"). Items are administered with a 4-point response scale ranging from 1 (*never*) to 4 (*often*). In a community sample, the IHP's internal consistency was reported as $\alpha = .79$. In terms of validity, the IHP was significantly negatively correlated with collective self-esteem, importance attached to community involvements, disclosure of sexual orientation to heterosexual friends, and satisfaction with the local gay/bisexual community (Herek & Glunt, 1988). Additionally, men score significantly higher than women, and bisexuals score higher than homosexuals (Herek & Glunt, 1988). Higher IHP scores also significantly related to demoralization, guilt, sex problems, suicidal ideation/behavior, and AIDS traumatic stress for gay men (Meyer, 1995). In this study, $\alpha = .88$.

The Stigma Scale (Martin & Dean, 1987). The Stigma Scale is an 11-item survey that assesses expectations of prejudice and discrimination due to one's sexuality (e.g., "Once they know a person is gay, most people will take his opinion less seriously"). The measure is scored using a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). In a community sample of gay men, Martin and Dean (1987) reported alpha to be .86. Higher scores on the Stigma Scale correlate to four forms of psychological distress in gay men: demoralization, guilt, suicidal ideation and behavior, and AIDS-related traumatic stress response (Meyer, 1995). Furthermore, the Stigma Scale has also been shown to be significantly related to the degree of "outness" in gay men (Meyer, 2003). In this study, $\alpha = .89$.

Antigay physical attack was measured with a single item that has been used in previous research addressing antigay experiences

(Kimmel & Mahalik, 2005; Meyer, 1995). The question asked, "Have you ever been physically attacked because of your sexual orientation?" and is scored 0 for no attack and 1 for answering yes. Research reports that experiencing physical and verbal attacks due to perceived sexual orientation is related to demoralization, guilt, suicidal ideation and behavior, and distress from failing to have a muscular body (Kimmel & Mahalik, 2005; Meyer, 1995).

The Conformity to Masculinity Norms Inventory (CMNI; Mahalik et al., 2003) is a 94-item questionnaire that assesses conformity to an array of dominant cultural norms of masculinity in the United States. For all CMNI test items, a 4-point Likert scale is used, with anchor points ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Higher scores on the CMNI reflect greater conformity to norms of masculinity (Mahalik et al., 2003). According to Mahalik et al. (2003), the CMNI yields 11 factor-validated masculinity norms and a total composite score. Prior research suggests CMNI scores are associated with social dominance, desire to be more muscular, negative attitudes toward help seeking, psychological distress, and aggression (Mahalik et al., 2003). Estimates of internal consistency for the CMNI range from .75 to .91 for the 11 masculinity norms, with an alpha of .94 for the CMNI total score.

In the present study, the 22-item abbreviated version of the CMNI was used, which uses the two highest loading items for each of the 11 factors from the original CMNI validation study (Mahalik et al., 2003), yielding a total masculinity score. The CMNI-22 correlates at .92 with the CMNI total for the 94-item scale. Cronbach's alpha for the CMNI-22 was .70 in a sample of men with prostate cancer (Burns & Mahalik, 2008). In present study, $\alpha = .73$ for the CMNI-22.

Perceptions of normative health behavior. Perceptions of normative alcohol use, tobacco use, drug use, and sexual risk taking were assessed through 16 items (e.g., "Most of my male co-workers have more than two alcoholic drinks per day"). Participants rated the normativeness of the four health risk behaviors listed above for the four reference groups: (a) male friends, (b) male relatives, (c) male coworkers, and (d) gay men. Each statement was rated on a 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

Problematic alcohol use was assessed using the *Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993)*. The AUDIT is a 10-item self-report survey that intended to identify the potential for problematic drinking, or current drinking problems. For example, questions asked "How often do you have six or more drinks on one occasion?" and "How often during the last year have you had a feeling of guilt or remorse after drinking?" Total scores range from 0 to 40, where 0 indicates nondrinkers, and 40 would signify serious and chronic problems associated with drinking behavior. The AUDIT correlates significantly to other self-report measures of alcohol abuse, such as the Michigan Alcohol Screening Test (Selzer, 1971), the CAGE (Ewing, 1971), and the MacAndrew Scale (Bohn, Babor, & Kranzler, 1995; Hays, Merz, & Nicholas, 1995; Saunders et al., 1993). Cronbach's alpha was .80 in this study.

Tobacco use was measured with one question taken from the Youth Risk Behavior Survey (Brener et al., 2002) and assessed participants' use of tobacco within the past 30 days. The question asked "During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?" Answers were scored on

a 7-point scale ranging from 0 (*I did not smoke cigarettes during the past 30 days*) to 6 (*more than 20 cigarettes per day*).

Illicit drug use was assessed in 13 categories derived from the National Household Survey on Drug Abuse (SAMHSA, 2002) and included drug categories that have been found to have significant prevalence in the gay male population (e.g., "poppers"; Stall & Wiley, 1988). The drug use categories assessed included (a) marijuana; (b) cocaine; (c) crack; (d) heroin; (e) Oxycontin or other opiates; (f) ecstasy, MDA, MDMA; (g) crystal methamphetamine, "uppers," or "speed"; (h) poppers; (i) nonprescription anxiolytics (e.g., Valium, Xanax, Ativan); (j) 'K' Ketamine; (k) 'G' GHB; (l) PCP, angel dust, LSD, mescaline; or (m) other. Participants were asked whether, and how often, they used the aforementioned substances. Answers were recorded on an 8-point scale ranging from 0 (*have never used*) to 7 (*every day*). Scores for the 13 substance categories were totaled for each participant, yielding a total drug use score that was used to indicate the degree of participants' drug use behavior. Total scores ranged from 0, indicating no history of substance use, to 91, which would indicate the every day use of all of the 13 substance categories. Therefore, higher scores indicate more drug use. In the present study, $\alpha = .70$.

Sexual risk behavior was assessed with four questions derived from the CDC's (CDC, 2007) findings that URAI has the highest risk for the transmission of STDs such as HIV. Questions asked participants the number of partners with which they had engaged in URAI behavior in the past 6 months. Questions ranged in terminology for clarification about what was being asked, for example, "I barebacked with another man where he inserted his penis into my rectum (butt)" and "I had another man's penis in my rectum (butt) without a condom." Answers for each of the four questions were summed and divided by four to construct a total URAI score. Higher scores represent URAI with more partners, thus higher sexual risk-taking behavior. Cronbach's alpha was .99.

Procedure

Forty-five listservs, discussion groups, and Web sites designed for gay, lesbian, and bisexual populations were identified (e.g., LGBT issues in religion, gay cruises, gay presence in the media, gay singles), and moderators were asked for permission to contact members. Of the 45 listservs, 28 were moderated, and 17 were open to all public contributions. Of the 28 moderated listservs, 10 rejected the request for members to participate, and 18 moderators approved the message requesting participation in the research. Messages were posted to general discussion boards stating that participation was completely voluntary, the purpose of the study, and eligibility criteria. Participants were informed that the purpose of this study was to better understand what predicts gay men's health behaviors and that they would be asked questions about experiences they have had being a gay man, how much they agree with traditional masculine gender roles, and how often they thought men engage in a variety of behaviors (e.g., alcohol use, smoking, illicit drug use, and unsafe sexual practices), as well as to report how often they engaged in these same behaviors. In the event that the listserv or discussion group was not moderated, indicating that members are open to all public contributions, the same message requesting participation was posted to the general discussion board. Messages were posted to 17 unmoderated listservs using this procedure. Members of the listservs who were

interested in participating clicked on the link in the message, which brought them to the informed consent page of the survey site. Finally, although monetary compensation was not provided, participants were given the opportunity to contact the primary investigator for information regarding issues related to gay men's health as well as a copy of the final draft of the study's findings.

Three hundred eighty respondents consented to participate. Sixty-five were eliminated for the following reasons: 3 identified as women, 52 only completed a very small portion of the survey, 8 did not identify their sexual orientation as gay, and 2 contained duplicate responses from the same Internet protocol address. The remaining 315 participants' responses were used to compose the present study and analyzed.

Results

In order to test our hypotheses related to minority stress, we created a single index from the three minority stress variables. We standardized the IHP Scale and Stigma Scale by transforming them to z scores, and we dummy coded the antigay physical attack measure with values of 0 and 1 (given that it was a categorical variable) but did not standardize it. We calculated the mean of the three scores, which represented the total quantity of minority stress experienced. Higher scores indicate more minority stress. In the present study, $\alpha = .32$ for the MSC. We created an additional single index for each of the perceptions of social norms of health behaviors (alcohol use, tobacco use, drug use, and sexual behavior). This was done by calculating the mean of the four reference groups (e.g., "norms of alcohol use") and standardizing these indices by transforming them to z scores. Cronbach's alpha for the SNC was .76. Last, we constructed a Health Risk Behavior Index by transforming the four criterion variables into z scores (alcohol use, cigarette use, drug use, and high-risk sexual behavior) and calculating the mean of these four scores. Higher scores represent greater overall health risk behavior. Cronbach's alpha was .39 for the Health Risk Behavior Index.

Preliminary Analyses

We examined assumptions of normality for general linear model analyses for all continuous variables by examining skewness and kurtosis. Eight variables did not meet the assumptions of normality (internalized homophobia, drug use, sexual risk, AUDIT, tobacco use, male relatives' drug use, male relatives' sexual risk behavior, and male coworker tobacco use) and were corrected by using procedures described by Tabachnick and Fidell (2001). Four variables were best corrected by computing the inverse of the score: internalized homophobia's (skewness from 1.71 to -0.55 ; kurtosis from 2.57 to -0.93), drug use (skewness from 1.92 to -0.57 ; kurtosis from 4.74 to -0.75), sexual risk behavior (skewness from 6.86 to -0.40 ; kurtosis from 49.25 to -1.75), and cigarette use (skewness from 1.16 to -0.99 ; kurtosis from -0.41 to -0.63). AUDIT scores were best transformed using the square root (skewness correcting from 1.95 to 0.66; kurtosis from 4.43 to 0.32). Three variables were best corrected by taking the log₁₀: perceptions of male relatives' drug use (skewness from 1.63 to 0.87; kurtosis from 2.35 to -0.52), perceptions of male relatives' sexual risk behavior (skewness from 1.57 to 0.90; kurtosis from 2.05 to -0.54), perceptions of male coworkers' tobacco use (skewness

from 1.06 to 0.57; kurtosis from 0.71 to -0.49). The variables in which the inverse was calculated (IHP, drug use, and sexual risk behavior), were multiplied by -1 to maintain the original direction of scores. Finally, using the Mahalanobis distance procedure as described by Tabachnick and Fidell (2001), we discovered nine cases to be outliers. Once removed, no significant changes in the analysis occurred; therefore, we retained these nine cases in the final analysis.

Main Analyses

We calculated Pearson correlations to test the hypothesis that greater minority stress, more traditional masculine gender roles, and perceptions that health risk behaviors were normative in other groups of men would be associated with gay men being more likely to abuse alcohol, use tobacco and illicit drugs, and engage in risky sexual practices. Results indicated that conformity to masculine norms ($r = .17, p < .01$) and perceptions of social norms ($r = .35, p < .01$) were significantly associated with health risk behavior. See the Appendix.

We conducted four regression analyses to examine main effects and interactions between minority stress, masculinity, and perceptions of social norms predicting the Health Risk Behavior Index. A simultaneous regression testing main effects indicated that the model was significant, $F(3, 296) = 15.09, p < .001, R^2 = .13, \text{Adj. } R^2 = .12$. Examining the individual beta coefficients revealed that variability in social norms contributed most to health risk variance ($\beta = .33, p < .001$), followed by masculinity, which was also significant ($\beta = .11, p < .05$). See Table 1.

To test the interaction effects of minority stress, masculinity, and perceptions of social norms on health risk behaviors, we performed three parallel hierarchical regression analyses following Frazier, Tix, and Barron's (2004) suggestions for testing moderating effects. We computed three product terms for the two-way interactions (e.g., Minority Stress \times Masculinity, Minority Stress \times Perceived Social Norms, and Masculinity \times Perceived Social Norms), which served as predictor variables (Frazier et al., 2004). For each hierarchical regression analysis, we entered the two associated variables in the first step of the model and their product term in the second step. See Table 1.

Results from the three interaction models indicated that the interactions between masculinity and perceptions of social norms as well as between masculinity and minority stress were not significant; however, we found a significant interaction between minority stress and perceptions of social norms ($\Delta R^2 = .01, p < .05$). As recommended by Frazier et al. (2004), interpretation of the significant two-way Minority Stress \times Social Norms interaction effect was achieved by plotting the unstandardized predicted values for the Health Risk Behavior Index against social norms for participants scoring one standard deviation above and one standard deviation below the sample minority stress sample mean. In the interaction, the regression slope for gay men experiencing high minority stress was significantly steeper than the slope for men experiencing low minority stress. Specifically, the relationship between perceived norms and health risk behaviors was stronger for gay men with high minority stress. Stated differently, the relationship between perceptions of others' health behaviors and

Table 1
Summary of Regression Analyses for Variables Predicting Composite Health Risk of Smoking, Unsafe Sex, Alcohol, and Drug Use in Gay Men

Variable	B	SE B	β	R^2	ΔR^2
Main effects model					
Step 1				.13	.13**
SNC	.26	.04	.33**		
MSC	-.02	.05	-.02		
CMNI	.06	.03	.11*		
Interaction Model 1					
Step 1					
CMNI	.05	.03	.09		
SNC	.25	.04	.33**		
Step 2				.14	.00
CMNI \times SNC	.04	.04	.05		
Interaction Model 2					
Step 1					
CMNI	.11	.06	.18**		
MSC	-.00	.04	-.01		
Step 2				.03	.00
CMNI \times MSC	-.04	.05	-.05		
Interaction Model 3					
Step 1					
MSC	-.00	.05	-.00		
SNC	.27	.04	.35**		
Step 2				.13	.01*
MSC \times SNC	-.12	.06	-.10*		

Note. $N = 315$. SNC = Social Norms Composite; MSC = Minority Stress Composite; CMNI = Conformity to Masculine Norms Inventory (Mahalik et al., 2003).
* $p < .05$. ** $p < .01$.

gay men's own health behaviors was contingent on their experiences of minority stress. See Figure 1.

Discussion

Results from this study supported several of the hypotheses. Masculinity significantly predicted gay men's health risk behaviors, supporting a growing literature that men who adopt traditional constructions of masculinity are more likely to engage in risky health practices (Mahalik et al., 2007), including risky sexual behavior (Mahalik et al., 2006; Pleck et al., 1994). The findings also extend previous research that traditional masculinity relates to an array of physical and psychological health problems for gay men (Carlson & Steuer, 1985; Kimmel & Mahalik, 2005; Simonsen, Blazina, & Watkins, 2000). In this case, gay men's construction of masculinity seems to play a role in their substance use and in a health behavior that puts them at risk for contracting HIV and other sexually transmitted diseases that have potentially serious health consequences.

The social norms variable was significant in the simultaneous regression analysis, accounting for the most variance in explaining gay men's health behaviors. From a social norms model perspective, gay men's male friends, coworkers, relatives, and men in the gay community helped provide "social proof" about health behaviors to adopt, thus saving time and cognitive effort, while giving guidance about behavior that is likely to be effective (Cialdini, 1993). Our findings are also consistent with previous research that perceptions of peer norms relate to alcohol use (Andrews et al., 2002; Baer et al., 1991; Carey & Correia, 1997; Lo, 1995), tobacco use (Weiss & Garbanati, 2006), drug use (Kilmer et al., 2006; Page & Scanlan, 1999), and sexual behavior (Peterson & Bakeman, 2006; Winslow et al., 1992). Additionally, the findings support research and theory examining other social group models, such as the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of diffusion of innovation (Rogers, 1962), predict health behavior change through the perceptions of other persons in one's social environment.

A significant strength of the social norms approach is its demonstrated utility in prevention by correcting pluralistic ignorance (i.e., misperceived social norms that substance abuse in reference groups is greater than it is; Perkins, 2003). Given our findings that

gay men's perceptions of men's normative health behaviors relates to their own adoption of health behaviors, social norms interventions may also be effective in reducing health risk behaviors and increasing health promotion behaviors in gay men. Social norms marketing campaigns, or small group norms interventions, demonstrated as successful in colleges and high schools for reducing alcohol abuse and tobacco use might be applied to gay men's health risk behaviors identified in this study (Berkowitz, 2003; Far & Miller, 2003; Perkins, 2003).

Although no main effects were significant with the MSC, the finding that minority stress moderated the relationship between social norms and gay men's health risk behaviors emphasizes the importance of addressing the complex social context that gay men experience as it relates to health behaviors. In this finding, the strength of the relationship between gay men's perceptions of health risk behaviors and their own health risk behaviors varied on the basis of their experiences of stress from identifying as one of a minority sexual orientation. This finding is consistent with previous research documenting the role of minority stress on gays and lesbians in relation to mental health concerns (Cochran & Mays, 1994; D'Augelli & Hershberger, 1993; Diaz et al., 2001; Herek et al., 1999; Kimmel & Mahalik, 2005; Meyer, 1995; Waldo, 1999) and suggests that both the minority stress model and social norms model could be enhanced to better predict gay men's health behaviors by incorporating their ideas into a more complex model of gay men's health behaviors. As such, the findings from the study add to the literature in being the first to approach gay men's health behaviors from three theoretical frameworks and to propose and test how the constructs may interact. These findings also indicate the importance of efforts to eliminate homophobia both within the mental health community and in society in general. Meyer (1995) makes an argument for advancing "an ideological agenda that promotes social change toward a more egalitarian society" (p. 52). Part of this agenda is to promote attitudinal and policy change in order to create a society that provides equal rights and privilege to minority sexualities. Such efforts may reduce minority stress for gay men, potentially leading to better health outcomes.

Results from this study have several implications for counselors working with gay men. Counselors treating gay men struggling

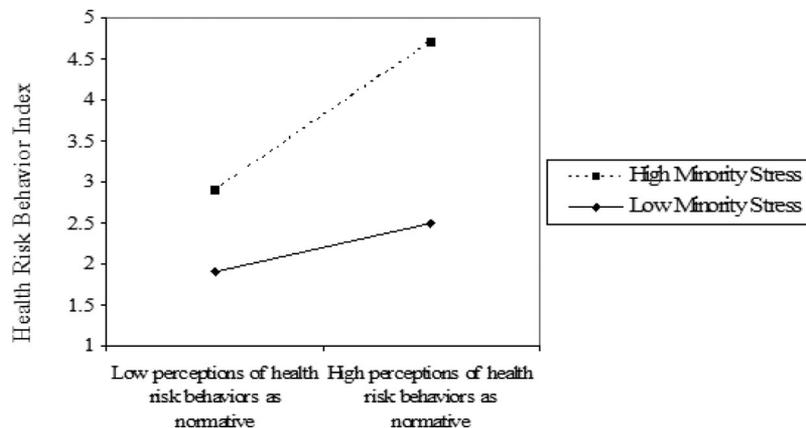


Figure 1. Interaction of minority stress and perceptions of normative health risk behavior.

with substance abuse problems or high-risk sexual behavior might recognize the relationship between these problematic behaviors and the sociocontextual factors that may explain their etiology. Understanding gay men's experiences as minorities and the impact of stigma and homophobia as they relate to potentially self-destructive behavior is an important association for counselors to consider in their interventions and treatment planning. The finding that minority stress moderated the relationship between social norms and health risk behaviors may help counselors better understand how minority stress can impact gay men's health behaviors not only directly but also indirectly. Specifically, counselors working with gay men may find that increases in minority stress may influence these clients' perspective of normative substance use and sexual behavior, and, henceforth, their own use of substances and sexual behavior. That is, the impact of minority stress on the relationship between perceptions of normative health behavior and gay men's own health behavior may be a mechanism for coping with the internal stress they experience if they internalize antigay sentiments and for coping with the trauma and feelings of vulnerability following physical assault because of their sexual orientation. Counselors can be mindful of how these factors might relate to their treatment of problematic health behaviors. Regarding minority stress, one suggestion is for counselors to help gay men understand the stress resulting from oppression and explore alternative coping strategies to manage negative feelings about themselves. Furthermore, counselors might explore gay men's perceptions of normative health behaviors as they relate to their own health behaviors in an effort to reveal potentially false impressions about others' behaviors as well as to increase their health-promoting behaviors.

Finally, gay men who endeavor to conform to masculine norms may be unintentionally placing themselves at risk; counselors might explore with them their experiences of being men and how their notions of "manliness" might be being enacted in unhealthy ways. We believe that counselors who understand these sociocontextual factors that impact gay men's lives will have a better footing by which to meet the needs of these men and help improve their lives.

We note several limitations to the present study. First, given the correlational nature of the study, we cannot make inferences about causal relationships between the predictors and gay men's health behaviors. Experimental and longitudinal data are required to determine the causal determinants and developmental trajectories of gay men's health behaviors. Also, the sample was recruited online, and respondents may have differed from nonrespondents (e.g., having resources that allowed access to the Internet). Third, the majority of respondents were Caucasian and well educated, raising concerns about whether these same relationships would be replicated with men from other racial and educational backgrounds. The variables measured in the study were also obtained through self-reports and online data collection. Although online surveys may raise concern about generalizability, a recent empirical analysis of online research concluded that "the data provided by internet methods are of at least as good quality as those provided through traditional paper and pencil measures" (Gosling, Vazire, Srivastava, & John, 2004, p. 102). Finally, the multifaceted nature of the three minority stress variables and four health risk behaviors resulted in low internal consistencies.

In conclusion, the findings from this study highlight the complex social context that gay men experience as it relates to health behaviors associated with an array of psychological and physical health concerns. Gay men simultaneously experience stressors from identifying as one of a minority sexual orientation, pressures to enact traditional masculinity, and social information from salient reference groups; and all these variables appear to make unique contributions in explaining gay men's health behaviors. Continued efforts need to be made to better understand factors that contribute to gay men's health behaviors and develop interventions to improve health behaviors and health outcomes for gay men. Future research might explore other predictors and moderators of gay men's health behaviors, as well as other health behaviors, in order to have a better understanding of the complex interactive effects of sociocontextual factors on the lives of gay men.

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Appendix A

Means, Standard Deviations, and Intercorrelations of Age, Health Risk Composite, AUDIT, Cigarette Use, Drug Use, URAI, Minority Stress Composite, Internalized Homophobia, Stigma, Attack, Social Norms Composite, Perceptions of Normative Alcohol Use, Tobacco Use, Drug Use, Sexual Risk Behavior, and CMNI

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	45.99	12.33	—															
2. Health Risk Composite			-.07	—														
3. AUDIT	4.14	4.37	-.08	.62**	—													
4. Cigarette Use	4.61	2.55	-.09	.57**	.17**	—												
5. Drug Use	16.69	5.65	-.04	.72**	.26**	.26**	—											
6. URAI	10.84	47.25	.00	.47**	.03	-.08	.19**	—										
7. Minority Stress Composite			.05	.03	.02	-.01	-.03	.09	—									
8. IHP	13.27	5.54	-.08	.03	.10	-.01	-.13*	.11*	.64**	—								
9. Stigma	36.88	11.22	.08	-.08	-.06	-.11	-.09	.07	.75**	.35**	—							
10. Attack	1.26	0.44	.09	.11	-.00	.11	.16**	-.02	.47**	-.17**	.04	—						
11. Social Norms Composite			-.16**	.35**	.13*	.27**	.29**	.14*	.09	.06	.09	.01	—					
12. Norms of Alcohol Use	9.71	3.92	.01	.26**	.25*	.15**	.15**	.07	.09	.10	.10	-.04	.78**	—				
13. Norms of Tobacco Use	8.84	3.52	-.22**	.30**	.07	.37**	.14*	.14*	.01	.00	.02	-.01	.73**	.43**	—			
14. Norms of Drug Use	7.82	3.32	-.17**	.32**	.11	.18**	.42**	.05	-.01	-.03	.00	.01	.76**	.51**	.35**	—		
15. Norms of Sexual Risk	7.54	3.15	-.19*	.19**	-.04	.14*	.17**	.18**	.17**	.10	.14*	.07	.77**	.44**	.45**	.47**	—	
16. CMNI	26.32	6.43	-.06	.17**	.12*	-.07	.08	.24**	.17**	.31**	.17**	-.15**	.19**	.21**	.09	.10	.18**	—

Note. Means and standard deviations are for untransformed, unstandardized variables. Correlations reported with variables transformed and standardized. AUDIT = Alcohol Use Disorders Identification Test (Saunders et al., 1993); URAI = unprotected receptive anal intercourse (number different partners in past 6 months); CMNI = Conformity to Masculine Norms Inventory (Mahalik et al., 2003); IHP = Internalized Homophobia Scale (Martin & Dean, 1987); Attack = history of antigay physical attack.
* $p < .05$. ** $p < .01$.

Received November 7, 2007

Revision received October 6, 2008

Accepted October 20, 2008 ■