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Coping Styles as Mediator of Sexual Orientation-Related Health Differences

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ABSTRACT

The higher prevalence of health problems in homosexual compared to heterosexual populations is usually understood as a consequence of minority stress. We hypothesized that differential rates of health problems also could result from sexual orientation-related differences in coping styles. We explored this using data collected in a general population-based study (N = 9684) via face-to-face interviews. A higher prevalence of both mental and physical health problems, as assessed with individual questions, the GHQ-12, and checklists, was observed in homosexual compared to heterosexual men and women. Coping style was related to sexual orientation in men, but not in women. Compared to heterosexual men, homosexual men more strongly applied emotion-oriented and avoidance coping strategies. Emotion-oriented coping mediated the differences in mental and physical health between heterosexual and homosexual men. Findings suggest the importance of further exploration of the development and use of emotion-oriented and avoidance coping by homosexual men.

INTRODUCTION

Several studies in large probability samples have shown that homosexuality is a risk factor for mental health problems (Cochran, Keenan, Schober, & Mays, 2000; Cochran, Sullivan, & Mays, 2003; Fergusson, Horwood, & Beautrais, 1999; Gilman et al., 2001; Jorm, Korten, Rodgers, Jacomb, & Christensen, 2002; King et al., 2003; McDaniel, Purcell, & D'Augelli, 2001; Meyer, 2003; Sandfort, de Graaf, & Bijl, 2003; Sandfort, de Graaf, Bijl, & Schnabel, 2001; Skegg, Nada-Raja, Dickson, Paul, & Williams, 2003). Sandfort et al. (2001), for instance, found in a large population sample of 7,076 heterosexually and homosexually active adults (aged 18–64 years) that homosexual men had a higher 12-month prevalence of

mood disorders and anxiety disorders than did heterosexual men, while homosexual women had a higher 12-month prevalence of substance use disorders than did heterosexual women. Lifetime prevalence rates reflected similar differences. In addition, mood disorders were more common in homosexual than in heterosexual women. Similar differences between homosexual and heterosexual persons have been found in other studies, regardless of whether participants were classified as homosexual or heterosexual based on their reported sexual behavior or self-labeled sexual orientation.

Few studies, if any, have been able to identify the causes of differences in mental health status in relation to sexual orientation. Most studies that established sexual orientation-related mental health differences were not designed to test causal explanations. In practice, this means that researchers are dependent upon which variables are available in data sets they work with. The cross-sectional design of such studies further limits the causal interpretations that can be made of any identified associations. One of the few studies exploring potential causes found that homosexual and bisexual individuals more frequently than heterosexual persons reported both lifetime and day-to-day experiences with discrimination (Mays & Cochran, 2001). Controlling for differences in such experiences decreased the disparity in psychiatric morbidity between homosexual and heterosexual persons.

Although empirical evidence is still insufficient, causes of differences in mental health status between homosexual and heterosexual populations are usually attributed to various forms of stigma. There are strong indications that this is justified. Such attributions are based on studies among gay and lesbian people, which show that the level of stigma experienced is related to impaired mental health (Brooks, 1981; D'Augelli, 2002; Frable, Wortman, & Joseph, 1997; Garnets, Herek, & Levy, 2003; Herek, Gillis, & Cogan, 1999; Herek, Gillis, Cogan, & Glunt, 1997; Meyer & Dean, 1998; Mills et al., 2004; Waldo, Hesson-McInnis, & D'Augelli, 1998). As Meyer (2003) has indicated, stigma can be experienced in a variety of ways, ranging from the anticipation of negative treatment to actual forms of extreme violence.

Sexual orientation-related health disparities may also result from individual differences in personality styles between homosexual and heterosexual populations in addition to stigma. Such explanations have not yet been explored. One such explanation could be that homosexual and heterosexual persons have different coping styles, which might contribute to the observed differences in mental health. In the only study we were able to identify, coping styles of gay, lesbian, and bisexual adolescents differed indeed from those of heterosexual adolescents (Lock & Steiner, 1999). There are several reasons why we assume this could be the case.

First of all, an abundance of studies has shown that coping styles are related to both mental and physical health. Emotion-oriented coping, for instance, has been found to be positively related to various health outcomes, such as depression, anxiety, disease progression, and poor recovery from illnesses in diverse populations (Ben-Zur, Gilbar, & Lev, 2001; Blaney et al., 1997; Cosway, Endler, Sadler, & Deary, 2000; Courbasson, Endler, & Kocovski, 2002; Drossman et al., 2000; Endler & Parker, 1994; Higgins & Endler, 1995; Mulder, de Vroome, van Griensven, Antoni, & Sandfort, 1999; Nolen-Hoeksema, 2001; Penedo et al., 2001; Zea, Reisen, & Poppen, 1999). Differential coping styles are usually also seen as contributing to health disparities between men and women (Nolen-Hoeksema & Rusting, 1999; Rosenfield, 1999; Sigmon, Stanton, & Snyder, 1995). From this perspective, women's emotionally oriented responses to stress, compared to the more instrumental problem-solving responses of men, result in higher levels of depression in women. The actual relationship between gender and coping style does, however, seem to be more complex and should also acknowledge the social roles both genders are in (Rosario, Shinn, Morch, & Carol, 1988; Sigmon et al., 1995). Furthermore, gender also seems to affect whether specific coping styles have positive or negative health effects (Endler & Parker, 1994; Higgins & Endler, 1995; Hobfoll, Dunahoo, Ben-Porath, & Monnier, 1994; Recklitis & Noam, 1999; Tamres, Janicki,

& Helgeson, 2002). Higgins and Endler (1995), for instance, showed that task-oriented coping was negatively related to distress for men but not for women.

Although no study to date explored this, coping styles could also be related to sexual orientation. There are at least two reasons why this could be so. First, experiences of stigma might reduce a sense of control or induce a state of learned helplessness, and subsequently reinforce particular coping styles while discouraging others in homosexual persons (Peterson, Folkman, & Bakeman, 1996). Such a relationship is suggested by a study that assessed the impact of child sexual abuse and stigma on methods of coping with sexual assault. In this study, Gibson and Leitenberg (2001) found that sexually assaulted women with a history of child sexual abuse used more disengagement methods of coping to deal with the assault than women without such a history. Furthermore, the relationship between prior abuse and the use of disengagement coping strategies was mediated by feelings of stigma. Another study suggests that the way people cope is related to their position in society. In this study, Major and Schmader (1998) showed that African-American students were more likely than European-American students to disengage their self-esteem from performance feedback in situations in which either negative stereotypes, expectations of racial bias, or expectations of poor performance were primed. Consequently, it could be that, due to their disadvantaged position in society, homosexual people use different coping styles than heterosexual people. Lock and Steiner (1999) who reported both stronger avoidance and approach coping in gay, lesbian, and bisexual adolescents compare to heterosexual adolescents, indeed attributed these differences to the adolescents' social position. While they saw avoidance coping as a productive way to cope with difficulties that sexual minority adolescents encounter and cannot otherwise be surmounted, higher levels of approach coping were interpreted as related to an increased need for vigilance and self-preservation in a hostile school environment. In line with Meyer's (2003) model of stress, such coping might have negative health consequences, though.

Another, potentially related possibility is that sexual orientation and coping styles are associated due to differences in gender roles which have been shown to be related to both coping styles and sexual orientation (Brems & Johnson, 1989; Broderick & Korteland, 2002; Gianakos, 2002; Radecki & Jaccard, 1996; Washburn-Ormachea, Hillman, & Sawilowsky, 2004). One study, for instance, found that in women, masculinity correlated positively with active coping and negatively with support seeking; femininity was positively associated with support seeking (Lengua & Stormshak, 2000). Another study showed that gender role identity made an important and independent contribution to the endorsement of coping strategy use (Renk & Creasey, 2003). Adolescents who were high in masculinity endorsed higher levels of problem-focused coping strategies compared to those who were low in masculinity, while adolescents who were high in femininity endorsed higher levels of emotion-focused coping strategies than those who were low in femininity.

The relationship between sexual orientation and gender role has been established in various studies, suggesting homosexual men to be less masculine or more feminine compared to heterosexual men, while for women the opposite pattern is found (Finlay & Scheltema, 1991; Lippa, 2002; Lippa & Arad, 1997; Pillard, 1991; Sandfort, 2005). If these relationships indeed exist, one would expect homosexual men's coping styles to differ from those of heterosexual men and to resemble heterosexual women's coping styles. Analogous differences are to be expected for homosexual women's coping styles.

The present study was designed to explore whether there are differences in mental and physical health outcomes and coping style in relation to sexual orientation and, if present, whether differences in coping styles account for observed differences in health outcomes.

METHOD

Participants

The data used for this study originate from the second Dutch National Survey of General Practice, carried out in 2001 (Sandfort, Bakker, Schellevis, & Vanwesenbeeck, 2006; Westert et al., 2004). This is a health interview survey in which an all-age random sample of the Dutch population was invited to participate. These people were randomly selected among 399,068 persons registered in the 104 participating general medical practices, regardless of their health status or doctor visit. Because virtually every non-institutionalized Dutch inhabitant is registered in a general medical practice, the total practice population is representative for the Dutch non-institutionalized population. Selected individuals were personally contacted (at least five attempts were made) after they had received a letter from their general practitioner pointing out the relevance of the study and the way in which confidentiality was handled.

Of the 19,685 invited persons, 12,699 participated (65% response). Non-response was attributable to refusals in two thirds of the cases. The participants' characteristics were comparable with those of the Dutch population in terms of age, level of education, and type of health insurance (public versus private); however, migrants of non-Western origin were underrepresented due to their limited mastery of the Dutch language (data not shown; see Westert et al., 2004). The 90-minute interview took place at the persons' homes by a trained interviewer with help of a notebook computer. Interviews took place over a period of 12 months (December 2000–December 2001), with random allocation of 25% of the sample to each quarter of the year. This study used data from participants 18 years and older (N = 9684).

According to Dutch legislation, it was not necessary to obtain informed consent from the individual participants due to the non-experimental nature of the study. However, for the study, a privacy regulation was established in accordance with the Dutch privacy legislation. The first author received approval to conduct data analysis and report writing from the IRB of the New York State Psychiatric Institute.

Of all participants 18 years and older (N = 9684), 98.2% could be classified as heterosexual, bisexual, or homosexual. Non-classification was due to missing data on the participants' gender and/or sexual orientation. Demographic characteristics for these 9511 participants are shown in Table 1. Of the 9,511 participants, .9% (N = 90) was categorized as bisexual and 1.5% (N = 143) as homosexual. A bisexual orientation was more frequent among women compared to men (1.2% and .6% respectively; $\chi^2 = 10.25$, $p < .01$). Sexual orientation was related to age: bisexual participants were older than heterosexual participants. Substantially more heterosexual than homosexual and bisexual men and women were married and/or living with a steady partner. All homosexual participants who reported being in an intimate relationship had a partner of the same sex. Larger proportions of bisexual and homosexual participants were highly educated compared to heterosexual participants. Finally, sexual orientation was related to residency status. Bisexual and homosexual men and women were more likely to live in highly urbanized areas compared to heterosexual men and women.

[TABLE 1]

MEASURES

Sexual Orientation

Sexual orientation was assessed with the question "Would you please indicate your sexual preference? You only have to mention the number that stands in front of your answer on this card." The card listed the following five options: women exclusively; women predominantly; both women and men; men predominantly; and men exclusively. The term "preference" was

used to avoid the more technical term "attraction." This question was only asked to participants 18 years and older. Exclusive or predominant attraction to the same and the other sex was categorized as homosexual and heterosexual, respectively. Participants with attraction to both women and men were categorized as bisexual.

Health Outcomes

Regarding physical health, both the occurrence of 37 acute physical symptoms experienced during the preceding 14 days and the presence of 19 chronic diseases were assessed with a checklist. The acute physical complaints included headache, sore throat, heartburn, and fever. Chronic conditions included diabetes, migraine, asthma, and high blood pressure. We determined the total numbers of both acute physical complaints and chronic conditions.

Acute Mental Health Problems

Acute mental health problems were assessed by means of the General Health Questionnaire (GHQ-12) (Goldberg & Hillier, 1979). Responses to 12 items were scored in binary format, resulting in values ranging from 0 to 12 (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001), a high score indicating a higher risk for serious psychopathology. Additionally, participants were asked whether they had had once in their lifetime or during the past year, an episode of severe anxiety or depression that lasted for at least 2 weeks.

Coping Styles

An abbreviated version of the Coping Inventory for Stressful Situations was used, which measures three main coping strategies: task-oriented coping, dealing with the problem at hand; emotion-oriented coping, concentrating on the resultant emotions; and avoidance coping, trying to avoid the problem (Endler & Parker, 1990). Each strategy was assessed with seven items using 5-point Likert scales. The inventory has been shown in several studies to have a stable factor structure, high internal reliability, stable test-retest reliability, and adequate construct and criterion-related validity (Cosway et al., 2000; Endler & Parker, 1994). Internal reliability for the three scales in this study was .81, .79, and .78, respectively.

DATA ANALYSIS

We first compared bisexual and homosexual participants with heterosexual participants on age and sociodemographic variables using univariate ANOVA with LSD post-hoc tests and chi-square tests. Subsequently, we used multiple linear regression and multiple logistic regression to compare bisexual and homosexual participants with heterosexual participants on seven health outcome variables, controlling for age, level of education, and urbanicity based on zip codes. To test the effect of sexual orientation, two dummy variables were created: bisexual participants versus the rest and homosexual participants versus the rest; including both dummy variables in the regression equation at the same time enabled us to assess whether bisexual persons and homosexual persons differed from heterosexual persons. Since various studies have shown that the effect of sexual orientation on health is different for men and women, these analyses were done separately by gender (Sandfort et al., 2001). In the third step, we tested the association of gender and sexual orientation with coping styles controlling for relevant covariates using ANCOVA. Subsequently, in the fourth step of our data analysis, we tested the relationships between coping styles and health outcomes using multiple linear regression and multiple logistic regression; since the effect of coping styles on health seems to be different for men and women, these analyses were again done separately by gender (Lengua & Stormshak, 2000).

In the final step of our analysis, we used multiple linear regression and multiple logistic regression to test whether coping styles functioned as mediators between sexual orientation and health outcomes. Following Baron and Kenny's (1986) guidelines, we only did so in those cases that sexual orientation, coping styles, and health outcomes were interrelated. In the first model, we included the two dummy variables for sexual orientation (bisexuality versus rest and homosexuality versus rest) and confounders. In the second, step we

independently tested the role of the relevant coping variables. In a final model, we included the coping variables that were shown to be potential mediators. To evaluate the role of coping variables as mediators we assessed decreases in AORs and bs by calculating the proportion of the difference between the respective AOR and regression coefficient of Model 1 and Model 2, to the AOR or b regression coefficient of Model 1. For all tests, two-tailed p-values less than or equal to .05 were considered to reflect statistically significant results.

RESULTS

Physical Health

Compared to heterosexual men, homosexual men reported a higher total number of acute physical complaints during the preceding 14 days (Table 2); bisexual men did not differ from heterosexual men, while there were no significant differences in acute symptoms for women in relation to sexual orientation. Sexual orientation was also related to the prevalence of chronic diseases (Table 2). On average, homosexual men reported more chronic conditions than heterosexual men. For bisexual men and women, the differences with heterosexual men and women were opposite: bisexual men had fewer chronic conditions compared to heterosexual men, while bisexual women had more chronic conditions compared to heterosexual women.

[TABLE 2]

Mental Health

Homosexual men and women more frequently reported acute mental health problems, as measured with the GHQ, than heterosexual men and women (Table 2); bisexual people did not differ from heterosexual people in this respect. Compared to heterosexual men, more homosexual men reported to have felt anxious and depressed for at least 2 weeks, both during their lifetime as well as in the preceding year (Table 3). Homosexual women only more frequently reported feelings of depression in the preceding year than heterosexual women did. Bisexual persons did not differ significantly from heterosexual persons.

[TABLE 3]

COPING STYLES

The 2 (gender) by 3 (sexual orientation) ANCOVAs yielded significant main effects for gender on task-oriented coping, $F(1, 9449) = 33.76$, $p < .001$, emotion-oriented coping, $F(1, 9449) = 355.44$, $p < .001$, and avoidance coping, $F(1, 9449) = 721.92$, $p < .001$. Table 4 shows that men scored higher on task-oriented coping than women, while women scored higher than men on emotion-oriented and avoidance coping. Given the significant interaction effects of gender by sexual orientation and to facilitate interpretation of differences, we subsequently evaluated the effect of sexual orientation separately by gender. These analyses only showed significant effects of sexual orientation for men in emotion-oriented coping, $F(1, 9449) = 7.91$, $p < .001$, and avoidance coping, $F(1, 9449) = 14.41$, $p < .001$. Simple contrast analyses indicated that these effects were caused by homosexual men, who scored higher than heterosexual men on emotion-oriented coping and avoidance coping. Bisexual men did not differ from heterosexual men. The coping styles of bisexual and homosexual women did not differ significantly from heterosexual women's coping styles.

[TABLE 4]

Coping Styles and Health Outcomes

Controlling for demographic variables, coping styles were related to health outcomes for both men and women. Emotion-oriented coping and avoidance coping were associated with poorer health outcomes for both genders. For continuous variables the absolute values of the regression coefficients ranged from .26 to 1.48 for emotion-oriented coping (all ps < .001) and form .06 to .41 for avoidance coping (.05 < p < .000). For dichotomous variables the odds ratios ranged from 1.65 to 4.05 for emotion-oriented coping (all ps < .001) and from 1.16 to 1.46 for avoidance coping (all ps < .001). There were few significant relationships between task-oriented coping and health outcomes; the pattern of these relationships differed between men and women (data not shown).

Coping Styles as Mediators

Testing whether coping style mediated the relationship between sexual orientation and health outcomes is, according to Baron and Kenny's (1986) guidelines, only relevant in those cases that sexual orientation, coping styles, and health outcomes were interrelated. This means that we only examined the potential role of avoidance and emotion-oriented coping styles as mediators in homosexual and heterosexual men. We first assessed the role of both coping styles separately. Since both coping styles turned out to be potential mediators in all cases (data not shown), we subsequently assessed their potential role as mediator simultaneously. Tables 5 and 6 show that, in almost all cases, emotion-oriented coping and not avoidance coping was independently related to the health outcomes. Inclusion of emotion-oriented coping increased the explained variance in each health outcome (the changes in R^2 ranged from .02 to .12). More importantly, by introducing emotion-oriented coping, the role of sexual orientation in the explanation of acute mental health problems, and lifetime feelings of anxiety and depression was decreased by 32%, 12%, and 11%, respectively. Emotion-oriented coping seemed to completely eliminate the role of sexual orientation in explaining total numbers of acute physical complaints and chronic diseases as well as having experienced at least 2 weeks of anxiety and depression in the preceding year.

[TABLE 5]

[TABLE 6]

DISCUSSION

As in other recent studies using population-based samples, we found significant differences in health outcomes in relation to sexual orientation, with homosexual persons having more health problems than heterosexual people. Unlike what is found in several other studies (Dodge & Sandfort, 2007), bisexual men and women did not differ from heterosexual men and women in terms of their health status. Also in line with earlier studies, we found differences in coping styles between men and women, with women scoring higher on emotion-oriented coping and avoidance coping than men, and men scoring higher on task-oriented coping. For both men and women, especially emotion-oriented coping and avoidance coping were related with poorer health outcomes.

A relatively new finding was that, at least in men, sexual orientation was related to coping style (see also Lock & Steiner, 1999). Compared to heterosexual men, homosexual men used more emotion-oriented coping and avoidance coping, which are more frequently observed in women than in men (Endler & Parker, 1994). Bisexual men did not differ from heterosexual men while, in women, sexual orientation was not related to coping style. In men, emotion-oriented coping functioned as a mediator between sexual orientation and all mental and

physical health outcomes studied; after controlling for coping style the health disparities between homosexual and heterosexual men decreased or disappeared.

These findings suggest that the health disparities between homosexual and heterosexual men not only result from stigma but might also be a consequence of the homosexual men's stronger emotion-oriented coping style. Emotion-oriented coping has been shown to be related to higher levels of depression (Cosway et al., 2000; Endler & Parker, 1994; Higgins & Endler, 1995). An interesting finding was the differential effect of emotion-oriented coping on the lifetime and one-year occurrence of anxiety and depression. The (statistical) effect of sexual orientation on the one-year occurrence of anxiety and depression completely disappeared after controlling for emotion-oriented coping. Although reduced, the effect of sexual orientation remained significant with regard to the lifetime occurrence of these problems. This could mean various things. First of all, it could be that homosexual men experienced more frequent or intense periods of anxiety and depression during their lifetime than heterosexual men that cannot be completely explained by differences in coping styles. More frequent or intense periods of these feelings could be the result of different or more stressors that homosexual men are confronted with. Not taking actual past and present stressors into account is one of the limitations of this study, implicitly assuming that homosexual and heterosexual persons encounter identical or the same level of stressors. Various studies have shown this not to be the case (Mays & Cochran, 2001; Sandfort, Bos, & Vet, 2006). Separate from the kind and intensity of the stressors is the appraisal of stressors. Just as there are gender differences in stressor appraisal—women usually appraise stressors as more serious then men (Tamres et al., 2002)—there might also be sexual orientation-related differences in the appraisal of specific stressors. Further research should explore this.

Another explanation for the differential role of emotion-oriented coping in explaining one-year versus lifetime occurrence of anxiety and depression is that coping styles change over time and that emotion-oriented coping is the outcome of feelings of depression and anxiety, potentially induced by experiences with stigma. Although coping is usually not studied that way, anxiety and depression on the one hand and coping on the other might affect each other reciprocally. This was supported by a study comparing depressed persons with HIV infection with non-depressed persons. When attempting to resolve significant stressors, the former more often distanced themselves from the stressor, used more escape-avoiding coping, and less frequently found something positive in the stressful situation, compared to the non-depressed HIV infected people (Heckman, Kochman, Sikkema, & Kalichman, 1999).

Whether differences in coping styles between homosexual and heterosexual men are a consequence of differences in gender role or are learned and result from stressors that men encountered cannot be answered based on the available data and should be explored in further studies. It is not clear why coping styles and health problems only differed between homosexual and heterosexual men. For bisexual men, the lack of differences in health outcomes might be related to a lack of differences in coping styles. This would imply that, compared to heterosexual men, bisexual men encounter the same level of stressors, do not differ in the appraisal of stressors, or cope more effectively with a higher level of stressors. The absence of differences in coping styles between heterosexual, bisexual, and homosexual women could mean that, in the development of coping skills, homosexual women are socialized primarily based on their gender and not in relation to their sexual orientation. It could also be that bisexual and homosexual women experience less stigma or that their gender nonconformity has less negative consequences than it does for homosexual men (cf. Sandfort et al., 2003).

Except for the ones mentioned above, this study has some further limitations that should be taken into account. Even though it is noteworthy to see that emotion-oriented coping mediates the relation of sexual orientation with both mental and physical health outcomes, it is unclear whether coping would have the same effect regarding disparities in more severe health outcomes, such as psychiatric disorders. Furthermore, there are other health outcomes besides depression and anxiety, such as those that are the consequence of externalizing

instead of internalizing problems (e.g., substance use, antisocial behavior), for which different relations with coping styles might be found. Final methodological limitations concern the cross-sectional design of the study and the relatively weak operationalization of some of the variables (e.g., sexual orientation; cf. Sell, 1997).

Findings suggest the importance of further exploration of the development and use of emotion-oriented and avoidance coping by homosexual men. A clinical implication of these findings is that at least for homosexual men it might be advantageous to help them to reduce their use of emotion-oriented and avoidance coping strategies. Given that stigma plays some role in sexual orientation-related differences in health status and potentially also in coping styles, social change to combat stigma is imperative.

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REFERENCES

Adlaf, E. M., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The prevalence of elevated psychological distress among Canadian undergraduates: Findings from the 1998 Canadian Campus Survey. Journal of American College Health, 50, 67–72.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality & Social Psychology, 51, 1173–1182.

Ben-Zur, H., Gilbar, O., & Lev, S. (2001). Coping with breast cancer: Patient, spouse, and dyad models. Psychosomatic Medicine, 63, 32–39.

Blaney, N. T., Goodkin, K., Feaster, D., Morgan, R., Millon, C., Szapocznik, J., et al. (1997). A psychosocial model of distress

over time in early HIV-1 infection: The role of life stressors, social support and coping. Psychology and Health, 12, 633– 653.

Brems, C., & Johnson, M. E. (1989). Problem-solving appraisal and coping style: The influence of sex-role orientation and gender. Journal of Psychology & Human Sexuality, 2, 187–194.

Broderick, P. C., & Korteland, C. (2002). Coping style and depression in early adolescence: Relationships to gender, gender role, and implicit beliefs. Sex Roles, 46, 201–213.

Brooks, V. (1981). Minority stress and lesbian women. Lexington, MA: Lexington Books.

Cochran, S. D., Keenan, C., Schober, C., & Mays, V. M. (2000). Estimates of alcohol use and clinical treatment needs among homosexually active men and women in the U.S. population. Journal of Consulting and Clinical Psychology, 68, 1062–1071.

Cochran, S. D., Sullivan, J. G., & Mays, V. M. (2003). Prevalence of mental disorders, psychological distress, and mental services use among lesbian, gay, and bisexual adults in the United States. Journal of Consulting and Clinical Psychology, 71, 53–61.

Cosway, R., Endler, N. S., Sadler, A. J., & Deary, I. J. (2000). The Coping Inventory for Stressful Situations: Factorial structure and associations with personality traits and psychological health. Journal of Applied Biobehavioral Research, 5, 121–143.

Courbasson, C., Endler, N. S., & Kocovski, N. L. (2002). Coping and psychological distress for men with substance use disorders. Current Psychology: Developmental, Learning, Personality, Social, 21, 35–49.

D'Augelli, A. R. (2002). Mental health problems among lesbian, gay, and bisexual youths ages 14 to 21. Clinical Child Psychology and Psychiatry 7, 433–456.

Dodge, B., & Sandfort, T. G. M. (2007). Mental health among bisexual individuals when compared to homosexual and heterosexual individuals: An introductory review. In B. A. Firestein (Ed.), Becoming visible. Counseling bisexuals across the lifespan (pp. 28–51). New York: Columbia University Press.

Drossman, D. A., Leserman, J., Li, Z., Keefe, F., Hu, Y. J., & Toomey, T. C. (2000). Effects of coping on health outcome among women with gastrointestinal disorders. Psychosomatic Medicine, 62, 309–317.

Endler, N. S., & Parker, J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. Journal of Personality and Social Psychology, 58, 844–854.

Endler, N. S., & Parker, J. D. A. (1994). Assessment of multidimensional coping: Task, emotion, and avoidance strategies. Psychological Assessment, 6, 50–60.

Fergusson, D. M., Horwood, L., & Beautrais, A. L. (1999). Is sexual orientation related to mental health problems and suicidality in young people? Archives of General Psychiatry, 56, 876–880.

Finlay, B., & Scheltema, K. E. (1991). The relation of gender and sexual orientation to measures of masculinity, femininity, and androgyny: A further analysis. Journal of Homosexuality, 21(3), 71–85.

Frable, D. E. S., Wortman, C., & Joseph, J. (1997). Predicting selfesteem, well-being, and distress in a cohort of gay men: The importance of cultural stigma, personal visibility, community networks, and positive identity. Journal of Personality, 65, 599– 624.

Garnets, L. D., Herek, G. M., & Levy, B. (2003). Violence and victimization of lesbians and gay men: Mental health consequences. In L. D. Garnets & D. C. Kimmel (Eds.), Psychological perspectives on lesbian, gay, and bisexual experiences (pp. 188– 206). New York: Columbia University Press.

Gianakos, I. (2002). Predictors of coping with work stress: The influences of sex, gender role, social desirability, and locus of control. Sex Roles, 46, 149–158.

Gibson, L. E., & Leitenberg, H. (2001). The impact of child sexual abuse and stigma on methods of coping with sexual assualt among undergraduate women. Child Abuse and Neglect, 25, 1343–1361.

Gilman, S. E., Cochran, S. D., Mays, V. M., Hughes, M., Ostrow, D.,& Kessler, R. C. (2001). Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. American Journal of Public Health, 91, 933–939.

Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. Psychological Medicine, 9, 139– 145.

Heckman, T. G., Kochman, A., Sikkema, K. J., & Kalichman, S. C. (1999). Depressive symptomatology, daily stressors, and ways of coping among middle-age and older adults living with HIV disease. Journal of Mental Health and Aging, 5, 311–322.

Herek, G. M., Gillis, J., Cogan, J. C., & Glunt, E. K. (1997). Hate crime victimization among lesbian, gay, and bisexual adults. Journal of Interpersonal Violence, 12, 195–215.

Herek, G. M., Gillis, J. R., & Cogan, J. C. (1999). Psychological sequelae of hate-crime victimization among lesbian, gay, and bisexual adults. Journal of Consulting and Clinical Psychology, 67, 945–951.

Higgins, J. E., & Endler, N. S. (1995). Coping, life stress, and psychological and somatic distress. European Journal of Personality, 9, 253–270.

Hobfoll, S. E., Dunahoo, C. L., Ben-Porath, Y., & Monnier, J. (1994). Gender and coping: The dual-axis model of coping. American Journal of Community Psychology, 22, 49–82.

Jorm, A. F., Korten, A. E., Rodgers, B., Jacomb, P. A., & Christensen, H. (2002). Sexual orientation and mental health: Results from a community survey of young and middle-aged adults. British Journal of Psychiatry, 180, 423–427.

King, M., McKeown, E., Warner, J., Ramsay, A., Johnson, K., Cort, C., et al. (2003). Mental health and quality of life of gay men and lesbians in England and Wales: Controlled, cross-sectional study. British Journal of Psychiatry, 183, 552–558.

Lengua, L. J., & Stormshak, E. A. (2000). Gender, gender roles, and personality: Gender differences in the prediction of coping and psychological symptoms. Sex Roles, 43, 787–820.

Lippa, R. A. (2002). Gender-related traits of heterosexual and homosexual men and women. Archives of Sexual Behavior, 31, 83–98.

Lippa, R. A., & Arad, S. (1997). The structure of sexual orientation and its relation to masculinity, femininity, and gender diagnosticity: Different for men and women. Sex Roles, 37, 187–208.
Lock, J., & Steiner, H. (1999). Relationships between sexual orientation and coping styles of gay, lesbian, and bisexual adolescents from a community high school. Journal of the Gay and Lesbian Medical Association, 3, 77–82.
Major, B., & Schmader, T. (1998). Coping with stigma through psychological disengagement. In J. K. Swim & C. Stangor (Eds.), Prejudice: The target's perspective (pp. 219–241). San Diego, CA: Academic Press.
Mays, V. M., & Cochran, S. D. (2001). Mental health correlates of perceived discrimination among lesbian, gay, and bisexual adults in the United States. American Journal of Public Health, 91, 1869–1876.
McDaniel, J., Purcell, D., & D'Augelli, A. R. (2001). The relationship between sexual orientation and risk for suicide: Research findings and future directions for research and prevention. Suicide and Life-Threatening Behavior, 31(Suppl), 84–105.
Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychological Bulletin, 129, 674–697.
Meyer, I. H., & Dean, L. (1998). Internalized homophobia, intimacy, and sexual behavior among gay and bisexual men. In G. M. Herek (Ed.), Stigma and sexual orientation: Understanding prejudice against lesbians, gay men, and bisexuals (pp. 160–186). Thousand Oaks, CA: Sage Publications.
Mills, T. C., Paul, J., Stall, R., Pollack, L., Canchola, J., Chang, Y. J., et al. (2004). Distress and depression in men who have sex with men: The Urban Men's Health Study. American Journal of Psychiatry, 161, 278–285.
Mulder, C. L., de Vroome, E. M., van Griensven, G. J., Antoni, M. H., & Sandfort, T. G. (1999). Avoidance as a predictor of the biological course of HIV infection over a 7-year period in gay men. Health Psychology, 18, 107–113.
Nolen-Hoeksema, S. (2001). Gender differences in depression. Current Directions in Psychological Science, 10, 173–176.
Nolen-Hoeksema, S., & Rusting, C. L. (1999). Gender differences in well-being. In D. Kahneman, E. Diener & N. Schwarz (Eds.), Well-being: The foundations of hedonic psychology (pp. 330– 350). New York: Russell Sage Foundation.
Penedo, F. J., Antoni, M. H., Schneiderman, N., Ironson, G. H., Malow, R. M., Cruess, S., et al. (2001). Dysfunctional attitudes, coping, and depression among HIV-seropositive men who have sex with men. Cognitive Therapy and Research, 25, 591–606.
Peterson, J. L., Folkman, S., & Bakeman, R. (1996). Stress, coping, HIV status, psychosocial resources, and depressive mood in African American gay, bisexual, and heterosexual men. American Journal of Community Psychology, 24, 461–487.
Pillard, R. C. (1991). Masculinity and femininity in homosexuality: ''Inversion'' revisited. In J. C. Gonsiorek & J. D. Weinrich (Eds.), Homosexuality: Research implications for public policy (pp. 32– 43). Newbury Park, CA: Sage.
Radecki, C. M., & Jaccard, J. (1996). Gender-role differences in decision-making orientations and decision-making skills. Journal of Applied Social Psychology, 26, 76–94.
Recklitis, C. J., & Noam, G. G. (1999). Clinical and developmental perspectives on adolescent coping. Child Psychiatry and Human Development, 30, 87–101.
Renk, K., & Creasey, G. (2003). The relationship of gender, gender identity and coping strategies in late adolescents. Journal of Adolescence, 26, 159–168.
Rosario, M., Shinn, M., Morch, H., & Carol, B. (1988). Gender differences in coping and social supports: Testing socialization and role constraint theories. Journal of Community Psychology, 16, 55–69.
Rosenfield, S. (1999). Gender and mental health: Do women have more psychopathology, men more, or both the same (and why)?. In A. V. Horwitz & T. L. Scheid (Eds.), A handbook for the study of mental health: Social contexts, theories, and system (pp. 348–360). New York: Cambridge University Press.
Sandfort, T. G. M. (2005). Sexual orientation and gender: Stereotypes and beyond. Archives of Sexual Behavior, 34, 595–611.

Sandfort, T. G. M., Bakker, F., Schellevis, F. G., & Vanwesenbeeck, I (2006). Sexual orientation and mental and physical health status: Findings from a Dutch population survey. American Journal of Public Health, 96, 1119–1125.

Sandfort, T. G. M., Bos, H., & Vet, R. (2006). Lesbians and gay men at work: Consequences of being out. In A. M. Omoto & H. S. Kurtzman (Eds.), Sexual orientation and mental health: Examining identity and development in lesbian, gay, and bisexual people (pp. 225–244). Washington, DC: American Psychological Association.

Sandfort, T. G. M., de Graaf, R., & Bijl, R. V. (2003). Same-sex sexuality and quality of life: Findings from the Netherlands Mental Health Survey and Incidence Study. Archives of Sexual Behavior, 32, 15–22.

Sandfort, T. G. M., de Graaf, R., Bijl, R. V., & Schnabel, P. (2001). Same-sex sexual behavior and psychiatric disorders: Findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Archives of General Psychiatry, 58, 85–91.

Sell, R. L. (1997). Defining and measuring sexual orientation: A review. Archives of Sexual Behavior, 26, 643–658.

Sigmon, S. T., Stanton, A. L., & Snyder, C. R. (1995). Gender differences in coping: A further test of socialization and role constraint theories. Sex Roles, 33, 565–587.

Skegg, K., Nada-Raja, S., Dickson, N., Paul, C.,& Williams, S. (2003). Sexual orientation and self-harm in men and women. American Journal of Psychiatry, 160, 541–546.

Tamres, L. K., Janicki, D.,&Helgeson, V. S. (2002). Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. Personality and Social Psychology Review, 6, 2– 30.

Waldo, C. R., Hesson-McInnis, M. S., & D'Augelli, A. R. (1998). Antecedents and consequences of victimization of lesbian, gay, and bisexual young people: A structural model comparing rural university and urban samples. American Journal of Community Psychology, 26, 307–334.

Washburn-Ormachea, J. M., Hillman, S. B., & Sawilowsky, S. S. (2004). Gender and gender-role orientation differences on adolescents' coping with peer stressors. Journal of Youth & Adolescence, 33, 31–40.

Westert, G. P., Schellevis, F. G., De Bakker, D. H., Groenewegen, P. P., Bensing, J. M., & Van der Zee, J. (2004). Monitoring health inequalities through general practice: The Second Dutch National Survey of General Practice. European Journal of Public Health, 15, 59–65.

Zea, M. C., Reisen, C. A., & Poppen, P. J. (1999). Psychological wellbeing among Latino lesbians and gay men. Cultural Diversity & Ethnic Minority Psychology, 5, 371–379.

TABLES

Table 1 Means and proportions of demographic variables by gender and sexual orientation

		Men				Women			
		Heterosexual (n = 4140)	Bisexual (n = 25)	Homosexual (n = 64)	F/χ^2	Heterosexual (n = 5138)	Bisexual (n = 65)	Homosexual (n = 79)	F/χ^2
Age (in years)	*M*	48.6	57.2[a]	45.7	4.3*	49.0	53.5[a]	49.9	2.3
	SD	16.7	19.9	15.8		17.1	19.9	19.8	
Lives with a steady partner (%)		76.3	56.5[a]	40.6[a]	48.3***	70.5	33.8[a]	27.8[a]	106.0***
Educational level (%)									
Primary, basic vocational		32.9	32.0	23.8		37.0	32.3	34.2	
Lower secondary		36.2	28.0	25.4	18.0**	36.4	29.2	24.1[a]	22.3***
Higher secondary		7.2	16.0	6.3		7.8	4.6	7.6	
Higher professional, university		23.7	24.0	44.4[a]		18.8	33.8[a]	34.2[a]	
Urbanicity (%)									
Lowest		19.0	28.0	6.3[a]		18.6	18.5	17.7	
Lower		26.9	4.0	14.1[a]		25.6	15.4	17.7	
Medium		20.5	20.0	15.6	44.0***	20.1	7.7[a]	15.2	27.6***
Higher		18.3	28.0	23.4		19.4	29.2[a]	20.3	
Highest		15.4	20.0	40.6[a]		16.3	29.2[a]	29.1[a]	

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

[a] Value of bisexual or homosexual group differs significantly from value in heterosexual group

Table 2 Multiple linear regression analysis for sexual orientation predicting health outcomes in men and women[a]

	Men								Women							
	Heterosexual (n = 4140)		Bisexual (n = 25)		*b*	Homosexual (n = 64)		*b*	Heterosexual (n = 5138)		Bisexual (n = 65)		*b*	Homosexual (n = 79)		*b*
	M	*SD*	*M*	*SD*		*M*	*SD*		*M*	*SD*	*M*	*SD*		*M*	*SD*	
Total acute physical complaints	3.50	3.45	3.00	3.42	−.57	4.88	4.64	1.12*	5.02	4.06	5.38	5.25	.30	5.70	5.11	.65
Total chronic diseases	1.17	1.41	.76	1.05	−.67*	1.52	1.80	.42*	1.67	1.77	2.28	2.20	.48*	1.91	1.92	.24
Acute Mental health problems (GHQ)	.95	2.03	.80	2.10	−.11	2.20	3.40	1.08***	1.33	2.41	1.71	2.41	.38	1.94	2.75	.59*

Note: Absolute range Total acute physical complaints, 0–37; absolute range Total chronic diseases, 0–39; absolute range Acute Mental Health Problems, 0–12

[a] Controlling for age, education, and urbanicity

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 3 Multiple logistic regression analysis for sexual orientation predicting anxiety and depression in men and women[a]

Men	Heterosexual (n = 4140)	Bisexual (n = 25)	Adjusted OR (95% CI)[a]	Homosexual (n = 64)	Adjusted OR (95% CI)[a]
Anxious or worried (% ever, for at least 2 weeks)	27.4	29.2	1.03 (.43–2.50)	48.4	2.37*** (1.43–3.92)
Anxious or worried (% past year, for at least 2 weeks)	8.6	12.0	1.51 (.45–5.08)	21.9	2.76*** (1.48–5.17)
Down or depressed (% ever, for at least 2 weeks)	23.4	16.7	.66 (.22–1.94)	53.1	3.37*** (2.04–5.58)
Down or depressed (% past year, for at least 2 weeks)	6.9	4.0	.62 (.08–4.64)	18.8	2.75** (1.40–5.38)
Women	(n = 5138)	(n = 65)		(n = 79)	
Anxious or worried (% ever, for at least 2 weeks)	40.5	46.2	1.30 (.79–2.12)	40.5	1.02 (.65–1.61)
Anxious or worried (% past year, for at least 2 weeks)	15.1	18.5	1.38 (.73–2.61)	16.5	1.15 (.63–2.11)
Down or depressed (% ever, for at least 2 weeks)	33.2	41.5	1.43 (.86–2.36)	43.0	1.47 (.93–2.32)
Down or depressed (% past year, for at least 2 weeks)	10.3	15.4	1.68 (.84–3.35)	25.3	3.04*** (1.80–5.14)

[a] AOR = adjusted odds ratio, CI = confidence interval; the OR was adjusted for age, education, urbanicity

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 4 Coping styles by gender and sexual orientation

	Men								Women							
	Heterosexual (n = 4140)		Bisexual (n = 25)		Homosexual (n = 64)		Total		Heterosexual (n = 5138)		Bisexual (n = 65)		Homosexual (n = 79)		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Task-oriented coping	3.62	.77	3.35	.95	3.61	.85	3.62[a]	.77	3.51	.75	3.48	.80	3.43	.89	3.51[a]	.75
Emotion-oriented coping	2.19[c]	.73	2.28	.68	2.59[c]	.90	2.20[b]	.73	2.50	.80	2.44	.77	2.48	.84	2.50[b]	.80
Avoidance-oriented coping	2.14[d]	.84	2.34	.94	2.77[d]	.90	2.15	.84	2.59	.90	2.52	.86	2.65	.89	2.60	.90

Note: Absolute range, 1–5. Values with identical superscripts are significantly different from each other (controlling for age, education, and urbanicity; $p \leq .01$)

Table 5 Multiple linear regression analysis for sexual orientation (heterosexual versus homosexual) and coping styles predicting health outcomes in men[a]

	Model 1		Model 2	
	b	*SE*	*b*	*SE*
Total acute physical complaints				
Sexual orientation	1.26**	(.45)	.72	(.43)
Emotion-oriented coping			1.4***	(.07)
Avoidance-oriented coping			.05	(.07)
Total chronic diseases				
Sexual orientation	.43*	(.17)	.32	(.17)
Emotion-oriented coping			.26***	(.03)
Avoidance-oriented coping			.03	(.03)
Acute mental health problems (GHQ)				
Sexual orientation	1.12***	(.27)	.76**	(.25)
Emotion-oriented coping			.98***	(.04)
Avoidance-oriented coping			−.01	(.04)

[a] Controlling for age, education, and urbanicity

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 6 Multiple logistic regression analysis for sexual orientation (heterosexual versus homosexual) and coping styles predicting health outcomes in men[a]

	Model 1 AOR (95% CI)	Model 2 AOR (95% CI)
Anxious or worried (ever, for at least 2 weeks)		
Sexual orientation	2.53*** (1.52–4.21)	1.97* (1.16–3.36)
Emotion-oriented coping		1.95*** (1.77–2.16)
Avoidance-oriented coping		1.10* (1.00–1.20)
Anxious or worried (past year, for at least 2 weeks)		
Sexual orientation	2.88*** (1.53–5.41)	1.86 (.94–3.67)
Emotion-oriented coping		2.95*** (2.55–3.42)
Avoidance-oriented coping		1.07 (.93–1.23)
Down or depressed (ever, for at least 2 weeks)		
Sexual orientation	3.61*** (2.16–6.03)	2.86*** (1.65–4.96)
Emotion-oriented coping		2.38*** (2.14–2.64)
Avoidance-oriented coping		1.05 (.95–1.15)
Down or depressed (past year, for at least 2 weeks)		
Sexual orientation	2.87** (1.46–5.63)	1.55 (.73–3.28)
Emotion-oriented coping		3.96*** (3.35–4.69)
Avoidance-oriented coping		1.15 (.99–1.34)

[a] AOR = adjusted odds ratio, CI = confidence interval; the OR was adjusted for age, education, urbanicity

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$