

Gender and Ethnic Differences in Health Beliefs and Behaviors

WILL H. COURTENAY

McLean Hospital, Harvard Medical School, USA

DONALD R. MCCREARY

Defence and Civil Institute of Environmental Medicine, Toronto, Canada

JOSEPH R. MERIGHI

College of Social Work, San José State University, California, USA

WILL H. COURTENAY is Lecturer in the Department of Psychiatry, Harvard Medical School, Editor of the *International Journal of Men's Health* and Director of Men's Health Consulting in Berkeley, California, USA.

DONALD R. MCCREARY is Defense Scientist in the Stress and Coping Group at DCIEM. He is Associate Editor of both the *International Journal of Men's Health* and *Psychology of Men and Masculinity*.

JOSEPH R. MERIGHI is Assisting Professor at San José State University and a Consulting Editor for *Social Work: Journal of the National Association of Social Workers*.

COMPETING INTERESTS: None declared.

ADDRESS. Correspondence should be directed to:
WILL H. COURTENAY, 2811 College Avenue, Suite 1, Berkeley, California 94705-2165, USA. [Tel. +1 415 346 6719; Fax +1 510 531 4640; email: courtenay@menshealth.org]

Journal of Health Psychology
Copyright © 2002 SAGE Publications
London, Thousand Oaks and New Delhi,
[1359-1053(200205)7:3]
Vol 7(3) 219-231; 023216

Abstract

This study explored the extent to which college men and women of various racial and ethnic groups differ in their health beliefs and behaviors. Exploratory factor analyses of survey responses from a diverse sample of 1816 undergraduate students identified 21 items in six cohesive domains: Diet; Anger and Stress; Preventive Care; Medical Compliance; Substance Use; and Beliefs about Masculinity. Analyses of variance explored group differences across these domains. Findings revealed consistent gender differences, with men engaging in riskier behaviors and holding riskier beliefs than women. Main effects for ethnicity were also observed, but only for the diet domain was a gender by ethnicity interaction found. Implications for establishing gender- and ethnicity-based health promotion and disease prevention interventions are discussed.

Keywords

ethnicity, gender, health beliefs, race, risk behavior

MEN IN THE USA, on average, die more than six years younger than women (US Department of Health and Human Services (DHHS), 2000). Although death rates for unintentional injuries, suicides and homicides are 2.4 to 4.3 times higher among men than women (DHHS, 2000), violent deaths alone do not explain this gender disparity. Men and boys have higher death rates than women and girls in every age group and for all 10 leading causes of death (DHHS, 2000). Men's age-adjusted death rate for heart disease, for example, is nearly two times higher than the death rate for women (DHHS, 2000), and one in two men—compared with one in three women—will develop cancer in his lifetime (American Cancer Society, 1997). The incidence rates for seven of the 10 most common infectious diseases are higher among men in the USA than among women (Centers for Disease Control (CDC), 1997). Men are also more likely than women to suffer severe chronic conditions and fatal diseases (Verbrugge & Wingard, 1987) and to suffer them at an earlier age. Under age 65, for instance, nearly three of four persons who die from heart attacks are men (American Heart Association, 1994).

Gender differences in mortality persist among various racial and ethnic groups. Among African Americans, men die seven years younger than women (DHHS, 2000). In every ethnic group, the age-adjusted death rate is at least 1.5 times greater for men than for women: 1.8 times greater for Hispanics; 1.7 times greater for African and Asian Americans; 1.6 times greater for European Americans; and 1.5 times greater for Native Americans (Collins, Hall, & Neuhaus, 1999). Health disparities also exist among men of various racial and ethnic backgrounds. Indeed, the difference between the life spans of African American men and European American men is greater than the difference between the life spans of women and men in general; African American men die seven years younger than European American men (DHHS, 2000). There are important distinctions in the leading causes of death between men of various racial and ethnic groups. The death rate for human immunodeficiency virus (HIV) is highest for African Americans and Latinos—it is the third and fourth leading killer, respectively, of these men (Collins et al., 1999). African American men are nearly six times more likely than

European American men to die from HIV or AIDS. Homicide ranks among the five leading causes of death only for Latino and African American men (Collins et al., 1999). Cerebrovascular disease ranks as the third leading cause of death among European and Asian American men, but not among Latino or African American men, for whom injuries, HIV and homicide are all greater risks (Collins et al., 1999).

A variety of factors influence and are associated with health and longevity; they include socioeconomic status, racism and utilization of medical care (Johnson, Anderson, Bastida, Kramer, Williams, & Wong, 1995). However, as one of us has discussed elsewhere (Courtenay, 2000b), these factors cannot explain gender differences in health and longevity. The explanatory power of genetic and biologic factors in predicting gender differences in morbidity and mortality is also comparatively small (Kandrack, Grant, & Segall, 1991; Ory & Warner, 1990; Verbrugge, 1985).

The hypothesis that men's poor health behavior is a major contributor to men's shorter lives had been raised as early as the mid-1970s (Goldberg, 1976; Harrison, 1978; Waldron, 1976). Extensive research in the area of disease prevention conducted since the mid-1980s provides evidence in support of this hypothesis. Studies consistently indicate that women are more likely than men to engage in a variety of health-promoting behaviors and to have healthier lifestyle patterns (e.g. Brener & Collins, 1998; Courtenay, 2000a; Kandrack et al., 1991). Being a woman may, in fact, be the strongest predictor of preventive and health-promoting behavior (Brown & McCreedy, 1986; Ratner, Bottorff, Johnson, & Hayduk, 1994). Men, in contrast, are more likely than women to engage in risk-taking behavior (Courtenay, 1998, 2000a). There is strong evidence that fewer health-promoting behaviors and greater risk taking among men contribute to their increased risk of serious chronic disease, injury and death. An independent scientific panel established by the US government recently evaluated thousands of empirical studies and concluded that an estimated half of all deaths in the United States each year could be prevented through changes in personal health practices (US Preventive Services Task Force, 1996).

Substance use, dietary habits and preventive care constitute three domains in which risk-taking behaviors are often examined for the effects of gender and ethnicity. The use of tobacco, alcohol, anabolic steroids and other drugs or substances is significantly greater among men than women (Courtenay, 2000a). Furthermore, the prevalence of substance abuse and dependence is much greater among men than women, and men begin using tobacco, alcohol and other drugs much younger than women do (Courtenay, 2000a). With regard to eating habits, men's diets, in general, are less healthy and nutritious than women's diets (Courtenay, 2000a). The average man's diet is a major contributor to heart disease and cancer, the two leading causes of death in the USA (Courtenay, 2000a).

Men are also less likely than women to engage in a variety of preventive and self-care techniques, and the failure to do so contributes to men's increased health risks. They are less likely than women to restrict their activities or stay in bed when they are suffering from acute or chronic conditions, and they are less likely to persist in caring for a major health problem (Courtenay, 2000a). Periodic physicals and screenings, self-examinations are an important aspect of health-promoting behavior and early detection of disease—particularly for men, who see physicians less frequently than women. Testicular cancer, for example, is highly curable when detected early. Melanoma is 95 percent curable when discovered early (CDC, 1995a, 1995b), and monthly self-exams play a critical role in the prevention of this and other skin cancer (Koh, Geller, Miller, & Lew, 1995). A population-based study of melanoma patients revealed that 66 percent of women discovered their own lesions, compared to only 42 percent of men (Koh, Miller, Geller, Clapp, Mercer, & Lew, 1992). It is likely that inadequate self-examination—along with insufficient screening—contributes to a melanoma death rate that is over twice as high for men as it is for women (CDC, 1995b).

The attitudes and beliefs that one adopts can also have a powerful influence on both one's health and one's health behavior. In the United States, men and boys are more likely than women and girls to adopt a variety of attitudes and beliefs that undermine their health and

well-being, including beliefs related to perceived invulnerability to risk and personal control over health and masculinity (Courtenay, 2000b, 2000c, in press). Research consistently indicates that men are less likely than women to perceive themselves as being at risk for illness, injury and a variety of health problems for which they actually are at greater risk—such as substance abuse, sexually transmitted diseases (STDs), HIV or AIDS, skin cancer and car crashes (Courtenay, 1998, 2001; Gustafson, 1998). Men also believe less strongly than women that they have control over their future health or that personal actions contribute to good health (Courtenay, 2001; Furnham & Kirkcaldy, 1997; Verbrugge, 1990). The perception of health as internally controlled rather than controlled by luck or chance is often found to be associated with the practice of health-promoting behaviors (e.g. Rakowski, 1986; Weiss & Larson, 1990). Beliefs about manhood are also associated with increased risk. Men and adolescent males who adopt traditional or stereotypic beliefs about masculinity have greater health risks than their peers with less traditional beliefs (e.g. Courtenay, 2000e, in press; Eisler, 1995; Lippa, Martin, & Friedman, 2000).

As Neighbors and Howard (1987) note in their discussion of help seeking, little is known about the influence of any interactions between gender and race or ethnicity on health behavior, because studies often neglect gender when examining race and neglect race when examining gender. Their large study of African Americans found that men were significantly less likely than women to seek professional help, contact a doctor or utilize social services regardless of the type or severity of distressing personal problem that they experienced. Studies examining ethnicity and gender separately, however, suggest that gender differences in health risk behaviors are consistent across several racial and ethnic groups. For example, the prevalence of smoking among Southeast Asian immigrants has been found to be nearly 10 times higher for men than for women (CDC, 1992), and rates for Southeast Asian American men range from 29 percent for Hmong, to 55 percent for Cambodians and up to 72 percent for Laotians (Chen, 1993).

Although there is consistent evidence that college men are more likely than college women to adopt unhealthy behaviors (e.g. Douglas,

Collins, Warren, Kann, Gold, Slayton, Ross, & Kolbe, 1997; Lewis, Goodhart, & Burns, 1996; Patrick, Covin, Fulop, Calfas, & Lovato, 1997), no previous study of college students' health behaviors has been designed to examine possible interactions between gender and ethnicity. It remains unclear whether this gender difference is larger or smaller in certain groups. Similarly, little is known about whether college men from various racial and ethnic groups are equally likely to adopt specific high-risk behaviors and beliefs. Furthermore, previous surveys of college students (e.g. Douglas et al., 1997; Lewis et al., 1996; Patrick et al., 1997)—as well as surveys of adolescents and young adults nationally (Kann, Kinchen, Williams, Ross, Lowry, Hill, Grunbaum, Blumson, Collins, Kolbe, & State and Local YRBSS Coordinators, 1998)—have failed to examine many of the key indicators of health and well-being relevant to this population. These key indicators include breast and testicular self-examinations, sun protection, social support, help seeking, adherence to traffic regulations, anger and stress and beliefs related to gender. For example, although college men are among those at highest risk for testicular cancer, studies have found that three of four college men do not know how to conduct a self-examination (Pinch, Heck, & Vinal, 1986), and only 8 to 14 percent practice regular exams (Neef, Scutchfield, Elder, & Bender, 1991). In fact, college men are significantly less likely to practice these exams than college women are likely to practice self-exams for breast cancer (Katz, Meyers, & Walls, 1995). Consequently, about half of men with testicular cancer are not diagnosed until the cancer is in an advanced stage, when it is fatal or disabling (Roth, Nichols, & Einhorn, 1993). Similarly, although both men and teenage boys have more exposure to the sun, they are far less likely than women and girls to use sunscreen and other forms of sun protection (Courtenay, 1998). Melanoma causes about three-fourths of all skin cancer-associated deaths, and two of three melanoma deaths are male (CDC, 1995a, 1995b). Among men, melanoma is increasing faster than any other cancer (CDC, 1995b).

College men, like men in general, are significantly less willing than college women to seek help or support in situations where help is needed, including help for physical illnesses

(Courtenay, 1998). We are not aware of any reported data on compliance with treatment in college populations. College men's reluctance to seek help can result in serious delays in treatment. Among one sample of college men, nearly three of four delayed getting help for STDs from two to more than six months after they developed symptoms (Sawyer & Moss, 1993). College men are also more likely than college women to delay seeking psychological help (Prosser-Gelwick & Garni, 1988). Among depressed college students, men are more likely than women to rely on themselves, to withdraw socially and to try to talk themselves out of depression (Courtenay, 1998). In regard to anger, men express this emotion—and hostility—more often than women do (Courtenay, 2001); and anger and hostility are linked with increased health risks—particularly for cardiovascular disease, which is the leading killer of men (Courtenay, in press). Furthermore, in response to stress, men in general are more likely than women to increase their alcohol consumption (Courtenay, in press).

To learn more about the influence of gender and ethnicity on a broad range of health risks, the present study assessed young men's and women's involvement in 48 health risk behaviors and health-related beliefs in the following 10 domains: diet; exercise and fitness; substance use; preventive care; social support; safety; anger and stress; beliefs about masculinity; perceived invulnerability; and personal control over health. We addressed the following three research questions: Do women and men differ in their level of involvement in a broad variety of specific health risk behaviors, and in their adoption of health-related beliefs? Do ethnic groups differ in their level of involvement in these behaviors and beliefs? Does gender interact with ethnicity in determining level of involvement in health behaviors and beliefs?

Methods

Participants

A convenience sample of 1816 undergraduate students, ranging in age from 18 to 72 years ($M = 22$ years, $SD = 6$ years), was recruited from three four-year, English-language, California public universities. The sample was comprised of 60 percent women. Thirty-seven percent of

the sample was Asian American, 28 percent European American, 18 percent Hispanic, 6 percent African American and 12 percent reported their ethnicity as Other (e.g. Middle Eastern) or Mixed Heritage (e.g. Mexican/Irish). The gender and ethnic breakdown of this sample was similar to that of the overall undergraduate student population at four-year California public colleges in 1999: 56 percent women; 27 percent Asian American; 43 percent European American; 20 percent Hispanic; 6 percent African American; 4 percent Other/Mixed Heritage (California Postsecondary Education Commission, n.d.a, n.d.b). Twenty-three percent were freshmen, 18 percent were sophomores, 25 percent were juniors and 34 percent were seniors. The participants represented a wide variety of academic majors, with business (26 percent), applied arts and sciences (21 percent), engineering (14 percent) and social sciences (12 percent) accounting for the majority. Sixty-nine percent of the sample were single or never married, 22 percent were in a long-term relationship with a domestic partner and 8 percent were married. Most of the respondents lived off campus, either with family (55 percent), friends (21 percent) or alone (8 percent). Eighty-five percent of the participants rated their health as either 'excellent' or 'good', and 68 percent reported the same rating for their overall health behavior (i.e. things they did that could improve their health). The majority of respondents believed they had either a 'low' or 'very low' risk of serious illness (80 percent) and serious injury or accident (81 percent).

Measure

To assess health risk behaviors, a series of seven behavioral and three attitudinal/belief domains were identified from the extant literature (Courtenay, 2000a). A list of behaviors or beliefs was then generated for each domain. A total of 48 items were produced in all. The seven behavioral domains were: *diet* (seven items: e.g. 'I avoid chips and fried foods by choosing foods that are baked, broiled, boiled, poached or stewed'); *exercise and fitness* (two items: e.g. 'At least three times each week I engage in physical activity that lasts at least 20 minutes and makes me breathe deeply and my heart beat faster'); *substance use* (four items: e.g. 'I smoke

cigarettes'); *preventive care* (11 items: e.g. 'I have physical and dental exams every year'); *social support* (five items: e.g. 'I have a close friend or family member that I talk to about things that are bothering me'); *safety* (four items: e.g. 'I buckle my safety belt when driving in a motor vehicle'); and *anger and stress* (four items: e.g. 'Things build up inside until I lose my temper'). The three health belief domains were *beliefs about masculinity* (five items: e.g. 'I believe a person should always try to control his or her emotions'); *perceived invulnerability* (three items: e.g. 'I believe it is unlikely I will have a health problem in the near future'); and *personal control over health* (three items: e.g. 'I believe I have control over my future health'). Items were written in the form of statements and worded in the first person. Respondents were asked to rate the extent to which each item was self-descriptive, using a scale from 1 (always) to 5 (never). Items were written so that they reflected both health risk behaviors or beliefs and health-promoting behaviors or beliefs. These latter items were reverse coded so that high scores on all items indicated a greater degree of health risk.

Procedure

After Institutional Review Board approval was obtained, study participants were recruited by contacting course instructors of all large, general education classes at the participating universities. Identical instructions, along with a detailed statement concerning the voluntary and anonymous nature of the study, were provided to participants to ensure consistency in the completion of the survey instrument. Students were asked to complete the surveys either in class or at home and return them to the investigator. There was an 85 percent return rate.

Data analysis

Because we felt it was important to tap a broader range of health risk behaviors and beliefs, we created our own list of health risk items in each of 10 categories. Although we selected each behavior or belief because it was representative of a specific type of health risk (i.e. each item was face valid based on a review of the literature by the senior author; see Courtenay, 2000a), we could not be certain that the items actually formed psychometrically reliable and valid

scales. Therefore, the sample was randomly split into two separate groups (each $N = 908$), and an exploratory factor analysis (EFA; principal components analysis with varimax rotation) was conducted separately for each subsample. Items that paired together on both EFAs were retained for the Gender by Race/Ethnicity ANOVAs that examined the main hypotheses being studied here. These ANOVAs were conducted on the entire sample.

Results

Data reduction: forming health risk domains

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was computed separately for both groups in order to determine whether the correlation matrix for each dataset was suitable for EFA. Both KMO statistics (.783 and .784) were above the recommended cutoff of .600, which suggested that the EFAs should proceed. The health risk items were then subjected to EFA using a principal components extraction procedure and a varimax rotation. Because we had no a priori assumptions about the orthogonality of the health risk domains, we also performed the same analyses with an oblique rotation; the analyses with the oblique rotation, however, failed to converge so only the orthogonal analyses were retained. Three criteria were used to determine how many factors to retain: (a) Kaiser's eigenvalues greater than 1.0 criterion; (b) analysis of the scree plot; and (c) factor interpretability. Within each factor, only items with rotated factor loadings greater than or equal to .40 were retained.

The EFA for the first random subsample produced 16 factors with eigenvalues greater than 1.0. The scree plot showed a discernable elbow at the seventh factor, but the seventh factor was not interpretable. Thus, we decided to retain the first six factors, which accounted for 34.54 percent of the variance. There were 25 items with rotated factor loadings greater than or equal to .40.

The EFA for the second group revealed 15 factors with eigenvalues greater than 1.0. Again, the scree plot showed an elbow at the seventh factor. As with the first group, that last factor was not interpretable and only the first six factors were retained. The six factors combined

to account for 33.98 percent of the variance. There were 24 items with rotated factor loadings greater than or equal to .40.

The 21 items that paired together on both EFAs were retained for future analysis. Table 1 shows those items and provides rotated factor loadings (per subsample) and descriptive information (based on the whole sample) for each item. In most cases, the items loaded on the same factors for which they were written (i.e. all Diet, Anger and Stress, Preventive Care, Substance Use and Beliefs about Masculinity items in Table 1 were written for those domains). However, two items written for the Preventive Care domain ('I take prescription medicine only as directed by a physician', and 'I fill my medical prescriptions immediately') loaded onto a separate, two-item factor that we labeled Medical Compliance. It should be noted that, while some items from each domain were dropped as a result of the EFA, none of the Exercise and Fitness, Safety, Perceived Invulnerability or Personal Control over Health items fitted into the results from the EFAs.

Next, averages were calculated for each of the six health risk domains, or subscales, identified in Table 1. The overall domains are presented in terms of descending alpha reliability estimates. Pearson correlation coefficients were computed to assess the degree to which the scales were interrelated. As Table 2 shows, there was very little overlap.

Gender \times race/ethnicity

In order to determine the influence of gender and race or ethnicity on the six domains of health risk that emerged from the EFAs (i.e. Diet, Anger and Stress, Preventive Care, Medical Compliance, Substance Use, Beliefs about Masculinity), which are outlined in Table 1, a series of 2 (Gender) \times 5 (Race/Ethnicity) ANOVAs was performed on the entire sample, using domain means as the dependent variables. To control for the increased probability of making a Type I error that results from performing six ANOVAs, an adjusted p -value of .008 (i.e. .05/6) was adopted.

Diet When Diet was the dependent variable, the ANOVA revealed main effects for both Gender, $F(1,1792) = 20.23, p < .0001$ ($\eta^2 = .01$), and Race/Ethnicity, $F(4,1792) = 8.63, p < .0001$

Table 1. Descriptive information for the 21 health risk items retained after exploratory factor analyses (N = 1816)

Scale and item	RFL ^a	M ^b	SD
<i>Diet</i> ($\alpha = .78$)			
I avoid chips and fried foods by choosing foods that are baked, broiled, boiled, poached or stewed	.673/.689	3.14	0.95
I limit the amount of red meat I eat by eating more chicken, fish or grains and beans	.676/.636	2.66	1.15
I limit the amount of fat I eat by choosing low-fat milk and cheeses, and by reducing the amounts of butter, margarine and salad dressing I eat	.754/.771	2.85	1.22
I limit the amount of salt I eat by not adding salt to my food, avoiding salty food and checking labels for sodium content	.742/.706	3.21	1.23
I avoid eating large amounts of sugar by limiting candy, desserts and soft drinks in my diet	.718/.632	3.16	1.08
<i>Anger and Stress</i> ($\alpha = .72$)			
I get angry and annoyed when I am caught in traffic	.810/.826	3.17	0.89
I get irritated and mad when waiting in lines	.846/.853	2.96	0.83
Things build up inside until I lose my temper	.694/.638	2.67	0.95
<i>Prevention</i> ($\alpha = .71$)			
I conduct a breast or testicular self-exam every month and check my skin for unusual spots or coloring every few months	.433/.531	3.74	1.11
I have physical and dental exams every year	.730/.725	2.28	1.19
I get my blood pressure checked every year	.704/.743	2.97	1.44
I go to all my scheduled physical and mental health appointments	.515/.533	1.87	0.92
I consult a physician or health care provider right away when I have unfamiliar physical symptoms	.542/.600	2.57	1.09
<i>Medical compliance</i> ($\alpha = .70$)			
I take prescription medicine only as directed by a physician	.841/.822	1.99	1.31
I fill my medicine prescriptions immediately	.824/.790	2.42	1.24
<i>Substance Use</i> ($\alpha = .57$)			
I smoke cigarettes	.603/.550	1.55	1.01
I chew tobacco or smoke a pipe	.518/.468	1.07	0.34
I drink more than 2 alcoholic drinks a day	.715/.736	1.48	0.73
I use recreational drugs or steroids	.727/.761	1.32	0.72
<i>Beliefs about Masculinity</i> ($\alpha = .53$)			
I believe it is important for a person to be physically strong	.564/.671	3.51	0.96
I believe a person should always try to control her or his emotions	.678/.643	3.57	0.90

^aRFL = Rotated Factor Loadings (subsample 1/subsample 2)

^bRange = 1 to 5

($\eta^2 = .02$). While the main effects showed that men engaged in a greater degree of risky dieting behavior than women, and that European Americans had the least risky dieting practices of all the Race/Ethnicity groups, there was a

significant Gender \times Race/Ethnicity interaction, $F(4,1792) = 4.29, p < .0001$ ($\eta^2 = .01$). Tukey's HSD post hoc tests explored the presence of gender differences within each Race/Ethnicity category and showed that men

Table 2. Intercorrelations among six health risk scales (N = 1816)

Scales	Diet	Anger and stress	Prevention	Medical compliance	Substance use
Anger and Stress	.12**				
Prevention	.27**	.06**			
Medical Compliance	.11**	.03	.32**		
Substance Use	.05*	.12**	.01	.03	
Beliefs about Masculinity	-.04	.06*	.02	.03	-.06*

*p < .05; **p < .01

had significantly poorer dieting practices ($p < .05$) in all Race/Ethnicity groups except Hispanics, where men's and women's dieting behaviors did not differ significantly (see Table 3).

Anger and stress This analysis revealed only a significant main effect for Race/Ethnicity, $F(4,1792) = 4.45, p < .001 (\eta^2 = .01)$. Tukey's post hoc tests explored differences in Anger and Stress scores among Race/Ethnicity categories. Findings revealed that Asian American participants were more likely to report behaviors related to anger and stress, which are associated with increased risk for disease and injury, than either European American ($p < .05$) or Hispanic ($p < .05$) participants (see Table 3).

Preventive care This ANOVA revealed main effects for both Gender, $F(1,1792) = 49.20, p < .0001 (\eta^2 = .03)$, and Race/Ethnicity, $F(4,1792) = 24.90, p < .0001 (\eta^2 = .05)$. The main effect for Gender revealed that men reported engaging in fewer preventive behaviors than women (2.89 vs 2.54, respectively). Post hoc tests exploring the

Race/Ethnicity main effect showed that Asian Americans reported significantly more risky practices in the Preventive Care domain than all other Race/Ethnicity groups and that European Americans reported significantly better preventive behaviors (as evidenced by their lower risk scores) than Asian Americans, Hispanics and those classified as Other (all $ps < .05$; see Table 3). The interaction was not significant.

Medical compliance When the medical compliance domain was the dependent variable, both the Gender, $F(1,1792) = 15.84, p < .0001 (\eta^2 = .01)$, and Race/Ethnicity, $F(4,1792) = 8.17, p < .0001 (\eta^2 = .02)$ main effects were significant. The Gender main effect showed that men reported a poorer degree of medical compliance than women (2.35 vs 2.09, respectively). Post hoc tests exploring the Race/Ethnicity main effect showed that European Americans reported significantly better medical compliance (as evidenced by their lower risk scores) than the Asian American and Hispanic groups (both $ps < .05$; see Table 3). Those classified as Other or Mixed

Table 3. Means for six health risk domains, by race and ethnicity

	African American	Asian American	European American	Hispanic	Other
Diet ^a					
Men	3.25	3.25	3.10	3.06	3.10
Women	3.10	3.01	2.63	3.07	2.84
Anger and Stress ^b	2.91	3.02	2.88	2.85	2.93
Prevention	2.52	2.89	2.42	2.75	2.66
Medical Compliance	2.28	2.32	1.97	2.36	2.08
Substance Use	1.25	1.31	1.47	1.30	1.36
Beliefs about Masculinity	3.63	3.70	3.35	3.52	3.48

^aThe only significant Gender \times Race/Ethnicity interaction occurred when the Diet domain was the dependent variable; post hoc tests explored gender differences within Race/Ethnicity groups

^bAll other dependent variables are main effects for Race/Ethnicity only

Heritage reported significantly better medical compliance than both Asian Americans and Hispanics (both p s < .05; see Table 3). The Gender \times Race/Ethnicity interaction was not significant.

Substance use The ANOVA for Substance Use revealed main effects for both Gender, $F(1,1792) = 8.01$, $p < .005$ ($\eta^2 = .01$), and Race/Ethnicity, $F(4,1792) = 11.96$, $p < .0001$ ($\eta^2 = .03$). The main effect for Gender revealed that men reported engaging in riskier substance use practices than women (1.42 vs 1.31, respectively). Post hoc tests exploring the Race/Ethnicity main effect showed that European Americans reported significantly healthier substance use practices (as evidenced by their lower risk scores) than all other Race/Ethnicity groups (all p s < .05; see Table 3). The Gender \times Race/Ethnicity interaction was not significant.

Beliefs about masculinity This ANOVA revealed main effects for both Gender, $F(1,1792) = 34.79$, $p < .0001$ ($\eta^2 = .02$), and Race/Ethnicity, $F(4,1792) = 14.71$, $p < .0001$ ($\eta^2 = .03$). The main effect for Gender revealed that men reported riskier health-related beliefs than women (3.68 vs 3.45, respectively). Post hoc tests exploring the Race/Ethnicity main effect showed that European Americans reported significantly healthier beliefs than Asian Americans, African Americans and Hispanics (all p -values < .05; see Table 3). In addition, Asian Americans reported riskier beliefs about masculinity than Hispanics and those classified as Other or Mixed Heritage (both p s < .05; see Table 3). The Gender \times Race/Ethnicity interaction was not significant.

Discussion

This study first examined whether women and men differed in their level of involvement in a variety of specific health risk behaviors and in their adoption of health-related beliefs. Exploratory factor analysis produced six health risk domains consisting of 21 items. Main effects were found for gender on five of the six domains, with men engaging in significantly riskier behaviors and possessing significantly riskier beliefs in every domain except for Anger and Stress. The finding of riskier behaviors among men than

women is consistent with previous studies of college students (e.g. Douglas et al., 1997; Lewis et al., 1996; Patrick et al., 1997). The present study further extends the empirical base to include a range of behaviors and beliefs that is broader than those previously studied; that is, men were more likely than women to report poorer medical compliance and preventive health behaviors—such as self-examinations—as well as beliefs that indicated a greater level of risk.

The finding of no gender difference in risks associated with anger and stress was unanticipated, because large and consistent gender differences for these characteristics have been found in prior research (Eagly & Steffen, 1986). The items in the Anger and Stress domain are worded similarly to those designed to assess hostility; men score significantly higher than women on hostility—which is associated with increased health risks, particularly for coronary heart disease (Friedman, 1991). One possible explanation for this finding is the relatively high percentage of students who commute to campus (84 percent) in a densely populated region that has experienced increased traffic congestion due to a rapidly growing local economy. These factors and their social contexts may have mediated the experience of anger or stress and minimized typical gender differences (Friedman, 1991).

Significant differences in risk based on race and ethnicity emerged in several domains. Asian Americans reported riskier habits than all other ethnic groups for behaviors related to preventive health. Additionally, Asian Americans were at greater risk than European Americans and Hispanics for behaviors related to anger and stress, and held riskier health-related beliefs than either Hispanics or respondents of mixed heritage. As discussed elsewhere (Myers, Kagawa-Singer, Kumanyika, Lex, & Markides, 1995), there is a tendency among both policy makers and researchers to assume that Asian Americans are healthier than other racial or ethnic groups. This assumption—which Myers et al. (1995) suggest is largely based on the low utilization of health services among Asian Americans—is not completely unfounded; Asian Americans have the lowest death rates of any racial or ethnic group in the USA (Collins et al., 1999). However, our data suggest that if the health beliefs and behaviors of Asian Americans

do not change—particularly among men—their current mortality advantage is likely to decrease in the future. If current smoking trends among Asian Americans continue, for example, it is believed that the mortality rates from lung and heart diseases among Southeast Asian American men will surpass those among other racial and ethnic groups (Chen, 1993).

European Americans reported the least risky dieting practices of any racial or ethnic group. This finding appears consistent with one other study of college students' health behavior, which reported that European Americans—as well as Hispanics—had better dietary habits than African Americans (Douglas et al., 1997). European Americans in the present study also reported the least risky substance use behaviors, which is inconsistent with findings reported by Douglas et al. (1997). In their study of college students nationally, European Americans were more likely than either African Americans or Hispanics to use alcohol frequently, to be current episodic heavy drinkers or to be current cigarette smokers. European Americans in the present study also reported significantly better medical compliance than Asian Americans and Hispanics, as well as healthier beliefs than Asian Americans, African Americans and Hispanics.

The principal finding to emerge from this study of multicultural college students is that in nearly every racial and ethnic group, men remained more likely than women to engage in behaviors and adopt beliefs that were detrimental to their health. The one exception was that no gender differences were found among Hispanics for dietary risk factors. This finding is inconsistent with the results from one study of Hispanic adults, aged 20 to 74 years, which reported that fat intake was significantly higher among men than women (Polednak, 1997). Findings from the present study also indicate that Hispanics are at greater risk than European Americans for poor dietary habits. This has important implications for health among Hispanics, particularly given that national data indicate that Hispanics are among those populations whose risk of obesity increased the most during the last decade (Mokdad, Serdula, Dietz, Bowman, Marks, & Koplan, 1999). The finding of no interaction for nearly every domain in the present study extends previous research showing greater

risk among college men than college women, indicating that this finding holds true regardless of race or ethnicity.

A secondary finding of interest in this study is that many of the health risk behaviors examined were intercorrelated. For example, Diet was positively correlated with Anger and Stress, Preventive Care, Medical Compliance and Substance Use; the Anger and Stress domain was also correlated with both Preventive Care and Substance Use. However, the magnitude of the correlations was small. Therefore, the knowledge of a person's medical compliance tells us little about the degree to which the person engages in healthy dieting and tells us even less about her or his substance use. These findings suggest that researchers interested in health risk behavior should use a multidimensional approach and not simply assume that unhealthy behaviors correlate. Although some research has found that certain risk behaviors do correlate strongly (e.g. Brener & Collins, 1998), additional research is needed to explore the interrelation among health risk behaviors.

Several implications can be drawn from this study. Most importantly, the findings suggest that gender-specific, culturally appropriate health promotion and disease prevention interventions are needed. Educational interventions appear particularly warranted for men. This is especially true because more men than women in this study reported that their overall health behavior was either 'good' or 'excellent', despite their obviously greater risk. Although many counseling and psychological interventions with men have been recommended in the past two decades (Courtenay, 2000d), very rarely do these interventions address men's physical health (Courtenay, 2001). Even less frequently do these interventions address the specific health needs of men of various racial and ethnic backgrounds.

Given that a link is consistently found between health risk and masculinity—as well as other psychosocial and behavioral factors—interdisciplinary approaches to fostering health and well-being are especially important (Courtenay, 2000e; Courtenay & Keeling, 2000). A clinical practice guideline was recently developed that provides evidence of biopsychosocial and behavioral factors that affect the onset, progression and management of men's health

problems and outlines specific recommendations for clinicians working with men (Courtenay, 2001). Outcome research is needed to measure the effectiveness of these and other gender-specific interventions in promoting men's health and reducing their risks.

Even though the sample size was large, the findings in this study must be interpreted with caution, because a nonrandom sample was used. Furthermore, respondents were residents of Northern California, and their responses may not reflect the experiences of young adults in other regions of the United States. Another limitation of this study is that, although the response rate was high (85 percent), 15 percent of the surveys were not returned. These factors may have contributed to a selection bias. Additionally, the sample was made up of college students, a social group whose health habits and practices may differ from those of their peers who do not attend postsecondary institutions. College students may benefit from access to health-related services on campus, health education materials in their classes and university-sponsored health campaigns. They may also benefit from easily accessible recreational facilities and fitness centers. Alternatively, the time restraints associated with attending classes, completing course work and being employed either part time or full time may hamper students' efforts to engage in positive health practices. A final limitation concerns the wording of one item in the Preventive Care domain. The item 'I conduct a breast or testicular exam every month and check my skin for unusual spots or coloring every few months' is over-inclusive and should be separated into two questions: one about breast or testicular cancer and one about skin cancer and melanoma. Although this item did load significantly onto the Preventive Care factor, it is unknown which part of the question the respondents were addressing.

If men are to live longer, healthier lives, they will need to change their unhealthy beliefs and behaviors. However, further research is needed to explore why men behave more self-destructively than women, and why they do less to promote their health. Only when these complex questions are addressed will health professionals be able to develop and provide effective interventions for improving men's health.

References

- American Cancer Society. (1997). *Cancer facts & figures—1994*. Atlanta, GA: American Cancer Society.
- American Heart Association. (1994). *Heart and stroke facts: 1995 statistical supplement*. Dallas, TX: American Heart Association.
- Brener, N. D., & Collins, J. L. (1998). Co-occurrence of health risk behaviors among adolescents in the United States. *Journal of Adolescent Health, 22*(3), 209–213.
- Brown, J. S., & McCreedy, M. (1986). The Hale elderly: Health behavior and its correlates. *Research in Nursing and Health, 9*, 317–329.
- California Postsecondary Education Commission. (no date a). *Total enrollment by segment by student level by ethnicity (undergraduates/graduates)*. <http://www.cpec.ca.gov/OnLineData/GenReport.ASP> [accessed 30 August 2001].
- California Postsecondary Education Commission. (no date b). *Total enrollment by segment by student level by gender (undergraduates/graduates)*. <http://www.cpec.ca.gov/OnLineData/GenReport.ASP> [accessed 30 August 2001].
- Centers for Disease Control (CDC). (1992). Cigarette smoking among Southeast Asian immigrants—Washington State, 1989. *Morbidity and Mortality Weekly Report, 41*(45), 854–855.
- Centers for Disease Control (CDC). (1995a). *Skin cancer prevention and early detection: At-a-glance*. Atlanta, GA: Centers for Disease Control.
- Centers for Disease Control (CDC). (1995b). Deaths from melanoma—United States, 1973–1992. *Morbidity and Mortality Weekly Report, 44*(44), 337, 343–347.
- Centers for Disease Control (CDC). (1997). Demographic differences in notifiable infectious disease morbidity—United States, 1992–1994. *Morbidity and Mortality Weekly Report, 46*(28), 637–641.
- Chen, M. S. (1993). Cardiovascular health among Asian Americans/Pacific Islanders: An examination of health status and intervention approaches. *American Journal of Health Promotion, 7*(3), 199–207.
- Collins, K. S., Hall, A., & Neuhaus, C. (1999). *US minority health: A chartbook*. New York: The Commonwealth Fund.
- Courtenay, W. H. (1998). College men's health: An overview and a call to action. *Journal of American College Health, 46*(6), 279–290.
- Courtenay, W. H. (2000a). Behavioral factors associated with disease, injury, and death among men: Evidence and implications for prevention. *Journal of Men's Studies, 9*(1), 81–142.
- Courtenay, W. H. (2000b). Constructions of masculinity and their influence on men's well-being: A

- theory of gender and health. *Social Science & Medicine*, 50(10), 1385–1401.
- Courtenay, W. H. (2000c). Engendering health: A social constructionist examination of men's health beliefs and behaviors. *Psychology of Men and Masculinity*, 1(1), 4–15.
- Courtenay, W. H. (2000d). Social work, counseling, and psychotherapeutic interventions with men and boys: A bibliography. *Men and Masculinities*, 2(3), 330–352.
- Courtenay, W. H. (2000e). Teaming up for the new men's health movement. *Journal of Men's Studies*, 8(3), 387–392.
- Courtenay, W. H. (2001). Counseling men in medical settings. In G. Brooks & G. E. Good (Eds.), *The new handbook of psychotherapy and counseling with men: A comprehensive guide to settings, problems, and treatment approaches* (vol. 1, pp. 59–91). San Francisco, CA: Jossey-Bass.
- Courtenay, W. H. (in press). Key indicators of men's health and well-being. *Journal of Men's Health*.
- Courtenay, W. H., & Keeling, R. P. (2000). Men, gender, and health: Toward an interdisciplinary approach. *Journal of American College Health*, 48(6), 1–4.
- Douglas, K. A., Collins, J. L., Warren, C., Kann, L., Gold, R., Slayton, S., Ross, J. G., & Kolbe, L. J. (1997). Results from the 1995 National College Health Risk Behavior Survey. *Journal of American College Health*, 46(2), 55–66.
- Eagly, A. H., & Steffen, V. J. (1986). Gender and aggressive behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin*, 100(3), 309–330.
- Eisler, R. M. (1995). The relationship between Masculine Gender Role Stress and men's health risk: The validation of a construct. In R. F. Levant & W. S. Pollack (Eds.), *A new psychology of men* (pp. 207–225). New York: BasicBooks.
- Friedman, H. S. (Ed.) (1991). *Hostility, coping, and health*. Washington, DC: American Psychological Association.
- Furnham, A., & Kirkcaldy, B. (1997). Age and sex differences in health beliefs and behaviors. *Psychological Reports*, 80(1), 63–66.
- Goldberg, H. (1976). *The hazards of being male: Surviving the myth of masculine privilege*. Plainview, NY: Nash.
- Gustafson, P. E. (1998). Gender differences in risk perception: Theoretical and methodological perspectives. *Risk Analysis*, 18(6), 805–811.
- Harrison, J. (1978). Warning: The male sex role may be dangerous to your health. *Journal of Social Issues*, 34(1), 65–86.
- Johnson, K., Anderson, N. B., Bastida, E., Kramer, B. J., Williams, D., & Wong, M. (1995). Panel II: Macrosocial and environmental influences on minority health. *Health Psychology*, 14(7), 601–612.
- Kandrack, M., Grant, K. R., & Segall, A. (1991). Gender differences in health related behavior: Some unanswered questions. *Social Science & Medicine*, 32(5), 579–590.
- Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Hill, C. V., Grunbaum, J. A., Blumson, P. S., Collins, J. L., Kolbe, L. J., & State and Local YRBSS Coordinators. (1998). Youth risk behavior surveillance—United States, 1997. *Morbidity and Mortality Weekly Report Centers for Disease Control Surveillance Summary*, 47(3), 1–89.
- Katz, R. C., Meyers, K., & Walls, J. (1995). Cancer awareness and self-examination practices in young men and women. *Journal of Behavioral Medicine*, 18(4), 377–384.
- Koh, H. K., Geller, A. C., Miller, D. R., & Lew, R. A. (1995). The early detection of and screening for melanoma: International status. *Cancer*, 75(2), 674–683.
- Koh, H. K., Miller, D. B., Geller, A. C., Clapp, R. W., Mercer, M. B., & Lew, R. A. (1992). Who discovers melanoma? Patterns from a population-based survey. *Journal of the American Academy of Dermatology*, 26(6), 914–919.
- Lewis, D. F., Goodhart, F., & Burns, W. D. (1996). New Jersey college students' high-risk behavior: Will we meet the health objectives for the year 2000? *Journal of American College Health*, 45(3), 119–126.
- Lippa, R. A., Martin, L. R., & Friedman, H. S. (2000). Gender-related individual differences and mortality in the Terman longitudinal study: Is masculinity hazardous to your health? *Personality and Social Psychology Bulletin*, 12, 1560–1570.
- Mokdad, A. H., Serdula, M. K., Dietz, W. H., Bowman, B. A., Marks, J. S., & Koplan, J. P. (1999). The spread of the obesity epidemic in the United States, 1991–1998. *Journal of the American Medical Association*, 282, 1519–1522.
- Myers, H. F., Kagawa-Singer, M., Kumanyika, S. K., Lex, B. W., & Markides, K. S. (1995). Panel III: Behavioral risk factors related to chronic diseases in ethnic minorities. *Health Psychology*, 14(7), 613–621.
- Neef, N., Scutchfield, F. D., Elder, J., & Bender, S. J. (1991). Testicular self-examination by young men: An analysis of characteristics associated with practice. *Journal of American College Health*, 39, 187–190.
- Neighbors, H. W., & Howard, C. S. (1987). Sex differences in professional help seeking among adult Black Americans. *American Journal of Community Psychology*, 15(4), 403–415.
- Ory, M. G., & Warner, H. R. (Eds.) (1990). *Gender, health, and longevity: Multidisciplinary perspectives*. New York: Springer Publishing Company.

- Patrick, M. S., Covin, J. R., Fulop, M., Calfas, K., & Lovato, C. (1997). Health risk behaviors among California college students. *Journal of American College Health, 45*(6), 265-272.
- Pinch, W. J., Heck, M., & Vinal, D. (1986). Health needs and concerns of male adolescents. *Adolescence, 21*(84), 961-969.
- Polednak, A. P. (1997). Use of selected high-fat foods by Hispanic adults in the northeastern US. *Ethnicity and Health, 2*(1-2), 71-76.
- Prosser-Gelwick, B., & Garni, K. F. (1988). Counseling and psychotherapy with college men. *New Directions for Student Services, 42*(Summer), 67-77.
- Rakowski, W. (1986). Personal health practices, health status, and expected control over future health. *Journal of Community Health, 11*(3), 189-203.
- Ratner, P. A., Bottorff, J. L., Johnson, J. L., & Hayduk, L. A. (1994). The interaction effects of gender within the health promotion model. *Research in Nursing and Health, 17*, 341-350.
- Rivara, F. P., Bergman, A. B., LoGerfo, J. P., & Weiss, N. S. (1982). Epidemiology of childhood injuries. *American Journal of Diseases of Children, 136*, 502-506.
- Roth, B. J., Nichols, C. R., & Einhorn, L. H. (1993). Neoplasms of the testis. In J. F. Holland, E. Frei, R. C. Bast, D. W. Kufe, K. L. Morton, & R. R. Weichselbaum (Eds.), *Cancer medicine* (3rd edn, vol. 2, pp. 1592-1619). Philadelphia, PA: Lea & Febiger.
- Sawyer, R. G., & Moss, D. J. (1993). Sexually transmitted diseases in college men: A preliminary clinical investigation. *Journal of American College Health, 42*(3), 111-115.
- Slap, G. B., Chaudhuri, S., & Vorters, D. F. (1991). Risk factors for injury during adolescence. *Journal of Adolescent Health, 12*, 263-268.
- US Department of Health and Human Services (DHHS). (2000). Deaths: Final data for 1998, DHHS Publication No. (PHS) 2000-1120. *National Vital Statistics Reports, 48*(11). Hyattsville, MD: National Center for Health Statistics.
- US Preventive Services Task Force. (1996). *Guide to clinical preventive services*, 2nd edn. Baltimore, MD: Williams & Wilkins.
- Verbrugge, L. M. (1985). Gender and health: An update on hypotheses and evidence. *Journal of Health and Social Behavior, 26*, 156-182.
- Verbrugge, L. M. (1990). The twain meet: Empirical explanations of sex differences in health and mortality. In M. G. Ory & H. R. Warner (Eds.), *Gender, health, and longevity: Multidisciplinary perspectives* (pp. 159-194). New York: Springer.
- Verbrugge, L. M., & Wingard, D. L. (1987). Sex differentials in health and mortality. *Women and Health, 12*(2), 103-145.
- Waldron, I. (1976). Why do women live longer than men? Part I. *Journal of Human Stress, 2*(1), 2-13.
- Weiss, G. L., & Larson, D. L. (1990). Health value, health locus of control, and the prediction of health protective behaviors. *Social Behavior and Personality, 18*(1), 121-136.