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Abstract *We assessed gender differences in psychosocial and behavioural predictors of HIV testing and returning for results in a high-risk sample of 1,049 predominately minority, impoverished, homeless and/or drug-abusing women (n = 621) and men (n = 428). Predictors included latent variables representing injection drug use, self-esteem, social support, AIDS knowledge, poor access to health services, perceived risk for AIDS, sexual risk behaviour and the mediators of positive and negative coping styles. Significant predictors of test and return for women included injection drug use, greater social support, more AIDS knowledge, a higher perceived risk for AIDS and a positive coping style. Significant predictors for the men included injection drug use, greater AIDS knowledge, a higher perceived risk for AIDS and a positive coping style. Although greater social support was not significant for the men, the significant predictors of HIV testing and return were generally similar for the men and women. However, the men evaluated their risk of AIDS significantly lower than the women, although they reported more sexual risk behaviours and equally risky injection drug use behaviours. Results suggest that interventions designed to increase AIDS knowledge, to raise the perception of risk and to promote a positive coping style would be effective in encouraging more HIV testing for both men and women, but raising perceptions of what constitutes personal risk behaviours may need special emphasis when delivering prevention programmes to men.*

Introduction

The purpose of this study was to determine whether there were gender differences in significant behavioural and psychosocial predictors of human immune deficiency virus (HIV) testing and returning for test results in a high-risk sample of heterosexual men and women. A finding of substantial differences would suggest the necessity of tailoring interventions specifically by gender among at-risk populations to encourage more HIV testing and returning for results and counselling. Research suggests that seropositive persons are often tested late in their course of HIV infection (Wortley *et al.*, 1995). Furthermore, of the estimated 900,000 HIV-positive individuals in the USA, it is speculated that one-third do not know that they are HIV-positive (Centers for Disease Control and Prevention (CDC), 1997).

HIV testing has been promoted as an important step in detecting, treating and preventing HIV infection (Norton *et al.* 1997). Early diagnosis and treatment for infected individuals

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are medically desirable; in addition, early identification of HIV-positive individuals lessens the possibility of their unknowingly spreading the virus to others. Furthermore, testing occasions are an opportunity for risk reduction counselling (CDC, 1999; Fichtner *et al.*, 1996).

In order for HIV testing and counselling to have the greatest impact, individuals must also return for their results (Fichtner *et al.*, 1996). One major 'Healthy People 2000' objective is increasing the percentage of HIV-infected people who know their serostatus, as measured by the percentage of HIV-positive tests for which people return for information and counselling (National Center for Health Statistics (NCHS), 1999). The latest trends indicate that goals are not being met in this particular arena; indeed, the latest statistics indicate movement away from the targeted goal of 80%. In 1995, 83% returned for results and counselling; in 1996, 61% returned (NCHS, 1999). Fichtner *et al.* (1996) reported that among 771,000 HIV tests provided in STD clinics in 1993, only 39.5% of results could be presented to returning clients. Molitor *et al.* (1999) reported that 16.4% of a large California sample failed to return for results.

Norton *et al.* (1997) note that the occasion of HIV testing provides an opportunity for a discussion about HIV prevention, but a high level of anxiety may make concentration difficult. When individuals return for their results, a discussion of the test results is an opportunity for more specific AIDS prevention counselling to promote positive behaviour changes whether the results were positive or negative. Future behaviour can be discussed in a calmer, more receptive atmosphere, especially when results are negative.

HIV testing among high-risk drug users (e.g. injection drug users (IDUs) and crack smokers) has been associated with subsequent reductions in HIV risk behaviours among both seropositive and seronegative individuals (Deren *et al.*, 1998; MacGowan *et al.*, 1997). Deren *et al.* further report that those who were seropositive reported an even greater decline in sexual risk behaviours which apparently indicates the utility of HIV testing in limiting or discouraging the spread of AIDS. Others have also found evidence of decreased sexual risk behaviours after testing whether or not the test was positive (George *et al.*, 1998). However, others have not found HIV testing useful in reducing HIV risk behaviours in the long term, especially among women (e.g. Ickovics *et al.*, 1998; Wilson *et al.*, 1996).

Risk perception has been a cornerstone of many theoretical models concerned with preventive health behaviours and has been an important component of several models specifically adapted for AIDS (Poppen & Reisen, 1997). Risk perception or a sense of vulnerability to a threat is assumed to motivate self-protective behaviours which may include HIV testing and also returning for the results. Fichtner *et al.* (1996) found that those who perceived themselves at higher risk were more likely to be tested and also return for test results. However, individuals who were objectively assessed as high risk but did not perceive themselves as such were not more likely to return. Wortley *et al.* (1995) found late testing associated with lower suspicion of having the disease and less awareness about testing or its availability.

Irwin *et al.* (1996) found that acceptance of voluntary counselling and testing was more likely among people at high risk for AIDS. Grella *et al.* (1998) found that frequent HIV testing among IDUs was associated with higher perception of risk principally due to their injection behaviours, illegal activities and more AIDS knowledge. They also reported that African-Americans had lower testing rates. Fichtner *et al.* (1996) and Miller *et al.* (1996) found women at higher risk due to their sexual behaviours were more likely to have accepted an invitation to have an HIV test and also to return for results.

It has also been reported that individuals tend to under-estimate their risk due to sexual behaviours and are more realistic about their risk due to injecting drug use (Bauman & Siegel,

1987; Kline & Strickler, 1993). Davis *et al.* (1997) reported that female IDUs were more likely to have been tested than men. Their results examining the impact of various sex risk behaviours on testing were inconsistent for both men and women. For instance, women who used condoms more often and with lower vaginal sex risk were more likely to get an HIV test; those who had more sexual partners and were prostitutes were also more likely to get an HIV test. For the men, condom use was associated with HIV testing; however, having more sex partners and more vaginal sex risk were less significant than among the women.

Correlates of testing also vary depending on the population under study. In a college sample, risky sexual behaviour was a correlate of HIV testing (Dorr *et al.*, 1999). In a population of high-risk women in prison, neither injection drug use, drug-injecting sex partners nor a STD history predicted voluntary HIV testing, although trading sex for drugs or money was a correlate (Cotten-Oldenburg *et al.*, 1999). Focusing on African-American women, Sobo (1994) suggested that they may fear the stigma that results from a seropositive test, and may question whether they will receive high-quality health care if they do test positive. Also, they may incorrectly assume that when they are having routine blood tests that they are also routinely tested for HIV, which is not the case (Sobo, 1994).

Access to care may play a role in whether a person gets tested for HIV and subsequently returns for results. In a study designed to evaluate whether self-reported access to outpatient medical care was associated with earlier HIV testing and preventive counselling, Mosen *et al.* (1998) found that a regular source of care and self-reported access to care predicted testing. Late testing among those diagnosed with positive HIV serostatus was associated with lower self-reported access to outpatient care. A regular source of care also predicted preventive counselling. However, access to care may not be sufficient for some populations. Brems *et al.* (1998) found that in a high-risk sample of drug-abusing women, 70% did not receive HIV counselling and 68% were not offered HIV testing from their health care provider.

AIDS knowledge has been studied frequently as a correlate of testing (e.g. Grella *et al.*, 1998). Evidence concerning the impact of AIDS knowledge on testing has been mixed (Dorr *et al.*, 1999). Many studies have found positive relationships (e.g. Grella *et al.*, 1998); others have found negative relationships (e.g. Meadows *et al.*, 1993).

Personality traits such as self-esteem and problem-focused coping may lead to more testing and return. Warburton *et al.* (1997) found that ineffective coping styles among both men and women were associated with more emotional distress centred around HIV testing. Thus, more focused and organized thinking may lead to less emotional distress. Harris (1997) found among a set of drug-addicted African-American women that those who reported fatalistic attitudes and a lack of future goals were more likely not to have been tested. Siegel *et al.* (1998) also found that fear and denial despite multiple risk factors were barriers to testing in a sample of HIV-infected women. A sample of STD clinic attendees reported that fear of testing and a sense of not knowing if they needed to be tested kept them from being tested (Kalichman *et al.*, 1996). Irwin *et al.* (1996) also found fear of coping with results of a positive test a deterrent to testing.

Our research programme has used a health seeking and coping model (Nyamathi, 1989) as a theoretical framework to develop and test empowerment strategies designed to improve coping skills and health outcomes of impoverished, homeless and drug-addicted individuals at risk for AIDS (e.g. Nyamathi & Stein, 1997; Nyamathi *et al.*, 1993; 1995a; 1995b; Stein *et al.*, 1997). Components of that model such as social support and self-esteem are positioned as exogenous factors that influence coping styles. In turn, coping styles are theorized to influence health-related outcomes such as poor mental health, drug use and various risk behaviours. The model posits that improved coping skills and greater self-esteem will decrease AIDS risk behaviours such as drug use and risky sexual practices among at-risk

individuals. This current study extrapolates and tests this framework to determine significant predictors of testing and return in both men and women. Exogenous predictors include sexual and drug risk behaviours, self-esteem, social support, AIDS knowledge, access to health care and perceived risk for AIDS. Positive and negative coping styles are mediators and further predictors of HIV test and return.

Methods

Participants

Assessments were conducted among 1,061 homeless and/or impoverished men and women (621 African-American, 178 white, 245 Latino/a and 17 of other ethnic groups) participating in a health promotion study conducted principally in homeless shelters and sober living recovery programmes in Los Angeles. Ten per cent of those approached refused to participate in the study. Participants ranged in age from 15 to 65 years (435 men and 626 women). The current study includes 1,049 of the participants due to a few missing data points (final sample sizes: women, $N = 621$; men, $N = 428$). Demographic characteristics of the sample are

Table 1. *Sample description*

	Women		Men	
Variables	*n*	(%)	*n*	(%)
Mean age (years)	34.2		37.3	
Range (years)	18–62		18–65	
Race				
African-American	332	(53.5)	285	(66.6)
White	137	(22.1)	39	(9.1)
Hispanic	143	(23.0)	100	(23.4)
Other	9	(1.4)	4	(0.9)
	621	100	428	100
Education				
6 years or less	47	(7.6)	23	(5.4)
7–9 years	71	(11.5)	57	(13.3)
10–12 years	370	(59.6)	236	(55.1)
13+	133	(21.3)	112	(26.2)
	621	100	428	100
Marital status				
Never married	269	(43.3)	173	(40.4)
Married	158	(25.4)	123	(28.7)
Separated	81	(13.0)	53	(12.4)
Divorced	78	(12.6)	69	(16.1)
Widowed	30	(4.8)	7	(1.6)
Declined to state	5	(0.8)	3	(0.7)
	621	100	428	100
Employment status				
Working full-time	29	(4.7)	95	(22.2)
Working part-time	43	(6.9)	43	(10.0)
Unemployed	431	(69.4)	242	(56.5)
Retired	–	–	4	(0.9)
Keeping home	48	(7.7)	6	(1.4)
In school	52	(8.4)	26	(6.1)
Other	18	(2.9)	12	(2.8)
	621	100	428	100

reported in Table 1. A significant number (66.4%) of the men reported that they had spent some time in jail or prison. Of these stays, 53.5% were for drug-or alcohol-related offences. Fewer women (49.5%) reported jail or prison stays of which 67.5% were for drug-or alcohol-related offences.

After obtaining voluntary informed consent, baseline data were collected by means of questionnaires administered face-to-face in English and Spanish by trained research nurses and outreach workers. All participants were interviewed separately and modestly compensated. Subjects were eligible for the intervention study if they met the following criteria: (1) they were 15–65 years of age; (2) homeless and living in a shelter one week or longer; (3) able to reside in the shelter for a minimum of six weeks; and (4) having a significant other who was willing to participate in the study. The significant other did not need to be of the opposite sex and was not necessarily residing in a shelter. However, this was a method to obtain a sufficient number of men for the study because the shelter populations were predominately female.

Measures

The interviews assessed a range of psychosocial and behavioural predictors including drug use, self-esteem, social support, AIDS knowledge, poor access to health services, perceived risk for AIDS, sexual risk behaviour and positive and negative coping styles. The literature reported some findings that African-Americans were less likely to have been tested. However, because preliminary analyses revealed no ethnic differences in HIV testing in this impoverished sample, ethnicity was not used as a predictor. Multiple-indicator latent variable predictors were constructed from items from the questionnaire as follows.

Injection drug use. The drug use latent variable focused principally on injection activities and was indicated by three items: (1) the number of various drugs that they admitted injecting during their lives; (2 and 3) frequency of use of heroin mixed with cocaine, and heroin by itself in the last six months rated on a 0 to 9 scale ranging from 'never using the substance' through 'four or more times a day'.

Self-esteem. Items from the Coopersmith Self-Esteem Inventory (CSEI; Coopersmith, 1967) were used for the self-esteem latent construct. Results of a maximum-likelihood factor analysis of responses to the CSEI indicated one major factor. Because we wanted personality constructs in the model to be represented as latent factors, inventory items were combined randomly, after reversing negatively-worded items, to create four composite indicators. These indicators are labeled as *self-esteem 1*, *self-esteem 2*, *self-esteem 3* and *self-esteem 4* and are the mean values of the combined items which were rated 'true/false' (range = 1–2).

Social support. This construct consists of five indicators which are responses to five questions concerning various forms of support from non-drug-using friends or family. These items were on a 1–5 scale, ranging from 'none of the time' to 'all of the time'. The items assessed the amount of time he/she had family or friends available to: (1) have a good time, (2) provide food or a place to stay, (3) listen to them talk about themselves or their problems, (4) accompany them to an appointment to provide moral support, and (5) show that they love or care for them.

AIDS knowledge. The participants were administered a 21-item test of knowledge about AIDS (Dawson & Hardy, 1989). The indicator of AIDS knowledge is a one-item variable that consists of the participant's score on the test (i.e. the number of items answered correctly with a possible range of 0–21.). Items covered a wide range of topics including knowledge of and misconceptions about AIDS including transmission routes (e.g. 'A person will get AIDS or the AIDS virus infection from working near someone with the AIDS virus', 'A person will get AIDS or the AIDS virus sharing needles for drug use with someone who has the AIDS virus'), AIDS symptoms (e.g. 'A person who has the AIDS virus can look and feel well'), general knowledge about AIDS (e.g. 'AIDS can damage the brain') and susceptibility (e.g. 'teenagers cannot get AIDS').

Poor access to health services. Five items scaled 1–2 were included to indicate access to care: (1) whether they would have liked to see a doctor or nurse or go to a hospital or clinic but did not; items 2–5 included yes/no questions that assessed why they did not go: (2) did not know where to go, (3) could not afford the medical care, (4) places where they get medical care are too confusing and (5) thought they would have to wait a long time.

Perceived risk for AIDS. Risk-perception items from the Copasa Health Protection Questionnaire (Erickson *et al.*, 1989) were included in this construct. Four items were assessed on 1–5 rating scales ranging from 'disagree strongly' to 'agree strongly' and reverse-scored where applicable: 1) I've already done plenty that could have exposed me to AIDS, (2) I've never done anything that could give me AIDS, (3) my chances of getting AIDS are great, (4) I don't think I'm at risk for AIDS. A fifth item was a rating of their chances of getting AIDS ranging from 1 = no chance to 4 = high chance.

Risky sexual behaviour. This was indicated by: (1) the number of sexual partners in the past six months (log-transformed in the analyses to avoid extreme skewness), (2 and 3) the frequency of oral and other sexual behaviour ranging from 0 = never to 7 = everyday, (4) whether he or she had sex without a condom in the last six months.

Negative and positive coping strategies. A 17-item version of the Medical Outcomes Study, Modes of Coping Battery (*Sherbourne et al.*, 1991) assessed coping used in response to physical health problems, emotional problems or other problems faced in the past six months. The items were rated on a five-point Likert scale 'never' to 'very often'. Maximum likelihood factor analysis indicated two major factors. The two factors that emerged were hypothesized to reflect *emotion-focused, negative coping strategies* and *problem-focused, positive coping strategies*. Five items that loaded the strongest on each factor were used as indicators.

Items reflecting negative coping strategies included withdrawing, eating and drinking too much, taking it out on others, spending time alone, and sleeping. Items reflecting positive coping strategies included getting more informed about the problem, taking it easy, thinking about the problem, talking it over with others and making a plan of action.

HIV testing and return. Outcome was a scaled variable that represented no testing (0), HIV testing (1) or testing and returning for results (2). We assessed the impact of latent variables representing the predictors on the measured outcome variable. Thirty-six per cent of the men

and 47% of the women reported having been tested; among those tested, 17% of the men and 15% of the women had not returned for their results.

Analyses

All latent variable analyses were performed using the EQS structural equations modeling (SEM) programme (Bentler, 1995). SEM compares a proposed hypothetical model explicating relationships in the data with a set of actual data. The closeness of the hypothetical model to the empirical data is evaluated through goodness-of-fit indexes including the chi-square/degrees of freedom ratio, and fit indexes. A chi-square value no more than twice the degrees of freedom in the model generally indicates a plausible, well-fitting model. We report chi-square values for an estimator that is appropriate when the data are multivariately kurtose, the Satorra-Bentler robust chi-square statistic (S-Bχ^2; Bentler & Dudgeon, 1996). In addition, we report an index of fit which ranges from 0 to 1, the Robust Comparative Fit Index (RCFI; Bentler & Dudgeon, 1996) which is based upon the improvement in fit of the hypothesized model over a model of complete independence or uncorrelatedness among the measured variables. Values of 0.9 and higher are desirable and indicate that 90% or more of the covariation in the data is able to be reproduced by the hypothesized model (Bentler & Stein, 1992).

Models

Preliminary confirmatory factor analysis. An initial confirmatory factor analysis (CFA) was performed with each hypothesized latent construct predicting its manifest indicators and all latent constructs intercorrelating freely without any imputation of causality among them. A CFA tests the adequacy of the factor structure (measurement model) and provides correlations among the latent variables. To improve the fit of the model, we planned to add a few additional correlated error residuals to the model based on suggestions from the Lagrange Multiplier Test if they made sense theoretically (LM test; Chou & Bentler, 1990).

Multiple-group latent variable models tested the equivalence (invariance) of the factor structure (measurement model) between the men and women (Bentler 1995; Byrne 1994). The factor loading of each measured variable on its latent factor was constrained to equality across the two groups. The plausibility of the equality constraints was determined with a chi-square difference test. We also assessed whether there were significant gender differences in the latent means of the latent constructs in the model. This analysis was performed after we tested for invariance in the measurement models between the men and women.

Path model. Once the measurement model was confirmed, we tested a predictive latent variable path model based on the hypotheses of the study in which the background latent variables predicted coping styles and HIV testing. The intermediate coping style variables predicted the outcome variable as well. All possible predictive paths were included in the original model and non-significant paths were gradually dropped until only significant paths remained.

Results

Confirmatory factor analysis

Table 2 presents the means, standard deviations and factor loadings of the measured variables in the final CFA model for the men and women. The initial fit statistics for the CFA

Table 2. *Means and factor loadings for males (N = 428) and females (N = 621) in confirmatory factor analysis*

	Males			Females		
Variable (range)	Mean	(SD)	Loading*	Mean	(SD)	Loading*
Injection drug use						
IDU	0.35	(0.94)	0.55	0.38	(0.97)	0.56
Heroin + cocaine (0–9)	1.08	(0.71)	0.05	1.20	(1.15)	0.73
Heroin (0–9)	1.23	(1.18)	0.70	1.31	(1.44)	0.90
Self-esteem (1–2)						
SE1	1.48	(0.27)	0.71	1.41	(0.28)	0.79
SE2	1.55	(0.32)	0.55	1.51	(0.33)	0.52
SE3	1.70	(0.24)	0.43	1.65	(0.25)	0.46
SE4	1.74	(0.29)	0.62	1.66	(0.34)	0.64
Social support (1–5)						
Have good time	3.00	(1.51)	0.89	2.96	(1.59)	0.86
Provide food/home	2.85	(1.55)	0.89	2.99	(1.61)	0.90
Listen to problems	2.98	(1.55)	0.94	3.14	(1.61)	0.94
Moral support	2.86	(1.56)	0.92	2.91	(1.60)	0.89
Show love and care	3.15	(1.56)	0.92	3.30	(1.65)	0.92
AIDS knowledge (0–21)	15.70	(4.80)	–	16.07	(4.98)	–
Poor access to health care (1–2)						
Wanted doctor	1.22	(0.41)	0.86	1.26	(0.44)	0.86
Doesn't know where to go	1.06	(0.23)	0.53	1.08	(0.27)	0.62
Can't afford	1.13	(0.34)	0.79	1.15	(0.36)	0.71
Confused	1.06	(0.23)	0.62	1.09	(0.29)	0.67
Wait long time	1.07	(0.26)	0.61	1.11	(0.31)	0.69
Perceived risk						
Done plenty (1–5)	3.00	(1.46)	0.65	3.02	(1.53)	0.61
Never do anything (*R*) (1–5)	3.58	(1.31)	0.49	3.61	(1.41)	0.51
Chances are great (1–5)	2.33	(1.23)	0.55	2.50	(1.35)	0.56
Don't think at risk (*R*) (1–5)	2.85	(1.31)	0.47	3.05	(1.43)	0.47
Chances of getting AIDS (1–4)	1.96	(0.80)	0.62	2.10	(0.87)	0.72
Sexual risk behaviour						
Number of partners**	1.57	(1.97)	0.26	3.21	(15.23)	0.49
Frequency—oral sex (0–7)	3.35	(1.94)	0.63	3.39	(1.92)	0.82
Frequency-vaginal sex (0–7)	4.43	(1.61)	0.87	3.91	(1.99)	0.82
Sex without condom (1–2)	1.72	(0.45)	0.27	1.67	(0.47)	0.45
Positive coping (1–5)						
Became informed	2.79	(1.29)	0.49	2.87	(1.40)	0.46
Take it easy	3.37	(1.09)	0.57	3.27	(1.09)	0.48
Thought what to do	3.77	(1.02)	0.69	3.84	(1.05)	0.59
Talked to others	2.93	(1.17)	0.44	3.10	(1.20)	0.50
Made action plan	3.37	(1.10)	0.57	3.29	(1.17)	0.47
Negative coping (1–5)						
Withdrew from people	2.92	(1.24)	0.57	3.12	(1.23)	0.61
Eat, drink, drugs	2.50	(1.35)	0.49	2.75	(1.50)	0.52
Take out on others	2.27	(1.16)	0.47	2.53	(1.27)	0.50
Time alone	2.84	(1.18)	0.58	3.07	(1.19)	0.54
Slept more	2.29	(1.10)	0.39	2.63	(1.33)	0.48
Scaled HIV test (0–2)***	0.69	(0.91)	–	0.87	(0.96)	–

*All loadings $p \leq 0.001$.

**Log transformed for analyses. Raw scores reported in table.

***0 = no HIV test; 1 = test, no return; 2 = test and return for results.

Table 3. *Correlations among latent variables**

		I	II	III	IV	V	VI	VII	VIII	IX	X
I.	Injection drug use		−0.04	0.06	0.07	0.07	0.25[c]	0.04	0.05	0.01	0.10[b]
II.	Self-esteem	−0.02		−0.01	0.17[c]	−0.27[c]	−0.19[c]	−0.09[a]	−0.62[c]	0.29[c]	0.08[a]
III.	Social support	−0.09	0.07		0.17[c]	0.10[a]	0.07	−0.02	0.14[b]	0.26[c]	0.17[c]
IV.	AIDS knowledge	0.02	0.14[b]	0.13[b]		0.04	0.17[c]	0.03	0.06	0.22[c]	0.20[c]
V.	Poor access	0.05	−0.22[c]	−0.12[a]	−0.16[c]		0.13[b]	0.03	0.26[c]	0.02	0.04
VI.	Perceived risk	0.43[c]	−0.19[b]	−0.01	0.21[c]	0.06		0.20[c]	0.47[c]	−0.06	0.11[a]
VII.	Sexual risk	−0.06	−0.07	0.12[a]	−0.01	0.07	0.08		0.11[a]	−0.17[c]	−0.06
VIII.	Negative coping	0.08	−0.48[c]	−0.08	−0.09	0.14[a]	0.36[c]	0.04		−0.02	0.06
IX.	Positive coping	−0.01	0.16[b]	0.15[b]	0.22[c]	0.03	−0.01	0.09	0.01		0.18[c]
X.	HIV test and return	0.18[c]	0.01	0.02	0.18[c]	−0.01	0.20[c]	0.03	0.05	0.13[a]	

*Women ($N = 621$) above diagonal; men ($N = 428$) below diagonal.
[a]$p < 0.05$; [b]$p < 0.01$; [c]$p < 0.001$.

model without any supplementary covariances was very good for the men and the women (men's Satorra-Bentler (S-B)χ^2 (622, N = 428) = 1048.52; RCFI = 0.91; women's S-Bχ^2 (622, $N = 621$) = 1151.72; CFI = 0.93). After adding the same three correlated error residuals suggested by the LM test to both models, the fit indexes improved further. The additional error residuals, which appear very plausible, were a positive association between wanting but not seeing a doctor and not being able to afford to see a doctor ($r = 0.53$ for men, 0.45 for women); confusion about their health care and waiting a long time for health care ($r = 0.24$ for men, 0.28 for women); and two coping items, becoming informed and talking to others ($r = 0.35$ for men, 0.22 for women). The fit indexes for the modified models were quite good: (men's S-Bχ^2 (619, $N = 428$) = 927.39; RCFI = 0.93; women's S-Bχ^2 (619, $N = 621$) = 1022.70; CFI = 0.95). In addition, all manifest variables loaded significantly ($p \leq 0.001$) on their hypothesized latent factors.

Table 3 reports the correlations among the factors for the men and women. Correlations for women are above the diagonal. Significant correlates of HIV test and return for the women included injection drug use, self-esteem, social support, AIDS knowledge, perceived risk and positive coping skills. Significant correlates for the men included injection drug use, AIDS knowledge, perceived risk and positive coping skills.

Latent means analysis

The χ^2 difference between a baseline, unconstrained model and a fully constrained model was 39.63/28 df, which was non-significant and which ascertained the factorial equivalence of the measurement model. We then assessed the differences between the men and women in their latent means and found that the men reported significantly higher self-esteem ($p \leq 0.001$), better access to care ($p \leq 0.05$), less perceived risk ($p \leq 0.05$), more sexual risk behaviour ($p \leq 0.001$), less negative coping ($p \leq 0.001$) and less HIV test and return ($p \leq 0.001$).

Path models

Figures 1 and 2 depict the final models for the men and women with only significant paths included. Not all significant correlational relationships remained as significant predictive paths in the structural path models. The fit indexes of the path model are quite good: (men's

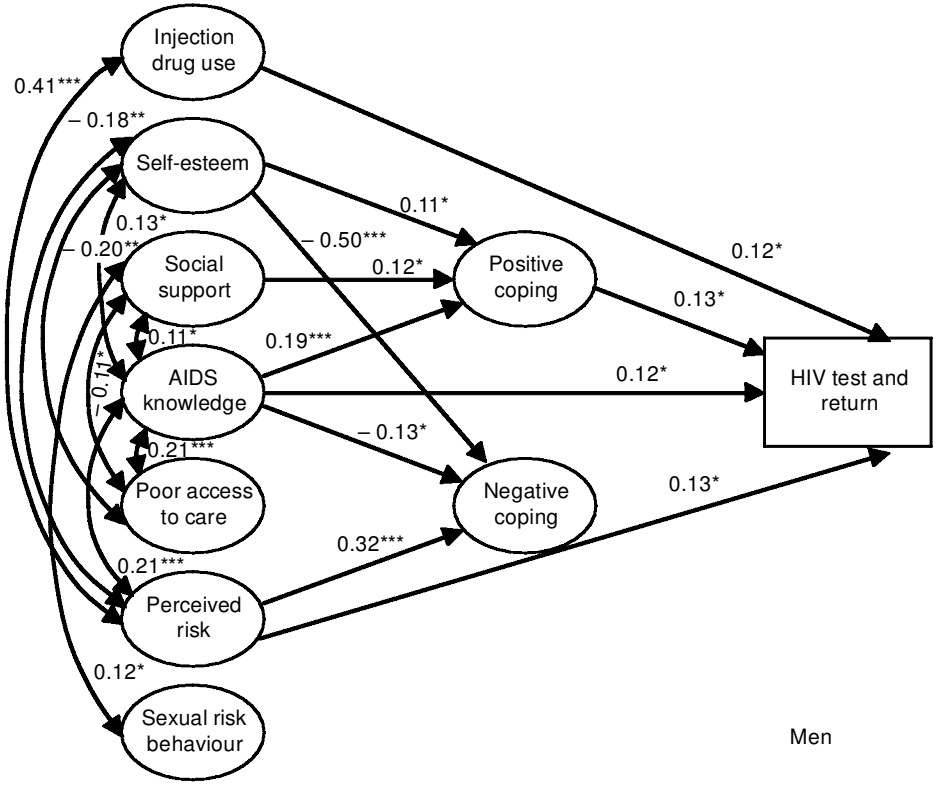

FIG. 1. *Path model for men. Latent constructs in circles, two-headed arrows indicate covariances, one-headed arrows are regression paths. Regression coefficients and covariances are standardized (*p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001).*

S-Bχ^2 (644, $N = 428$) = 941.11; RCFI = 0.94; women's S-Bχ^2 (640, $N = 621$) = 1032.14; RCFI = 0.95).

Significant predictors of HIV testing for women included more injection drug use ($p \leq 0.05$), greater social support ($p \leq 0.05$), more AIDS knowledge ($p \leq 0.01$), a higher perceived risk for AIDS ($p \leq 0.05$) and a positive coping style ($p \leq 0.01$). Significant predictors for the men included more injection drug use ($p \leq 0.05$), greater AIDS knowledge ($p \leq 0.05$), a higher perceived risk for AIDS ($p \leq 0.05$) and a positive coping style ($p \leq 0.05$). Greater social support was not significant for the men.

Discussion

Using a health-seeking and coping model, we examined whether there were gender differences in significant psychosocial and behavioural predictors of HIV testing and returning for test results in a high-risk sample of heterosexual men and women. Substantive differences would suggest that interventions among at-risk populations need to be specifically tailored by gender to encourage more HIV testing. Our study was an effort to discover what would bring more individuals into a testing centre and also increase their returning to obtain their results.

In general, our results were similar for both men and women, indicating that significant tailoring by gender may not be necessary. However, we did find that the men evaluated their risk of AIDS significantly lower than the women at the same time they were reporting more

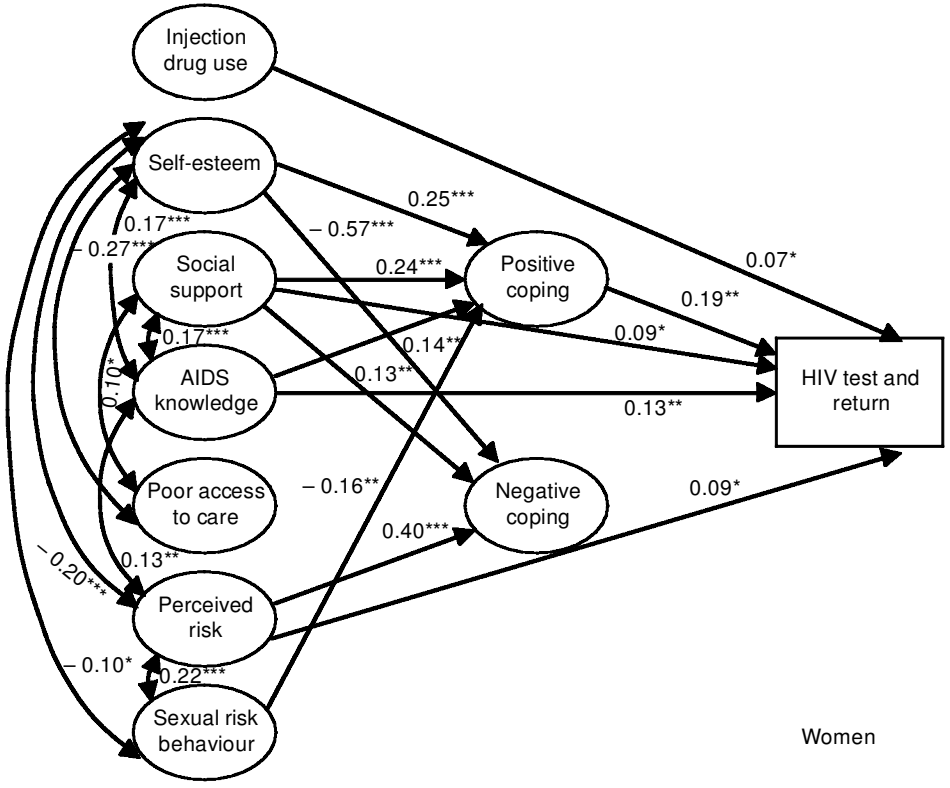

FIG. 2. *Path model for women. Latent constructs in circles, two-headed arrows indicate covariances, one-headed arrows are regression paths. Regression coefficients and covariances are standardized (*p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001).*

sexual risk behaviours and equally risky injection drug use behaviours as those of the women. They also reported less testing and return. Raising perceptions of what constitutes personal risk behaviours should thus be a priority, especially among men, and may need special emphasis when delivering prevention programmes.

Supporting other researchers who found greater AIDS knowledge predictive of HIV testing, we also found this relationship for both genders. Again, this is a possible leverage point for greater public health outreach in which effort can be expended to increase knowledge about risk for HIV. We also found a considerable range of knowledge and misinformation about transmission routes and other aspects of AIDS in this at-risk population despite the enormous public health outreach effort that has been taking place for almost two decades.

For both genders, injection drug use predicted having had an HIV test, whereas greater sexual risk behaviour did not predict HIV testing. For the men and in support of the findings of Kline and Strickler (1993) and Bauman and Siegel (1987), injection drug use was associated with higher perceived risk for AIDS (0.43), whereas greater sexual risk behaviour was not significantly related to perceived risk (0.08). This may help explain why sexual behaviour did not predict more testing among the men, although perceived risk was a direct predictor of testing. Furthermore, the lower perception of risk for the men may also be related to this finding, especially since the men reported significantly less testing and return than the women.

For the women, perceived risk was significantly associated with sexual risk behaviour

(0.20) as it also was with injection drug use (0.25), but again, sexual risk behaviour was not a direct predictor of more testing and return. Indeed, sexual risk behaviour was modestly but *negatively* associated with more testing (-0.06, NS). This result could suggest that the women may have acknowledged their sexual risk behaviours in assessing their personal risk for AIDS but were avoiding testing due to fear and fatalistic attitudes. Also, they may be exhibiting an optimistic bias (Fichtner *et al.*, 1996; Goodman *et al.*, 1995; Poppen & Reisen, 1997) regarding their sexual behaviours and denying that they need testing due to their risky behaviours.

Although poor access to care did not predict less HIV testing and return for men or women, further investigation of this potential barrier is warranted as at-risk women in particular have reported problems with HIV testing in overcrowded community-based health clinics, many of which have limited hours of operation (Landry & Forrest, 1996). Our measures of this construct may not have reflected their difficulties with accessing appropriate care and HIV counselling.

It is encouraging that the significant predictors of HIV testing and return were generally similar for the men and women. These results imply that a focused intervention to encourage more HIV testing does not have to be modified radically to appeal to both men and women. Although it may be more useful to capitalize on sources of social support in the case of women, increasing AIDS knowledge, improving coping skills and raising the perception of risk would be effective for both men and women. Again, more effort may need to be directed at raising men's awareness of sexual risk behaviour and its relationship to greater risk of HIV infection.

We did not find self-esteem to be a direct predictor of more testing and return. However, it may have exerted an effect through its positive impact on positive coping strategies which in turn were predictive of more HIV testing. Our community outreach effort to increase and develop better coping skills and self-esteem in improverished populations has been demonstrated to reduce other AIDS-related behaviours (e.g. Nyamathi & Stein, 1997; Stein *et al.*, 1997) and may be a leverage point for more HIV testing as well.

Limitations include the use of a cross-sectional design in which HIV testing may have preceded some of the motivational, knowledge and behavioural variables in the model. Prior negative test results may also have had an impact on risk assessment (Poppeh & Reisen, 1997). Further, it is possible that injection drug use was associated with testing due to the fact that many of the study participants were in drug rehabilitation centres in which they may have been encouraged to get HIV tests. Thus a predictive relationship between more injection drug use and later testing cannot be demonstrated unequivocally.

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