AN INVESTIGATION OF PSYCHOSOCIAL VARIABLES RELATED TO HIV PREVENTIVE BEHAVIORS IN UNIVERSITY STUDENTS

BY

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THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY in the Department of PSYCHOLOGY

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SIMON FRASER UNIVERSITY

April 1996

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Title of Thesis/Project/Extended Essay

An Investigation of Psychosocial Variables Related to HIV

Preventive Behaviours in University Students

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ABSTRACT

Studies have shown that despite the risk of contracting HIV and despite high levels of AIDS knowledge, university students continue to practice unsafe sex. The purpose of this study was to investigate factors that might influence condom use in response to AIDS, including: AIDS knowledge, self-esteem, and sex-role orientation. The subjects who volunteered for the study were 162 female and 97 male undergraduates living in residence at the University of British Columbia. The questionnaire comprised a sexual behaviour measure, an AIDS knowledge quiz, the Culture Free Self Esteem Inventory, and the BEM Sex-Role Inventory. The majority of the subjects were sexually active and reported having multiple sex-partners. The majority of sexually active students reported that they "never" or only "sometimes" used condoms during intercourse. Despite their rather obvious risky behaviours, the subjects estimated their level of risk for HIV infection to be very low. AIDS knowledge was very high in this sample and had no relationship to condom use nor to total number of sex partners. Contrary to what was predicted, self-esteem was also unrelated to condom use. Perhaps most surprising, was that sex-role orientation was unrelated to condom use although subjects with a masculine sex-role orientation (including females) reported more sex partners than any other sex-role category.

Keywords: AIDS Knowledge, risky sexual behaviour, self-esteem, sex-role orientation, condom use
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INTRODUCTION

Over the past ten years the medical community and society in general have become increasingly aware of the threat posed by the human immunodeficiency virus type 1 (HIV), the recognized cause of Acquired Immunodeficiency Syndrome or AIDS (Fisher & Misovich, 1990; Svenson & Varnhagen, 1990). HIV is transmitted predominantly through sexual contact, through the shared use of hypodermic needles, and through exposure to blood and blood products. Since there is no cure for HIV infection and since treatments such as AZT are effective in slowing progression, but not in eliminating transmission, primary prevention is the only strategy for controlling spread. A commonly advocated mode of control at this time is public health education (Fisher & Misovich, 1990). Most efforts at public health education have focused on the reduction of behaviors that put individuals at risk for infection, such as having multiple sexual partners, engaging in sex without a condom, and sharing injection needles (Fisher & Misovich, 1990).

Numerous studies have investigated current knowledge of AIDS transmission and the incidence of AIDS risk behaviors. Research with the male homosexual population has indicated that health education improves knowledge about high-risk sexual behaviors and also reduces the occurrence of those behaviors. Data from the San Francisco Men's Health Study, which was initiated in 1983, has indicated that by 1985, the average number of sexual partners of the cohort had decreased by 13.5%, the frequency of unprotected anal intercourse decreased by 46%, the number of anonymous sexual partners by 29%, and there was a 60% decline
in the average number of visits to a sex club. The study also found that both alcohol and drug use of all kinds was associated with an increased level of risky sexual behavior (McKusick, Horstman, & Coates, 1985; McKusick, et al., 1985).

While the AIDS crisis in North America was initially concentrated in the male homosexual population, it is becoming a greater problem among intravenous (IV) drug users, and their sexual partners (Fisher & Misovich, 1990) and is increasing in the heterosexual population (Schecter, Marion, & Elmslie, 1992). HIV infection has been found in a variety of groups including military recruits, job applicants, hospital patients, and inner city women (Health and Welfare Canada, 1996; Stall, McKusick, Wiley, Coates, & Ostrow, 1986).

As part of its ongoing surveillance of AIDS in Canada, the Laboratory Centre for Disease Control (LCDC) has estimated that the total number of people infected with HIV up to the end of 1995, could be between 42,500 and 45,000. In addition, it has been estimate that their are between 2,500 to 3,000 new infections per year (Health and Welfare Canada, 1996).

The U.S. Center for Disease Control and Prevention has indicated that the number of cases of AIDS from heterosexual contact has drastically increased from 1.9% in 1985 to 9.0% in 1993. In Canada, heterosexual women are becoming HIV infected at a faster rate than any other group. As of March, 1994, heterosexual activity accounted for 58.4% of AIDS cases in women (N=730), with blood transfusions accounting for the second highest risk for infection at 12.4%. For Canadian males,
homosexual contact still accounts for the greatest proportion (81%) of HIV infections. As of March 1994, heterosexual activity accounted for 5.3% of AIDS cases in Canadian males (N=€96). It is important to recognize that the number of AIDS cases represents only one quarter of the number of people who are actually infected with HIV (see Schecter and Marion, 1992). From the number of AIDS cases in heterosexuals in Canada, it can be estimated that at least 5,700 heterosexual have been infected with HIV up to 1995.

Overall, the percentage of AIDS cases in heterosexuals has more than doubled between 1987 and 1995 (Health and Welfare Canada, 1996). From these numbers, it is clear that HIV infection is breaking out of traditional risk groups (homosexuals and I.V. drug users) and is beginning to spread more broadly through the heterosexual population.

University students are considered to represent a population of adults who are sexually active and postponing marriage into their mid-twenties or later (Baldwin & Baldwin, 1988). In addition, sexual norms of permissiveness and multiple sexual partners of many university students make this population a potential risk group for HIV infection. Thus they may serve as a vehicle for the spread of HIV infection into the heterosexual population generally (Baldwin & Baldwin, 1988; Freimuth, et al., 1992; Reinsch, Sanders, Hill, & Ziemba-Davis, 1992). According to a seroprevalence study conducted on 19 university campuses across the U.S., one in 500 college students is infected with HIV (Gayle et al., 1990). HIV seroprevalence studies have not yet been conducted at Canadian university campuses. If we apply the prevalence estimate from the American study,
as many as 30 students may be infected with HIV at Simon Fraser University and as many as 64 students may be infected at the University of British Columbia.

A number of studies have investigated AIDS knowledge and risky sexual behaviors in college and university students (e.g., Bowd, 1987; Bowd & Loos, 1987; Fisher & Misovich, 1990; Friedland et al., 1991; Kegeles, Adler & Irwin, 1988; King et al., 1989; Strader & Beaman, 1991; Ramsum, Marion, & Mathias, 1993; Svenson & Vamagen, 1990). The prototypical study involves giving large groups of students an AIDS knowledge and awareness quiz in conjunction with a questionnaire asking students about their sexual habits and safer sex practices. The general finding of these studies is that while most students are well informed about the modes of HIV transmission and feel that the issue of AIDS is relevant to their lives, only a small proportion of them consistently engage in safer-sex practices. Although both Canadian (Allard, 1989; Bowd, 1987; Bowd & Loos, 1987; King et al., 1989; Maticka-Tyndale, 1991; Ramsum, Marion, & Mathias, 1993; Svenson & Vamagen, 1990) and American (Baldwin & Baldwin, 1988; Fisher & Misovich, 1990; Kegeles, Adler, & Irwin, 1988; Strader & Beaman, 1991) studies indicate that knowledge of AIDS and HIV transmission is high among students, this knowledge appears to be insufficient to deter many students from sexual risk-taking behaviors. Across studies, only 40-50% of students practice some form of safer sex (albeit sporadically) and fewer, 5-25%, report using condoms during all sexual encounters. Even more surprising is the finding that the students who have the highest risk of HIV infection, those who have multiple sex partners, are less inclined to use condoms than students with only one sex
partner (Baldwin & Baldwin, 1988; Hobart, 1992; Ramsum, Marion, & Mathias, 1993; Severn, 1990). It has also been found that those individuals who have had more sexual partners over their lifetime, those who began having sex at an earlier age, and those who are older are the least likely to use condoms during casual sex (Baldwin & Baldwin, 1988). It is possible that these individuals have a sexual history that goes back to a time when there was little knowledge or risk of AIDS, a time when most STDs could be easily and effectively treated with antibiotics. Old sexual habits (non-use of condoms) may be very hard to break for some of these at-risk individuals.

Numerous studies of AIDS knowledge and risky sexual behavior conducted in student populations have looked for significant demographic variables that may be related to risky sexual behavior. With the exception of age, no other demographic variables seem to be related to unsafe sexual behavior; these include gender, income, level of education, and religious affiliation (Cochran & Peplau, 1991; Herold & Mewhinney, 1993; Ramsum, Marion, & Mathias, 1993; Rickert, Jays, Gottlieb, & Bridges, 1989).

The underlying assumption of most HIV/AIDS prevention programs is that knowledge about AIDS will decrease the frequency with which people will engage in high risk sexual behavior (Basen-Engquist, 1992). However, most studies do not support this assumption. In fact, there is a glaring inconsistency between most students' high level of AIDS knowledge and their reported high-risk sexual behaviors, despite this knowledge. Although knowledge may be a necessary condition for promoting behavior change, it is obviously not sufficient. According to Bandura (1990),
"information alone does not necessarily exert much influence on refractory health impairing habits. It has not slimmed the obese or eradicated smoking."

The failure of AIDS knowledge to predict who will or will not practice safer sex behaviors has resulted in the investigation of other variables that may be related to risky sexual behaviors in the context of AIDS. Recent research on alcohol use prior to and during sexual activity has indicated that the use of alcohol in sexual situations is related to risky sexual behaviors in both homosexual and heterosexual subjects. In a three year prospective study of the changes in sexual behavior made by gay men in San Francisco, Stall et al. (1986) found that men who never drank during sex were three times more likely to be classified as having no risky sexual behaviors than those men who combined drinking with sex. In addition, those men who were initially classified as having no risk, but who increased their level of risk as the study progressed, were twice as likely to have started to combine alcohol or drugs with sexual activity, than the men who remained at low risk throughout the duration of the study.

In a correlational study of the relationship between alcohol, drugs, and AIDS-related risks, Bagnall, Plant, & Warwick (1990) administered questionnaires and standardized interviews to 350 male and 430 female heterosexual subjects. The authors found that subjects who reported a high frequency of combining alcohol and sex were seven times less likely than other subjects to report always using condoms during intercourse.
Since this study was correlational, a causal relationship between alcohol consumption and risky sexual behavior cannot be assumed from the data. Alternative explanations of this relationship should be considered. Cooper and Skinner (1990) suggest that this relationship may reflect concomitant availability of both alcohol and potential sexual partners in social settings such as bars or at parties. It is also possible that alcohol use and risky sexual behavior may both be manifestations of a third variable, perhaps a personality dimension such as deviance proneness, sensation seeking, or general problems with impulse control (Cooper & Skinner, 1990; Leigh, 1990).

Since compliance with safer sex practices requires the involvement and cooperation of both partners in the sexual dyad, there are many psychosocial factors which may impede engaging in these health protective behaviors (Wilson, Manual, & Lavelle, 1991). Interpersonal pressures such as the desire for acceptance, fear of rejection, peer pressure, and embarrassment during sexual talk can be serious obstacles to AIDS-preventive actions, even if the individuals are well informed about the acquisition and spread of HIV infection (Kassen, Vaughan, & Walter, 1992). In addition personality variables likely play a role in asserting one's desire to practice safer sex. A number of studies have investigated the role of psychosocial variables in the practice of safer sex. Among these variables are perceived self-efficacy, locus of control/health locus of control, attitudes towards condoms, perceived risk, and sensation seeking.
Self-Efficacy

Perceived self-efficacy concerns people's beliefs or confidence that they can exercise control over their own motivation and behavior and over their social situations (Bandura, 1990; White, 1959). Bandura (1990) has stated that people's beliefs about their capabilities (efficacy) has an effect on what they choose to do, how much effort they put in, how long they will persist in the face of obstacles, whether they engage in "self-debilitating" or "self-encouraging" thought patterns, and the amount of stress and depression they experience in difficult situations. Thus, according to self-efficacy theory, when people have a low sense of self-efficacy, they do not manage situations effectively, even though they know what they should do and possess the appropriate skills. A lack of self-efficacy helps create a discrepancy between knowledge and actual behaviour.

Self-efficacy has been found to be related to a number of health promoting behaviors such as smoking cessation, weight loss, and exercise (Chambliss & Murray, 1979; Kaplin, Atkins, & Reinsch, 1984; Nicki, Remmington, & MacDonald, 1985). Perceived self-efficacy has also been shown to be one of the predictors of the practice of safer sex. Effective self-regulation of sexual behavior and the negotiation of safer sex practices require a number of skills and the self-confidence that one can successfully use these skills to exert control during sexual encounters.

In the process of developing and validating a condom self-efficacy scale, Brafford and Beck (1991) found that students' low level of condom use self-efficacy may explain their failure to use condoms. Students who never use condoms were shown to have the lowest levels of condom use.
self-efficacy, while consistent condom users were found to have the highest levels of condom use self-efficacy.

In another study, Freimuth et al. (1992) examined the stages that college students might follow in promoting the use of condoms during sexual encounters. These stages included: recognizing the desire to use a condom, the initiation of a discussion about condom use, and actual condom use. The authors found that among a number of predictor variables tested, condom use self-efficacy and communication self-efficacy (regarding condoms) had the greatest influence on the initiation of discussion about condoms and on the actual use of condoms. The greater the subjects' beliefs in their ability to communicate effectively with their sexual partners and the greater their confidence in their ability to apply a condom on themselves or their partners, the more likely they are to use condoms during sexual encounters.

In a similar study of the predictors of safer-sex behaviors by Basen-Engquist (1992), self-efficacy was found to be negatively associated with perceived barriers to practicing safer-sex (e.g, embarrassment, decreased pleasure, lack of spontaneity, moral implications of condoms) and positively associated with the intention to discuss AIDS and past sexual partners with their current partner. A direct negative relationship was found between perceived barriers and actual condom use. Although self-efficacy was not directly related to condom use, it may have indirect effects through its relationship to perceived barriers to condom use. That is, a strong sense of condom self-efficacy may weaken the barriers to safer-sex practices and thus influence the use of condoms indirectly.
Witte (1991) investigated the role of fear, threat and efficacy in AIDS prevention. The author proposed that fearful or high threat messages about AIDS could be reacted to in one of two ways: the subject could take the information and use it to avoid infection or he or she could act defensively and avoid thinking about the issue to reduce fear. In a prospective study using 146 sexually active undergraduates, the author manipulated the level of threat of a message (high/low) in an AIDS education seminar and efficacy expectations (high/low) regarding the effectiveness of condoms as a preventative measure. Witte found that when the threat level of the message was high and expectation of condom efficacy was low, subjects typically failed to use condoms; when both the threat level and condom efficacy was high, subjects reported more condom use. The author concluded that threatening messages can instigate behavior change, but only when the recommended behavioral response to the threat is accompanied by high efficacy expectations.

Condom use self-efficacy and safer sex behavior have also been examined in younger 10th grade students in New York. Kasen, Vaughan, and Walter (1992) investigated levels of self-efficacy for specific behaviors including refusing offers to engage in sex, questioning potential partners about their sexual and drug-use history, and the consistent use of condoms. The authors found that students who had low self-efficacy for refusing sex were twice as likely to have experience with sexual intercourse. In addition, those students with low self-efficacy for the correct use of condoms were five times less likely to have used condoms consistently. These results held even after considering the level of AIDS knowledge among these students.
Self-Esteem

A concept that is frequently intertwined with self-efficacy is self-esteem. Self-esteem can be said to comprise an evaluation of one's personal competence and self-worth. It reflects a judgement of one's ability to cope with the challenges inherent in life and one's right to stand up for one's interests and needs (Brandon, 1988). White (1959) suggests that self-esteem has an important root in experiences of self-efficacy. However, Bandura (1990) has cautioned against drawing a direct comparison between these two concepts since a person can have high self-efficacy for a task from which he or she derives no esteem. It is more accurate to say that self-efficacy is an evaluation of one's capabilities in specific situations, whereas self-esteem is a more generalized evaluation of one's personal competence and self-worth (Bandura, 1990; Brandon, 1987).

Keeling (1987) has suggested that individuals with high self-esteem may be more likely to practice safer-sex because, through their greater sense of self worth, they put a higher value on their health and lives than individuals with low self-esteem. Although the idea that self-esteem may be related to risky sexual behaviour is intuitively appealing, surprisingly little research has investigated this relationship. Of the two studies that have been conducted in this area to date, the results are inconsistent for heterosexual and homosexual subjects.

One study examined factors distinguishing homosexual males practicing risky versus safer-sex (Siegel, Mesagno, Chen, & Christ, 1989). The authors interviewed participants two times, 6 months apart and based
on reports of sexual behavior at these two time periods, the subjects were classified as either "risky" or "safe". In addition, self-report data were obtained on measures of self-esteem, emotional and social support, perception of risk, past sexual history and drug and alcohol use. A discriminant analysis was used to distinguish 53 "risky" males from 47 "safe" males. Only four of the predictor variables could significantly discriminate between the two groups. These were drug use during sex (0.83), emotional support (0.45), past sexual behavior (0.39), and perceived difficulty in changing behavior (0.29). The self-esteem variable (0.22) only approached significance in this study.

Freimuth et al. (1992) investigated factors related to discussion and use of condoms with a sample of 204 heterosexual college students. Subjects were asked to consider their most recent episode of sexual intercourse with a new partner, while completing a questionnaire packet that included scales measuring sexual practices, AIDS saliency, perception of AIDS risk, alcohol and drug use, condom use self-efficacy, locus of control, and self-esteem. The authors found that only 43% of the subjects reported that they had used a condom and 56% of these subjects indicated that it was their idea to use the condom. A discriminant function analysis showed that self-esteem (0.46), condom use self-efficacy (0.68) and poor history of condom use (-0.64) were the best discriminator variables for condom use during the last episode of sexual intercourse with a new partner. Clearly, self-esteem made a more significant contribution to condom use in this study than in the previous study. It is possible that a smaller sample size in the Siegel et al. (1989) study (n=100) may explain the contradictory results since discriminant
function analysis is very sensitive to sample size. Of course, it is also possible that factors which are important in predicting safer-sex behaviors for heterosexuals may not be the same for homosexuals. Given the contrary results in these studies, more research needs to be conducted to clarify this issue.

Locus of Control

Locus of control refers to the extent to which people believe that life events are shaped by forces over which they exercise some control (Rotter, 1966). Rotter suggests that people can be placed on a continuum according to the extent to which they believe they are in control of what goes on in their lives. Generally, those people who believe they can control their own lives are considered to have an internal locus of control. Those individuals who feel that luck, fate, or powerful others control their lives are considered to have an external locus of control.

A locus of control scale specific to health matters has also been developed (Wallston, Wallston, Kaplan, & Maides, 1976). Health locus of control explores the tendency to perceive health issues as being more or less controllable. A person having an internal health locus of control tends to believe that one is or is not healthy because of one's own actions. A person having an external health locus of control tends to believe that health depends on luck, chance, or environmental influences (Freimuth et al., 1992; Schwarzer, Jerusalem, & Klein, 1990).

It has been suggested that those who believe that health is primarily governed by chance (external locus of control) will be less likely to use condoms to protect themselves from HIV (Freimuth et al., 1992).
Surprisingly, few studies investigating the predictors of safer-sex behaviors have included health locus of control as a predictor variable. Of the studies which have investigated the relationship between this variable and condom use, it appears that health locus of control is a factor in the discussion and use of condoms. Freimuth et al. (1992) examined the factors predicting intent, discussion and use of condoms in college students. When asked about their most recent sexual episode with a new sex partner, 43% of the subjects reported that they used a condom. Although locus of control was not directly related to the actual use of condoms, it was related to the initiation of a discussion for the need to use condoms. Subjects with an external locus of control were less likely to discuss the use of condoms with their sex partners for protection against HIV.

In a similar study with African-American adolescents, St. Lawrence (1993) found that five variables accounted for 44% of the variance in condom use. Those who were more likely to use condoms had used a condom during their first occasion of intercourse, were in an earlier grade in school, had more positive attitudes toward condoms, and had a lower belief in an external health locus of control.

Health locus of control was also included in a study investigating the predictors of vulnerability to AIDS risk behavior relapse in a sample of 68 gay men who had earlier attended AIDS prevention sessions. Kelly, St. Lawrence, and Brasfield (1991) followed this sample for 16 months and found that the resumption of high risk sexual practices was associated with a younger age, history of multiple sex partners, alcohol
use preceding sex, lower scores on a depression scale, and a greater belief that that AIDS infection is determined by external factors such as bad luck.

**Attitudes Toward Condoms**

Individuals entering sexual encounters bring with them some preconceived attitudes and feelings about condoms. Some individuals may have positive attitudes toward condoms and a general commitment to use them, while others may have negative attitudes toward their use (Freimuth et al., 1992). A number of studies have asked subjects to indicate some of the negative aspects of condoms that would influence their use. Some of the most frequently cited factors include: embarrassment in purchasing and using condoms, hassles in carrying condoms, cost, reduction in sensation during sex, breaking the mood or disrupting the spontaneity of sex, fear of losing an erection, fear of insulting their partner, and the unpleasant physical characteristics of condoms themselves such as the smell or feel of the latex (Baffi, Schroeder, Redican, & Lawrence, 1989; Brafford & Beck, 1991; De Man & Farrar, 1989; Hebert, Bernard, DeMan, & Farrar, 1989; Severn, 1990).

Scales measuring attitudes toward condoms have been developed for the purpose of examining existing beliefs and attitudes toward condoms as contraceptives (Brown, 1984) as well as for exploration of beliefs related to the use of condoms as an AIDS relevant behavior (Sacco, Levine, Reed, & Thompson, 1991).
Brown's (1984) Attitude Toward the Condom Scale (ATS) was developed as an instrument for use in research directed toward promotion of condoms as a method of contraception. Through its development and validation, it was found that attitudes toward condoms accounted for 45% of the variance in condom use as a contraceptive device.

In developing the Condom Attitude Scale (CAS), Sacco et al. (1991) have found that attitudes toward condoms were also able to explain a substantial amount of variance in condom use. Those individuals with the most positive attitudes toward condoms were significantly more likely to have used condoms in the past and to continue to use condoms presently, compared to individuals with negative attitudes toward condoms.

Attitudes toward condoms have been included as a variable in a number of studies exploring the impact of psychosocial variables on condom use for protection against HIV. In a study assessing male college students use of condoms, Baffi et al. (1989) found that a positive attitude toward condoms was the strongest predictor of the intention to use condoms for future sexual encounters. In a study of the correlates of condom use among fraternity men, Mink, Mareth, Russell, and Young (1991) not only found that positive attitudes of men toward condoms was an important predictor of condom use but a perceived positive attitude of their female partners was also an important predictor of condom use in these men. In a similar study using both male and female college students, Sevem (1990) found that subjects who possessed, discussed, and used condoms regularly had more positive attitudes toward condoms than subjects who did not possess or use condoms.
In an attempt to develop an intervention to increase the use of condoms among homosexual men at high risk for HIV, Ross (1988) conducted a study to identify the characteristics of homosexual men with positive or negative attitudes toward condom use. He administered the Attitude Toward Condoms Scale, Adjective Check List, and the Profile of Mood States to 148 homosexual men. The author found that homosexual men who had a more positive attitude toward condoms could be described as being assertive, instrumental, and determined, while men with negative attitudes toward condoms were described as submissive, passive, and conflict avoiding. Overall, this study suggests that more positive attitudes toward condoms are associated with a greater degree of assertiveness in homosexual males.

The relationship between positive attitudes toward condoms and assertiveness may also operate in heterosexuals. Yesmont (1992) explored the relationship between assertiveness and safer sex behaviors in heterosexual college students. In this study, college students completed a sexual behavior/demographic questionnaire and the Intimate Relationship Questionnaire involving assertive, nonassertive, and aggressive responses to scenarios relevant to safer sex behaviors. The study found that assertiveness varied positively with the frequency of condom use and the discussion of a partner's sexual history.

Personal Concern and Perception of Risk

Generally, models of preventive health behaviors hold that a feeling of personal concern, worry, or perceived susceptibility to an illness is a necessary condition for the adoption of preventive health behaviors
(Kaemingk & Bootzin, 1990). This view holds true for preventive health behaviors relevant to HIV as well. A number of studies have investigated the role of concern about HIV and perception of susceptibility to HIV in the adoption of risk reduction behaviors such as condom use and limiting the number of sexual partners. These variables have been found to be related to several behaviors relevant to AIDS risk reduction (Allard, 1989).

Ishii-Kuntz (1990) conducted a study to examine the impact of AIDS knowledge and concern about the disease on perceived changes in sexual practices in college students. The author found that while knowledge had little impact on the sexual behaviors of these students, concern about AIDS significantly increased the likelihood of using condoms.

In a study to investigate the factors which predict the stages involved in the decision to use a condom during sex, Freimuth et al. (1992) found that the desire to use a condom during sex and actual condom use were related to college students' assessment of their own level of AIDS risk or susceptibility. In a similar study with homosexual males, Basen-Engquist (1992) found that perceived susceptibility to HIV was positively associated with the intention to use a condom and intention, was in turn, associated with actual condom use.

In a study to investigate responses to the AIDS epidemic among sexually active homosexual men, McCusker et al. (1989) found that the greatest reported behavioral changes in response to the AIDS epidemic
occurred in men who had a greater perceived susceptibility to HIV and who had a higher assessment of the severity of AIDS infection.

**Sensation Seeking**

Sensation seeking has been defined by Zuckerman (1990) as a trait characterized by the need for novel, varied, and complex experiences and the willingness to undergo physical and social risks in order to obtain stimulation. The Sensation Seeking Scale (SSS) was developed to assess individual differences in optimum level of arousal or stimulation. Zuckerman (1971) suggested that the need for variety, change, and intense stimulation would manifest itself in activities with sensory, social, and thrill-seeking themes. The SSS (Zuckerman, 1971) includes four subscales: (a) Thrill and Adventure Seeking - the desire to participate in high risk activities or sports involving speed or danger; (b) Experience Seeking - the need to seek new experiences through the mind and senses, drug use, or an unconventional lifestyle; (c) Disinhibition - seeking sensation socially through partying, heavy social drinking, and sex; and (d) Boredom Susceptibility - an aversion to routine or unstimulating environments and people.

Generally, high sensation seekers are more likely to be smokers, use drugs, have more sexual partners, and a wider variety of sexual experiences, than low sensation seekers (Franken & Rowland, 1990; Zuckerman, 1971; Zuckerman, Tushup, & Finner, 1976). In addition, Arnett (1990) has found that adolescent girls who scored high on the Disinhibition and Boredom Susceptibility subscales of the SSS are more
likely to have sex without contraception than girls who score low on these subscales.

Given the link between sensation seeking and a variety of sexual behaviors, it is surprising that only one study has examined the relationship between this variable and risky sexual behavior. Arnett (1991) examined reckless behavior among a sample of college-educated adults aged 23-27. Reckless behavior was measured using a questionnaire that asked subjects to report whether they had engaged in a variety of reckless behaviors over the past year, including reckless driving, drug use, sexual behavior, shoplifting and vandalism. In addition, sensation seeking was measured using Zuckerman's Sensation Seeking Scale. The study found that 50% of the sample had engaged in reckless driving and sexual behavior. Sensation seeking was found to be related to drinking and driving and speeding. Surprisingly, sensation seeking was not related to sex without contraception. However, Arnett only asked the subjects to indicate if they had engaged in at least one episode of unprotected sex over the past year and did not assess whether they tended to engage in unprotected sex on a regular basis. One episode of unprotected sex does not imply a general trend toward reckless sexual behavior. This issue should be explored further by investigating more thoroughly the overall level of risky sexual behavior with regard to HIV risk, including total number of sexual partners and how often subjects have intercourse without a condom.
Gender Roles

All known societies have constructed a set of beliefs which are understood or expected to differentiate males and females (Deaux, 1987; Howells, 1986). Included in this set of beliefs are gender roles, which can be described as stereotyped expectations for behaviour based on sex (Stock, 1984). These gender roles encompass all of the psychological traits and social responsibilities that a particular society stresses as being gender appropriate (Klein, 1983). Examination of gender stereotypes across societies has shown that men are typically viewed as stronger, more physically active, higher in achievement, more autonomous and aggressive. In contrast, women are typically viewed as weaker, less physically active, and more concerned with "affiliation, nurturance and deference" (Deaux, 1987).

In our society from the moment of birth, a person's sex or gender is a major determining factor in how she or he will be socialized. This socialization process (sex-typing) encourages the acquisition of sex-appropriate preferences, skills, personality characteristics, behaviours, and self-concepts (Bem, 1981). Upon the doctor's announcement of the sex of a baby in the delivery room, the process of sex-typing begins with boys being wrapped in blue blankets and girls being wrapped in pink blankets. Previous research has shown that within just one day following birth, parents describe female babies as "soft, fine-featured and little" whereas parents describe male babies as "hard, large-featured and big". These differential descriptions occur despite the fact that objective raters cannot see a realistic basis for them (Klein, 1983).
There are three contemporary models of sex-role acquisition that are considered the most influential in describing the process whereby male and female children become masculine and feminine (sex-typed). They are social learning theory, cognitive-developmental theory and gender schema theory.

The social learning theory of sex-role acquisition suggests that male and female children learn to behave differently because people treat them differently and they are exposed to different role models. Boys are reinforced or praised for modeling the behaviour of males and girls are reinforced or praised for modeling the behaviour of females (Deaux, 1987; Klein, 1983). In addition, children are punished or discouraged for modeling the behaviour of opposite-sex role models, and this is particularly true for male children. Parents tend to give boys more positive reinforcement for "masculine" behaviours that encompass such things as independence, self reliance, and emotional control. In contrast, girls are given positive reinforcement for "feminine" behaviours which encompass such things as dependence, compliance, empathy, nurturance and expression of emotions (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972).

The cognitive-developmental theory of sex-role acquisition suggests that with the discovery that they are male or female, children come to identify with members of their own sex and come to value the behaviours and attitudes associated with their sex. Children are said to actively and selectively match their behaviour to their developing constructs of masculinity and femininity (Klein, 1983). Children begin to categorize
behaviours and objects as more or less appropriate for one sex or the other, using sex as an organizer for information in their social world. As a result, children begin to imitate sex-appropriate behaviours and avoid sex-inappropriate behaviours by modeling the behaviours of individuals of their own sex (Frieze, Parsons, Johnson, Ruble, & Zellman 1978).

The gender-schema theory of sex-role acquisition holds that children process information in terms of a gender schema which invokes sex-linked associations. Bem (1981) suggests that as children learn the components of society's gender schema they learn which characteristics are linked with their own sex and hence with themselves. Children invoke this schema to evaluate and assimilate new information and to act as a guide for perception. Schematic information processing thus enables the individual to impose meaning and structure onto incoming stimuli. As a result, gender schematic processing involves "spontaneously sorting persons, attributes, and behaviours into masculine and feminine categories regardless of their differences on a variety of dimensions unrelated to gender" (Bem, 1987). This theory views perception as a constructive process in which an interaction between a person's preexisting schema and incoming information determine what is perceived. According to Bem (1987), gender schema theory proposes that children would be far less sex-typed if our society would temper its insistence on the functional importance of the gender dichotomy.

Historically, masculinity and femininity have been viewed as bipolar ends of a single dimension of behaviours said to innately characterize men and women (Constantinople, 1973; Orloffsky, 1982). When defined in this
way, masculinity implies low femininity. The commonly used expression "the opposite sex" is an salient example of this perspective. A more recent formulation of sex-roles developed by Bem (1974) includes psychological androgy and has conceptualized masculinity and femininity as two separate dimensions. Within this view, individuals of either gender can be high or low on each dimension because they are independent domains. If individuals are high on both the masculine and feminine dimensions they are referred to as androgynous. People are considered to be sex-typed to the extent that they endorse sex-stereotyped characteristics of one variety to the exclusion of sex-stereotyped characteristics of the other variety (Kelly & Worell, 1977). The concept of androgy allows for the idea that it is possible for a person to be both instrumental and expressive, or masculine and feminine, depending on the situational appropriateness of these attributes.

Thus for both men and women, sex roles can be said to range from traditional (sex-typed) to nontraditional (androgy) (Bem, 1974; Koblinsky & Palmeter, 1984). Women who subscribe to a traditionally feminine sex role often perceive themselves as subordinate to and dependent on men and feel that their greatest achievements are attained within the home (Koblinsky & Palmeter, 1984). They are socialized to define achievement as successful affiliation rather than as mastery of their environment. Many of these women have been brought up to believe that they should put the needs of their men ahead of their own. Feminists have referred to this role as the "stroking function" (Lewin, 1985). Men who subscribe to a traditionally masculine sex-role see their roles as being in control in relationships, the decision-makers and providers (Bem,
These traditional or "sex-typed" individuals have internalized society's rules of desirable behavior for men and women, inhibiting behaviors that do not fit their socially defined role (Bem, 1974). As a result, the highly sex-typed person is left with a limited number of effective behavioural options because of a reluctance to engage in cross-typed behaviour, even in situations where it might be more adaptive (Kelly & Worrell, 1977).

Men and women who are nontraditional minimize sex role differentiation and are referred to as androgynous (Bem, 1974). These individuals believe men and women possess the same rights and competencies in both the career and social areas. Androgynous individuals feel free to engage in both masculine and feminine behaviors having a greater behavioral repertoire available to them as they move from situation to situation (Bem, 1974).

**Sex-role Orientation and Self Esteem**

Since androgyny has been proposed to be a more adaptive sex-role, a number of investigators have investigated the relationship between sex-role orientation and self-esteem, a measure thought to be an indicator of well-being. It was expected that androgynous individuals would show higher self-esteem than sex-typed individuals. However, clear support for this hypothesis has only been obtained for individuals with a feminine and undifferentiated sex-role orientations and in only one study for androgynous individuals.
Spence, Helmreich and Stapp (1975) gave 500 male and female college students the Personal Attributes Questionnaire (PAQ) and the Texas Social Behaviour Inventory, a measure of self-esteem. The authors found that for both sexes, subjects classified as androgynous were highest in self-esteem, followed by those high in masculinity, and finally, those high in femininity.

More recent research by a number of investigators has failed to replicate this finding. In fact, subsequent investigations have shown that both male and female subjects who have a masculine sex-role orientation show the highest level of self-esteem, followed by androgynous individuals, and then feminine individuals. Self-esteem is the lowest in undifferentiated individuals (see, Antill & Cunningham, 1980; Lamke, 1982; Lundy & Rosenberg, 1987; Myers & Finn, 1985). Whitely (1983) has suggested that this relationship may be due to the "instrumental" aspects of masculinity which may enhance one's sense of competence. He also suggests that Spence et al.'s (1975) finding that androgynous subjects had the highest level of self-esteem may be accounted for by the larger contribution of the masculine attributes than feminine attributes in androgynous individuals.

Sex-role Socialization and Sexuality

Sex-role socialization not only determines our self concept generally, but it also determines what expectations and behaviours we bring into a sexual interaction with another person. The content of sex-role stereotypes in the realm of sexuality includes the belief that males are sexually dominant and females are sexually passive. Stock (1984)
describes women's sexual socialization as fostering sexual restraint and naivety, passivity, responsiveness to the sexual needs or demands of others, and personal disinterest in sex. Traditional sex-roles in women have been associated with sexual dysfunctions such as anorgasmia, difficulties with arousal, and low sexual desire (Howells, 1986). It has been suggested that the feminine sex-role identity and its expectations of sexual passivity work against the need to be assertive enough to express one's needs and enjoy sex (Holland, Ramazanoglu, Scott, Sharpe, & Thompson, 1990). In addition, since sex-typed women have been brought up to perceive themselves as dependent on men, they may be hesitant to refuse sex at times when they are not interested, or to suggest changes in the sexual repertoire. These females may be hesitant to bring up these issues if they feel that they may subsequently be rejected by the man (Lewin, 1985).

In contrast, men's sexual socialization stresses that males control and orchestrate sexual encounters, always desire intercourse, are free of emotional needs during intercourse and that their masculinity is measured by the number of women they can "make it with" (Klein, 1983; Stock, 1984). There is little or no research on the relationship between male sex-typing and sexual problems. It has been postulated that since male sexuality is considered goal-oriented where performance counts, some males may suffer from a fear of failure which might produce erectile dysfunction (Howells, 1986).

Past research has shown that nontraditional views of women's roles have been associated with more positive attitudes toward birth control,
more knowledge of contraceptive techniques, a greater likelihood of asking one's partner to use a condom for birth control, a more positive attitude toward sexuality and greater likelihood for women to initiate sexual interactions and a higher likelihood that females will experience orgasm (Eagly & Anderson, 1974; Fox, 1977; Howells, 1986; Koblinsky & Palmeter, 1984).

**Sex-Role Constraints and Safer Sex Behaviours**

Clearly, safer-sex practices and condom use in general are not just a simple matter of making an informed decision based on knowledge of the facts of HIV transmission (Holland, Ramazanaglu, Scott, Sharpe, & Thomson, 1990). The practice of safer-sex may be unpredictable because of the contradictory pressures operating in sexual encounters. Among these are the gender-role expectations and power imbalances that are deeply ingrained in our society.

Holland et al. (1990) suggest that the sexual identity for heterosexual women is constructed in a ideological context which defines their sexuality in terms of men's drives and needs and sees women as "passive receptacles of men's sexual passions." This feminine sexual identity that promotes passivity works against women's need to be assertive in order to enjoy sex more fully as well as to ensure personal safety through safer-sex practices (Holland et al., 1992).

Women who subscribe to a traditionally feminine sexual identity may be hesitant both to admit to and accept their sexual needs. In addition, they may fear that if they carry condoms it is an admission to
others that they are not sexually innocent and that they are "pre-meditating" a sexual encounter (Wight, 1992). This fear may not be unwarranted. Scott and Griffin (1989) found that many males in their study reported that they would not have a sexual relationship with a female who carried condoms because she would probably be promiscuous.

Given the constraints of a traditionally feminine sexual identity, it may also be difficult for some women to talk openly about past sexual experiences. Thus, discussions between couples regarding levels of past risky sexual behavior may be pointless when one or both partners may be misrepresenting themselves in favor of a picture that complies with what is considered appropriate for their sex-role (Wight, 1992).

Another aspect of gender inequality in sex that may prevent women from insisting on safer-sex, may be the commonly-held belief by both men and women that the man's sexual pleasure or gratification is paramount in a sexual encounter (Wight, 1992). Since many men and women believe that male satisfaction takes priority and that condoms reduce the pleasure of sex for the male, asking one's partner to wear a condom might be interpreted as an unreasonable demand (Wight, 1992). The advent of the birth control pill may have even strengthened this position by allowing the sole responsibility of contraception to be placed on women.

Holland et al. (1990) suggest that the main obstacle standing between women and safer sex is the men with whom they are involved. Traditional males who may believe that their satisfaction is paramount in sexual situations may resist the idea of using condoms. In addition, these
men may not be able to accept a woman who asserts her own needs and is less focused on the priority of male pleasure in sexual encounters.

Although there has been some early research on the relationship between women's sex role attitudes and contraceptive use, no studies have examined this issue with males and in the context of AIDS. As Bandura (1990) points out, issues surrounding the use of contraceptives are different from those surrounding safer sex practices to prevent AIDS. In the case of pregnancy protection, women can exert independent control by taking birth control pills or using a diaphragm. Unfortunately, in the case of protection against HIV or other STD's, the use of condoms requires women to have the desire, skills, and confidence to exercise control over the behavior of their male partners.

One might expect that women with a nontraditional (androgynous) sex-role orientation may be more likely to place their own needs and health above their partner's pleasure. These women may take a more active role in HIV prevention than women who have a more traditional or feminine sex-role orientation.

One might also expect that males with an androgynous sex-role orientation may be more likely to practice safer-sex than sex-typed (masculine) males since they are not confined by a role that stresses the priority of their own pleasure and the need to emphasize their "maleness" by having many sexual partners.
The Present Study

The main purpose of the study reported herein was to investigate the role of sex-role orientation on AIDS-relevant behavior in university students. Sex-role orientation has been found to relate to contraceptive use in females and may also have an influence on safer-sex practices in both males and females. Since there is some preliminary evidence (reviewed above), that (a) self-esteem may be related to safer-sex behaviour and (b) a relationship between gender-role orientation and self-esteem has been found, the present study also examined the contribution of self-esteem to safer-sex behaviors and its relationship to gender roles.

This study also included an assessment of AIDS knowledge and reports of past and present sexual behaviors so that comparisons could made to previous Canadian studies.

The following hypotheses were proferred:
1. If sex-role constraints are a factor in promoting and practicing safer-sex behaviors, both males and females who are less sex-typed in their sex-role orientation (androgynous) would (a) be more likely to use condoms during sex and (b) will report fewer sexual partners than subjects who are highly sex-typed (masculine or feminine).

2. If individuals with high self-esteem are more likely to consider their own health over the desires or needs of their partner, these individuals would be more likely to use condoms than individuals with low self-esteem.
3. It was also predicted that AIDS knowledge would be high in this sample of students, and that condom use would be low and the total number of sex-partners would be high in spite of this knowledge.

METHOD

Subjects

A random sample of 500 single students living in three on-campus residences at the University of British Columbia were given questionnaires for this study. A total of 259 students completed and returned their questionnaires giving a response rate of 52%. The sample comprised 162 (62.5%) females and 97 (37.5%) males. The average age of the females was 20.1 (sd=1.79) and the average age of the males was 20.8 (sd=1.96). The males had completed an average of 3.1 (sd=1.49) years of university and the females had completed an average of 2.5 (sd=1.38) years of university.

Materials

The research package comprised a 10-page questionnaire containing demographic items, questions on sexual and drug use behavior, and two standardized questionnaires to measure sex-role orientation and self-esteem (see Appendix A).

Sexual Behaviour

Risky sexual behaviour was measured by asking subjects how many sexual partners they had in their lifetime, in the past 6 months, and whether they had ever had sex with someone they had just met. In addition, subjects were asked how consistently they used condoms during the past 6 months. Condom use was measured with a ordinal scale with
condom use levels being never, sometimes, most of the time, and always. An estimate of perceived personal risk of HIV infection was obtained by asking subjects to indicate on a scale from 0 (not at all likely) to 10 (completely likely) how likely they felt they were to become infected with HIV. The questionnaire also asked subjects to indicate if they had ever used intravenous drugs, and whether they had ever shared hypodermic needles.

**Sex-role Orientation**

The Bem Sex-role Inventory (BSRI) developed by Sandra Bem (1974) was used to measure sex-role orientation. The BSRI asks subjects to indicate on a 7-point scale how well each of the 60 masculine, feminine and neutral personality characteristics describes them. In order to categorize subjects as masculine, feminine, androgynous or undifferentiated, each subjects' masculine score and feminine score were calculated. A median split was then used to divide the sample into four categories. Subjects who scored above the median on both scales were classified as androgynous, those who scored below the median on both scales were classified as undifferentiated, those who scored above the median on the masculine scale and below the median on the feminine scale were classified as masculine, and those who scored above the median on the feminine scale and below the median on the masculine scale were classified as feminine. This measure has a test-retest reliability correlation of .90 and a internal consistency correlation of .83.
Self-Esteem

The Culture Free Self-esteem Inventory for Adults (CFSEI-2) developed by Battle (1992) was used to measure self-esteem. The scale contains 40 items and 3 self-esteem sub-scales including general (16 items), personal (8 items), and social (8 items). General self-esteem is considered to encompass one's overall perceptions of self-worth, social self-esteem one's perception of the quality of relationships with peers, and personal self-esteem one's most intimate perceptions of self worth. This inventory, which was developed and standardized with Canadian adults, has been shown to be both reliable, with a test-retest reliability correlation of .81 and an internal consistency correlation of .78 (Battle, 1992).

AIDS Knowledge

AIDS knowledge was assessed using Kelly's (1989) 40 item (true/false) AIDS Knowledge Quiz. This measure was constructed to reflect three general areas of knowledge including high-risk sexual and drug use practices, appropriate steps for reduction of risk, and misconceptions regarding HIV and AIDS. Content validation was obtained by consulting a panel of ten national experts in AIDS prevention. Test-retest reliability for this measure was .84, indicating temporal stability of the measure.

The research package included a cover letter to subjects stating that participation was purely voluntary and that the confidentiality of their replies would be strictly maintained. To ensure confidentiality and anonymity each questionnaire was unlinked from the participant by
including a tear-away sheet with the student mailbox number printed on it. When students completed their anonymous questionnaire they tore off the sheet, placed it in a separate reply box (B) and dropped the questionnaire in the other collection (A). Both boxes were located in the lobby of each residence. The tear-away sheet allowed us to send a reminder letter 2 weeks later, to the mailbox of each student who had not yet returned a questionnaire while still preserving the anonymity of individual questionnaires.

**Procedure**

The researchers systematically, randomly sampled the students living in residences by placing a questionnaire package in 1 of every 7 student mailboxes. These residences house 3457 students, representing 82% of single students living on campus. Each student in residence is assigned his or her own mailbox, making random sampling of student mailboxes very convenient. A fourth residence on the same campus houses the remaining 18% of single students living on campus, but this residence had to be excluded from the study because several students share one mailbox making proper random sampling of students impossible.

The study began one week after spring break. Two weeks after questionnaire distribution, participants who had not yet returned their questionnaire were sent a prompting letter and another copy of the research package.
Coding and Analysis

The completed questionnaires were coded and analyzed quantitatively. The relationship between behaviors relevant to HIV acquisition (condom use and number of sex partners) and the predictor variables (AIDS Knowledge, Sex-role Orientation and Self-Esteem) was assessed using Chi-square tests, correlations and F-tests where each was appropriate.
RESULTS

1. Description of Subjects

A majority of the respondents were sexually experienced, 71% of the females and 80% of the males. Of the sexually active respondents (n=193), all females reported being heterosexual while 2 males (1%) reported being homosexual and 2 males (1%) reported being bisexual.

The only demographic variable that was related to sexual experience was the subject's age. As might be expected, younger subjects (<20yrs) were less likely to report having had any sexual experience than older subjects (21+ yrs) (Chi-square=9.26,df=1, p=0.002).

The sexually active respondents reported having from 1 to 32 sexual partners in their lifetime with a mean of 3.38 (sd=3.34). There was no significant difference between males and females on this variable. There was a significant relationship between the subjects' age and the number of life-time sex partners. Subjects between 17 to 20 years of age were grouped and compared to subjects 21 and over on their reported number of sex partners over their life-time. As might be expected, subjects in the older age group reported more sex partners (M=3.25,sd=2.99) than subjects in the younger age group (M=2.03,sd=3.31) (t=3.06,df=191;p<.01).

The subjects were also asked to indicate the number of sex partners they had in the past 6 months. This ranged from 0 to 7 with a mean of 1.32 (sd=0.81). As with total number of sex partners, there was no significant difference between males and females on this measure.
Contrary to what was found for life-time sex partners, there was no significant difference between age groups for this measure.

The sexually active subjects were also asked to indicate whether they had ever had sex with a person whom they had just met. Only 14% (n=27) of the sample responded yes to this question while 86% (n=165) responded no. As with the previous measures of sexual behaviour, there was no significant relationship to gender, age, or level of education.

Condom Use

Condom use in the past 6 months was also investigated in this study. Condom use categories included "never", "sometimes", "most-times", and "always". Since the two middle categories are equivalent from a risk factor perspective (inconsistent condom use), they were collapsed into a category called "sometimes"

As shown in Table 1, a majority of sexually active students reported engaging in unprotected intercourse during the previous six months. Seventy eight percent of sexually active students "never" or only "sometimes" used condoms during intercourse while only 22% reported "always" using condoms. The use of condoms was not significantly related to any demographic variables (sex, age, level of education) or to variables related to risky sexual behaviour (the number of sexual partners in either their life-time or in the past 6 months), or whether subjects had ever had sex with someone they had just met.
The frequency of condom use reported by the subjects in this sample was compared to studies conducted using identical sampling techniques at the University of British Columbia in 1988 and 1992 (see Ramsum et al., 1993). A Chi-square analysis was performed to test for linear trends in the condom use data (Chi-square=19.05, df=4, p<0.01). As shown in Table 2, the proportion of students who never use condoms during intercourse has dropped steadily since 1988, while the proportion of students who sometimes use condoms has increased steadily. Unfortunately, the proportion of students who always use condoms has not increased since 1992.
Table 1

Reported Frequency of Condom use for Sexually Active Males (n=64) and Females (n=100) in the Past 6 Months

<table>
<thead>
<tr>
<th>Sex</th>
<th>Never (n)</th>
<th>Sometimes (n)</th>
<th>Always (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>34% (22)</td>
<td>36% (23)</td>
<td>30% (19)</td>
</tr>
<tr>
<td>Female</td>
<td>36% (36)</td>
<td>47% (47)</td>
<td>17% (17)</td>
</tr>
<tr>
<td>Total</td>
<td>35% (58)</td>
<td>43% (70)</td>
<td>22% (36)</td>
</tr>
</tbody>
</table>
Table 2
Reported Frequency of Condom use During Intercourse Among Sexually Active Students for 1988, 1992, and 1995 Samples

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>51% (n=74)</td>
<td>40% (n=65)</td>
<td>35% (n=58)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>32% (n=46)</td>
<td>35% (n=57)</td>
<td>43% (n=70)</td>
</tr>
<tr>
<td>Always</td>
<td>17% (n=25)</td>
<td>25% (n=40)</td>
<td>22% (n=36)</td>
</tr>
</tbody>
</table>

Note: Chi-square = 19.05, df = 4, p < 0.01
Risk Assessment

A measure of personal risk of HIV infection was obtained by asking subjects to indicate on a scale from 0 (not likely) to 10 (completely likely), how likely they felt they were to become infected with HIV. The majority of subjects felt that they were relatively unlikely to acquire HIV (M=1.51, sd=1.45). Level of perceived risk was compared across demographic variables and no significant relationships were found with age, gender, or educational level.

A correlational analysis did reveal a significant positive correlation between perceived personal risk and the number of sexual partners over their lifetime (r=0.18, p=0.0137) as well as to number of sex partners in the past 6 months (r=0.18, p=0.0237). This suggests that subjects who have had more sex partners see themselves as having a higher likelihood of acquiring HIV than those with fewer sex partners.

In addition, a trend approaching significance was found between self-assessed risk and whether subjects had reported having sex with someone they had just met (t=1.92, df=191, p=0.056). Subjects who had sex with a "stranger" had somewhat higher perceived risk scores (M=2.0, sd=1.78) than those who had not had sex with a "stranger" (M=1.43 sd=1.50).

It might be expected that those who had never used a condom during sex would give themselves a higher risk score than those who use condoms. To test this, condom use levels were collapsed into 2 categories: "never" vs "always/most-times/often" and mean risk scores
were compared for these 2 categories using a t-test. Contrary to what was expected, subjects who never use condoms do not rate themselves at higher risk (M=1.57, sd=1.53) for HIV infection than those who have used condoms (M=1.50, sd=1.40) \( (t=0.31, df=160, p=0.7561) \).

**Intravenous Drug Use**

Subjects were asked to indicate if they had ever used intravenous drugs and if so, whether they had ever shared needles. None of the subjects in this study reported ever using I.V. drugs.

**2. AIDS Knowledge**

AIDS knowledge was measured using Kelly's (1989) 40 item AIDS Knowledge Quiz. AIDS knowledge was found to be high in this sample of university students. Overall, the scores ranged from 28 to 40 with a mean score of 36.4 (91%, sd=1.88). Further analyses showed there to be no discernible associations between level of AIDS knowledge and age, sex, education, total number of sexual partners, or number of partners in the past six months. However, an inverse relationship was found between AIDS knowledge and personal risk assessment. The negative correlation found between these two variables \( (r=-0.14, df=190, \ p<0.05) \) suggests that as AIDS knowledge increases, perceived level of personal risk of HIV infection decreases.
3. Psychological Measures

I. Self-Esteem

The 40-item self-esteem inventory (CFSE-I) comprised 3 subscales including social (8 items), personal (8 items) and general (16 items). Overall, the mean scores for each subscale in this sample were high and were even slightly higher than the norms reported for Canadian college students (See Table 3). Mean scores for each subscale were compared for the total sample of males and females, using t-tests, and in accordance with past research, no sex differences were found.

II. Bem Sex-Role Inventory (BSRI)

Sex-role orientation was measured with the BSRI. In accordance with past research and theory, the distribution of males and females across sex-role categories shows that the greatest proportion of males are masculine and the greatest proportion of females are feminine (See Table 4). A Chi square analysis confirmed that there was a significant relationship between sex and sex-role orientation (Chi-square= 21.15, df=3, p<0.01).

For exploratory purposes self-esteem scores were compared across sex-role orientation categories (See Table 5). Analyses of variance were run, comparing the mean self-esteem subscale scores for each sex-role category. Following significant F-scores, Duncan Multiple Range Tests were conducted to compare individual means. In accordance with past research, subjects who were classified as Masculine or Androgynous (both
males and females) had higher self-esteem scores than subjects who were classified as feminine or undifferentiated.
Table 3
Table of Mean Self-Esteem Scores for the Total Sample of Males and Females

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Male (n=96)</th>
<th>Female (n=161)</th>
<th>Total (n=257)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>7.26 (0.92)</td>
<td>7.27 (1.13)</td>
<td>7.27 (1.06)</td>
</tr>
<tr>
<td>Personal</td>
<td>5.52 (2.2 )</td>
<td>5.23 (1.98)</td>
<td>5.34 (2.01)</td>
</tr>
<tr>
<td>General</td>
<td>13.2 (2.87)</td>
<td>13.17 (2.9)</td>
<td>13.18 (2.86)</td>
</tr>
</tbody>
</table>

* Numbers in brackets are standard deviations
* The table contains data from the entire sample (N=257)
Table 4

Sex-Role Orientation Patterns for Sexually Active Males (n=95) and Females (n=162)

<table>
<thead>
<tr>
<th>Sex</th>
<th>ANDRO</th>
<th>FEMIN</th>
<th>MASC</th>
<th>UNDIFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18%</td>
<td>18%</td>
<td>45%</td>
<td>19%</td>
</tr>
<tr>
<td>(n=17)</td>
<td>(n=17)</td>
<td>(n=43)</td>
<td>(n=18)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>26%</td>
<td>33%</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>(n=43)</td>
<td>(n=53)</td>
<td>(n=31)</td>
<td>(n=35)</td>
<td></td>
</tr>
</tbody>
</table>

Note: chi-square=21.15, df=3, p<0.01
Table 5

Mean Self-Esteem Scores Across Sex-role Orientation Categories for Sexually Active Male and Female Subjects Combined

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>MASC (n=59)</th>
<th>ANDRO (n=48)</th>
<th>FEMIN (n=48)</th>
<th>UNDIFF (n=35)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>14.1 (1.87)</td>
<td>14.1 (2.15)</td>
<td>12.6 (2.87)</td>
<td>12.4 (3.53)</td>
<td>5.82</td>
<td>0.0008</td>
</tr>
<tr>
<td>Social</td>
<td>7.5 (0.77)</td>
<td>7.6 (0.89)</td>
<td>7.2 (0.98)</td>
<td>7.1 (0.84)</td>
<td>4.05</td>
<td>0.0081</td>
</tr>
<tr>
<td>Personal</td>
<td>5.9 (2.08)</td>
<td>5.3 (1.79)</td>
<td>5.3 (1.98)</td>
<td>4.8 (2.12)</td>
<td>2.54</td>
<td>0.0581</td>
</tr>
</tbody>
</table>

*Numbers in brackets are standard deviations*
Hypothesis Testing

To test hypothesis 1(a), that subjects who are less sex-typed (i.e., androgynous) would be more likely to use condoms, frequency of condom use was compared across sex-role categories (See Table 6). A Chi-square statistic was computed for the data, and contrary to what was predicted, no significant pattern was found for the total sample (Chi-square=8.45, df=6, p=0.286). For exploratory purposes, the same analysis was run on males and females separately and as with the total sample, no significant relationship was found between condom use and sex-role orientation.

To test hypothesis 1(b), that androgynous subjects would report fewer sex partners than sex-typed subjects (masculine or feminine), the average number of sex partners over the lifetime was compared across sex-role categories. A 2 by 4 (sex by sex-role) analysis of variance testing was performed and followed up with Duncan's Multiple Range Tests to compare individual means where significant F tests were obtained. As shown in Table 7, there was a significant relationship between sex-role orientation and total number of sex partners (F=3.45, p=0.0177). Duncan's Multiple Range Test indicated partial support for hypothesis 1b in that masculine subjects had significantly more sex partners than androgynous, feminine or undifferentiated subjects.
**Table 6**

Frequency of Condom Use Across Sex-Role Categories (Sexually Active Males & Females combined)

<table>
<thead>
<tr>
<th>Condom Use</th>
<th>ANDRO</th>
<th>FEMIN</th>
<th>MASC</th>
<th>UNDIFF</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>17</td>
<td>9</td>
<td>20</td>
<td>12</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>(10.4%)</td>
<td>(5.5%)</td>
<td>(12.3%)</td>
<td>(7.4%)</td>
<td>(35%)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>13</td>
<td>25</td>
<td>21</td>
<td>11</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>(7.9%)</td>
<td>(15.3%)</td>
<td>(12.9%)</td>
<td>(6.7%)</td>
<td>(43%)</td>
</tr>
<tr>
<td>Always</td>
<td>11</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>(6.7%)</td>
<td>(5.5%)</td>
<td>(6.7%)</td>
<td>(2.4%)</td>
<td>(22%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>41</td>
<td>43</td>
<td>52</td>
<td>27</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>(25%)</td>
<td>(26%)</td>
<td>(32%)</td>
<td>(17%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

* Chi-square=8.45,df=6,p=0.286
### Table 7

**Mean Number of Lifetime Sexual Partners Across Sex-Role Categories**

<table>
<thead>
<tr>
<th>Sex-Role</th>
<th>MASC</th>
<th>ANDRO</th>
<th>FEMIN</th>
<th>UNDIFF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4.4</td>
<td>3.2</td>
<td>2.4</td>
<td>3.2</td>
<td>3.45</td>
<td>0.0177</td>
</tr>
<tr>
<td>(n=192)</td>
<td>(4.76)</td>
<td>(2.31)</td>
<td>(1.92)</td>
<td>(2.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>4.5</td>
<td>2.8</td>
<td>2.5</td>
<td>3.5</td>
<td>3.01</td>
<td>0.0331</td>
</tr>
<tr>
<td>(n=115)</td>
<td>(3.6 )</td>
<td>(1.82)</td>
<td>(1.83)</td>
<td>(3.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>4.4</td>
<td>3.9</td>
<td>2.1</td>
<td>2.5</td>
<td>1.33</td>
<td>0.2702</td>
</tr>
<tr>
<td>(n=77)</td>
<td>(5.45)</td>
<td>(3.00)</td>
<td>(2.10)</td>
<td>(1.90)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Numbers in brackets are standard deviations

** df for F tests=3
Although there was no significant interaction between sex and sex-role for number of sex-partners, for exploratory purposes this analysis was repeated for males and females separately. As shown in Table 7, the significant relationship between sex-role and total number of sex partners was found for female subjects (F=3.01, p=0.0331), but not for male subjects, although masculine males do show a similar pattern.

To test hypothesis 2, that subjects with high self-esteem would be more likely to use condoms, the scores for the three self-esteem subscales were compared across condom use categories using analysis of variance (F=0.98, df=159, p=.4843). As shown in Table 8, the self-esteem scores were nearly identical across condom use categories, indicating that self-esteem is not related to condom use practices.

To test hypothesis that AIDS knowledge would be high and unrelated to condom use, AIDS knowledge scores were compared across condom use categories using analysis of variance (F=0.24, df=159, p=.7868). AIDS knowledge was very high and scores were nearly identical across condom use categories, indicating that AIDS knowledge is unrelated to condom use patterns in this sample (See Table 9).

In order to test the hypothesis that AIDS knowledge would be unrelated to the number of life-time sexual partners, a Pearson correlation coefficient was computed for these variables. As predicted, there is no relationship between AIDS knowledge and total number of sex partners (R=-0.0498, p=0.4938) in this sample.
Since condom use is the cornerstone of safer-sex behaviour, variables related to condom use were explored further using a logistic regression analysis. Variables that might be expected to predict condom use (AIDS knowledge, self-esteem, total number of sex partners, and perceived level of risk) were entered into logistic regression equations. The purpose of the first regression analysis was to identify variables that would predict "always" using condoms. In order to do this, condom use categories were collapsed into "no" (never and sometimes) vs "always". The variables expected to predict "always" using condoms were entered into the regression equation using the stepwise procedure, but none met the 0.05 significance level for entry into the model.

A similar regression analysis was conducted to find variables that would best predict those subjects who "never" use condoms. In order to do this, condom use categories were collapsed into "never" vs "ever" (sometimes, always). Once again, none of the variables met the 0.05 level of significance for entry into the model.
Table 8

Self-Esteem Scores Across Condom Use Categories for Sexually Active Males and Females Combined

<table>
<thead>
<tr>
<th>Self Esteem</th>
<th>Never (n=57)</th>
<th>Sometimes (n=67)</th>
<th>Always (n=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>7.3 (1.01)</td>
<td>7.5 (0.74)</td>
<td>7.4 (0.87)</td>
</tr>
<tr>
<td>General</td>
<td>13.7 (2.70)</td>
<td>13.4 (2.42)</td>
<td>13.2 (3.06)</td>
</tr>
<tr>
<td>Personal</td>
<td>5.5 (1.89)</td>
<td>5.4 (1.94)</td>
<td>5.6 (2.12)</td>
</tr>
</tbody>
</table>

*Numbers in brackets are standard deviations*
Table 9
AIDS Knowledge Scores Across Condom-use Categories for Sexually Active Students.

<table>
<thead>
<tr>
<th>Condom Use</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>36.47</td>
<td>1.71</td>
</tr>
<tr>
<td>Sometimes</td>
<td>36.68</td>
<td>1.71</td>
</tr>
<tr>
<td>Always</td>
<td>36.7</td>
<td>1.65</td>
</tr>
</tbody>
</table>

F = 0.24, df = 159, p = 0.7868
Discussion

A total of 259 students living in residence completed and returned questionnaires for this study giving a response rate of 52%. While this rate is consistent with similar studies conducted in 1988 and 1992, it should be noted that the sample in this study may not represent the entire population of students living in residence. Unfortunately, we were unable to obtain demographic data for the nonresponders so basic comparisons could be made to the sample obtained. In addition, generalization beyond students living in residence must also be done cautiously. Students living in residence are dissimilar to the general student population, in not living at home and in being largely from outside Vancouver.

The results obtained in the present study confirmed the hypothesis that AIDS knowledge would be high and have no relationship to condom use or to the total number of sex partners. This finding is consistent with previous studies of college students. Both Canadian and American studies have found that while knowledge of AIDS and HIV transmission is high among students, this knowledge is insufficient to deter many students from sexual risk-taking behaviours. Across studies, the majority of students sampled had multiple sex partners and only 5-25% of students report using condoms during all sexual encounters.

For the majority of students in this study, the self-perceived level of risk for HIV infection was very low. It is interesting to note that while overall, perceived risk is low, subjects who report a greater number of
sex partners or report having had sex with a stranger do see themselves at slightly higher risk for HIV infection. Unfortunately, these individuals are no more likely to use condoms than those subjects who report fewer sex partners or who have not had sex with a stranger.

When evaluating personal risk and considering whether to adopt safer-sex behaviours, students may be comparing themselves to previously established "risk groups" (e.g. homosexuals, IV drug users, etc.) rather than considering their own level of "risky behaviours" (e.g. multiple partners, sex with strangers). This might explain why subjects in this study, who never use condoms do not see themselves at a higher risk for HIV infection than those who use condoms. Information from Student Health Services at UBC indicates that the numbers of HIV infections on campus may indeed be low, and there is no documented HIV transmission occurring. However, no seroprevalence studies have been conducted on campus and the information described above is based on data obtained from students who chose to use Student Health Services for their medical care.

The hypothesis that subjects with high self-esteem would be more likely to use condoms than subjects with low self-esteem was not supported in this study. Subjects who always used condoms did not have higher scores on any of the self-esteem subscales than subjects who never or inconsistently used condoms. This is inconsistent with a study by Freimuth et al. (1992) where the authors found that self-esteem was a strong predictor of condom use. The reason for these conflicting findings is not clear. The self-esteem scale used in the Freimuth study was not
identified and was only described as a 20-item semantic differential scale. This scale may have been developed by the authors specifically for their study. Hence, the difference in findings may be due to the different self-esteem scales used.

In addition, the self-esteem scores obtained in the present study were very high and showed low variability. The lack of support for hypothesis 2 may be due to ceiling effects for the self-esteem measure used in this study. The fact that the mean self-esteem scores obtained in this study were actually higher (and the standard deviations lower) than the scales' norms for Canadian college students supports this explanation.

The hypothesis that androgynous students would be more likely (a) to use condoms and (b) to have fewer sex partners than sex-typed students was only partially supported in this study. With regard to condom use, sex-role had no relationship to condom use patterns in that androgynous students were no more likely than sex-typed students to use condoms. This finding held true when the sample was analyzed as a whole as well as when males and females were analyzed separately.

With regard to the total number of sex partners, the hypothesis was partially confirmed in that students classified as masculine had more sex partners than students classified as androgynous, undifferentiated or feminine. Surprisingly, when this relationship was analyzed separately for males and females, the relationship between masculinity and number of sex partners held up for females but not males. This peculiar finding may be due to the reduced sample size obtained when analyzing each sex
individually. While the sample size for the female analysis was still fairly large \((n=115)\), the male sample used was relatively small \((n=77)\) which would reduce statistical power. Considering that the average number of sex partners reported for masculine males \((4.4)\) was nearly the same as that reported for masculine females \((4.5)\) this explanation does seem viable.

Overall, it is important to note that with regard to the number of sex partners, students with a masculine sex-role orientation are at higher risk for HIV infection than students with other sex-role classifications. It might be fruitful for future research to explore aspects of masculinity that may lead people to pursue more sex partners. If masculine individuals are merely more assertive in pursuing relationships, this assertiveness might be "harnessed" and used to help a person be more persuasive when negotiating condom use. There are many other attributes of masculinity that would seem to be very compatible with condom use. These include independence, aggressiveness, self-reliance, and willingness to take a stand, which could be valuable tools when negotiating safer-sex practices. These too could be capitalized on and incorporated into safer-sex counselling techniques.

It is encouraging to note that since 1988 the proportion of students who "never" use condoms during intercourse has dropped significantly. Unfortunately, the proportion of students who only "sometimes" use condoms has increased more than the proportion who "always" use condoms. There are still great gains to be made in condom use and psychologists can play an important role in identifying the factors that
either limit or encourage consistent condom use and other safer-sex behaviours.

Reliance on educational programs that focus primarily on knowledge to change behaviour is a common practice and it is a commonly held belief that the recognition of a health hazard will lead an individual to change harmful behaviours. The results of this study show that knowledge alone does not ensure the recommended healthful behaviour and therefore, education directed solely at knowledge is inadequate.

Many factors may mitigate against consistent use of condoms, such as lack of immediate accessibility, inconvenience, peer or partner pressure, moral or religious beliefs, and personality style. For behaviour change to occur, the magnitude of the perceived health risk (HIV infection) must be high enough, and/or the magnitude of the perceived difficulty of the recommended behaviour change (e.g., consistent use of condoms), must be low enough. For most students, one or both of these conditions does not seem to be satisfied at the present time.

As AIDS enters its second decade in North America, public health interventions must evolve to meet the newly identified and perhaps constantly changing needs of the population. Reliance on limited models of public health education may impede the progress in the fight against AIDS and other sexually transmitted diseases. Effective public health interventions are not "one-size-fits-all". New methods of public health
education must include not only up-to-date information, but must also consider that the negotiation of safer-sex practices occurs in a dyad and thus reflects the needs and personalities of both partners involved.
REFERENCES


Witte, K. (1991). The role of threat and efficacy in AIDS prevention. International Quarterly of Community Health Education. 12, 225-


APPENDICES
Appendix A

Study Questionnaire
AIDS OPINION SURVEY
ANNOUNCEMENT

A joint study between the Department of Health Care and Epidemiology at UBC and the Department of Psychology at Simon Fraser is conducted with UBC students living on campus. The survey covers knowledge, behaviour and opinions related to AIDS. The results of the study will help to improve education and prevention services for students in residence. The final results of the study will also be published in the residence newsletter, for the benefit of all students.

You were one of approximately 500 students chosen at random and are asked to participate by completing the attached brief self-administered questionnaire. Answers are confidential and anonymous.

We hope that you will agree to complete the questionnaire, since the validity of our conclusions will depend partly on your participation. However, participation is completely voluntary.

This study has been given ethical approval by both the UBC and SFU ethical review committees. If you have any questions or concerns about this survey, you may contact Dr. Rick Mathias in the Dept of Health Care and Epidemiology at UBC at 822-2772, or Dr. C. Webster (Dept. Chair) or Dr. B. Beyerstein in the Dept of Psychology at SFU at 291-3354.
Thank you for choosing to be a participant in this study. Your participation should require approximately one hour of your time.

To improve the quality of the study it is essential to know which mailboxes have and have not returned a questionnaire. Please tear this page off, put your post office box number on it and place the sheet into Box "B" in the lobby of your residence. The questionnaire should be placed into Box "A" when it is complete. If the tear sheet and the questionnaire are placed in the different boxes it will not be possible to link the questionnaire to the individual. Remember, do not put your name on any pages of the questionnaire or the on the tear-away sheet. Thank you for participating in the study. We assume that if you have completed the questionnaire and returned it, you have consented to being a participant in this study.

Post office box number  ___________
AIDS OPINION SURVEY

This study investigates AIDS knowledge personal opinions and behaviours. Your responses are strictly confidential and you will not be asked to identify yourself on the questionnaire. While some of the questions may seem very personal, the results of the study will help to improve AIDS education and prevention services for students.

1. What is your age?
   _______ years

2. Are you:
   A. Male___
   B. Female ___

3. How many years of university have you attended?
   _______ (Please specify the number)

4. What is your marital status?
   A. single ____
   B. married ____
   C. living common law ____
The next 10 questions ask about your sexual and drug use behaviour. While you might find some of the questions sensitive, please try to answer them as honestly as you can. Also remember that this is an anonymous questionnaire and it will be impossible to link your answers to you.

5. Have you ever engaged in any type of sexual intercourse (oral, anal, or vaginal)?

   A. Yes _____   B. No _____

6. The number of partners with whom you have engaged in sexual intercourse in your entire life is/are:

   _______ (please specify number)

7. In the past 6 months have you had any type of sexual intercourse (oral, anal, or vaginal)?

   A. Yes _____   B. No _____

8. The number of partners with whom you have engaged in sexual intercourse in the last 6 months is/are:

   _______ (please specify number)

9. In the past 6 months, I have engaged in sexual intercourse with:

   A. Males only _____
   B. Females only _____
   C. both males and females _____
   D. Not applicable _____

10. In the past 6 months have you had sex with an individual whom you had just met?

    A. Yes _____   B. No _____
11. In the past 6 months, you or your partner(s) have used a condom during intercourse:
   A. Never _____
   B. Sometimes _____
   C. Most of the time _____
   D. All of the time _____
   E. Not applicable _____

12. During the past 6 months have you engaged in intravenous (IV) drug use (mainlining, shooting up)?
   A. Yes _____  B. No _____

13. During the past 6 months, if you have engaged in IV drug use, did you share needles with other users?
   A. Yes _____  B. No _____  C. Not Applicable _____

14. Given your own lifestyle and behaviours, how likely do you feel you are to become infected with HIV, the virus that causes AIDS? Please make your response on a scale from 0 to 10, where 0 means not at all likely to become infected and 10 means completely likely to become infected.

   not at all likely \hspace{1cm} somewhat likely \hspace{1cm} completely likely

   \begin{tabular}{ccccccccccc}
   & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\
   \end{tabular}
AIDS Risk Behavior Knowledge Quiz

This is a true/false test. Please do not skip any questions. Because this is a test, some of the statements are true and accurate, while others are false and inaccurate. Please indicate whether the statement is true or false for each item.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>1. Most people who transmit the AIDS virus look unhealthy.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>2. Anal intercourse is high risk for transmitting the AIDS virus.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>3. Oral intercourse carries risk for AIDS virus transmission.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>4. A person can be exposed to the AIDS virus in one sexual contact.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>5. Keeping in good physical condition is the best way to prevent exposure to the AIDS virus.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>6. It is unwise to touch a person with AIDS.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>7. Condoms make intercourse completely safe.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>8. Showering after sex greatly reduces the transmission of AIDS.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>9. When people become sexually exclusive with one another, they no longer need to follow &quot;safe-sex&quot; guidelines.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>10. Oral sex is safe if the partners &quot;don't swallow&quot;.</td>
</tr>
<tr>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
<td>11. Most people who have been exposed to the AIDS virus quickly show symptoms of serious illness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>12. By reducing the number of different sexual partners, you are effectively protected from AIDS.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>13. The AIDS virus does not penetrate unbroken skin.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>14. Female-to-male transmission of the AIDS virus has not been documented.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>15. Sharing razors and toothbrushes can transmit the AIDS virus.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>16. Pre-ejaculatory fluids carry the AIDS virus.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>17. Intravenous drug users are at risk for AIDS when they share needles.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>18. A person must have many different sexual partners to be at risk from AIDS.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>19. People carrying the AIDS virus generally feel quite ill.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>20. Vaginal intercourse carries high risk for AIDS virus transmission.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>21. Withdrawal immediately before orgasm makes intercourse safe.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>22. Persons who are exclusively heterosexual are not at risk from AIDS.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>23. Healthy persons in AIDS risk groups should not donate blood.</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
<td>24. Sharing kitchen utensils or a bathroom with a person with AIDS poses no risk.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>25.</strong></td>
<td>Intravenous drug users become exposed to the AIDS virus because the virus is often contained in heroin, amphetamines, and the injected drugs.</td>
<td>True</td>
</tr>
<tr>
<td><strong>26.</strong></td>
<td>A wholesome diet and plenty of sleep will keep a person from becoming exposed to the AIDS virus.</td>
<td>True</td>
</tr>
<tr>
<td><strong>27.</strong></td>
<td>A cure for AIDS is expected within the next two years.</td>
<td>True</td>
</tr>
<tr>
<td><strong>28.</strong></td>
<td>It is more important to take precautions against AIDS in large cities than in small cities.</td>
<td>True</td>
</tr>
<tr>
<td><strong>29.</strong></td>
<td>A negative result on the AIDS virus antibody test can occur even for people who carry the virus.</td>
<td>True</td>
</tr>
<tr>
<td><strong>30.</strong></td>
<td>A positive result on the AIDS virus antibody test can occur even for people who do not carry the virus.</td>
<td>True</td>
</tr>
<tr>
<td><strong>31.</strong></td>
<td>Coughing does not spread AIDS.</td>
<td>True</td>
</tr>
<tr>
<td><strong>32.</strong></td>
<td>Only receptive (passive) anal intercourse transmits AIDS.</td>
<td>True</td>
</tr>
<tr>
<td><strong>33.</strong></td>
<td>Most present AIDS cases are due to blood transfusions that took place before 1984.</td>
<td>True</td>
</tr>
<tr>
<td><strong>34.</strong></td>
<td>Most persons exposed to the AIDS virus know they are exposed.</td>
<td>True</td>
</tr>
<tr>
<td><strong>35.</strong></td>
<td>A great deal is known about how the AIDS virus is transmitted.</td>
<td>True</td>
</tr>
<tr>
<td><strong>36.</strong></td>
<td>Donating blood carries no risk for the donor.</td>
<td>True</td>
</tr>
<tr>
<td><strong>37.</strong></td>
<td>No cases of AIDS have ever been linked to social (dry) kissing.</td>
<td>True</td>
</tr>
</tbody>
</table>
True False 38. Mutual masturbation and body rubbing are low in risk unless the partners have cuts or scratches.

True False 39. People who have become exposed to the AIDS virus through needle sharing can transmit the virus to others during sexual activities.

True False 40 The AIDS virus can be transmitted by mosquitoes or cockroaches.