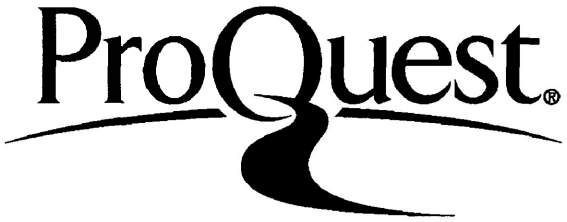
# ASSESSING KNOWLEDGE OF AIDS, CONCERN AND BEHAVIOURAL CHANGE AMONG UNIVERSITY STUDENTS

LISA A. BELL

A THESIS SUBMITTED TO THE FACULTY OF ARTS
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTERS OF ARTS

DEPARTMENT OF PSYCHOLOGY
LAKEHEAD UNIVERSITY
THUNDER BAY, ONTARIO

JULY, 1990



I would like to dedicate this paper in memory of my father (Jerry), as I know he would be very proud of my accomplishments. I would also like to dedicate this paper to my friends and family. More specifically, my Mom (Vi), Mike, Scott and Murray. I know that without all of your love and support I would not have made it this far. I love you all very much, thank you.

ACKNOWLEDGEMENTS

The author wishes to express her appreciation to Dr. Margaret Sellick and Dr. John Jamieson for their guidance and assistance throughout all phases of this study. Thanks are also extended to Darlene Binette, Community Coordinator of the AIDS Program in Thunder Bay, and Health Services at Lakehead University for their assistance.

## Abstract

The escalating prevalence of Acquired Immune Deficiency Syndrome has precipitated many efforts aimed at informing the public about the deadly AIDS virus and how to avoid infection. Since the university population consists largely of single young adults, many of whom are sexually active, it is an important target population for AIDS education. The present study examined through the use of an AIDS Questionnaire (AIDSQ), the relationships among knowledge about AIDS, concern, barriers to change, and behavioural change. The AIDSQ was administered to 121 female and 38 male introductory psychology students attending a Northern Ontario University. Results indicated that knowledge alone was not sufficient to produce behavioural change. Several factors which did appear to be related to behaviour change included level of concern about contracting AIDS, confidence in one's ability to estimate the risks associated with one's behaviour, confidence in the effectiveness of the recommended behavioural changes for avoiding AIDS, and the degree of comfort felt engaging in the recommended behaviours. Implications for future educational interventions and research are discussed.

# TABLE OF CONTENTS

LIST OF TABLES

# LIST OF APPENDICES

## INTRODUCTION

Within the past decade, due to the escalating prevalence of Acquired Immune Deficiency Syndrome, various efforts have been made to educate the public about the deadly AIDS virus and how to avoid infection. Although many educational efforts have been made (e.g. pamphlets, lectures), there is still an alarming increase in the incidence of infection, and many people are still not making the behavioural changes which are necessary for their own, and others' protection. It seems that knowledge is not necessarily translated into behavioural change. The university student population, consisting largely of single young adults, many of whom are sexually active, is an important target population for AIDS education. Before these interventions can be properly designed, we need more information about the obstacles, or barriers to behaviour change with which this age group typically contends, and how these are successfully overcome by students who in fact make the appropriate changes.

We know from various health behaviour change models (Ajzen & Fishbein, 1980; Janz & Becker, 1984; Rogers, 1983), that knowledge about a disease is, by itself, not enough to motivate people to adopt certain health practices or modify personal habits. People must also see the threat as serious and personally relevant, must see the recommended changes as both effective and as reasonable for them to achieve, and must feel confident in their ability to comply with the changes.

The purpose of the present study is to examine in a university student population what the barriers to behavioural change and risk reduction really are, and how students are responding to the AIDS epidemic. More specifically, a questionnaire will assess students' level of knowledge and concern about AIDS, their belief in the effectiveness of altering their behaviour (response-efficacy), confidence in their own ability to overcome the obstacles to change (self-efficacy), and the degree of comfort felt engaging in the recommended behaviours. It is hoped that this kind of specific information will help in planning intervention campaigns for this target population, which take into account the specific needs and difficulties of young adults in achieving the recommended behaviour changes.

Acquired Immune Deficiency Syndrome, more commonly known as AIDS, is a disease syndrome characterized by an unexplained severe loss of natural immunity, resulting in the emergence of cancer or infection that would not otherwise occur with life threatening severity (Batchelor, 1984; Koop, 1987). Most persons with AIDS are between 20 and 49 years of age (Gallin & Fauci, 1985) and often develop a rare type of cancer (Karposi's Sarcoma) or pneumonia (Pneumocystis Carinii Pneumonia) which eventually causes their death (Kinnier, 1986; Koop, 1987). It is important to know that AIDS is contagious, but it cannot be spread in the same manner as the common cold. AIDS is transmitted, regardless of sexual orientation, through any activity which involves the contact with body fluids, such as blood and semen. It is not only limited to sexual intercourse, as recipients of blood products and people who share needles or syringes for illicit drugs can also get AIDS (Koop, 1987). Once an individual has been infected by the AIDS virus there are several outcomes:

1) some people may remain well but even so are able to infect others. In Canada, those persons with HIV infection and no symptoms are estimated at 50,000 or more (Canadian Public Health Association, 1987). Thus, there are thousands of people in Canada who do not even know

that they are infected with the AIDS virus and who, therefore, may have no reason to modify their own sexual practices for the safety of others with whom they have sexual contact. This unidentified "silent" population, as a result, is very dangerous (Canadian Public Health Association, 1987);

2) some may develop a disease less serious than AIDS, AIDS Related Complex. In Canada, it is estimated that 3,000 to 5,000 persons are infected with the AIDS virus and exhibit the general symptoms (Canadian Public Health Association, 1987) and;

3) in some people their protective immune system may be destroyed by the AIDS virus allowing other germs and cancers to develop. It is possible that this virus may also attack the nervous system, causing damage to the brain (Koop, 1987). In Canada, there are approximately 2,229 reported cases of AIDS (Disease Control and Epidemiology Service, December 1988). The first case of AIDS was diagnosed in the United States in 1979 (Kinnier, 1986). As of June 13, 1987, there were 1,134 cases reported in Canada, with 583 resulting in death (Punter, 1987). Within a few months, the number of AIDS cases increased at a dramatic rate. As of October 5, 1987, 1,303 cases had been reported in Canada, with 678 resulting in death (Centre for Disease Control, October

1987). The number of AIDS cases has steadily increased over the year with 2,229 cases being reported in Canada, with 1,236 resulting in death. In fact, it is estimated that the number of reported cases is currently doubling every 16 months (Disease Control and Epidemiology Service, December 1988). In light of these statistics, some have suggested that we have only seen the beginning of what could become a Black Plague of the twentieth century (Kinnier, 1986). The disease has become a major epidemic and as a result, the psychological impact of AIDS must be examined. The emotional impact and various mental health issues of AIDS must be considered (Batchelor, 1984).

Although AIDS was once thought to threaten only a specific population (mainly homosexual men), it is now evident that AIDS can be acquired by anyone and can be transmitted through heterosexual sex and through the sharing of needles among IV drug users (Koop, 1987; Norwood, 1987). One must remember that AIDS is a disease that can threaten any and all sexually active people and that it is people's behaviour and not sexual orientation that is a factor in contracting the AIDS virus (Norwood, 1987). Brandt (1986) stated, "We need to recognize that behavioural change does not mean encouraging celibacy, heterosexuality, or morality; rather it means developing

means to avoid coming into contact with a pathogen" (p.240). It is not, therefore, just homosexual and bisexual men who can get AIDS, but also women, children, intravenous drug users and those who have received many blood or blood product transfusions between 1980 and November 1985 (Koop, 1987; National Advisory Committee on AIDS, 1986). Transfusions between 1980 and November 1985 are considered risky because blood donations were not being tested by the Red Cross at this time for signs of the AIDS virus. It is, therefore, specific practices that people engage in that are risky, not whether or not they are considered to be within the "at risk groups".

**RESEARCH ISSUES IN AIDS**

Since the AIDS epidemic began, the main emphasis of research has been on relevant medical and biological factors, the treatment and counselling of persons with AIDS, and associated legal issues. Investigations concerning the medical and biological factors associated with AIDS have tended to focus on the symptoms and cause of AIDS, tests for the AIDS virus, treatment of AIDS and the particular effects the virus has on various parts of the body (AIDS Committee of Toronto, 1987; Gallin & Fauci, 1985; National Advisory Committee on AIDS, 1986; Pearl & Armstrong, 1984; Perry & Markowitz, 1988;

Runck, 1986). Research on counselling of persons with AIDS and their families has concentrated on the need for support and support groups, the need for practical information about medical treatments and the various services available (Annals of the New York Academy of Sciences, 1984; Green & Miller, 1985; Perry & Markowitz, 1988; Robinson, Skeen, & Walters, 1987; Runck, 1986). Studies examining the legal aspects of AIDS have focused on confidentiality, ethical dilemmas, discrimination in the workplace and in society in general, and the neglect of medical personnel (Aberth, 1986; Halcrow, 1986; Kinnier, 1986; Melton & Gray, 1988; Wing, Spencer, Fane, Britt, & Browne, 1986).

It has been suggested that future research focus on the relationship between environmental, psychosocial and behavioural factors (Coates, Temoshok, & Mandel, 1984). Coates et al. (1984) believe that various factors in combination may at times protect the organism, predispose the organism to disease onset, or influence the course of disease once it is contracted. As a result, attention should be directed to those factors which may influence a person's behaviour and behaviour change. Scientists must expand their investigations to include social and behavioural input (Batchelor, 1984). Only by doing this will we be able to develop a better understanding of the

phenomenon of AIDS. Kinnier (1986) adds that future investigators also need to explore factors such as stress, anxiety and personality characteristics. These variables may also be linked to the acquisition or progression of the disease. The amount of stress and depression a person with AIDS experiences may increase the severity of the disease and may even hasten death for some individuals (Kinnier, 1986). It is possible, therefore, that positive coping behaviours, attitudes and social support systems could contribute to the prevention of AIDS and improve the prognosis of persons with AIDS (Annals of the New York Academy of Sciences, 1984; Kinnier, 1986).

**PUBLIC EDUCATION**

According to various researchers, education is one area that we must turn our attention in order to develop behavioural change strategies to reduce the risk of contracting the AIDS virus (Coates, Temoshok, & Mandel, 1984; Corless & Pittmen-Lindeman, 1988; Osborn, 1986; Runck, 1986; Solomon & De Jong, 1986; Winslow, 1988). Education is so important because misinformation or misconceptions can lead to homophobia, an inappropriate fear or even hatred of gay individuals, rather than reasonable health behaviour change (Brandt,

1986). Koop (1987), who released the Surgeon General's Report on AIDS stated that the only weapon against AIDS is education and information to change human behaviour and to contain any further spread of the disease. He stated that education should start early in the home and at elementary school so that individuals can grow up knowing behaviours to avoid in order to protect themselves. At present, it appears that adolescents and university students may have been poorly informed about the cause, transmission and, especially, the prevention of HIV infection (DiClemente, Boyer, & Mills, 1987; Goodwin & Roscoe, 1988).

Education campaigns have been focussing on the "at risk groups" and this may in fact have had a negative impact on the public by leading people to believe that only gay individuals and drug users are at risk. Those people who are not gay and not IV drug users, as a result, may tend to underestimate the riskiness of their own sexual practices. They tend to evaluate their own personal risk on the basis of stereotypes of the "at risk person", which education campaigns may have depicted to the public (Bauman & Siegel, 1987). For instance, a telephone poll conducted by Newsweek (August 12, 1985, as cited in Goodwin & Roscoe, 1988), indicated that respondents themselves, or someone they knew, had taken

precautions to reduce the chance of contracting AIDS by: 1) avoiding people they know or suspect to be homosexual; 2) avoiding certain places where homosexuals may be present; and 3) refusing elective surgery that requires blood transfusions. It is clear that education programs need to address these existing misconceptions regarding AIDS. Even some health care workers are not taking the proper precautions: There are many who are using infection control precautions that are appropriate only for airborne infections (e.g. use of masks, gowns, or quarantine rooms), while at the same time they risk exposure to the HIV virus by recapping needles (Wertz et al., 1988).

The question that remains, however, is the extent to which knowledge about a particular disease will by itself be reflected in an individual's willingness to make behavioural changes. While some researchers, like Joseph et al. (1984) found that knowledge about AIDS was insufficient to warrant behaviour change, it is certainly clear that knowledge about risky and safe sex practices is at least one of the prerequisites to the adoption of safer sex practices (Siegel & Gibson, 1988). Knowledge regarding the transmission and prevention of AIDS is necessary to foster preventive behaviour and to prevent the spread of the disease (DiClemente, Boyer, & Mills,

1987; Emmons et al., 1986; Winslow, 1988). It remains to be shown, however, how knowledge interacts with other factors (e.g. attitudes, concern) to actually promote behavioural change.

In a study by Simkins and Eberhage (1984) for instance, 232 volunteer participants from a midwestern university in Kansas City were given a questionnaire to determine current attitudes about AIDS, herpes, and Toxic Shock Syndrome. It was found that male homosexuals expressed more concern about AIDS than other sexual preference groups (e.g. homosexual women, heterosexual men and women). They also found that men expressed more concern about getting AIDS than women. However, in general, the majority of subjects were not very concerned about AIDS or herpes, and reported little change in the frequency of sexual behaviour or in the number of sexual partners. They concluded that the relative lack of concern about AIDS may be a reflection of the low incidence of the disease in the region (Missouri) in which the study was conducted. Perhaps, it is also possible that these individuals were not knowledgeable about AIDS since this was not examined, and subjects may have altered the nature of their sexual behaviour (e.g. by using condoms) without changing the frequency of sexual encounters.

Two years later, Simkins and Kushner (1986) conducted the study again and still found little change either in attitudes or in people's sexual behaviour. Men, especially homosexuals, continued to be most concerned about AIDS, and this concern affected the sexual activity of homosexual men more than that of heterosexual men and women.

As is evident from these studies it appears that homosexuals are more concerned about AIDS and as a result are more apt to change their sexual practices. Perhaps one's knowledge about AIDS, however, should also be examined as homosexuals may be more concerned about AIDS because they know more about the disease.

In other studies, researchers have found that individuals with more knowledge about AIDS tend to report greater changes in their behaviour. For instance, the 1982 - 1984 AIDS Behavioural Research Project found that the AIDS epidemic had precipitated fundamental changes in the sex lives of gay men in San Francisco. These researchers found that the volume of sexual contacts, as well as the likelihood of behaviours which are thought to transmit disease and the AIDS virus, have been on a downward trend since November of 1983 (McKusick et al., 1985).

A similar study was conducted in New York City to determine the impact of the AIDS epidemic on the non-ill but at risk community (Martin, 1987). The research involved interviews with 745 gay men. Results indicated that major changes in almost all aspects of sexual behaviour have occurred in the New York City gay male community since these men became more aware of the AIDS epidemic. More specifically, in terms of the number of sexual partners, sexual activity in extra-domestic (clubs, bath houses) and domestic locations (homes) combined has declined by approximately 78%, and the frequency of sexual episodes involving the exchange of body fluids and contact with mucous membranes has declined by 70%. There was also an increase from 1.5% to 20% in the frequency of condom use during anal intercourse (Martin, 1987).

Despite the fact that many gay individuals are clearly changing some of their behaviours, there are still those who continue to engage in high-risk activities. There are those individuals who underestimate the riskiness of their behaviours, perhaps due to an unrealistic sense of optimism (Bauman & Siegel, 1987).

**HEALTH BEHAVIOUR CHANGE**

Since it has become increasingly apparent that neither a vaccine to prevent HIV (human immunodeficiency virus) infection nor a cure for AIDS is likely to be available soon, behavioural risk reduction is critically important for both homosexual and heterosexual individuals (Joseph et al., 1987). This is not an easy task as health behaviours typically are highly resistant to change (Best & Cameron, 1986; Brandt, 1986). For instance, there are a large number of people who are heavy smokers, and they know that smoking is bad for their health, but they cannot seem to quit. Various researchers indicate that possibly self-efficacy, or confidence in your ability to make the required health changes, is a predictor of health behaviour change and maintenance (Mullen, Hersey, & Iverson, 1987; Strecher et al., 1986).

There are many other factors that come into play which may influence whether an individual will adopt appropriate health behaviours. Joseph et al. (1987) indicated that in addition to sociodemographic characteristics other factors such as knowledge of the disease of concern, perceived risk or vulnerability to disease, perceived efficacy of behaviour in altering one's risk of disease, access or barriers to appropriate care, and social network characteristics, may be

important in influencing the adoption of appropriate health behaviours.

## Health Belief Models

It appears that in most cases preventive health psychology is based on two crucial assumptions: 1) that certain behaviours increase the risk of certain chronic diseases; and that 2) changes in one's behaviour can reduce the probability of risk of certain diseases (Prentice-Dunn & Rogers, 1986).

There are various models that have been developed for the purpose of trying to understand and predict health-related behaviour. For instance, the Health Belief Model (HBM) states that the probability that an individual will undertake preventive health action depends on four components:

1) perceived susceptibility to the threat - subjective perception of the risk or vulnerability to a health threat;

2) perceived severity of the threat -- one's perception of the seriousness of the health threat;

3) perceived benefits of the recommended action -- efficacy of an action designed to prevent or reduce the threat of an illness and;

4) perceived barriers or costs relating to adopting the advocated behaviour -- assessment of the

negative consequences that might be associated with the preventive or ameliorative behaviour (e.g. side effects, inconvenience). According to this model susceptibility and severity components mobilize the individual to act, whereas cost-benefit analysis of perceived benefits (assessed costs) provides a person with a preferred course of action. This model also stipulates that although the threatened individual is energized to act, a cue to action must occur to trigger the appropriate behaviour by making individuals aware of their feelings about the health threat (e.g. symptoms, or mass media messages) (Janz & Becker, 1984; Mullen, Hersey, & Iverson, 1987; Prentice-Dunn & Rogers, 1986; Sutton, 1987).

The Protection Motivation Theory (PMT) was formulated about twenty years after the HBM, in the 1970's. Researchers felt the need for another model because they were looking for a way to account for fear arousing communications in attitude change. They needed a theoretical framework to integrate and explain these variables better than the HBM did. As a result, the PMT places emphasis on the cognitive processes mediating attitudinal and behavioural change (Prentice-Dunn & Rogers, 1986). This theory proposes that environmental or intrapersonal sources of information about a health

threat initiate two cognitive processes, threat appraisal and coping appraisal.

Threat appraisal involves evaluating factors that increase or decrease the probability of making a maladaptive response. Variables that increase the likelihood of making a maladaptive response are intrinsic rewards (e.g. bodily pleasure) and extrinsic rewards (e.g. social approval), while factors reducing the probability of making a maladative response are related to the severity of the threat and the perceived vulnerability to the threat. It has been found that fear arousal influences the perceived severity of the threat, but that it has only an indirect effect on the eventual behaviour enacted (Rogers, 1983; Rogers, 1984).

Coping appraisal on the other hand, refers to judgements about the efficacy of a preventive response that will avert the perceived threat (response-efficacy) plus the assessment of one's ability to successfully initiate and complete the adaptive response (self-efficacy). The existence of an effective alternative to the maladaptive behaviour is not by itself sufficient: One must also believe oneself capable of carrying out the preventive regimen. In this case

self-efficacy influences not only the initiation of the coping response, but also the amount of energy expended and the person's persistence in the face of obstacles (Bandura, 1977; Rogers, 1984).

The PMT assumes that protection motivation is maximal when: 1) the threat to health is severe; 2) the individual feels vulnerable; 3) the adaptive response is believed to be an effective means for averting the threat; 4) people are confident in their abilities to complete successfully the adaptive response; 5) the rewards associated with the maladaptive behaviour are small and; 6) the costs associated with the adaptive response are small. As a result, when response-efficacy and/or self-efficacy with regard to the recommended behaviour changes is low, and there is greater severity and/or vulnerability, this will either have no effect on the individual or it will reduce their intentions to comply with the health recommendation. What is unique about this model, compared to the HBM model, is its capacity to account for the "boomerang effect" of intensely fear-arousing campaigns. That is, the likelihood of actually carrying out a recommended health behaviour is not always a function of purely additive influences: sometimes, increasing concern and vulnerability, if paired with insurmountable obstacles to

change or with low perceived efficacy, will actually have the opposite effect of immobilizing the individual.

Finally, Fishbein and Ajzen have developed a theory of reasoned action (Ajzen & Fishbein, 1980; Mullen, Hersey, & Iverson, 1987; Sutton, 1987). This theory indicates most behaviours of social relevance are under 'volitional control'. Behaviour, therefore, is a function of a person's intention to perform that behaviour. According to this model, intention is determined by: 1) attitudes toward the behaviour; and 2) the subjective norm, or the perceived expectations of important others with regard to his/her performing the behaviour in question.

All three of these models offer explanations for why an individual may or may not adopt the appropriate health behaviours. More specifically, with regard to AIDS education, all three models underscore the fact that there are several factors such as the perceived severity of the disease, perceived personal susceptibility to AIDS, response-efficacy, self-efficacy with regard to the required changes, and perhaps certain social network characteristics (e.g. the belief that others are also making similar changes and that it is both socially acceptable and necessary to make the required changes), which need to be examined to determine what effect they

have on people's attitudes and willingness to change.

## Barriers to the Modification of Sexual Practices

Both the Health Belief Model and the Protection Motivation Theory try to account for the role of "barriers to change", although the HBM does so more directly. In the context of AIDS education, it is essential that we realize that the recommended behavioural changes are enormously difficult for many people to make. Not only are we asking people to make changes in the most intimate sphere of interpersonal activity, but we are asking them to make lasting changes and to make them without fail, one hundred percent of the time. Given this, and several other "barriers to change" about to be discussed, we must tailor education campaigns accordingly, realizing that increasing knowledge and concern can only back-fire if people do not perceive the recommended changes as reasonable and within their reach.

### (i) Stereotypes and False Optimism

The AIDS epidemic has progressed to such a point that all sexually active individuals not in a long-standing monogamous relationship, regardless of sexual orientation, must be considered potentially at risk for the disease. However, many heterosexuals likely to be at increased risk for AIDS are not altering their sexual behaviour, and if they are, many are altering

inappropriate behaviours (e.g. "avoiding homosexuals") (Goodwin & Roscoe, 1988; Wertz et al., 1988). There may be various reasons for this: perceptions of low vulnerability (which may be related to the lack of accurate information, misinterpretation of information, avoidance or denial of information or as mentioned previously, people's tendency to be overly optimistic about their risk), misperception of the appropriate behaviours to be modified, misperception of the efficacy of adaptive behaviours, barriers to the adoption of condoms, the interpersonal nature of sexual activity, and the stigma of AIDS (Siegel & Gibson, 1988).

In a lot of cases most heterosexuals will not be motivated to modify practices that could place them at risk for infection with the AIDS virus because they do not perceive themselves to be vulnerable to the disease. There is always that tendency for people to believe that "nothing will ever happen to me", that they are invulnerable to the dangers which may afflict others (Weinstein, 1980). This false optimism may actually have been aggravated by the fact that there has been so much emphasis on "risk groups" as opposed to "risk behaviours". That is, many who engage in heterosexual practices that are associated with the transmission of the AIDS virus may have been given a false sense of

security (Siegel & Gibson, 1988). Because many people still tend to associate AIDS with two of the most stigmatized groups in society, drug abusers and homosexuals, many disassociate themselves from AIDS and from the possibility of being infected. They appraise their own vulnerability based on their evaluation of how much or little they resemble the stereotype, generally judging themself as very different and therefore at low risk. In fact, the stigma associated with AIDS may even make individuals unwilling to seek out information, including prevention-related information about the disease (Siegel & Gibson, 1988; Winslow, 1988).

(ii) Resistance to Condom Usage

Since AIDS is a sexually transmitted disease, the only prophylactic measures believed to be potentially effective at this time if one continues to engage in risky sexual practices, are reducing one's number of partners, being more selective in the choice of partners, and using condoms (Siegel & Gibson, 1988).

Although reducing one's number of partners and being more selective in the choice of partners may reduce the risk of contracting the AIDS virus, the only way to be 100% safe is to use condoms 100% of the time. It only takes one sexual encounter with the wrong individual to contract AIDS, and in most cases there is no way that one

can evaluate the probability that a potential partner is infected. The use of condoms is the only way people can really protect themselves and thereby control the spread of HIV infection (Siegel & Gibson, 1988).

There are various barriers to the use of condoms, however. Some people feel condoms compromise the pleasure of intercourse, and that condom use is unnatural, they believe that using condoms makes sex seem premeditated and not spontaneous. There is also a tendency to underestimate the personal risk of infection present in a situation. This combined with a failure to anticipate and/or prepare in advance for sexual activity, with the belief that one's partner would be offended if a condom were introduced, and with the embarrassment of purchasing condoms tends to make consistent condom usage a formidable obstacle (Armonker, 1980, Curjel, 1964, Darrow, 1974, Hart, 1975, Yarber, 1977, as cited in Siegel & Gibson, 1988). Thus, it seems that if the spread of AIDS is to decline people must change their beliefs about condoms.

**(iii) Interpersonal Barriers**

Another reason why heterosexuals may not be altering their sexual behaviour is because it is such a personal matter. It involves a permanent change in one's sexual lifestyle. This change does not just concern one person

but it also involves one's sexual partner. Thus, two individuals must be convinced of the necessity of modifying their actions.

These barriers make it difficult for people to modify their sexual behaviours. It is essential therefore, that people's awareness and knowledge of AIDS, and their attitudes towards the required behaviour changes should not be overlooked when public education campaigns are designed and implemented. Futhermore, since most people do not suddenly alter their health lifestyle, but sometimes seem to do so in a series of incremental steps, punctuated by occasional set-backs, perhaps public education campaigns for AIDS could capitalize on this by having several waves of educational efforts, each one designed to recapitulate and build upon the last. Perhaps we can no longer afford to assume that one "dose" of information is all people need (Best & Cameron, 1986).

**PRESENT STUDY**

On the basis of previous research findings it is expected that a number of barriers to behaviour change are present in the university population, and that an examination of these barriers should precede the development of public intervention campaigns for this

group. Such barriers might include: misinformation or inadequate information regarding how to assess personal risk, anxiety regarding buying and using condoms, discomfort speaking openly with a potential sexual partner about previous sexual histories, and simple resistance to the whole idea of monogamy or celibacy. The present study is designed to assess what a sample of university students are thinking and doing about AIDS, and why they have or have not changed their behaviour in response to the epidemic. Several open-ended questions on the AIDS questionnaire will assess their personal reasons for changing or not changing their behaviour. In addition, this questionnaire will assess students' knowledge (and/or misinformation) about AIDS, their level of personal concern (or perceived vulnerability), their sense of personal efficacy with regard to the recommended behaviour changes (can they really see themselves carrying out the changes and overcoming the barriers?), and their sense of response-efficacy (do they know which practices are truly safe, and do they believe that the recommended modifications will really protect them from AIDS?).

Perhaps if we can identify who has in fact changed their behaviour (and in response to what kinds of messages or threats), and who has not changed (and

what is stopping them from changing), we will be in a better position to design intervention campaigns for this population. Furthermore, based upon previous research with health behaviour change, it is important to evaluate whether knowledge about AIDS is by itself a useful predictor of who achieves the recommended changes, or whether other factors such as degree of personal concern, sense of self-efficacy in overcoming the barriers to change and accomplishing the necessary changes, and sense of response-efficacy, are necessary factors to be accounted for in understanding why people change.

## Method

### Subjects

The participants were 161 students enrolled in Introductory Psychology courses at Lakehead University. All of the participants completed the study, however, two questionnaires had to be excluded due to the insufficient completion of the questionnaire. As a result, 159 questionnaires were used in this study. Of those participants, 38 were male while the remaining 121 subjects were female. The mean age of this sample was 21.5 years. All subjects were given one credit towards their final Introductory Psychology mark for participating in this study and for answering a skill-testing question.

### Materials

The materials consisted of an AIDS questionnaire (AIDSQ) comprised of 3 parts. The first section of the AIDSQ examined various demographic characteristics of the participants. The second section consisted of 58 True-False items, which assessed students' knowledge about AIDS.

The knowledge portion of the AIDSQ originally consisted of 86 True-False items and 14 items concerning one's knowledge of risk behaviours. This involved rating activities according to the risk of contracting AIDS associated with each behaviour. The

reliability coefficient for the 100-item test was .63. This value was considered high enough to warrant further development of the test instrument (Nunnally, 1967). To increase the reliability of the test, items with low or negative item-total correlations (less than .20) were deleted, along with some items that were too high or low in difficulty level. This was not done without exceptions. Following the advice of Nunnally (1967), some items were retained that exhibited low item-total correlations or extreme difficulty values because of their importance to the domain of interest. In the end, 49 items were deleted. The remaining 51 items were again analyzed and yielded a satisfactory reliability of .78. These 51 items plus 7 other items considered relevant to the test domain made up the knowledge portion of the AIDSQ.

The third portion of the AIDSQ consisted of open-ended questions targetting students' reasons for changing or not changing their behaviour in response to the AIDS epidemic. Also specific "barriers" for the subjects in changing their sexual behaviour were examined by asking the students, "Are there any specific 'barriers' for you in changing your sexual behaviour?". In addition, students' attitudes (e.g. self-efficacy, response-efficacy, perceived severity of the threat, perceived vulnerability to the virus),

concern and willingness to change their sexual behaviour was examined. These were assessed on 5-point Likert scales. A copy of the complete AIDS questionnaire appears in Appendix A.

**Procedure**

The AIDS questionnaire was administered to small groups of students in a classroom setting. The testing was done over a two week period, several times a day. All subjects were asked to sit one seat apart and were given a sealable envelope which contained a consent form and the AIDS questionnaire. Prior to filling out the AIDSQ, subjects were asked to read the provided consent form and sign it if they agreed to participate in the study. Once the consent form was signed, they were collected from the participants so that the investigator could not associate the participant with a particular AIDSQ. A copy of the consent form appears in Appendix B. Each participant was told that some questions may be difficult or embarrassing to answer, but to answer each question as truthfully and accurately as possible. Upon the completion of the AIDSQ, all participants were asked to place it in the envelope provided and seal it. At no point were the participants asked to put their names on the questionnaires, thus allowing anonymity. It took the

participants approximately 30 minutes to complete the AIDSQ.

After the results of the study were known the participants were given the answers to the knowledge section of the questionnaire, a general information pamphlet on AIDS, and each received a feedback sheet summarizing the results of the study. A copy of the answers to the knowledge section as well as the feedback sheet appears in Appendix C.

## Design

The data were analyzed by focusing on several AIDSQ test items in order to establish: who have changed their behaviour due to the spread of AIDS, who are buying and using condoms, who are asking their partners to disclose their sexual history and who expect to be in a mutually monogamous relationship for the rest of their life. These questions were viewed as dependent variables or outcome measures, and the items which significantly correlate with each one were identified.

Following the two-tailed correlational analysis, stepwise multiple regressions were performed to identify a subset of variables which maximally predicted each outcome measure. This was done for two reasons: first, to identify the maximal percentage of variance which could be explained by the items

surveyed, and second, because the predictor items or variables are in some cases highly intercorrelated, the multiple regression identifies a subset of items which are sufficient to yield maximal prediction.

## Results

### Description of the Sample

Overall 98% of the sample considered themselves to be heterosexual, with the majority of participants being single (86%). The average age of first sexual experience was 17 years. In terms of the number of sexual partners for this population, 14% have never been sexually active (virgins), 36% have only had one sexual partner (monogamous), 30% have had two to five sexual partners, 9% have had six to nine partners, and 11% have had ten or more sexual partners, since first becoming sexually active. Within the past 12 months, however, 17% have not had a partner, 61% have had one partner and 22% have had two to five sexual partners. No one reported having six or more sexual partners within the past 12 months. Upon examining the frequency of sexual activity in this sample, overall 54% were found to be very sexually active (engage in sex at least once a week), with 45% of the males and 54% of the females being very sexually active. This is not unusual as Loos and Bowd (1989) found that more

than half of the students in their study were also sexually active (having had multiple partners in the past year and engaging in sexual activity frequently). In terms of students' knowledge about AIDS (examined by the AIDSQ), the mean knowledge score was 48.65 (maximum score 58). This seemed to indicate that students were generally knowledgeable about AIDS and its transmission, despite the fact that in some instances students still reported believing in some of the myths concerning the transmission of AIDS (e.g. mosquitoes can transmit the AIDS virus, likely to contract AIDS virus from contact with saliva & tears of an infected person) (Gottlieb, Vascalis, Palmer, & Conlon, 1988). A summary of further characteristics of this sample appears in Table 1.

Barriers to Change

In the open-ended section of the AIDSQ, participants were asked "Are there any specific 'barriers' for you in changing your sexual behaviour?". In response to this question, students indicated that

Table 1

Sexually active individuals (N = 137)

| | Male | Female | Total |
|---|---|---|---|
| Ever bought condom(#26) | 81% | 47% | 56% |
| Frequency of condom usage(#24) | 50% of the time | 50% of the time | 50% of the time |
| Never use condoms(#24) | 28% | 40% | 32% |
| Asked partner to disclose sexual history(#35) | 77% | 82% | 81% |
| Never asked partner to disclose(#35) | 27% | 18% | 19% |
| Frequency of disclosure(#35) | 50% of the time | 50% of the time | 50% of the time |

they felt uncomfortable buying and using condoms, uncertain as to what behaviours to change and how to begin to talk about one's past sexual history. These "barriers" to change suggested by the participants may account for why there appears to be a lack of behaviour change among university students. A summary of the participants' own suggested barriers to change from the open-ended section of the questionnaire appears in Table 2.

Correlational analyses were also performed to examine those items possibly reflecting barriers to

Table 2

Barriers to Change (items 12 & 14)

| |
|---|
| - Uncomfortable & embarrassed about buying condoms |
| - Do not use condoms -- "like washing feet with socks on" |
| - Feel uncomfortable, unnatural, awkward using condoms |
| - Afraid of partner overeacting when condom introduced e.g. accusing them of having disease |
| - Do not know a lot about AIDS, so do not think about it |
| - Unsure of what activities or behaviours to change and how to change |
| - Feel have no one to talk to or people I can talk to do not understand |
| - Uncertain how to begin conversation about past sexual history |
| - Uncomfortable revealing own sexual history and asking partner to reveal theirs |
| - Realize taking risks, but consciously do not change them |
| - Lack of self-control (giving in to physical needs rather than acting responsably) |

change and what it would take to overcome these barriers. Several items were found to be significantly correlated. Marital status was found to be significantly related to how effective one thinks wearing a condom is in preventing the transmission of

the AIDS virus, $r(159) = -.26$, $p<.01$. It seems that those individuals who are presently married or have been in the past, are less likely to think wearing a condom is effective in preventing the transmission of the AIDS virus. If an individual is uncomfortable using condoms, then they are less likely to use them, $r(122) = .35$, $p<.001$. If an individual is comfortable using or asking their partner to use a condom, then they also tend to be more comfortable disclosing their own sexual history, $r(129) = .17$, $p<.05$ and will be more comfortable asking their partner to disclose, $r(129) = .24$, $p<.01$. No significant relationship was detected between frequency of condom usage and feeling that condoms compromised pleasure, however, it was in the predicted direction, $r(124) = -.13$, $p>.10$. Compromise of pleasure was not significantly related to using or asking a partner to use a condom, $r(124) = -.10$, $p>.10$, to feeling comfortable about buying condoms, $r(127) = .02$, $p>.10$, or to ever buying a condom, $r(127) = -.06$, $p>.10$. The item reflecting feeling comfortable buying condoms was found to be significantly correlated to the degree of comfort using or asking your partner to use a condom, $r(129) = .25$, $p<.01$, degree of comfort disclosing your own sexual history, $r(152) = .17$, $p<.05$, and degree of comfort asking your partner to disclose, $r(152) = .26$, $p=.001$.

Also, if a person is comfortable disclosing their own sexual history, then they will be comfortable asking their partner to disclose, $r(158) = .16$, $p<.05$. Finally, a significant correlation was found between sexual monogamy being a realistic way to avoid risk and feeling comfortable disclosing their own sexual history, $r(158) = .23$, $p<.01$, and feeling comfortable asking their partner to disclose their sexual history, $r(158) = .16$, $p<.05$. These findings are not surprising since in a monogamous relationship the partners know each other quite well, and are more likely to be comfortable with one another. It only makes sense, therefore, that in this type of relationship people feel more comfortable disclosing their own sexual history and also more comfortable asking their partner to disclose their sexual history.

## Dependent Variables

### 1a. Behaviour change

All participants in this study were asked "Since first hearing about AIDS, to what extent have you modified your own sexual practices?". In response, 18% of the sexually active participants reported not at all modifying (married participants accounted for 10% of the 18%), 21% reported modifying some of the time, while 10% reported modifying their own sexual practices all the time. A mean response of 2.77 (indicating

having changed a little to some of the time) and responses ranging from 1 to 5 were found for this item.

Nine variables were found to be correlated with behaviour change. These correlations are presented in Table 3. These variables generally reflect that an individual who has had a number of sexual partners, is more informed and concerned about AIDS, sees their own sexual practices as risky, is confident that changing would reduce the risk and feels it is realistic to change, but is not sure how to evaluate the risks associated with his/her own sexual practices and does not expect to be in a mutually monogamous relationship for the rest of his/her life, is the individual most apt to change his/her behaviour.

A stepwise multiple regression resulted in three variables being entered, $F(3, 120) = 9.23$, $p<.001$, which explained 18.7% of the variance. These variables are concern, the number of partners since first becoming sexually active and how realistic the participant feels it is for him/her to change (See Appendix D). Those individuals who are very concerned about AIDS, who have had many sexual partners since first becoming sexually active and who feel it is very

Table 3

9 Variables Correlated with Reported Behaviour Change (item 10)

| Item | Correlation | Significance Level |
|---|---|---|
| No. sexual partners past 12 months(#1) | .16 | <.05 |
| No. sexual partners since first sexually active(#5) | .31 | <.001 |
| How well informed consider oneself about AIDS compared to peers(#6) | .21 | <.01 |
| Concern(#15) | .35 | <.001 |
| How certain one knows how to evaluate risks assoc. with own practices(17) | -.19 | <.05 |
| Degree of risk in own practices(#18) | .23 | <.01 |
| Expect to be in mutually monogamous relationship for rest of life(#31) | -.22 | <.01 |
| How confident modifying practices would reduce risk of AIDS(#36) | .25 | <.01 |
| How realistic it is to change to avoid risk of AIDS(#38) | .34 | <.05 |

realistic for them to change are more apt to have reported that they have modified their sexual

practices.

1b. Reported behaviour change in students

The participants were asked in the open-ended section of the AIDSQ to describe what aspects of their sexual behaviour they had changed. In general, the participants suggested that they had changed their behaviour by adopting safer sex practices and by having themselves and their partner tested for the AIDS virus. A summary of these reported behavioural changes appears in Table 4.

Table 4

Reported Behaviour Changes in University Students

(item 11)

| |
|---|
| · Use a latex condom |
| · Become less promiscuous |
| · Reduce the number of sexual partners |
| · More selective in choosing sexual partner |
| - No more one night stands, only have sex with someone you know very well |
| - No oral sex |
| - AIDS testing |
| · Seeking a mutually monogamous relationship |
| · Beginning to ask partners about their past sexual history |

**2. Who is buying condoms?**

Approximately 56% of those sexually active in this student population have bought a condom, while the remaining 44% have never bought a condom. Only 47% of the sexually active females in this study reported ever buying a condom, while 81% of the sexually active males indicated having bought a condom.

Nine variables were significantly correlated with ever buying a condom. These correlations are presented in Table 5. In general, these variables reflect that people who buy condoms are likely to be more knowledgeable about AIDS, have a number of sexual partners, engage in sexual activity more often, feel more informed about AIDS than their peers, think their own sexual practices are risky, use condoms more often, and feel more comfortable about buying condoms and using or asking their partner to use a condom.

A stepwise multiple regression resulted in three variables being entered, $F(3, 118) = 18.70$, $p<.001$, explaining 32.2% of the variance. These variables are feeling comfortable about buying condoms, frequency of condom usage, and knowledge about AIDS. A summary appears in Appendix E. It appears that those individuals who feel comfortable buying condoms, who

Table 5

9 Variables Correlated with Buying Condoms (item 26)

| Item | Correlation | Significance Level |
|---|---|---|
| Knowledge Score | .20 | <.05 |
| No. sexual partners past 12 months(#1) | .38 | <.001 |
| Frequency of sexual activity (#2) | .24 | <.01 |
| No. partners since first sexually active(#5) | .17 | =.05 |
| How well informed consider oneself about AIDS compared to peers(#6) | .16 | <.05 |
| Degree of risk in own practices(#18) | .18 | <.05 |
| Frequency condom usage(#24) | .33 | <.001 |
| Degree of comfort felt buying condoms(#25) | .49 | <.001 |
| Degree of comfort felt using or asking partner to use condom(#27) | .22 | <.05 |

use condoms a lot, and who are knowledgeable about AIDS and its transmission are more apt to buy condoms.

3. Frequency of condom usage

32% of those who are sexually active reported that they did not use condoms (14% of which were married or

in a monogamous relationship). However, 72% of the sexually active males were found to be using condoms, while 60% of the sexually active females reported that their partner was using a condom. In terms of the frequency of condom usage, both males and females used condoms approximately only 50% of the time.

Six variables were found to be significantly correlated to the frequency of condom usage. These correlations are presented in Table 6. In general, these variables reflect that people will use a condom more often during sexual intercourse if the participants are relatively young, consider themselves to be more informed about AIDS and more informed than their peers. Also these individuals are more apt to buy condoms often, feel that wearing a condom is an effective way to avoid risk, and are more comfortable using or asking their partner to use a condom.

A stepwise multiple regression resulted in three variables being entered, $F(3, 118) = 14.38$, $p<.001$, which explained 26.8% of the variance. These three variables are being comfortable using or asking a partner to use a condom, buying condoms and age or maturation. These variables appear in Appendix F. Those individuals who are using condoms more frequently during sexual intercourse are relatively young, are

Table 6

Correlation between Frequency of Condom Usage (item 24) and 6 Variables

| Item | Correlation | Significance Level |
|---|---|---|
| Age | -.25 | <.01 |
| How well informed consider yourself about AIDS(#3) | .19 | <.05 |
| How well informed consider oneself about AIDS compared to peers(#6) | .20 | <.05 |
| How effective wearing condom is to avoid risk of AIDS(#23) | .21 | <.05 |
| Ever bought condom(#26) | .33 | <.001 |
| Degree of comfort felt using or asking partner to use condom(#27) | .35 | <.001 |

buying condoms and are very comfortable using or asking their partner to use a condom.

4. Asked sexual partner to disclose sexual history

In general, 81% of those sexually active indicated having asked their sexual partner to disclose their sexual history (36% of which were married or in a monogamous relationship). 82% of the female participants and only 77% of the male participants

indicated having asked their partner to disclose their sexual history.

Correlational analyses revealed that nine variables were significantly related to asking a sexual partner to disclose their sexual history. These correlations are presented in Table 7.

These nine variables indicate that individuals are more likely to ask their sexual partner to disclose their sexual history if they frequently engage in sexual intercourse, if they see their own sexual practices as risky and if their health is important to them. They are also more likely to ask their partner to disclose their sexual history if they expect to be in a mutually monogamous relationship for the rest of their life, if they are confident that they know what to change in order to avoid risk, if they are comfortable using or asking a partner to use a condom, if they are comfortable disclosing their own sexual history and if they are comfortable asking their partner to disclose. No significant relationship was detected between marital status and the degree of comfort asking one's partner to disclose, however, it was in the predicted direction, $\underline{r}(159) = .15$, $\underline{p}<.06$.

A stepwise multiple regression was conducted and resulted in two variables being entered,

Table 7

9 Variables Correlated with Asking Sexual Partner to Disclose (item 35)

| Item | Correlation | Significance Level |
|---|---|---|
| Gender | .20 | <.05 |
| Frequency of sexual activity(#2) | .31 | <.001 |
| Degree of risk in own practices(#18) | -.17 | =.05 |
| Importance of own health(#19) | .20 | <.05 |
| Degree of comfort felt using or asking partner to use condom(#27) | .18 | =.05 |
| Expect to be in mutually monogamous relationship for rest of life(#31) | .22 | <.01 |
| Degree of comfort felt disclosing own sexual history(#33) | .55 | <.01 |
| Degree of comfort felt asking partner to disclose(#34) | .59 | <.001 |
| How confident know what to change to avoid risk of AIDS(#37) | .31 | =.001 |

$F(2, 119) = 39.24$, $p<.001$, which explained 39.7% of the variance. These two variables are being comfortable disclosing your own sexual history, and again being comfortable asking your sexual partner to disclose their sexual history. See Appendix G for summary. Those individuals who are very comfortable disclosing their own sexual history, and feel comfortable asking their partner to disclose are more likely to ask their sexual partner to disclose their sexual history.

**5. Who expects to be in mutually monogamous relationship for rest of their life?**

Participants were asked "Do you expect to be in a mutually monogamous relationship for the rest of your life?". In response, 72% of those surveyed indicated that they did expect to be in a mutually monogamous relationship for the rest of their life (item 31). Also, in response to item 31, 50% of the males and 79% of the females surveyed indicated that they expected to be in a mutually monogamous relationship for the rest of their life. Thirteen variables were correlated with expecting to be in a mutually monogamous relationship for the rest of their life. These correlations are presented in Table 8.

Table 8

13 Variables Correlated with Expecting to be in a Mutually Monogamous Relationship for Life (item 31)

| Item | Correlation | Significance Level |
|---|---|---|
| Gender | .31 | <.001 |
| Age | .17 | <.05 |
| No. partners past 12 mths(#1) | -.22 | <.01 |
| Extent modified own sexual practices(#10) | -.22 | <.01 |
| How serious problem AIDS is in Thunder Bay(#16) | .16 | <.05 |
| Degree of risk in own practices(#18) | -.41 | <.001 |
| Importance of own health(#19) | .25 | <.01 |
| Degree of risk for contracting AIDS willing to take in own sexual practices (#21) | -.23 | <.01 |
| How important is mutual monogamy in relationship(#29) | .32 | <.001 |
| Sexual monogamy realistic way to avoid risk of AIDS(#30) | .55 | <.001 |
| Degree of comfort felt disclosing own sexual history(#33) | .29 | <.001 |
| Degree of comfort felt asking partner to disclose sexual history(#34) | .22 | <.01 |
| Frequency asked sexual partner to disclose(#35) | .23 | <.01 |

These variables generally reflect that people are more likely to expect to be in a mutually monogamous relationship for the rest of their life if they see AIDS as a serious problem in their area, if their health is important, if mutual monogamy is important to them personally and a realistic way to avoid risk, if they are comfortable disclosing their own history and asking their partner to disclose, if they frequently have asked sexual partners to disclose, and if they see their sexual practices as less risky and are willing to take less risks. These people were also less likely to report, in response to item 10, that they have modified their sexual behaviour in response to the AIDS scare. It appears that these individuals may not have modified their sexual practices because they are presently in or expect to be in a mutually monogamous relationship with an uninfected partner for the rest of their lives. These people, therefore, feel that it is not necessary to change their sexual behaviour because they are not at risk.

A stepwise multiple regression resulted in four variables being entered, $F(4, 117) = 23.10$, $p<.001$, which explained 44.1% of the variance. These four variables are gender, importance of health, belief in sexual monogamy as a realistic way to avoid risk, and

how risky one thinks their own sexual practices are in contracting the AIDS virus. A summary of these variables appears in Appendix H. It appears that people who believe sexual monogamy is a realistic way to avoid risk, who feel that their health is important, who believe their own sexual practices are not risky, and more than likely are female rather than male, are more apt to expect to be in a mutually monogamous relationship for the rest of their life.

## Discussion

In the present sample, the relationship between students' level of knowledge about AIDS, and reported changes in their sexual practices is complex and requires careful interpretation. Despite the fact that these students were generally knowledgeable about AIDS (as indicated by the mean score of 48.65 out of a possible total score of 58), correlational analysis revealed that the students who scored higher were not more likely to report that they had changed their sexual practices since hearing about AIDS (item 10). However, at the same time, scores on the knowledge questionnaire were found to be significantly related to one specific sexual practice: buying condoms (item 26). Students who were more knowledgeable about AIDS were in fact more likely to

report buying condoms ($r$=.20, $p$<.05). A stepwise multiple regression further revealed that students' level of knowledge about AIDS was one of the best predictors of who is buying condoms ($\beta$=.18, $p$<.05). Interestingly, those students who rated themselves as more informed about AIDS than their peers (item 6) were significantly more inclined to report that they had modified their sexual practices since hearing about AIDS (item 10, $r$=.22, $p$<.01). The results from this sample suggest that while knowledge (as reflected in scores on the knowledge questionnaire) is not clearly related to general changes in sexual practices, it is related to buying condoms. On this front at least, students do seem to have benefited from hearing about AIDS. The fact that knowledge about AIDS was not significantly correlated with other changes in sexual practices (i.e. condom use, practicing monogamy and seeking mutual disclosure of sexual histories) suggests that other factors may be involved in motivating changes in these areas. Previous research strongly supports the present findings which suggest knowledge about a disease is alone not sufficient to produce behavioural change (Edgar, Freimuth, & Hammond, 1988; Kelly & St. Lawrence, 1988; Loos & Bowd, 1989; McKusick, Horstman, & Coates, 1985; Siegel & Gibson, 1988). However, there is an acknowledgement that

knowledge regarding the transmission and prevention of AIDS is necessary to foster preventive behaviour and to prevent the spread of the disease (DiClemente, Boyer, & Mills, 1987; Emmons et al., 1986; Winslow, 1988).

In this sample, correlational analyses revealed that students were more likely to report that they had modified their sexual practices (item 10) if they also reported more concern about catching AIDS (item 15), $r=.35$, $p<.001$). In fact, multiple regression analysis revealed that the degree of concern was one of the best predictors of who had changed their sexual practices since hearing about AIDS ($\beta=.21$, $p<.05$). It seems that those students who are concerned about catching AIDS are more likely to change their sexual practices. This finding is consistent with previous studies in this area (Joseph et al., 1987; Loos & Bowd, 1989; Simkins & Eberhage, 1984; Simkins & Kushner, 1986; Underwood & Driedger, 1990). A poll conducted by Maclean's (Underwood & Driedger, 1990) examined such factors as concern about AIDS among Canadians. They found that 25% of those polled were very concerned, while 28% were somewhat concerned. A significant number of those respondents who expressed concern had changed their sexual habits. 40% of those polled who said they were very concerned claimed to be practicing safer sex by

choosing partners more carefully, abstaining more from casual sex or seeking out monogamous relationships. These findings from the Maclean's poll further substantiate what was found in the present study.

In this sample, students reported to have changed their sexual practices by being more selective in choosing their partners, abstaining more from casual sex and reducing the number of sexual partners (item 11). However, only 31% of the sexually active heterosexuals reported to have modified their sexual practices some of the time to all of the time. What is puzzling is that while some students report having modified their sexual practices, in response to item 10, correlational analyses revealed that there was no significant relationship between reported change in sexual practices since hearing about AIDS (item 10), and regular condom use (item 24) or between reported change in sexual practices and disclosure of one's sexual history (item 33). These university students are not more likely to report regular condom use or disclosure of their sexual history. Similarly, concern about catching AIDS was not significantly related to specific behavioural practices like buying condoms, practicing monogamy, or disclosing one's own sexual history, while concern about catching AIDS was significantly correlated with reported changes

in sexual practices (item 10). It appears that those who did report having changed (item 10) were not more likely to have undertaken some of the most important behavioural recommendations (e.g. regular condom use, disclosure of one's sexual history, practicing monogamy). These results are consistent with those found by Siegel and Gibson (1988). They found that heterosexuals likely to be at a greater risk for AIDS were not altering their sexual behaviour, and if they were, many were altering inappropriate behaviours or were not engaging in the most important behavioural recommendations.

The stepwise multiple regression analysis indicated that in combination, concern about catching AIDS (item 15), increased numbers of sexual partners since first becoming sexually active (item 5), and the belief that it is realistic to change (item 38), were the 3 best predictors of reported behaviour change in this group. It seems that university students are more likely to report having modified their sexual practices if they have had a number of sexual partners and are concerned about contracting AIDS. Also, students who believe that it is realistic for them to change their sexual practices are more likely to report having done so. This suggests that students who feel capable of making the changes themselves are more motivated to modify their sexual

practices. Confidence in one's own ability to be able to make the necessary behaviour changes seems to play an important role in determining students' willingness to modify their sexual practices. In fact, Kelly and St. Lawrence (1988) and Joseph et al. (1987) also found that the degree of concern or vulnerability to the disease, confidence in one's own ability to carry out the recommended behaviour changes and confidence in the effectiveness of the recommended changes themselves, may determine whether an individual makes the necessary behavioural changes.

## Barriers to the Modification of Sexual Practices

In the present study, 18% of the sexually active heterosexuals indicated not having modified their sexual practices at all since first hearing about AIDS, while 21% reported having modified their sexual practices all of the time (item 10). In this sample, there appear to be a number of obstacles that may be stopping students from modifying their sexual practices.

### 1. Resistance to condoms

Students reported that they felt very uncomfortable buying condoms in a store and having to use them. Many stated that they felt awkward using a condom and that it made sex seem premeditated. A lot of the time students said that they were caught unprepared for sexual

intercourse (did not have a condom) and so a condom was never used. They also stated that introducing the use of a condom might offend their partner, perhaps inferring distrust. For these reasons many students are not using condoms. Correlational analyses in fact revealed that comfort using a condom (item 27) and a student's belief in the effectiveness of condoms in reducing the risk of contracting the AIDS virus (item 23) were significantly related to condom use (item 24, $r$=.35, $p$<.001; and $r$=.22, $p$ <.05 respectively). The stepwise multiple regression analysis also indicated that a history of having bought condoms, feeling comfortable using condoms, and being relatively young, were the 3 best predictors of condom use. Students are more apt to use condoms if they are relatively young, and if they are comfortable buying and using condoms.

2. Discomfort disclosing one's sexual history

In this sample, discussing one's own sexual history with a potential partner is an embarrassing and uncomfortable experience for a lot of students, especially in a new relationship. Students in this sample did not know how to begin to talk about their own past sexual history let alone ask their partner to disclose his/her own previous sexual history (item 14). Feeling uncomfortable about discussing such personal

matters appears to be stopping a lot of students from doing so, and as a result is increasing their risk of contracting the AIDS virus. A stepwise multiple regression revealed that feeling comfortable disclosing one's own sexual history (item 33) and feeling comfortable asking one's partner to disclose his/her sexual history (item 34), were the 2 best predictors of who is going to ask his/her partner to disclose his/her sexual history in this group (item 35, $\beta$=.28, $p<.01$; and $\beta$=.40, $p<.001$ respectively). This seems to suggest that those students who are comfortable disclosing their own sexual history and are comfortable asking their partner to disclose theirs, will be more apt to ask their partner for disclosure. Again, this underscores the notion that feeling comfortable engaging in the behavioural recommendations seems to be related to whether students will modify their sexual practices.

### 3. Uncertainty around one's own abilities and the effectiveness of the behavioural recommendations

Many students in this sample indicated that confidence in themselves and in the recommended changes influenced whether they would modify their sexual practices or not. Correlational analyses revealed that university students were more likely to modify their sexual practices (item 10) if they were confident that

changing would reduce the risk of contracting the AIDS virus (item 36, $r$=.25, $p$<.01), and if they believed that it was realistic to change (item 38, $r$=.34, $p$<.001). Stepwise multiple regression analyses further indicated that feeling comfortable engaging in specific behavioural practices (items 25, 27, 33, 34) was one of the best predictors of who is buying condoms ($\beta$=.41, $p$<.001), asking one's partner for disclosure ($\beta$=.41, $p$<.001), and frequent condom usage ($\beta$=.29, $p$<.001) in this group. Also in this sample, the belief that it is realistic to change was found to be a good predictor of reported behaviour change ($\beta$=.22, $p$<.05), and the belief that sexual monogamy is a realistic way to personally avoid contracting the AIDS virus was found to be one of the best predictors of who expects to be in a mutually monogamous relationship for the rest of one's life ($\beta$=.38, $p$<.001). These findings seem to suggest that if students feel comfortable and capable of modifying their sexual practices, believe that it is realistic for them to do so, and believe in the effectiveness of the behavioural recommendations, then they are more likely to modify their sexual practices and adopt the behavioural recommendations.

As pointed out by the Health Belief Model and the Protection Motivation Theory, weighing the costs and

benefits of carrying out the recommended changes also influences people's behaviour. If the benefits or rewards associated with the adaptive response are small then the individual will be more apt to change his/her behaviour (Prentice-Dunn & Rogers, 1986). In this case, however, the rewards associated with the maladaptive behaviour are very high. Sexual activity is very rewarding and is, therefore, very difficult to change. Also, in this instance the costs appear to be quite high as students reported that using a condom reduces spontaneity, makes sex seem premeditated, and asking for disclosure is embarrassing and intrusive in a new relationship. This is why sometimes there is a "boomerang effect". Sometimes increasing concern and vulnerability, if paired with insurmountable obstacles to change or low perceived efficacy, will have the opposite effect of immobilizing the individual. People will not change because they do not have the confidence they need to overcome the barriers to change (Bandura, 1982; Prentice-Dunn & Rogers, 1986).

In this sample, sexually active heterosexuals were found to be concerned about AIDS and generally knowledgeable about the disease, but they were also faced with overcoming many obstacles when trying to modify their sexual practices. There seemed to be more

obstacles stopping students from modifying their sexual practices than there were rewards for altering their behaviour. This may explain why some students are not modifying their sexual practices when in fact they are concerned about AIDS.

In this sample, correlational analyses revealed that students are most likely to modify their sexual practices and engage in some of the most important behavioural recommendations if they are: concerned about contracting AIDS, comfortable engaging in the behavioural recommendations, confident in their own ability to make the necessary behavioural changes, confident in the effectiveness of the behavioural recommendations and have had a number of sexual partners since first becoming sexually active (ie. see themselves as at risk). Correlational analyses further revealed that students in this sample are more likely to begin to feel more comfortable using condoms and asking their sexual partner to disclose, if they are comfortable about and capable of using condoms, buying condoms, and disclosing their own sexual history. In this sample, feeling confident, capable and comfortable in modifying one's sexual practices (self-efficacy), and believing in the effectiveness of the recommended changes (response-efficacy), appear to be related to whether

students will begin to modify their sexual practices. It seems that university students in this sample who display these qualities are more likely to succeed in adopting the recommended behavioural changes (e.g. buying & using condoms frequently, asking one's partner to disclose his/her sexual history). As explained by the Protection Motivation Theory, a person who is confident in the effectiveness of the recommended changes and believes that he/she is capable of carrying out the recommended changes is more likely to expend a lot of energy and persist in trying to make those necessary changes, despite the obstacles (Bandura, 1982).

Implications of this study reveal that dissemination of information is of course a necessary first step in promoting behaviour change, but it is, by itself, insufficient. Education needs to go beyond increasing the public's knowledge about AIDS and help them overcome such barriers as feeling uncomfortable purchasing and using condoms, not knowing what behaviours to change and how to begin to talk about their past sexual history, the lack of confidence in their own abilities and in the effectiveness of the behavioural recommendations themselves. Education programs will back-fire unless people perceive the recommended changes as reasonable and within reach. It is also important to remember that

individuals may not change all at once, but may move through a series of stages of change (Best & Cameron, 1986). Perhaps if the target behaviour is broken down into a series of components with the initial tasks being easier to manage than subsequent tasks, then people will feel more confident in their abilities (Stretcher, DeVellis, Becker, & Rosenstock, 1986). In order to reduce the obstacles to behaviour change health educators may need to repeat their messages frequently and present the information using different modalities (visual, print, spoken), delivered by sources perceived as trustworthy and credible to the listener (Kelly & St. Lawrence, 1988). Perhaps we can no longer afford to assume that one "dose" of information is all people need (Best & Cameron, 1986). As educators it is our responsibility to disseminate knowledge about AIDS, but also to ensure that the motivation and skills to apply the knowledge are present.

Due to the existence of these barriers to change, it seems only logical that future research examine the content of present AIDS education programs. If they are only disseminating knowledge about AIDS and are not giving people the skills, motivation, and confidence they need to overcome the obstacles to behaviour change, then a lot of people will not change despite the life

threatening severity of AIDS. Future research should also examine more extensively what are the relationships between confidence in the effectiveness of the recommended changes (response-efficacy), one's capability of carrying out the changes without feeling uncomfortable doing so (self-efficacy), and behaviour change. It appears that self-efficacy and response-efficacy are strongly related to behaviour change.

## Conclusion

For too long, many people have not considered themselves vulnerable and susceptible to AIDS because they are not gay or IV drug users. Educational efforts, as a result, are very important because people need to realize that it is not their sexual orientation, but the behaviours they engage in which will determine whether they will contract the AIDS virus (Bauman & Siegel, 1987). Educating the public about AIDS and getting people to alter their sexual behaviour if they are at risk is very difficult. There seems to be something stopping some people from changing. In the university population the presence of significant barriers to change have also made adopting the recommended behavioural changes very difficult. The existence of these barriers to change forces health educators to do more than disseminate knowledge about AIDS. Education programs

need to emphasize the importance of using condoms 100% of the time, teach the public how to properly use condoms and overcome the embarrassment surrounding the purchase and usage of condoms, and dispel the myth that condoms compromise pleasure. People's attitudes about condoms need to be changed. It seems that health educators may also need to teach skills in risk assessment and decision-making, communication skills, assertiveness in social situations, and boost people's confidence in themselves and in the effectiveness of the recommended behavioural changes. This may be accomplished not only by the dissemination of rote information, but by conducting mini-plays, skits and role-playing (DiClemente, Boyer, & Mills, 1987; Edgar, Freimuth, & Hammond, 1988; Melton, 1988). If health educators hope to succeed in getting people to change their sexual behaviour, then perhaps in their programs they need to teach the skills necessary to help people overcome the barriers to change. After all, it seems that people are most likely only going to change their behaviour if they see the need to do so and if they are comfortable and confident that they themselves can make the necessary changes.

## References

Annals of the New York Academy of Sciences. (1984). Special session, 437, 290 - 311.

Aberth, J. (1986). AIDS: The human element. Personnel Journal, 65(8), 19 - 123.

AIDS Committee of Toronto. (1987, March). AIDS: Get the facts. (AIDS Committee of Toronto, Box 55, Station F, Toronto, Ontario M4Y 2L4)

Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behaviour. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioural change. Psychological Review, 84, 191 - 215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122 - 147.

Batchelor, F. (1984). AIDS: A public health and psychological emergency. American Psychologist, 39(1), 1279 - 1284.

Bauman, L., & Siegel, K. (1987). Misperception among gay men of the risk for AIDS associated with their sexual behaviour. Journal of Applied Social Psychology, 17(3), 329 - 350.

Best, J., & Cameron, R. (1986). Health behaviour and health promotion. American Journal of Health Promotion, 1(2), 48 - 57.

Brandt, A. (1986). AIDS: From social history to social policy. Law, Medicine and Health Care, 14, 231 - 242.

Canadian Public Health Association. (1987, August). AIDS: The new facts of life. (Canadian Public Health Association, 210 - 1335 Carling Avenue, Ottawa, Ontario K1Z 8N8, (613) 725-3769).

Centre for Disease Control. (1987,October 5). (Federal Centre for AIDS, 301 Elgin Street, Ottawa, Ontario K1A 013)

Coates, T., Temoshok, L., & Mandel, J. (1984). Psychosocial research is essential to understanding and treating AIDS. American Psychologist, 39(11), 1309 - 1314.

Corless, I., & Pittman-Lindeman, M. (1988). AIDS: Principles, practices, and politics. Washington: Hemisphere publishing corporation.

DiClemente, R., Boyer, C., & Mills, S. (1987). Prevention of AIDS among adolescents: Strategies for the development of comprehensive risk-reduction health education programs. Health Education Research, 2(3), 287 - 291.

Disease Control and Epidemiology Service. (1988, December 16). (Federal Centre for AIDS, 301 Elgin Street, Ottawa, Ontario K1A 0L2)

Edgar, T., Freimuth, V., & Hammond, S. (1988). Communicating the AIDS risk to college students: The problem of motivating change. Health Education Research, 3(1), 59 - 65.

Emmons, C., Joseph, J., Kessler, R., Wortman, C., Montgomery, S., & Ostrow, D. (1986). Psychosocial predictors of reported behaviour change in homosexual men at risk for AIDS. Health Education Quarterly, 13(4), 331 - 345.

Gallin, J., & Fauci, A. (1985). Acquired immunodeficiency syndrome (AIDS). New York: Raven Press.

Goodwin, M., & Roscoe. (1988). AIDS: Students' knowledge and attitudes at a midwestern university. Journal of American College Health, 36, 214 - 222.

Gottlieb, N., Vacalis, T., Palmer, D., & Conlon, R. (1988). AIDS-related knowledge, attitudes, behaviours and intentions among Texas college students. Health Education Research, 3(1), 67 - 73.

Green, J., & Miller, D. (1985). Psychology and AIDS in Britain. American Psychologist, 40(11), 1273 - 1275.

Halcrow, A. (1986). AIDS: The corporate response. Personnel Journal, 65(8), 123 - 127.

Janz, N., & Becker, M. (1984). The health belief model: A decade later. Health Education Quarterly, 11(1), - 47.

Joseph, J., Emmons, C., Kessler, R., Wortmen, C., O'Brien, K., Hocker, W., & Schaefer, C. (1984). Coping with the threat of AIDS. American Psychologist, 39, 1297 - 1302.

Joseph, J., Montgomerey, S., Emmons, C., Kessler, R., et al. (1987). Magnitude and determinants of behavioural risk reduction: Longitudinal analysis of a cohort at risk for AIDS. Psychology and Health, 1(1), 73 - 95.

Kelly, J., & St. Lawrence,J. (1988). AIDS prevention and treatment: Psychology's role in the health crisis. Clinical Psychology Review, 8(3), 255 - 284.

Kinnier, R. (1986). The need for psychosocial research on AIDS and counseling interventions for AIDS victims. Journal of Counseling and Development, 64(7), 472 - 474.

Koop - Surgeon General. (1987). From the surgeon general, U.S. public health service. Journal of Substance Abuse Treatment, 4, 5 - 13.

Loos, C., & Bowd, A. (1989). AIDS-related behaviour change, knowledge and opinions among first year university students. Canadian Journal of Counselling, 23, 288 - 295.

Martin, J. (1987). The impact of AIDS on gay male sexual behaviour patterns in New York City. American Journal of Public Health, 77(5), 578 - 581.

McKusick, L., Horstman, W., & Coates, T. (1985). AIDS and sexual behaviour reported by gay men in San Francisco. American Journal of Public Health, 75(5), 493 - 496.

McKusick, L., Wiley, J., Coates, T., Stall, R., Saika, G., Morin, S., Charles, K., Horstman, W., & Conant, M. (1985). Reported changes in sexual behaviour of men at risk for AIDS, San Francisco, 1982 - 1984 - the AIDS behavioural research project. Public Health Reports, 100(6), 622 - 629.

Melton, G. (1988). Adolescents and prevention of AIDS. Professional Psychology: Research and Practice, 19(4), 403 - 408.

Melton, G., & Gray, J. (1988). Ethical dilemmas in AIDS research. American Psychologist, 43(1), 60 - 64.

Mullen, P., Hersey, J., & Iverson, P. (1987). Health behaviour models compared. Social Science and Medicine, 24(11), 973 - 981.

National Advisory Committee on AIDS. (1986). AIDS in Canada: What you should know. (National Advisory Committee on AIDS, c/o Laboratory Centre for Disease Control AIDS Centre, Health and Welfare Canada, Ottawa K1A 0L2)

Nisbett, R., & Ross, L. (1980). Human inference: Strategies and short commings. Englewood Cliffs, N J: Prentice-Hall.

Norwood, C. (1987). Advice for life. New York: Patheon Books.

Nunnally, J. (1967). Psychometric theory. New York: McGraw Hill.

Osborn, J. (1986). AIDS and the world of the 1900's: Here to stay. Aviation, Space, and Environmental Medicine, 57, 1208 - 1214.

Pearl, & Armstrong, D. (1984). The Acquired immune deficiency syndrome and infections of homosexual men. U.S.A. : Technical Publishing.

Perry, S., Markowitz, J. (1988). Counseling for HIV testing. Hospital and Community Psychiatry, 39(7), 731 - 739.

Prentice-Dunn, S., & Rogers, R. (1986). Protection motivation theory and preventive health: Beyond the health belief model. Health Education Research, 1(3), 153 - 161.

Punter, J. (1987, September/October). Selling safe sex on campus. Campus Canada, pp. 43 - 44.

Robinson, B., Skeen, P., & Walters, L. (1987). The AIDS epidemic hits home. Psychology Today, 21(4), 49 - 52.

Rogers, R. (1983). Cognitive and physiological processes in fear appeals and attitude change : revised theory of protection motivation. In Cacioppo, J., & Petty, R. (eds), Social psychology: A sourcebook. New York: Guilford Press, pp. 153 - 176.

Rogers, R. (1984). Changing health-related attitudes and behaviours: The role of preventative health psychology. In Harvey, J., Maddux, J., McGlynn, R., & Stoltenberg, C. (eds.), Social perception in clinical and counselling psychology. Lubbock, TX: Texas Tech University Press, pp. 91 - 112.

Runck, B. (1986). Federal government intensifies its efforts in the mental health aspects of AIDS. Hospital and Community Psychiatry, 37(3), 219 - 221.

Siegel, K., & Gibson, W. (1988). Barriers to the modification of sexual behaviour among heterosexuals at risk for acquired immunodeficiency syndrome. New York State Journal of Medicine, 88, 66 - 70.

Simkins, L., & Eberhage, M. (1984). Attitudes toward AIDS, herpes II, and toxic shock syndrome. Psychological Reports, 55(3), 779 - 786.

Simkins, L., Kushner, A. (1986). Attitudes toward AIDS, herpes II, and toxic shock syndrome: Two years later. Psychological Reports, 59(2, pt.2), 883 - 891.

Solomon, M., & De Jong, C. (1986). Recent sexually transmitted disease prevention efforts and their implications for AIDS health education. Health Education Quarterly, 13, 301 - 316.

Stretcher, V., DeVellis, B., Becker, M., & Rosenstock, I. (1986). The role of self-efficacy in achieving health behaviour change. Health Education Quarterly, 13(1), 75 - 91.

Sutton, S. (1987). Social - psychological approaches to understanding addictive behaviours: Attitude - behaviour and decision making models. British Journal of Addiction, 82(4), 355 - 370.

Underwood, N., & Driedger, S. (1990, January 1). Getting the message. Maclean's, pp. 34 - 36.

Weinstein, N. (1980). Unrealistic optimism about future life events. Journal of Personality and Social Psychology, 39, 806 - 820.

Wertz, D., Sorensen, J., Liebling, L., Kessler, L., & Herensen, T. (1988). Caring for persons with AIDS: Knowledge and attitudes of 1,047 health care workers attending AIDS action committee educational programs. Journal of Primary Prevention, 8(3), 109 - 124.

Wing, D., Spencer, Fane, Britt & Browne. (1986). AIDS: The legal debate. Personnel Journal, 65(8), 114 - 119.

Winslow, R. (1988). Student knowledge of AIDS transmission. Sociology and Social Research, 72(2), 110 - 113.

# APPENDIX A

## The AIDS questionnaire

# The AIDS Questionnaire

## Instructions

This is a questionnaire concerning your knowledge about AIDS and your sexual behaviour in response to the AIDS epidemic. Your responses to this questionnaire will be kept strictly confidential. Do not put your name on this questionnaire. After you have completed the questionnaire, put it in the envelope provided, and seal it.

## Part I: Background Information

'r se

age

~ marital status: single _____
married _____
separated/divorced _
widowed _____

How would you classify your current sexual orientation (Check one)?

homosexual ____
bisexual _____
heterosexual __

Have you had any previous AIDS education?

Yes ___ ___ No

6. If you answered, Yes ,to the previous question, from what source did you obtain this information? Please check ( ) as many as apply.

   television _____
   newspaper (magazine) _____
   radio _____
   peers _____
   school program _____

Part II: The AIDS Quiz

Instructions: Read each statement carefully and indicate whether the statement is true (T) or false (F) in the space provided. Please provide a response for each item.

Example

__T__ It is important to educate people about AIDS.

Statements

_____ 1. Anyone can contract the AIDS virus.

_____ 2. If one person in the family contracts AIDS, it is likely that the other family members will also get AIDS.

__ 3. Children can contract the AIDS virus from an infected mother before or at birth.

_____ 4. Persistent diarrhea could be a symptom of infection with the AIDS virus.

_____ 5. The AIDS virus can only be transmitted by homosexual or bisexual persons.

_____ 6. A person can contract the AIDS virus from the water in public swimming pools, saunas, or whirlpools.

_____ 7. A thick, white coating on the tongue could be a symptom of infection with the AIDS virus.

_____ 8. Natural membrane (i.e. sheep intestine) condoms are more effective than latex condoms in reducing the risk of contracting the AIDS virus.

_____ 9. Office workers who work side by side with persons with the AIDS virus are in real danger of contracting the virus themselves.

_____ 10. There is a drug available that can prolong the lives of some AIDS victims.

_____ 11. More men have contracted AIDS than women.

_____ 12. A person can reduce the risk of contracting the AIDS virus by maintaining a mutually monogamous relationship with one partner.

_____ 13. The AIDS virus can be transmitted through food.

_____ 14. People with the AIDS virus may not show symptoms for as many as nine years.

_____ 15. The AIDS virus can be spread through the air by coughs and sneezes.

_____ 16. The AIDS virus attacks the body's immune system.

_____ 17. The most common means of transmission of the AIDS virus is through blood transfusions.

_____ 18. A positive test that shows you have AIDS virus antibodies in your blood means that you will go on to develop AIDS.

_____ 19. Unexplained, persistent fatigue could be a symptom of infection with the AIDS virus.

_____ 20. One can reduce the risk of spreading the AIDS virus by washing dishes used by persons with AIDS separately from dishes used by noninfected individuals.

_____ 21. Birth control pills can help protect women from contracting the AIDS virus.

_____ 22. The AIDS virus can be found in the semen and vaginal fluid of infected persons.

23. A person is likely to contract the AIDS virus from contact with saliva of an infected person.

24. Infection with the AIDS virus always leads to AIDS.

_____ 25. There is evidence to support the possibility of the AIDS virus being contracted from dogs and cats.

_____ 26. A person can reduce the risk of contracting the AIDS virus by not having sexual contact with any person whose past history and current health status are not known.

_____ 27. Unexplained bleeding from any body opening could be a symptom of infection with the AIDS virus.

_____ 28. The symptoms for mononucleosis are similar to some of the symptoms of infection with the AIDS virus.

_____ 29. Everyone who is infected with the AIDS virus, whether they have symptoms or not, can transmit the infection to others.

_____ 30. A vaccine for the AIDS virus has recently been made available to the general public.

_____ 31. Insects such as mosquitos can transmit the AIDS virus.

_____ 32. An unusual increase in sexual drive could be a symptom of infection with the AIDS virus.

_____ 33. A person can contract the AIDS virus from sharing a straw with a person with AIDS.

_____ 34. Unexplained fever, shaking chills or night sweats could be symptoms of infection with the AIDS virus.

_____ 35. Blood transfusions are now almost 100% safe.

_____ 36. Teachers with the AIDS virus are likely to transmit the virus to their students.

_____ 37. The AIDS virus can be contracted by sharing the same drinking glass with a person with AIDS.

_____ 38. If you wanted, your present physician could arrange to have you tested for the AIDS virus.

_____ 39. A person can catch the AIDS virus from a locker room floor.

_____ 40. Many persons with AIDS develop persistent chicken pox.

_____ 41. There is a possibility of contracting the AIDS virus from the needle used when you donate blood.

_____ 42. Employers who hire persons who admit they have the AIDS virus are putting their other employees at risk.

_____ 43. Swollen glands could be a symptom of infection with the AIDS virus.

_____ 44. Most persons with AIDS develop a rare type of pneumonia or skin cancer.

_____ 45. If a person tests negative for the AIDS virus, they still may have the AIDS virus.

_____ 46. Children are at risk if they engage in casual contact with children infected with the AIDS virus.

_____ 47. A person can catch the AIDS virus from public toilet seats.

_____ 48. A person can reduce the risk of contracting the AIDS virus by abstinence from sexual intercourse (i.e. by remaining celibate).

_____ 49. For women with AIDS, there is a higher risk of transmitting the AIDS virus to a sexual partner during menstruation.

_____ 50. The AIDS virus is also known as the HIV virus.

_____ 51. A person can reduce the risk of contracting the AIDS virus by not sharing needles used for drug injection.

_____ 52. AIDS can cause damage to the brain and to the nervous system.

_____ 53. A person can catch the AIDS virus from shaking the hand of a person with AIDS.

_____ 54. If a person tests positive for the AIDS virus, they will definitely develop AIDS.

_____ 55. The AIDS virus has been detected in tears and saliva of persons with AIDS.

_____ 56. Swollen ankles could be a symptom of infection with the AIDS virus.

_____ 57. Most people with the AIDS virus have been exposed to the virus through sexual intercourse with infected individuals.

_____ 58. The AIDS virus is more contagious than viruses for flu or colds.

Part III: Sexual Behaviour

I realize that some of the questions in this section may be embarrassing and difficult to answer, but it is essential that you be as explicit and honest as you can. Only by doing this will it help us better understand peoples' behaviour and attitudes in regard to AIDS.

For the purpose of this questionnaire, please consider yourself sexually active if you engage in any sexual activities which involve mouth to genital or genital to genital contact. (That is, if you engage only in kissing and petting, then you would not consider yourself sexually active).

For the following questions, please indicate your response by circling the appropriate number.

How many sexual partners have you had in the past 12 months?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| None | One | Two to Five | Six to Nine | Ten or more |

How often, on the average, are you sexually active?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Never | Once a year | Once a month | Once a week | Twice a week or more |

How well informed would you consider yourself about the transmission and prevention of AIDS?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very poorly informed | Poorly informed | Moderately informed | Well informed | Very well informed |

Since what age have you been sexually active?

_____

How many sexual partners have you had since you <u>first</u> became sexually active?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| One | Two to Five | Six to Nine | Ten to Fifteen | Sixteen or more |

Compared to your friends and peers, how well informed would you consider yourself about AIDS?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Much less informed | A bit less informed | About the same | A bit more informed | Much better informed |

How helpful have public education programs been in helping you understand the transmission and prevention of AIDS?

| 1 | 3 | 4 | 5 |
|---|---|---|---|
| Not at all helpful | Moderately helpful | | Extremely helpful |

What information do you think may have been missing from public education programs, which may help you better understand how to protect yourself against AIDS?

None _____

The following (Please describe as specifically and concretely as you can):

As specifically and concretely as you can, please describe what you think are the best ways to reduce the risk of contracting the AIDS virus.

10. Since first hearing about AIDS, to what extent have you modified your own sexual practices?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | A little | Some of the time | A lot | All the time |

. What aspects of your sexual behaviour have you changed? (Could you please risk some embarrassment and describe for us as specifically as you can how your sexual behaviour has changed. Thanks.)

12. What aspects of your sexual behaviour have you <u>not</u> changed and why not? (Again, a very specific description would be helpful, as well as a brief explanation as to why you have not changed your sexual behaviour.)

13. Can you give us some idea of what it would take to get you to change your sexual behaviour?

14. Are there any specific "barriers" for you in changing your sexual behaviour? (E.g., you aren't really sure what to change, your peers would think you're overreacting if you changed, you don't like buying condoms etc. etc. Please describe fully.)

15. How concerned are you that you will contract the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all concerned | | Moderately concerned | | Extremely concerned |

16. Please rate on the following scale, how serious a problem you think AIDS is in Thunder Bay?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all serious | | Moderately serious | | Very serious |

17. How certain are you that you know how to evaluate the risks associated with your own sexual activities?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all certain | | Moderately certain | | Very certain |

18. How risky do you think your own sexual practices are in contracting the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all risky | Minimal degree of risk | Small degree of risk | Moderately risky | Very risky |

19. How important to you is your own health?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all important | Slightly important | Moderately important | Very important | Extremely important |

20. How much control do you think you have over your own health?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| None | A little | Fair amount | A lot | Complete control |

21. How much risk of contracting the AIDS virus are you personally willing to take in your sexual practices?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| None at all | Very minimal degree of risk | A small degree of risk | A moderate degree of risk | A high degree of risk |

22. How important is it to you that you <u>not</u> put your present or future partner(s) at risk of contracting the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all important | | Somewhat important | | Extremely important |

23. How effective do you think wearing a condom is in preventing the transmission of the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all effective | | Somewhat effective | | Very effective |

24. How often do you or your partner use a condom?

Not applicable (I am not sexually active) _____

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Never | Occasionally | Half the time | Most of the time | Absolutely 100% of the time |

25. Do you feel comfortable about buying condoms?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all comfortable | A little | Fairly | Moderately comfortable | Perfectly comfortable |

26. Have you ever bought a condom?

Yes _____ No _____

27. Would you be comfortable using or asking your partner to use a condom?

Not applicable (I am not sexually active) _____

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all comfortable | A little | Fairly | Moderately comfortable | Perfectly comfortable |

28. How much do you think your sexual pleasure is compromised by using a condom?

Not applicable (I am not sexually active) _____

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all compromised | Compromised a little | Somewhat | Moderately compromised | Extremely compromised |

29. How important to you is mutual monogamy in sexual relationships?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all important | Slightly important | Moderately important | Very important | Extremely important |

30. Is sexual monogamy a realistic way for you to personally avoid contracting the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Totally unrealistic | A little realistic | Fairly realistic | Moderately realistic | Definitely realistic |

31. Do you expect to be in a mutually monogamous relationship for the rest of your life?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Definitely Not | | Possibly | | Absolutely Yes |

32. How effective do you think knowing your partner's past sexual history is in preventing the transmission of the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all effective | | Somewhat effective | | Very effective |

33. Would you be comfortable disclosing your own sexual history to a sexual partner?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all comfortable | Slightly comfortable | Fairly | Moderately comfortable | Perfectly comfortable |

34. Would you be comfortable asking a sexual partner to disclose his/her sexual history?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all comfortable | Slightly comfortable | Fairly | Moderately comfortable | Perfectly comfortable |

35. Have you ever asked a sexual partner to disclose his/her sexual history?

Not applicable (I am not sexually active) _____

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Never | Occasionally | Half the time | Most of the time | Absolutely 100% of the time |

36. How confident are you that changing some of your sexual practices would actually reduce your risk of contracting the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all confident | A little | Fairly confident | Moderately | Extremely confident |

37. How confident are you that you know which practices to change?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all confident | A little | Fairly confident | Moderately | Extremely confident |

38. How realistic is it for you to change your sexual practices to reduce your risk of contracting the AIDS virus?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Totally unrealistic | A little realistic | Fairly realistic | Moderately realistic | Very realistic |

Instructions: To receive 1 mark credit towards your final mark for Introductory Psychology, you must answer the skill testing question found below.

Do you think education programs on campus are important in making students more aware of the transmission and prevention of AIDS?

Yes _____ No _____

# APPENDIX B

## Consent Form

# Consent Form

I understand by completing this questionnaire, that I am participating in a study examining university students' knowledge about AIDS and its transmission. I am aware that this information will be kept strictly confidential and that the anonymity of the participants will be upheld. I understand that I will not be recontacted.

I also understand that the information gathered from this study will be compiled and presented in statistical form by Lisa Bell under the supervision of Dr. Margaret Sellick, as part of the requirement for the completion of her Masters Thesis. I am fully aware that I can freely agree to participate in this study or I can decline.

I hereby consent to participate in this study by signing this form and completing the questionnaire.

Signature: _____

# APPENDIX C

Knowledge answers and Feedback sheet

# The AIDS Questionnaire

For further information about the study or if you have any concerns after completing this questionnaire please feel free to stop by my office. I am located in the basement of the Braun Building, office 29L and I will be available Wednesdays from 3:30 to 4:30 pm.

Thank you for participating in this study.

Lisa A. Bell

## The AIDS Quiz (Answers)

Statements

__T__ 1. Anyone can contract the AIDS virus.

__F__ 2. If one person in the family contracts AIDS, it is likely that the other family members will also get AIDS.

__T__ 3. Children can contract the AIDS virus from an infected mother before or at birth.

__T__ 4. Persistent diarrhea could be a symptom of infection with the AIDS virus.

__F__ 5. The AIDS virus can only be transmitted by homosexual or bisexual persons.

__F__ 6. A person can contract the AIDS virus from the water in public swimming pools, saunas, or whirlpools.

__T__ 7. A thick, white coating on the tongue could be a symptom of infection with the AIDS virus.

__F__ 8. Natural membrane (i.e. sheep intestine) condoms are more effective than latex condoms in reducing the risk of contracting the AIDS virus.

__F__ 9. Office workers who work side by side with persons with the AIDS virus are in real danger of contracting the virus themselves.

__T__ 10. There is a drug available that can prolong the lives of some AIDS victims.

__T__ 11. More men have contracted AIDS than women.

__T__ 12. A person can reduce the risk of contracting the AIDS virus by maintaining a mutually monogamous relationship with one partner.

__F__ 13. The AIDS virus can be transmitted through food.

__T__ 14. People with the AIDS virus may not show symptoms for as many as nine years.

__F__ 15. The AIDS virus can be spread through the air by coughs and sneezes.

__T__ 16. The AIDS virus attacks the body's immune system.

__F__ 17. The most common means of transmission of the AIDS virus is through blood transfusions.

__F__ 18. A positive test that shows you have AIDS virus antibodies in your blood means that you will go on to develop AIDS.

__T__ 19. Unexplained, persistent fatigue could be a symptom of infection with the AIDS virus.

__F__ 20. One can reduce the risk of spreading the AIDS virus by washing dishes used by persons with AIDS separately from dishes used by noninfected individuals.

__F__ 21. Birth control pills can help protect women from contracting the AIDS virus.

__T__ 22. The AIDS virus can be found in the semen and vaginal fluid of infected persons.

__F__ 23. A person is likely to contract the AIDS virus from contact with saliva of an infected person.

__F__ 24. Infection with the AIDS virus always leads to AIDS.

__F__ 25. There is evidence to support the possibility of the AIDS virus being contracted from dogs and cats.

__T__ 26. A person can reduce the risk of contracting the AIDS virus by not having sexual contact with any person whose past history and current health status are not known.

__T__ 27. Unexplained bleeding from any body opening could be a symptom of infection with the AIDS virus.

__T__ 28. The symptoms for mononucleosis are similar to some of the symptoms of infection with the AIDS virus.

__T__ 29. Everyone who is infected with the AIDS virus, whether they have symptoms or not, can transmit the infection to others.

__F__ 30. A vaccine for the AIDS virus has recently been made available to the general public.

__F__ 31. Insects such as mosquitos can transmit the AIDS virus.

__F__ 32. An unusual increase in sexual drive could be a symptom of infection with the AIDS virus.

__F__ 33. A person can contract the AIDS virus from sharing a straw with a person with AIDS.

__T__ 34. Unexplained fever, shaking chills or night sweats could be symptoms of infection with the AIDS virus.

__T__ 35. Blood transfusions are now almost 100% safe.

__F__ 36. Teachers with the AIDS virus are likely to transmit the virus to their students.

__F__ 37. The AIDS virus can be contracted by sharing the same drinking glass with a person with AIDS.

__T__ 38. If you wanted, your present physician could arrange to have you tested for the AIDS virus.

__F__ 39. A person can catch the AIDS virus from a locker room floor.

__F__ 40. Many persons with AIDS develop persistent chicken pox.

__F__ 41. There is a possibility of contracting the AIDS virus from the needle used when you donate blood.

__F__ 42. Employers who hire persons who admit they have the AIDS virus are putting their other employees at risk.

__T__ 43. Swollen glands could be a symptom of infection with the AIDS virus.

__T__ 44. Most persons with AIDS develop a rare type of pneumonia or skin cancer.

__T__ 45. If a person tests negative for the AIDS virus, they still may have the AIDS virus.

__F__ 46. Children are at risk if they engage in casual contact with children infected with the AIDS virus.

__F__ 47. A person can catch the AIDS virus from public toilet seats.

__T__ 48. A person can reduce the risk of contracting the AIDS virus by abstinence from sexual intercourse (i.e. by remaining celibate).

__T__ 49. For women with AIDS, there is a higher risk of transmitting the AIDS virus to a sexual partner during menstruation.

__T__ 50. The AIDS virus is also known as the HIV virus.

__T__ 51. A person can reduce the risk of contracting the AIDS virus by not sharing needles used for drug injection.

__T__ 52. AIDS can cause damage to the brain and to the nervous system.

__F__ 53. A person can catch the AIDS virus from shaking the hand of a person with AIDS.

__F__ 54. If a person tests positive for the AIDS virus, they will definitely develop AIDS.

__T__ 55. The AIDS virus has been detected in tears and saliva of persons with AIDS.

__F__ 56. Swollen ankles could be a symptom of infection with the AIDS virus.

__T__ 57. Most people with the AIDS virus have been exposed to the virus through sexual intercourse with infected individuals.

__F__ 58. The AIDS virus is more contagious than viruses for flu or colds.

# Feedback Sheet for Promoting Knowledge, Concern and Behavioural Change among University Students

Most participants in this study were female (77.1%), while the remaining 23.3% were male. The mean age for this population was 21.5 years. Overall 98% of the sample considered themselves to be heterosexual, with the majority of the participants being single (85.5%). Results indicated that knowledge was not related to behaviour change but was related to buying condoms. Concern was related to behaviour change as was feeling comfortable buying condoms and feeling comfortable using or asking a partner to use a condom. This study confirmed that knowledge about a disease is not sufficient alone to produce behaviour change. Other factors such as concern, sexual activeness, feeling comfortable and confident in performing the recommended changes, and seeing the need to change all play an important role in determining who will make the necessary behaviour changes . Health educators, as a result, must begin to take these factors into consideration when planning and implementing education programs.

It is hoped that this research has contributed to a greater awareness of AIDS and its transmission among you, the participants, of this study.

Thank you for your participation in this research.

# APPENDIX D

## Multiple Regression for Behaviour Change

$R^2 = .187$, $F(3,120) = 9.23$, $p<.001$

| Variable | $R^2$ | Beta | t | p |
|---|---|---|---|---|
| Concern(#15) | .096 | .205 | 2.36 | <.05 |
| No. sexual partners since first sexually active(#5) | .143 | .235 | 2.78 | <.01 |
| How realistic it is to change to avoid risk of AIDS(#38) | .187 | .218 | 2.56 | <.05 |

# APPENDIX E

## Multiple Regression for Buying Condoms

$R^2 = .322, F(3,118) = 18.70, p<.001$

| Variable | $R^2$ | Beta | | |
|---|---|---|---|---|
| Degree of comfort felt buying condoms(#25) | .219 | .407 | 5.28 | <.001 |
| Frequency of condom usage(#24) | .293 | .243 | 3.10 | <.01 |
| Knowledge Score | .322 | .176 | 2.26 | <.05 |

# APPENDIX F

## Multiple Regression for Frequency Condom Usage

$R^2 = .268$, $F(3,118) = 14.38$, $p<.001$

| Variable | $R^2$ | Beta | | p |
|---|---|---|---|---|
| Degree of comfort felt using or asking partner to use condom (#27) | .123 | .287 | 3.56 | <.001 |
| Ever bought condom (#26) | .199 | .292 | 3.62 | <.001 |
| Age | .268 | -.262 | -3.32 | <.01 |

# APPENDIX G

## Multiple Regression for Asking Partner to Disclose

$R^2 = .397$, $F(2,119) = 39.24$, $p<.001$

| Variable | $R^2$ | Beta | | F |
|---|---|---|---|---|
| Degree of comfort felt asking partner to disclose sexual history(#34) | .355 | .402 | 4.11 | <.001 |
| Degree of comfort felt disclosing own sexual history(#33) | .397 | .283 | 2.89 | <.01 |

# APPENDIX H

## Multiple Regression for Expect to be in Mutually Monogamous Relationship for Rest of Life

$R^2 = .441$, $F(4,117) = 23.10$, $p<.001$

| Variable | $R^2$ | Beta | | |
|---|---|---|---|---|
| Sexual monogamy realistic way to avoid risk of AIDS (#30) | .305 | .378 | 4.67 | <.001 |
| Degree of risk in own sexual practices (#18) | .369 | -.264 | -3.25 | <.01 |
| Gender | .414 | .191 | 2.71 | <.01 |
| Importance of own health(#19) | .441 | .161 | 2.38 | <.05 |