ABSTRACT

in an experimental process, three groups were tested pre and post intervention to determine change in attitudes and behaviours. Two interventions were designed, using Social Cognitive Theory as the framework. Intervention 1, was an affective intervention subjects to the teaching of a young heterosexual woman who was HIV positive. Intervention 2, involved subjects planning a prevention program for members of their population. The sample group consisted of young adults, ages 18 to 25, attending UNBC. The sample group was divided into three study groups; Control, N = 9; intervention Group 1, N = 10; and Intervention Group 2; N = 12. The questionnaire package used to measure change consisted of a demographic survey (only used in pre test), an attitude and a behaviour questionnaire. Results of ANOVA showed no statistically significant difference among the three groups at pre test for attitude and behaviour. However, an ANOVA done on gains (pre-post) reflected statistically significant difference between control group and Intervention 1. Results indicate that an affective intervention involving a person living with AIDS interacts with participants can be said to be effective in promoting some behaviour change. More research needs to be done to discover the behaviours most impacted by the intervention. Open ended questions showed several different responses at the post test
level particularly in the area of concern for self and others, increase in
detailed information, acknowledgement that abstinence is a viable option,
and acknowledgement that one could not identify a person as HIV positive.
Both interventions were seen as viable for prevention programs, particularly
as they did not involve significant considerations and were very basic
and could be run in many different venues among many different groups.
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DEDICATION

This work is dedicated to my parents, Pat and Alfreda Walsh:
You have never doubted that your girls could do anything they wished.
Why should I?

And to my dear friend Ross:
You are the inspiration for this work.
Your courage never ceases to amaze me!
CHAPTER ONE
INTRODUCTION

In Chapter One, information about the formulation of the study is presented along with brief outlines of some of the relevant literature. Essential elements to the study are explored. This Chapter also includes a statement of perceived significance of the study and an explanation of any terms necessary to the research that may have needed further clarification.

Statement of Problem

The Human Immunodeficiency Virus (HIV) and the resultant syndrome, Acquired Immune Deficiency Syndrome (AIDS) has become one of the most profound concerns of the latter 20th century. According to a report from Health Canada (1997a):

As of June 30, 1997, there had been a cumulative total of 15,101 reported cases of AIDS in Canada since the beginning of the epidemic... After adjusting for under reporting and delayed reporting, we estimate that, by the end of 1996, there had actually been about 20,000 AIDS cases in Canada since the epidemic began (p. 1).

Health Canada (1996) also presented the results of surveillance of HIV contraction since 1985. From 1985 to 1995, 36,613 cases of HIV were detected in Canada. With the effects of this virus being felt globally, the rush to design and implement useful prevention programs grew. To date, there is no cure for HIV, no cure for the resultant syndrome and no vaccine to prevent contraction.
While millions of dollars were being poured into AIDS research, the number of people living with HIV continued to grow, often to epidemic proportions. Methods of lessening the risk of contraction of HIV did exist and were spread over the media for several years. Zimbardo and Lieppe (1991) warned that information was not being acted upon, despite the media blitz:

At the level of national media, the blitz of T.V. and radio messages designed to persuade sexually active people to use condoms as precaution against the AIDS virus has enjoyed only mixed success (p. 129).

Generally, prevention efforts were seen as meeting with similar dubious outcomes. Behaviour was not being changed (Fisher, Fisher, Misevich, Kimble, & Malloy, 1996). Keeling (1991) reported that college students "in general, have very good to excellent levels of knowledge" (p. 51). However, he also asserted that this knowledge had not decreased risky behaviours. Knowledge and positive attitudes were not always precursors to increased safer sex activity; attitudes did not, necessarily, translate into behaviour (Ajzen & Fishbein, 1980). Theorists attempted to define the reason for this lack of behavioural change. Researchers stated that those who developed interventions have not accorded enough importance to cultural influences. Dancy's (1991) study on developing ethnically sensitive and gender-specific questionnaires, stressed the importance of this information to group appropriate intervention development. Other authors have claimed that the correct information is not being received, understood and/or accepted by the larger population. Numerous studies (Bryan, Aiken, & West, 1997; Rothspan & Read, 1996; van der Plight & Richard 1994; Weinstein, 1989)
presented explorations of the concepts of perceived susceptibility and invulnerability and implications of these concepts for behaviour change. In much of the research, the belief that HIV contraction only occurred in homosexual men was put forward as partial reason for lack of behaviour change. If such beliefs still exist, there are many men and women who may not have been practising safer sex in the mistaken belief that they are safe. The Canadian Public Health Association (1993) defined primary prevention as the only way to fight the spread of HIV and stressed that every possible intervention and means of education must be considered and tested.

Kanfer and Goldstein (1991) defined prevention as the attempt "to intervene before deficiencies would lead to symptoms of frank pathology" (p. 74). While this definition was used in reference to clinical perspective work, the relevance to a decrease in HIV contraction was clear. Indeed, the concern was to prevent behaviours (deficiencies) before contraction (pathology) occurred. In this study, prevention or prevention programs referred to a whole attempt to lessen the possibility of HIV contraction, while interventions or preventive strategies were considered parts of that whole.

The role of preventive strategies is to promote positive attitudes and behaviour toward preventive lifestyles. For the purposes of this study, attitudes were defined as the psychological tendencies to view particular entities either positively or negatively (Eagly & Chaiken, 1993). People evaluate objects and situations and from this evaluation formulate a favourable or unfavourable attitude. Attitudes are divided into three subgroups; COGNITIONS - expressions of beliefs; AFFECT - expressions of feelings,
CONATION - expressions of intentions to behave in a given way (Krebs & Schmidt, 1993). These three aspects of attitude were considered in the development and administration of the questionnaire package and in the interventions used in this study. Wolman (1989) defined behaviours as verbal expressions of interactions with the social environment. Verbal representations of both attitudes and behaviours related to HIV contraction were investigated.

For the current study, the researcher considered the attitudes and behaviours of young adults. Two interventions were designed in an attempt to increase positive attitudes and behaviours (definition of attitudes and behaviours can be found on page 13) in young adults ages, 18 through 25, who attended the University of Northern British Columbia (UNBC). O'Leary, Goodhart, Jemmot, & Boccher (1992) expressed that interventions were essential for young American adults due to the continuance of high risk behaviour among this group. The decision to work with this age group also evolved from theories of attitude flexibility and change. In these theories, attitudes were reported to become more persistent from an early point of adulthood (Krebs & Schmidt, 1993). A study of change was presumed, by this researcher, to be more successful with young adults than with older adults for whom persistence was increasing.

The first intervention in this study was an affective intervention. Interaction with a young heterosexual woman who had contracted HIV through heterosexual intercourse was hypothesized by this author to aid students in associating with the idea that they were, indeed, at risk. The imparting of lived experience by the presenter would promote a change in the evaluation of the attitude/behaviour object. The potential for
observational learning was proposed to be strong in models with whom people felt they could associate (Bandura, 1986).

The second intervention involved students in the process of decision-making about, and planning for, a program specifically designed to promote positive attitudes and behaviours in post secondary students of their own age group. The second intervention was designed to capitalize on this process, not the teaching aspect but the process of planning the program. The researcher postulated that subjects would experience an increased personal involvement with the attitude/behaviour object. This personal involvement would increase self-efficacy (Bandura, 1986) and feelings of ownership of the program. The result of an increase in self-efficacy and ownership was expected to lead to positive change in attitude and behaviour and/or maintenance of positive attitudes and behaviours.

The use of an established theoretical framework is a very important aspect of intervention design (Fisher, Fisher, & Rye, 1995; Mantell, DiVittis, & Auerbach, 1997). Kowalewski, Henson & Longshore (1997) noted the lack of interventions developed from specific theories of social learning. The Health Belief Model had been used in many research endeavours, but was not reported to be as effective as hoped (Wulfert & Wan, 1995). Such theories as the Theory of Reasoned Action and the Social Cognitive Theory were not well represented in the literature on HIV prevention. The researcher speculated that this may have been due to the lack of reporting of the theory behind a particular piece of research (denying the reader valuable information). Another possible reason was the fact that interventions were developed based on procedures without
theory. Many interventions were designed according to established steps and processes, but not grounded in theory. A theoretical base that could help those who were designing interventions to address social, cultural, affective and cognitive issues relevant to HIV prevention was also needed (Burnette, 1996; Herlocher, Hoff, & DeCarlo, 1996; Truax, 1994).

**Significance of the Problem**

Contraction of HIV is a major health concern in this era. There is no doubt that the impact is being felt globally. Due to the lack of a cure, strategies have focused on prevention as the key to controlling the spread of HIV (Edgar, Fitzpatrick, & Freemuth, 1992). Development of effective prevention programs has been presented as requiring (1) design of interventions geared toward particular groups and (2) proof of efficacy in promotion of attitude and behaviour change through evaluation. Interventions proven effective in certain populations can then become part of a larger prevention program that would be tested for appropriate interaction between interventions (Mantell et al., 1997). In this study, the interventions were designed to address HIV issues relevant to young adults 18 - 25. Efficacy of these interventions, significant change in attitude and behaviour, would have allowed further exploration of the impact of similar interventions on the same group with the eventual design of larger prevention programs with the effective interventions as major components.

Attitudes about HIV play an important role in prevention. King, Beazley, Warren, Hankins, Robertson, and Radford (1989) stressed the importance of attitudes in HIV prevention when they stated that it was essential to provide "...opportunities for
young people to develop positive attitudes predisposing them to safer, health promoting behaviour" (p. 142). It was proposed that the two interventions in this study would aid students in developing more positive attitudes toward all forms of prevention.

While the role of attitudes in prevention is important, the role of behaviour change should be the ultimate goal of intervention development and evaluation. It was hypothesized that interventions combining presentation of accurate information, along with interventions designed to promote increased self efficacy through modelling or ownership and through goal setting, would effect positive behaviour change.

Explanation of Terms

Most of the terms essential to this research were either self-explanatory or explained in the "Statement of the Problem" section of this chapter. A few terms used throughout this work may need clarification for the reader. In many areas references were made to positive attitudes and behaviours. For the purposes of the study, those attitudes and behaviours defined as leading to increase in potential for contraction were seen as negative (see Chapter 3 for attitudes and behaviours of concern). Those attitudes and behaviours considered preventive in nature, such as increased use of condoms during sexual intercourse, were considered positive.

Throughout the study, the terms 'preventive strategies' and 'interventions' were used interchangeably. These terms referred to any part of a prevention program. The researcher did not define one test or a single interaction with a target group as a prevention program. A program was interpreted as an integration of interventions designed to help targeted populations in preventing contraction of HIV. The expression
of sex denoted sexual intercourse.

Summary

In this chapter, the researcher outlined the purposes of the study, including some relevant literature leading to the development of the study. Significance of the problem is presented and any terms that needed further explanation are defined. The following chapters represent the progression of the study from investigation of the relevant literature through investigation of results and possible impact. In Chapter 2, information from various studies and writings in the areas relevant to design, implementation and evaluation of HIV interventions is presented. In Chapter 3, the reader is provided with a detailed account of the methodological considerations for this study from subject selection to proposal of types of statistical analyses to be used. The results of analyses are explored in Chapter 4 with discussion of significance of these results. In Chapter 5, the researcher presents an interpretation of the results in relation to the research questions. Relevance of the thesis to HIV prevention is discussed as well as limitations in this research. In the final section of the fifth chapter, the researcher presents suggestions for further related work based on the outcomes of this study and continued research into relevant literature.
CHAPTER 2

REVIEW OF THE LITERATURE

In Chapter 2, a compilation of the findings from an in depth investigation of literature relevant to HIV prevention is presented. The review begins with a brief exploration of historical and epidemiological information concerning AIDS/HIV. This exploration includes the origin of HIV, current epidemiological details of HIV/AIDS presence in Canada and information about contraction and transmission. The second section of the review involves presentation of information around HIV prevention research including exploration of the use or lack of use of theory in HIV prevention, overviews of studies that attempted to define factors related to risk and reduction of risk and presentation of information gathered from studies that involved the development and evaluation of interventions designed to modify attitudes and behaviours. The third section reflects various challenges to primary prevention strategies and ways in which researchers have attempted to deal effectively with these challenges. In the final section of the review, the research hypotheses are presented. A brief summary highlights the major themes in the information.

History

Specific proof of the origins of the Human Immunodeficiency Virus does not exist. However, an accepted belief is that HIV is related to the Simian or Green Monkey. "The virus first affected humans in central Africa where the monkeys were hunted for food and often skinned and eaten raw. The monkeys also bite, increasing
the potential for infection" (Learning Together About HIV, 1994, p. 4). Although not named at the time, AIDS was described by the Centre for Disease Control (CDC) in January, 1981. The development of a rare form of cancer, Karposi’s Sarcoma (KS), and a rare form of pneumonia called Pneumocystis Carinii Pneumonia (PCP) in young men focused attention on a cohort of illnesses that should not have been present in these men. The illnesses were seen only with severely immunodepressed people. At that time, no specific cause had been identified for the development of these illnesses. The one common factor, however, was an underlying immune system failure. Acquired Immune Deficiency (AIDS) was eventually used to describe the cohort of symptoms including: weight loss, fatigue, PCP, KS, and premature death. This definition of symptoms occurred in 1982 when "the Centers for Disease Control (CDC) in Atlanta, Georgia officially classified the conditions as Acquired Immune Deficiency Syndrome, by which name it is still widely described" (Watney, 1994, p. 76). The causal factor of AIDS was first isolated in 1983 by Dr. Luc Montagnier of the Pasteur Institute in Paris. However, Dr. Montagnier had difficulty convincing his colleagues that this was the virus. It was not until May, 1984 that HIV was designated. Dr. Robert Gallo, a researcher for the National Cancer Institute (NCI), also isolated the virus and had less difficulty convincing the community that it was the virus that led to the expression of AIDS symptomology.
Epidemiological Information

At the end of 1982, 11 cases of AIDS had been reported in Canada. The number rose to 49 in 1983, tripled to 165 in 1984 and then more than doubled to 415 by the end of 1985 (Learning Together About HIV, 1994). In 1996, Health Canada released a surveillance report of incidences of HIV in Canada. That report showed the progression of the virus from 1985 to the end of 1994. Between 1985 and 1994 there were 33,520 cases of HIV reported. In 1995 there were 3093 new cases. This brought the total of people infected up to 33,613 by the end of 1995. Other information provided in this report included:

1. The total number of HIV cases in British Columbia in this time period was 8819, more than 20% of the national number.

2. The national number for adolescents, aged 15 to 19, was 510.

3. The national number of cases for young adults, 20 to 29, was 9992.

4. The total number of cases of contraction through heterosexual contact was 1376.

In an HIV/AIDS Epi Update called AIDS and HIV in Canada, "the Bureau of HIV/AIDS and STD estimate(d) that as of the end of 1996, a cumulative total of 50 000-54 000 Canadians had been infected with HIV since the onset of the epidemic....."(Health Canada, 1997, p. 2). The Bureau of HIV/AIDS and STD is a branch of Health Canada at the Laboratory Centre for Disease Control.
**Paths of Transmission.** In Western Society, AIDS was defined as a homosexual disease. This generalization has continued although drug users, hemophiliacs, and prostitutes were added to the list of those who contracted. As expressed in the 1994 resource, *Learning Together About HIV,* such a generalization could lead to drastic results because numerous sexual contacts was no longer the common denominator, nor was homosexual contact. What was emerging was a pattern of infection by a pathogen transmitted through the exchange of body fluids, especially blood and semen (p. 4).

A definition of high risk behaviour did not focus on just sexual contact, but moved to the exchange of particular body fluids. The refinement of the causes of HIV did not seem to have become a reality for those who saw themselves as separate from the early established high-risk groups. This meant that the heterosexual community continued to risk exposure to HIV (Yarber, 1995).

Health Canada (1997b) determined that Canadians are still engaging in sex with multiple partners, even if this is a result of serial monogamy. Many men and women engaging in sexual activity still do not report using condoms consistently, nor do a percentage of intravenous drug users (IDU’s) and men and women in sex-trade. The Bureau of HIV/AIDS and STD’s reported that

The number of new HIV infections that occurred in Canada in 1996
is estimated to be between 3,000 and 5,000, which is higher than the estimated average number of 2,500-3,000 per year for the period 1989-1994. The majority of this increase appears to be occurring among injection drug users and young gay men. However, available data also suggest increasing HIV infections among non-IDU heterosexuals (especially women) and Aboriginal peoples (p. 2).

There is no cure for AIDS, and contraction of HIV is usually a devastating experience. That devastation increases with the onset of the symptoms called AIDS. According to Edgar et al. (1992) prevention is the most appropriate way to deal with this pandemic until such a time as the cure is found. This group of researchers suggested that, in designing effective prevention strategies, it is essential to recognize two very important aspects of human behaviour:

Prevention through appropriate behaviour was and still is, the best weapon available to fight further spread of HIV infection. However, individuals take necessary actions to prevent a disease such as AIDS only when (a) they are properly informed and (b) they feel motivated to respond to the information they possess (p. xi).

The responsibility for the development of preventive strategies lies with those who function in the realm of the Social Sciences, community organizations, and communities/people themselves (Ratzan, 1993; Orians, Liebow & Branch, 1995).
These three groups, with some support by the government, have become the active members to provide those strategies necessary to decrease the numbers of people contracting the virus.

HIV is found in all body fluids to a greater or lesser extent. In some fluids such as tears the virus is found in amounts that would not suggest much potential for transmission. However, in semen, vaginal fluid and blood, the concentrations are high and thus there is risk for transmission (Learning Together About HIV, 1994). Hales (1994) outlined those situations and behaviours that put people at risk for HIV infection. The first was sexual activity. Anal and vaginal intercourse without the use of a condom and/or non-oxyl 9 increased the potential for contraction. If a person had already contracted an STD, chlamydia for example, risk is further increased. A second set of risky behaviours revolved around intravenous drug use. Intravenous drug users (IDU’s) may share needles using them to inject drugs directly into the bloodstream. If one of the IDU’s sharing the needle was HIV positive the virus would be injected into the system along with the drug. IDU’s who then have sex without using condoms faced the risk of transferring the virus to their sexual partner, ".....sex with infected IV-drug users has been the number one cause of HIV infection in women"(p. 459). Blood products tainted with HIV were also identified as a point of transmission, however, this occurrence is rare now, in Canada and the United States, as a result of available screening methods. Mothers can pass the virus to their
babies and people have contracted through accidental contact with infected blood and/or body fluids through such things as needle sticks or being splashed. Most of the transmissions have occurred through sexual contact and needle sharing.

**HIV Primary Prevention Research**

It was acknowledged that the effort to develop programs to prevent spread of HIV needs to be a shared effort by many contributors. Public health workers, social and behavioural scientists, community groups, at-risk populations, government agencies and program development specialists need to integrate their efforts to provide the best programs possible (Needle, Brown, Coyle, & Weissman, 1994; Snider & Satcher, 1997; Valdeserri et al., 1995). There is increasing interest in and argument for the role of social and behavioural science research in development of interventions and programs. In investigating the literature, the researcher found that studies done in the area of HIV prevention revolved around establishment and/or proof of theoretical frameworks useful in development of preventive interventions, investigation and exploration of contributing factors to HIV preventive attitudes and behaviours and design, implementation, and evaluation of programs and interventions to promote HIV preventive attitudes and behaviours in individuals and groups. Acknowledgement is now being given to the role of scientists in explaining behaviour, providing tested strategies for behaviour change and exploring the personal and social challenges that are factors in attitudes and high risk behaviours. (Burnette, 1996;
Clay, 1996; Holtgrave, Doll & Harrison, 1994).

Theory and HIV Research Herlocher et al. (1996) asserted that all prevention practices followed at least informal theory; knowledge of populations, and determination of needs of specific populations are examples of informal theoretical factors. They stressed that formal theories could also be very helpful in the provision of explanations of behaviour and/or potential goals for preventive strategies and programs. Several theories, many of which were social cognitive, were used in the development of general health preventive programs or research studies and also in HIV prevention specifically. Mantell et al. (1997) presented several of the theories that had been used in interventions to promote HIV preventive behaviour as well as the researchers responsible for their development. These theories included: (a) the Theory of Reasoned Action - introduced by Fisher and Ajzen; (b) the Health Belief Model - developed by Rockenstock; (c) Social Cognitive Theory - modified by Bandura; (d) the AIDS Risk Reduction Model - presented by Catania, Kegeles and Coates.

According to the Theory of Reasoned Action (TRA) intent to execute behaviours is mediated by a person’s attitude toward the particular behaviour, the outcome expectancies of performing the behaviour and/or the normative beliefs developed through perceptions of expectations of significant others with regards to the performance of the behaviour (Baker, Morrison, Carter & Verdon, 1996). Behaviours
are then predicted from intentions to behave. In application of TRA to HIV prevention, Fisher et al. (1995) stated that "an individual’s attitude toward performance of a particular AIDS-preventive behaviour is a function of the individual’s beliefs about the consequences of performing the behaviour, multiplied by his or her evaluations of these consequences" (p. 256). They added that the above concept was also influenced by the person’s perception of social support and their motivation to behave as expected. Ajzen and Fishbein (1980) pointed to the importance of exploration and identification of beliefs that a group holds about the consequences of certain preventive behaviours and of determining those who would be considered influential in the group in order to address the particular population.

TRA has been used in attempts to understand risk reduction behaviour and social influences impacting this behaviour. In a study done on young gay men, Ross and McLaws (1992) established predictors of condom use. The results showed that opinions of others, significant in these mens’ lives, were greater predictors of intentions to use condoms than attitudes about condom use. The idea that intentions were predictors of behaviour was also supported. They stressed the importance of considering the influence of significant others when attempting to promote preventive behaviours.

Fisher et al. (1995) investigated determinants of HIV preventive behaviours. This study involved gay men, heterosexual university students and heterosexual high
school students. All of these populations were defined as being at risk. A strong correlation between expected consequences of the acts multiplied with social and personal evaluations of these consequences and attitudes toward preventive behaviours was found. They also discovered a relationship between intent to act and attitudes and norms; this intent to act mediated behaviour. The researchers suggested that this study proved TRA could be used to structure HIV preventive interventions. An added element to intervention design based on TRA was suggested by Baker et al. (1996). They reported that previous experience with condoms and their use influenced intention to use the condoms. Therefore, it was necessary to investigate mechanisms to explain the relationship between previous experiences with condoms and condom use.

The Health Belief Model (HBM) has been used by researchers in an attempt to explain health behaviour and efforts to change behaviour by those seeking to improve health status (Thurman & Franklin, 1990). Rosenstock, Strecher and Becker (1988) reported that use of HBM has led to significant results in research, although they tempered this with the conclusion that the variance in behaviour explained by HBM was lower than expected. HBM was "designed to explain health actions in terms of health related beliefs and motivations" (Petosa & Jackson, 1991). The perception of efficacy of preventive behaviours was compared to perceived barriers to committing to these preventive behaviours. In the case of HIV prevention, the behaviours would
have included safer sex practices and the barriers would have included psychological, social and or physical factors. According to Mantell et al. (1997) and Rosenstock et al. (1988), health preventive behaviour was a result of the occurrence of three factors. The first factor was the perception of threat. There must be enough concern about the threat of the illness to make this threat relevant. The second factor involved perceived susceptibility: "Perceived susceptibility refers to the likelihood of experiencing personal harm if no action is taken..." (Weinstein, 1989). The final factor involved the weighing of perceived efficacy of the preventive behaviour and barriers to this behaviour. Rosenstock et al. (1988) stated this factor involved "the belief that following a particular health recommendation would be beneficial in reducing the perceived threat, and at a subjectively-acceptable cost." (p. 177). A person would conclude that the benefit of reduction of the risk of illness would outweigh the energy spent overcoming barriers. The belief a person had in their ability to carry out the necessary behaviours (self efficacy) was added to the HBM in the 1980's (Mantell et al., 1997).

HBM has been used in attempting to identify contributing factors to the adoption of preventive actions as well as to develop interventions. While Thurman and Franklin (1990) reported that the HBM was not sufficient to predict preventive behaviour, they did find support for one of the primary concepts of HBM. This concept, as discussed in the previous paragraph, was the perception of relevance of
threat to people. The subjects were studied regarding their reactions to the health threat of HIV. It was reported that subjects "were reluctant to change their sexual behaviour unless the threat of infection was personalized" (p. 179). Weinstein (1989) also supported the importance of another major factor included in HBM - perceived susceptibility. Weinstein expressed the opinion that many perceptions of personal susceptibility were not realistic and that many people showed a consistent trend toward optimistic bias; they perceived personal threat to be less than that of others in their group. Considering this conclusion, any intervention that dealt with attempts to promote preventive attitudes would need to involve elements to address optimistic bias and so attempt to increase perception of threat and personal susceptibility.

Petosa and Jackson (1991) used HBM to predict safer sex intentions of adolescents. The results suggested that programs devoted to promotion of safer sex intention needed to focus on health related motivations. The researchers discovered an interesting outcome in this study. While the HBM effectively predicted intentions in younger students it was not effective in predicting the same for older adolescents. They concluded that for older adolescents more contributing factors influence intentions than were specifically laid out in the HBM, such as self-presentation, need for acceptance and other social influences.

Eisen and Zellman (1984) found a connection between health beliefs outlined by HBM and knowledge about sexuality and contraceptive use. In their study, they
also found that an educational intervention based on HBM produced statistically significant increases in condom use among adolescents.

In 1988, Rosenstock, Strecher and Becker presented the argument that the Health Belief Model and Social Cognitive Theory were connected. They reported that both involved the concepts of threat, expectation of outcomes and incentive or motivation. They also proposed that, while HBM did not specifically deal with self efficacy, this concept was implied under perception of barriers and the need to weigh barriers with the outcomes of preventive behaviour.

Social Cognitive Theory (SCT) was introduced by Albert Bandura. Social Cognitive theorists believed that

....people are neither driven by inner forces nor automatically shaped and controlled by external stimuli. Rather, human functioning is explained in terms of a model of triadic reciprocality in which behaviour, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other (Bandura, 1986, p. 18).

People were seen as having an active role in the determination of their behaviours, thoughts, emotions while the impact of the larger system was also acknowledged.

According to SCT (Bandura, 1986) human nature is defined by the following human capabilities: the abilities to (1) use and interpret signs and symbols, (2) use
forethought, (3) learn through vicarious experience, (4) regulate behaviour through personal standards and self evaluation, (5) be self reflective - to reflect on cognitions, act on them either physically or in an anticipatory way, explore results and change behaviour accordingly. Four processes of behaviour change arise from these five capabilities. People can change their thoughts and behaviours through direct experience and mastery, through modelling or indirect experience, through social persuasion, ie. social judgements, and through inference based on interaction with self, others and environment. In the fourth case belief in the physical ability to behave in a certain way plays a major role. These four experiences are also the ways to build self-efficacy (Bandura, 1989).

The belief in self-influence appeared to be a cornerstone of Bandura’s theory. A major aspect of self-influence/self-determination is perceived self-efficacy.

"Perceived self-efficacy is a judgement of one’s capability to accomplish a certain level of performance..." (Bandura, 1986, p. 391). There are three major ways in which self-efficacy impacts our functioning. First, it has an impact on the choices we make to behave. Second, is the impact on motivation. Expectations of ability to perform leads to higher level of effort. Third, self-efficacy impacts a person’s patterns of thought. Bandura asserted that when problem-solving, a person with a high sense of efficacy can focus all attention on resolution.
In an interview with Evans (1989), Bandura spoke to the relevance of perceived self efficacy to health promotion. When questioned about this relationship, Bandura asserted that efficacy had an impact on whether a person would consider and/or adopt certain health preventive behaviours. Efficacy could affect the feeling of benefit from treatments as well as maintenance of preventive behaviours.

Social Cognitive Theory and, more specifically, the concept of self efficacy has been used in many research efforts around change in health behaviour, including HIV preventive behaviours. Studies have shown the impact of perceived self-efficacy on health behaviour, for example, Beck & Lund (1981) and O'Leary et al. (1992). Bandura, Adams and Beyer (1977) showed that interventions promoting positive change in perceived self-efficacy were effective in helping people change behaviour. In this case the behaviour was related to a phobia of snakes. They showed that those who attended the interventions designed to model and/or practice assertive behaviour with snakes had higher perceptions of personal efficacy than the control group.

In a study on patients living with Chronic Obstructive Pulmonary Disease, Kaplan, Atkins and Reinsch (1984) discovered that specific efficacy in the form of exercise instructions led to increase in exercise behaviour. Changes occurred due to increased feelings of efficacy for exercise brought on by the instructions about the exercise. According to the researchers, this study supported the role of self-efficacy and SCT generally.
Jacobs, Prentice-Dunn and Reinsch (1984) found that efficacy, outcome expectancies and self-awareness all had a part to play in persistence. Their study revolved around persistence after a task was failed. The strongest interaction occurred among those who had been exposed to self-efficacy manipulations as an interventive strategy after the preliminary failure. These outcomes led the authors to state that "...self-efficacy expectancies were the best predictor of persistence." (p. 333). Acknowledging the impact of outcome expectancies on perception of efficacy is important. The perception of negative consequences to using condoms was related to a decrease in judgement of ability and less practice of preventive behaviour. Therefore, the expectations of the negative aspects of using condoms, such as the lack of stimulation, led to a decrease in the perception of ability to consistently use condoms. Exploration and identification of the components of self efficacy with respect to safer sexual behaviour was necessary (Abraham and Sheeran, 1994).

Some research studies were observed to combine related components of several theories as their framework. One such theoretical model was the AIDS Risk Reduction Model (AARM). Elements of such theories as HBM, TRA and SCT were integrated to better explain AIDS preventive actions (Mantell et al., 1997). According to Mantell et al., the important factors of AARM were knowledge of risk and methods to increase satisfaction of low risk behaviours, perception of risk, weighing of perceived costs and benefits of low risk acts, belief in ability to perform
the behaviours, emotional states, and social factors such as group norms.

Accordingly, behaviour change occurred when (a) the behaviour was identified as high risk; (b) a commitment was made to change the behaviour; (c) the intent to behave was transformed into action. The movement from one step to another was mediated by achieving the goals of the previous stage and belief in the ability to achieve the goals of the next stage.

Factors and Barriers Affecting HIV Preventive Attitudes and Behaviours. A major area of study seen in the literature was exploratory in nature. Researchers attempted to determine HIV knowledge, attitudes, behaviour and contributing factors and barriers to prevention in populations. Research focused on exploration of the psychosocial factors influencing behaviour (Kowalewski et al., 1997). This focus seemed to come from an attempt to define all factors affecting preventive behaviour so that these factors could be used or worked on within development of interventions. Measures of HIV knowledge were taken in populations to explore levels of knowledge, myths in knowledge and the impact on knowledge on undertaking preventive behaviour. Attitudes about HIV and ideas around HIV prevention were measured to understand how attitudes affected behaviours and how they could be used in the promotion of preventive behaviour. Researchers tested for factors that they hypothesized were important in HIV prevention.

When adolescents were first identified as at risk for HIV infection, an immense Canada Youth and AIDS Study was designed to explore knowledge, attitudes and
behaviour in Canadian youth nationwide. King et al. (1989) reported that more than 38,000 youth from across Canada were surveyed. Six surveys examined gender, age, knowledge of AIDS, and behaviour considered to pose risk. The primary conclusion of the study was that AIDS was a threat to youth. There were eleven conclusions as follows:

1. There was a threat to youth for HIV contraction.
2. Responsible behaviours were essential in prevention.
3. Accurate knowledge was imperative to behaviour change
4. All people have a right to accurate information and it was the responsibility of the community to educate in the area of AIDS.
5. Links should be made between AIDS and STD's in educational programs.
6. Dissemination of information should be done by those knowledgeable who use appropriate language for this population.
7. A number of adolescents were sexually active and educational approaches should reflect this.
8. Evaluation of educational interventions before they are implemented was essential.
9. Sub groups of this population at highest risk were identified as needing priority status in preventive strategies.
10. AIDS education was considered most effective when it was in a larger program that addressed several concerns at the same time.
11. Educational programs needed to encompass accurate presentation of
information, development of skills necessary to carry out preventive
behaviours, promotion of tolerance of and compassion for persons living
with HIV and AIDS (pp. 143-144).

Thurman and Franklin (1990) studied the knowledge of AIDS and perception of
health threat from AIDS in college students at the University of Massachusetts/Amherst.
They stated that students were well informed about AIDS and preventive behaviour.
They also expressed that personalizing the threat of HIV was necessary before behaviour
would change. The discordance between knowledge and behaviour supported the case
that merely educating people about AIDS and HIV was not enough to lead to behaviour
change. One suggestion, made by the researchers, was that “future research, on and off
college campuses, is needed to determine better the perceived susceptibility to the
disease of students, and the general public” (p. 183). The role of perceived
susceptibility was a major concern in primary prevention and is explored further in the
next section of the review. While Thurman and Franklin showed students to be fairly
knowledgable about AIDS, Brown, DiClemente and Beausoleil (1992) stated that many
studies have shown significant gaps in knowledge for this group.

Knowledge has been tested in many situations for a variety of populations and
groups, including homosexual men, intravenous drug users, college students, youth and
the heterosexual population. Comparative studies have also been done between groups.
For example, Brown, DiClemente & Beausoleil (1992) compared the knowledge, attitudes
and intentions to practice safer sex between young adolescents who were sexually active
and those who weren’t. These researchers found significant differences between the two
groups. For example, measured difference was more pronounced in young boys who were sexually active versus those who were not. Significant differences between males and females also occurred. The authors hypothesized that young people who were sexually active felt a need to minimize their risk and so were not really integrating the information provided. They postulated that prevention strategies in the schools were focused on abstinence which led to the possibility of alienation of the sexually active group. The researchers stressed that efforts must be continued in promotion of positive attitudes, knowledge and behaviour of young people who were not engaging in sexual intercourse, while efforts to aid young people who were sexually active needed to be ‘stepped up’.

Exploratory studies around the topic of behaviour focused on establishing risk behaviours for populations, identifying barriers to preventive behaviour and, more specifically, condom use. Butcher, Manning and O’Neal (1991) identified risky behaviours in college students. These behaviours included alcohol consumption (people reported sexual intercourse when intoxicated) and sexual intercourse with multiple partners, that seemed to be defined as serial monogamy. The students reported having sex with only one person at a time, but having an average number of three partners in a year. Most of the students said they did not use condoms in these interactions. In their summary of the Canada Youth and AIDS Study, King et al. (1989) defined more risky behaviours. Their findings showed that most older youths had engaged in sexual intercourse and usually with more than one partner. It was also reported that much of this interaction occurred without the use of a condom and spermicide. The study also
showed that youths were engaging in anal intercourse.

Krull (1994) defined different factors that affected risk behaviour. Krull performed two studies on data gathered through a national survey in the United States. In study one, she attempted to assess the interaction of levels of education, liberal sexual attitude and sexual promiscuity and, in study two, she related these factors to risk for AIDS. Krull found that levels of education led to more liberal sexual attitudes which were associated with sexual promiscuity in the group with whom she was dealing. This pointed to the increased risk of AIDS brought on by sexual promiscuity. Therefore, people with higher levels of education were presented as having more liberal sexual attitudes. These more liberal attitudes, coincided with increased promiscuity. And, finally, increased promiscuity indicated a higher risk for contraction. Krull's study supported the case that higher levels of education had not protected people from AIDS, and, as a matter of fact, may have increased behaviours that were related to contraction. The report also supported the case that all groups of people should be addressed when it comes to prevention development.

The findings in the above studies point to several behaviours that needed to be considered when designing preventive strategies, particularly with older adolescents and young adults. Those behaviours included sex with multiple partners, lack of condom use, sexual intercourse under the influence of alcohol, and anal intercourse. Other behaviours of interest included lack of discussion of preventive behaviours with partner and lack of provision of and/or suggestion to use condoms (Caron, Davis, Halteman, & Stickle, 1993; O'Leary et al., 1992).
Condom use is a behaviour that was a common topic in the literature. Researchers looked at such things as predictors of condom use, use of condoms in partnerships, and changes in condom use. Baffi et al. (1989) looked at factors that influenced the use of condoms in male heterosexual college students, N = 305. In this study, the subjects were given questionnaires measuring such factors as numbers of partners, intent to use condoms, and attitudes toward condoms. The authors found that, in the two months prior to the study, 67% had at least one sexual partner, 14% had two sexual partners, 5% had engaged in intercourse with three partners and 3.33% with more than three. These subjects reported that they did not consistently use condoms and that their use of condoms was mostly for the purposes of contraception. Many of the subjects did report a willingness to use condoms, but expressed such barriers as level of comfort in buying condoms and lack of communication between themselves and their partners about preventive behaviours. Therefore, factors that impacted the use of condoms were the provision of another form of contraception, lack of communication with partner, and social level of comfort with condoms (which could point to an underlying level of comfort in sexuality generally).

Other useful information in the area of condom behaviour involved change in condom use. Catania, Stone, Binson, & Dolcini (1995) reported that when condoms were used, they were not used consistently. They looked at heterosexuals from several groups including high risk groups. The researchers reported that lack of consistency had implications for HIV contraction given that safer sex involved consistent use of condoms. The authors also reported that condom use among heterosexuals had
increased from 1989 to 1992 and then had begun to level off. According to the researchers, the results of the study pointed to a need to seek new avenues to promote condom use.

**Modification and Promotion of HIV Preventive Attitudes and Behaviours.** In an exploration of literature, this researcher discovered several studies that provided valuable information for development of interventions. These included development interventions based on theory driven incentives to promote condom use (Grube, Mayton & Ball-Rokeach, 1994; O'Leary et al., 1992); interventions that integrated education and motivation for positive attitude and behaviour change (Fisher et al., 1996; Moskal, 1991); preventive strategies that addressed communication issues (DeBro, Campbell & Pepiau, 1994); and interventions based on small group interaction (Tudiver et al., 1992).

One set of interventions, developed by Tudiver et al. (1992), was based on small group education sessions for gay and bisexual men. Three groups were involved in the study. Two intervention groups in which subjects were either involved with a single educative session guided by a peer volunteers, or a series of four sessions led by trained counsellors. This study supported the case that single session interventions were not necessarily less effective than multiple sessions and that peer helpers could be useful in carrying out interventions.

Fisher et al. (1996) designed an intervention using the Information-Motivation-Behaviour Skills (IMB) model of behaviour change. In the IMB “information and motivation are thought to affect the use of risk reduction behavioural skills that are necessary for initiating and maintaining patterns of AIDS risk behaviour change” (p.
Subjects in an intervention group were presented with deficits in information around AIDS preventive behaviour information. They attended small group discussions led by peer leaders in which the peer leaders acknowledged the same negative attitudes and beliefs as presented in the information session. In these sessions the subjects problem-solved around ways to deal with the underlying factors of the negative beliefs. Later subjects attended a large group session designed to reinforce any changes made due to the interactions in the small group and to present information around changing behaviour and maintaining it in their social circles through watching a video, modelling, and skills building. Subjects attended small and large group discussions after this in which they were taught skills that could be used in consistently displaying preventive behaviours. The subjects in the intervention group were shown to have changed behaviours and maintained those changes over time.

Moskal (1991) implemented an AIDS curriculum over a two month period with college students who were predominantly First Nations. This study was also pre/post intervention/control design. Subjects took part in such activities as attending lectures, performing opinion polls and discussing controversial issues in the area of HIV prevention. The course included a variety of methods and activities such as lectures involving relevant videotapes, anonymous opinion polls, nonjudgemental discussions of controversial issues, and a classroom demonstration of the use of the condom. Role playing was used as well as development of posters or a video tape. Results showed that the curriculum was effective in greater change in knowledge, attitudes toward low risk behaviours and towards those who are HIV positive.
The three studies discussed in this section showed valuable strategies in prevention. In all three studies, researchers were able to report a level of efficacy in promoting positive behaviour and/or attitude change. Common processes in the above studies included: the provision of information that was supported by strategies to promote change; interactive components in which the subjects were involved in activities; and, creative activities that could increase interest and involvement in the interventions. All studies targeted condom use as a preventive behaviour, however, not many studies integrated the provision of abstinence as a realistic choice.

**Challenges and Solutions in HIV Primary Prevention**

Stevens-Smith and Remley (1994) supplied some important considerations for SCT in prevention planning. The first was that correct information about HIV must be given. This included patterns of transmission and explanation of HIV and AIDS. The second consideration stressed the importance of helping people develop social and regulatory skills. Here they asserted that it was important to address people’s responsibility in controlling their attitudes and behaviours. A third consideration offered continued aid in further development of skills and encouragement in continuance of personal control. The final consideration was the necessity of social support to improve chances that preventive behaviour is maintained. These factors reflected some of the challenges to HIV prevention. The next section of this literature review will present information regarding various challenges to HIV prevention and suggested strategies to deal more effectively with the challenges.
Sexual Behaviour: HIV transmission is directly related to sexual behaviour, although there are other modes of contraction. Sexual behaviour is a complex process that integrates cultural beliefs, interpersonal power issues, gender role prescriptions, and personal responses such as fear of rejection and denial (Evans, 1989; Wilson & Stewin, 1993). The contraction of HIV does not occur in the insular world of the individual. Due to the way HIV is transmitted, the social role in contraction is as important as the personal characteristics of the individual. If HIV is transmitted through sexual activity, then the interaction involves at least two people. There is more to consider than the beliefs and ideals of the individual. In the development of interventions it is essential to design interventions geared toward both of the partners, in two couple relationships. This can impact the norms established within the dyadic relationship (DeBro et al., 1994; Fisher et al., 1995).

Trussler (1994) pointed to a consideration that must come into play in the interaction of heterosexual couples. This factor related to sexual negotiation and the fact that the means for a woman to protect herself from HIV is usually controlled by the male, ie. condom use. This was considered a power differential with which women have to deal in relationships. Caron et al. (1993) also reported that women with traditional attitudes toward their gender role were more likely to forego safer sex. Women have been found to be less comfortable with sexual issues than men and to have felt less responsible for their sexuality and less powerful in a sexual encounter (Bryan et al., 1997). Many of the researchers presented in this section attested to the fact that gender differences were a part of sexual behaviour and communication and that interventions
needed to address this factor.

The larger system in which a couple functions also impacts sexual interaction. Perception of opinions of others can have an influence on the motivation to indulge in high risk activities (Baker et al., 1996). Many studies and programs professed that it was essential to teach communication skills and to help promote assertive behaviour in the sexual practices of target groups (Bryan, Aiken & West, 1996; 1997). This included such activities as role plays in which a person interacted with a proposed sexual partner, practice in facing social group pressures around sexual intercourse, and practice of skills necessary for condom use (Fisher et al., 1996). Cotton, Higgins, Person, & Darrow (1994) described how the powerful influence of peers was used. They spoke of role model stories in which members of the community relayed stories of their own struggles and successes with safer sex, prevention and HIV. These stories were printed in brochures and flyers and distributed by other members in the group. The form of distribution allowed for the inclusion of an interpersonal dimension of interaction. The credibility of a person who was experiencing like situations as those they were attempting to reach could help those people make positive changes in attitudes and/or behaviours (Lief, 1989).

Sexual behaviour contains an individual component that is comprised of emotions and experiences around sexuality. Abraham and Sheeran (1994) defined sexual behaviour as very different from other health behaviours because of the high emotional and arousal content, among other things. They proposed that individual differences in emotional responses to sexual stimuli were the real predictors of safer sexual behaviour.
They expressed that any interventions dealing with sexual behaviour must address the underlying emotions and the individuals’ methods of dealing with emotion.

**Cultural/Group Considerations.** Each group or culture is unique and has its own patterns of behaviour, jargon, boundaries, ideas of acceptability, and rules for interaction (Baron & Byrne, 1987). It would seem reasonable to assume that this uniqueness must be considered in any type of preventive strategies that are designed.

One example of such uniqueness and the need for consideration of that uniqueness in designing preventions is language. Terminology used by those who disperse information for consumption by groups is not necessarily known or understood by those groups (Canadian Public Health Association, 1993). This must be taught and learned. Along with this comes the jargon which is used by various groups. If a person is to deal effectively with a particular group, it is immensely useful to use the jargon and patterns of speech of that group.

An essential aspect of addressing the target group is to use group appropriate language. Language defines who we are as a people and as individuals. To use jargon with which people are unable to associate is to isolate them from the very beginning (Lief, 1989). It would seem unlikely that any intervention that used inappropriate language would prove to be effective. One way of getting to the language and manipulation of language of a particular group is to involve the group as ‘experts’ in the understanding of the dynamics of their respective groups. An integral part of those dynamics is the language.
One important strategy for dealing with the difficulties posed by group or cultural barriers is to include group members in the planning, implementation and evaluation of the programs to be used with their group (Cotton et al., 1994; Orians et al., 1995; Sandfort & Zessen, 1992). The ability to serve the needs of the population can be referred to as cultural competence. The CDC, 1996, provided an in-depth definition of cultural competence:

Participation of client populations throughout the process of designing and implementing programs helps assure that the program will be acceptable to the persons for whom it is intended. For the purposes of this document, cultural competence is defined as the capacity and skill to function effectively in environments that are culturally diverse and that are composed of distinct elements and qualities. The fact that many organizations in a community are directly controlled by the members of the community will lead the organization to reflect the beliefs and interactions of the community as well as some of the difficulties which must be addressed by anyone targeting that community for interventions (p. 1).

Bryant et al. (1992) suggested that the involvement of members of the target group can increase the possibility of cultural competence. This group presented the target populations as the consumer and thus "the inclusion of the consumer allowed participants to provide input about the severity of the problem, to discuss the environmental and social conditions that affect the problem, and to take an active role in desired change" (p. 28). Therefore including those for whom the interventions are being
designed can increase the role consumers play in their own change.

**Denial and Underestimation of Risk.** The research and resources on denial, perceived vulnerability and perceived risk, showed that these three concepts were directly related to each other. Several researchers discussed the importance of addressing these three concepts in prevention planning (Weinstein, 1989; Cohen & Bruce, 1997; Fisher et al., 1996; O'Leary et al., 1992).

Sandfort and Zessen (1992) reported that denial downplays the perception of risk to oneself, one’s system and the larger system (society). This lessening of perceived risk can lead to less tendency to practice those behaviours that are essential in living a preventive lifestyle. These researchers gave several consequences of denial of risk. First, people may block out prevention messages and other valid information. The ignorance brought on by this exclusion could lead to increased risk. Second, while people may be unaware of necessary messages and information, they may not translate this awareness into positive behaviours. Sandfort and Zessen discovered that subjects who heard the messages but tended to downplay them were less likely to take on future preventive behaviours. People not only downplayed the information they were given but also downplayed their risk.

People who have been at risk and who reason this risk away don't acknowledge the fact that they have been at risk. These people are often less worried about the possibility of being infected. In general, the stronger the tendency to reason away the risk of infection, the less often subjects worried about their future risk of getting infected (p. 69).
This type of denial has ramifications for HIV prevention because all of the information that can be provided will not be enough without helping people overcome the underlying tendency to deny/reason away the risks being relayed to them.

Sandfort and Zessen (1992) found that the changes in sexual behaviour were "related to whether one knows people who are HIV infected or who have AIDS. As a consequence of personal confrontations with HIV/AIDS related issues, the awareness of potential risk might be heightened" (p. 71). These researchers stated that interventions should include an element designed to decrease denial of risk. They proposed that an effective element would be to make visible to target groups that HIV affects people who don’t belong to traditional risk groups. Orians, Liebow and Branch (1995) also suggested that interaction with those who are HIV positive or full-blown AIDS can make the threat of contraction much more real. The Canadian Public Health Association took a clear stand on inclusion of infected people in prevention. They proposed that "programs and services should be developed and delivered in consultation and/or partnership with people affected by/infected with AIDS" (CPHA, 1993, p. 2).

Sandfort and Zessen did caution, however, that for some people, exposure to those who have HIV or AIDS can be so traumatic as to increase the potential for denial. In this case, other interventions were considered more appropriate.

In order for individuals to make a realistic estimation of their risk several things must occur. They must have the most up-to-date information and not be dealing with myths and partial truths (Cohen & Bruce, 1997). The risk must be personalized in order for them to apply it themselves (King et al, 1989; Thurman & Franklin, 1990).
Individuals must have a realistic perception of their vulnerability to the risk.

“Perception susceptibility refers to the likelihood of experiencing personal harm if no action is taken” (Weinstein, 1989). People, particularly adolescents and young adults, seem to have difficulty determining their susceptibility to HIV contraction. Seppa (1997) spoke to this issue when he addressed the concept of invulnerability. This perception of invulnerability can come from denial, misinformation, confusion, and the general perception of invulnerability to insult experienced by youth.

Cohen and Bruce (1997) argued that people were not unrealistic in their perceptions of their vulnerability to contraction. They suggested that in comparing perception of risk to epidemiological forecasts of risk in certain populations, subjects were actually overestimating their potential to contract HIV. They suggested that the risk for contraction in the heterosexual, non-IDU population was negligible. They did, however, report that statistics for mortality due to AIDS was very high in certain young adults, and that it was very clearly a major health risk in particular groups.

**Research Hypotheses**

The extensive review of the literature led to the structuring of the research hypotheses. Two hypotheses were defined for the study represented in this thesis. These hypotheses revolved around assumptions of efficacy in two types of interventions; an affective intervention in which the subjects attended a presentation given by a person living with HIV, and a second intervention in which groups of subjects designed interventions for their peer group. The hypotheses were expressed as follows:

1. An intervention, hereafter referred to as Intervention One, involving presentation of
accurate information about HIV and AIDS, interaction with a young adult who is HIV positive, and developing goals around preventive behaviours will be effective in promotion of positive change in attitudes and behaviours around HIV.

2. An intervention, hereafter referred to as Intervention 2, involving presentation of accurate information about HIV and AIDS, involvement in planning a prevention program, and developing goals around preventive behaviours will be effective in promoting positive change in attitudes and behaviours around HIV.

Statistical hypotheses for attitudes and behaviours can be found below:

\[ H_0: \mu_{ai} = \mu_{aj} \quad \text{where } i, j = 1, 2, 3 \text{ and } i \neq j \]

\[ H_1: \mu_{ai} \neq \mu_{aj} \quad \text{where } i, j = 1, 2, 3 \text{ and } i \neq j \]

In the above hypotheses, the null hypothesis \((H_0)\) would be that the means of all three groups are equal. To reject that hypothesis \((H_1)\) would lead to the conclusion that the means of groups are significantly different. In the notation \(a\) represents attitude.

\[ H_0: \mu_{bi} = \mu_{bj} \quad \text{where } i, j = 1, 2, 3 \text{ and } i \neq j \]

\[ H_1: \mu_{bi} \neq \mu_{bj} \quad \text{where } i, j = 1, 2, 3 \text{ and } i \neq j \]

In the above, means are all equal if the null hypothesis \((H_0)\) is retained. The means are considered to be significantly different if the null hypothesis is rejected. Behaviour is represented by the figure \(b\). In both sets of hypotheses, rejection of the null hypotheses would mean that significant change had occurred in attitudes and behaviours between the pre and post tests.
Summary

This chapter contained a presentation of information resulting from an investigation of the literature around HIV and prevention. An historical overview of HIV and relevant epidemiological information was provided. A presentation of the types of research being done in the area of HIV prevention was given and common challenges in the literature were explored. The final section in the chapter presented the research hypotheses of the study; that interventions involving interaction with a person living with HIV or involvement in planning a prevention program would be effective in promoting positive attitudes and behaviours. In the next chapter methodological issues and procedures used in the study are explored.
In this chapter, recruitment, participants involved in the study, the process of the study and types of statistical analysis that will be done are described. The settings involved, all materials necessary for the execution of the interventions, the procedures followed in the administration of tests, and the approaches used in the interventions are presented. The demographic, attitude and behaviour questionnaires are described. This description includes types of items used in the questionnaire package, examples of items in the attitude and behaviour scales, and references to those inventories and questionnaires in the literature used as models by the researcher in item preparation. An overview of the procedures to be used in the data analysis is also presented.

Subjects

Subjects for the study were canvassed, through convenience sampling and a snowball like effect (Palys, 1992), from the student population at the University of Northern British Columbia (UNBC), in Prince George, British Columbia. Due to the small numbers of students at the institution (n~2500), and to low participation at other educational events, the researcher decided to collect subjects through personal contact. Students were contacted by visiting a first and third year psychology class, as well as the majority of apartments in residence with the aid of the Resident Assistants. The investigator described the type of research being done, and left sheets for the students to fill out and return, anonymously, to Student Success Centres. The sheets contained
information about appropriate times for the pretest and space for subjects to enter their name and contact number. An option was given to contact the researcher by a private phone number if the subjects were not comfortable with the idea of passing their sheets to the receptionist at Student Success Centres. The total number of participants for the study were 31 (N = 31).

Setting

The investigator held the interventions on the premises of UNBC and used a large lecture theatre for the administration of pre and post tests. The decision to use such a large hall was an attempt to increase confidentiality and further demonstrate to the subjects that confidentiality would be a top priority. In a larger hall there was more room for students to spread themselves around and the researcher instructed students about the space necessary between them. A lecture hall was selected for Intervention 1. Intervention 2 necessitated a room with movable chairs. These rooms were empty of all materials with the exception of those brought in by the researcher.

Research Instruments

A questionnaire package was used to measure attitudes and behaviours of the subjects pre and post test. The package consisted of a questionnaire measuring demographic information (Appendix B), an attitude questionnaire (Appendix C) and a behaviour questionnaire (Appendix D). The researcher designed the questionnaires to specifically reflect those attitudes and behaviours to be measured. Piloting of the questionnaires occurred in a first year and a fourth year psychology class. The investigator also gathered feedback from colleagues in a master's level research seminar.
course. As suggested by Sax (1989), the feedback concentrated around choice of the most appropriate questions, analysis and critiques of the questions as they had been presented, and identification of any areas that may have inadvertently been omitted.

**Demographic Questionnaire.** The demographic questionnaire contained open-ended questions related to demographic information necessary for interpretation of the results of the experiment. The measure was used only in the pretest. Types of information sought with this questionnaire included the age of subjects, gender, sexual orientation, measure of sexual experience, and degree and type of HIV knowledge. The questionnaire also measured the amount and type of communication about HIV between the subjects and family, friends, and sexual partners. These considerations added to the understanding of the sample used in this study. They also provided measures on some of the factors that contributed to HIV preventive attitudes and behaviors in the literature, such as gender as reflected by Caron et al. (1993); DeBro et al. (1994); and Catania et al. (1995).

**Attitude Questionnaire.** The second test was composed of questions designed to measure attitudes toward HIV prevention. The attitudes to be measured were selected from such sources as Thurman & Franklin (1990); O’Leary et al. (1992); Torabi & Yarber (1992); Caron et al. (1993), and Dancy (1994). The attitudes to be addressed were reflected in subjects’ responses to the following:

1. HIV infection is limited to homosexuals, drug users and those who receive blood products.

2. Condoms are not a necessary aspect of sexual intercourse.
3. Knowing your partner is the best prevention of HIV contraction.
4. Abstinence is never practised as a preventive measure against the contraction of HIV.
5. Communication of the need to practice safer sex leads to reluctance or rejection.
6. A person is powerless to protect him/herself against HIV contraction.

The first section of the attitude questionnaire contained a selection of open-ended questions which were provided to measure attitudes that may not have been indicated in the Likert scale format. Mantell et al. (1997) suggested that open-ended questions allowed subjects to respond without the confines of a Likert type scale and without being led by a series of responses in which they must fit. These items were placed at the beginning of the questionnaire to lessen the impact of the more structured questions on student responses (Sax, 1989).

An agreement attitude scale was used in the second section of this questionnaire. Responses were made through a 6-point Likert scale range "very strongly agree", "strongly agree", "agree", "strongly disagree", and "very strongly disagree". The researcher constructed Likert scale questions from a list of attitudes drawn from the literature and formulated to reflect change if the interventions were effective.

Examples of attitude items in this questionnaire included:

1. Using a condom during sex can be erotic. VSA SA A D SD VSD
2. No one practices abstinence as a prevention for HIV infection. Response options of "not applicable" or "undecided" were omitted to allow various levels of agreement to be measured.

**Behaviour Questionnaire.** The third questionnaire measured specified verbal behaviours relevant to safer versus unsafe sexual practices. These behaviours were gathered from such sources as Butcher et al. (1991); Caron et al. (1993); Dancy (1994); and van der Plight and Richard (1994). The placement of questions and procedure for the construction of items was the same as in Questionnaire 2. In this scale the measurements range was "every time", "sometimes", "once or twice", "never", and "not applicable" and they were arranged in a 5-point Likert Scale. Examples of behaviour items in this questionnaire included:

IN THE PAST SIX MONTHS I HAVE....

1. depended on my partner to provide protection. ET ST TO N NA

2. asked a partner if they had been tested for HIV ET ST TO N NA

The investigator used this type of measure instead of a "yes/no/not applicable" measure in an attempt to gauge possible nuances of behaviour. It was believed that an uncommon occurrence might lead to an answer of "no" or "not applicable" thus disallowing a proper measure of that behaviour.
Procedure

One hundred students volunteered to be part of the research and sixty of these completed the pretest. Thirty-one students completed the full study. Reasons for the lack of extended involvement may have included such things as student schedules, decision not to take part after completing the questionnaires, or lack of interest. The subjects were randomly assigned to one of three groups, the Control group, \( N = 9 \); Intervention 1, \( N = 10 \); Intervention 2, \( N = 12 \). Before administration of the pre tests, a subject number and a group letter were printed on each manila envelope. The envelopes were placed on a table in random order and subjects were asked to pick an envelope as they came in. Therefore students were randomly assigned to each of the three groups.

The subjects completed a consent form before they began the questionnaires. On the back of the consent form, they were asked to choose appropriate days out of those provided by the researcher for the interventions. The need to have the interaction of as many subjects as possible, negated a plan to have equal representation by gender.

Prior to opening the envelopes the investigator gave basic instructions. The same instructions were placed on overhead for subjects to read as they were going through the test. One of the instructions involved the subjects placing a unique character on the outside of the envelope which only they could identify. This ensured that subjects could access their envelope if they forgot their subject number and group letter. Students’ names were not entered anywhere on the questionnaires or the envelope. The researcher further instructed the subjects that the questionnaire was to be completed and replaced in the envelopes in the order given. When subjects finished, they returned the envelope
with contents enclosed to the investigator or assistant and were reminded that they would be contacted when the interventions were to take place. In an effort to accommodate as many subjects as possible, the pretest occurred three times so that subjects could choose a time slot that suited their individual schedules.

All subjects in the Control group were contacted and informed that they were members of the control group. The researcher explained their responsibility as members of the Control; (1) They were informed that they need not attend any intervention. (2) They were expected to return for the post test in early April. Due to the fact that many of the subjects fed back knowledge of control groups and their purpose, the researcher explained to all the reason for the use of control groups. This explanation provided general terms with no reference to the study in which the subjects were taking part.

Intervention 1 necessitated contracting with a person who was living with HIV. A young heterosexual woman who had contracted the virus during her second pregnancy agreed to speak to the subjects involved with Intervention 1. The researcher accessed the volunteer through the AIDS Society in Prince George. This young woman gave an account of her personal journey through the process of discovering that she was HIV positive, and how she was dealing with the situation. She also discussed more general aspects of HIV prevention which would be comparable to the information provided for the Intervention 2 group. The researcher met with the woman several times before the intervention took place to discuss the context of her presentation. The intervention lasted two and a half hours and was set up in the following way:

1. Presentation of the facts about HIV.
A. Definitions of HIV and AIDS.

B. How HIV is contracted.

C. Ways to prevent contraction.

D. Cultural barriers to preventive strategies.

E. Gender differences in the area of HIV prevention.

F. Importance of peers in decision-making.

G. The role of self-awareness in living positive lifestyles.

H. The importance of keeping up with current information and the usefulness of setting personal goals.

2. The speaker presented the process of contracting HIV from her perspective. She addressed her own feelings and difficulties around being HIV positive and some of the lessons that this has taught her.

3. Time was provided for questions to the speaker, the representative or the researcher.

4. The subjects were asked to set reasonable goals for themselves based on the information with which they were provided and their own ideas of prevention.

Instruments needed for the second intervention consisted of information gathered by the researcher from various organizations. The majority of the resources were obtained from the National AIDS Clearinghouse, a branch of the Canadian Public Health Association concerned with dissemination of information on HIV and AIDS. The resources used included general information about the HIV and AIDS; causes,
symptoms, prevention strategies (mostly focused on safer sex), and blocks to preventive
behaviours. These were the only instruments necessary for the second intervention with
the exception of an overhead projector, paper and pens. The subjects in this intervention
participated in planning their own prevention. They were divided into three groups and
asked to consider what they felt would be helpful for university students of their age
group, 18 - 25 yrs., based on the verbal and visual information provided for them. The
process progressed as follows:

1. Presentation of the facts. This was done the same way and using the same
   materials and information as the first intervention.

2. Outlining of strategies based on the following procedure, and with
   access to information sources which would help them make their
decisions:

   A. Definition of the needs of young adults at the university
      level.

   B. An outline of strategies which they felt would be most
      successful in helping members of this group meet their
      needs.

   C. Projected outcomes of the intervention.

   D. Rationale for the use of these strategies.

3. Presentation of the intervention(s) to the other groups involved.

4. Discussion and questions regarding any of the information or part of
   the process.
5. Subjects were instructed to set reasonable goals for themselves to help prevent contraction.

At the end of both Intervention 1 and 2, a brief discussion occurred as a point of debriefing. Subjects were also reassured that if they had any questions or wanted to speak more about their experiences with the intervention they could feel free to contact the researcher.

The post test occurred seven weeks after the pre test had been administered, and two weeks after the interventions occurred. The researcher used the same attitude and behaviour questionnaires in the post test as had been administered in the pre test. The order was reversed to further decrease the potential of students responding from memory of the pre test. An open-ended question asking subjects to report any perceived impact of the interventions on them was included in the post test and the demographic questionnaire was not included. The investigator informed members of the control group that it was not necessary to respond to the added question. Some members of the control responded anyway. The researcher's assistant collected the packages and they were locked in a secure filing cabinet in a locked office until the data could be entered onto a database.

For both interventions there were several ethical considerations that were dealt with. The interventions were outlined and considered by the university ethics committee to determine appropriateness. Approval was given by the committee for the interventions to be carried out. The major consideration revolved around confidentiality and was dealt with by careful collection, storing, and disposal of information. A second
consideration was the sensitive nature of the subject matter. To deal with this consideration debriefing occurred at the end of each of the interventions and at pre and post test students were assured that they could access the Counselling Centre and/or the researcher at any time should they feel they needed further debriefing.

**Data Analysis**

Data analysis was conducted in three areas, analysis of the items of the questionnaires, analysis of the Likert type scales in the attitude and behaviour questionnaires, and exploration of responses to the demographic questions and the open-ended questions in the attitude and behaviour scales.

Because the construction of the items in the questionnaire package was developed by the researcher, and not subjected to tests for external validity, an item analyses for both the attitude and the behaviour questionnaires was necessary. An item analysis gives the researcher information about whether response alternatives function well for an item, if an item is measuring appropriately and if each item is contributing to the reliability of the questionnaire (Assessment Systems Corporation, 1993; Sax, 1989). Due to the variance of questioning and the demographic nature of Questionnaire #1, an item analysis was not done for this portion of the package. The demographic questionnaire had been part of the piloting process mentioned earlier. The item analysis for both the attitude and behaviour scales was performed with the use of the computer program ITEMAN™ (Assessment Systems Corporation, 1993).

ITEMAN™ offers a series of choices for the configuration of analysis and information presentation once the analysis is done. The item statistics for multi point
items provided by ITEMAN\textsuperscript{tm} included the number of examinees endorsing each item; mean subject score; the variance of distribution of subject scores; standard deviation of distribution; skewness of distribution; minimum, median, and maximum scores; mean Pearson correlation; and, several other results which were not all useful for the researcher’s purposes. The main statistical process of concern in this item analysis was the item scale correlation by which responses to a particular item were correlated with the average scores for examinees. While other statistics provided useful information, it was the item scale correlation that was of prime consideration in the results of the item analysis. The correlation used was a Pearson product-moment correlation between an item with a possible range of 1 to 5, or 1 to 6, and the total score with a range of minimum to maximum.

To deal with missing data, the researcher chose to endorse itemwise deletion. This process allowed for all subject information although they may not have responded to all questions. Therefore, there was potential variation in number of examinees within each scale. This variation was chosen due to the fact that it had less influence on the outcome of the analysis than a deletion of respondents that did not respond to all questions, as would have occurred with scalewise and casewise deletion.

The Analysis of Variance (ANOVA) was used to investigate the potential of significant change in attitudes and behaviours caused by the interventions. The ANOVA is a statistical procedure involving the comparisons of means to determine if the differences between these two means are more than could be attributed to
sampling error (Glass & Hopkins, 1984). While the necessary analysis could have been done through separate t-tests and paired sample t-tests, the ANOVA was seen as a more accurate and powerful test. Glass and Hopkins pointed to three advantages that the ANOVA had over t-tests:

1. It yields an accurate and known type-I error probability, whereas the actual $\alpha$ for the set of separate t-tests is high yet undetermined;

2. It is more powerful (when $\alpha$ is held constant)-that is, if the null hypothesis is false, it is more likely to be rejected;

3. It can assess the effects of two or more independent variables simultaneously (p. 325).

One-way ANOVA is used when groups are defined on only one independent variable (Howell, 1995). In this case, the independent variable was the intervention or lack of intervention given. A preliminary one-way ANOVA was done to determine any interaction of gender. The results predicted the type of ANOVA done for the analysis. No significant difference was found for gender, therefore, a one-way ANOVA was decided upon for the analysis. A second set of one-way ANOVA were done on the attitude and behaviour scales to determine any significant difference between the groups at the pre test level. If there was no significant difference, gain scores could then be obtained and another set of ANOVA could be done to see if there was any significant change in the groups. Wiersma (1986) reported that there
are those who have cautioned against the use of gain scores in statistical procedures
due to the believed limitations. Wiersma asserted that gain scores were desirable in
certain areas, particularly in instructional areas, and presented opinions of other
authors who expressed that gain scores could be reliable and useful.

A test of multiple comparisons would be done for any of the ANOVA if the
null hypothesis was rejected. With rejection of the null hypothesis detection of
significant differences in means is important (Glass & Hopkins, 1984). Multiple
comparison techniques are used for "making comparisons between two or more group
means subsequent to an analysis of variance" (Howell, 1995). When sample groups
are equal, as in this case, Tukey's HSD test provides an easily understood and
interpreted process for investigation of the groups presenting significant difference.
The minimum difference between means necessary to reject the null hypothesis is
computed, this is the honestly significant difference. The two means that differ more
than the honestly significant difference are said to be significant. Glass and Hopkins
(1984) suggested that the chance of type one error occurring in the contrasts
(differences between means) is lower than for other tests of multiple comparison,
albeit power is less with this type of process and so more of a chance of Type II
error. The Tukey test for Multiple Comparisons is a conservative test. Other tests of
multiple comparisons provided for less conservative results and, thus, less chance of
Type II error. Two such tests included the Neuman-Keuls and the test of multiple t's
or Least Significant Difference (LSD). The Neuman-Keuls was presented by Glass and Hopkins (1984) as very similar to the Tukey test but with more power. That is, this test was suggested to reject more null hypotheses than Tukey’s test. Following an ANOVA, multiple t-tests can be done to determine the means that presented significant difference. These tests are the least conservative of the multiple comparison tests, therefore the chance of Type II error is further dealt with. However, Glass and Hopkins presented the argument that it was very difficult to determine whether Type I error had occurred or not with LSD.

With a failure to reject the null hypothesis statistical evaluation ends. The alpha level, or probability for Type I error, for all ANOVA’s done was $\alpha = .05$; the most common size of rejection region (Glass & Hopkins, 1984; Howell, 1995).

The researcher explored the demographic and open response data through a process of scanning. The questions were explored for themes and subthemes by the researcher and an assistant, agreement between the two reviewers. In this way themes that were observed in the post test but not in the pre test, and themes that appeared in greater frequency at the post test level were recorded.

**Summary**

This chapter presented an overview of the process of the study including subject recruitment, item construction, the procedure used in the administration of the pre and post tests and interventions, and the planned process of analysis of subject
responses. In Chapter 4, the researcher describes the item and data analyses and discusses the results of these analyses. An exploration of the open-ended response analyses and the results is also included in this chapter.
Chapter 4 includes the results of all analysis done on the data obtained from the questionnaires completed by subjects pre and post intervention. The outcomes of an exploration of demographic responses is presented as well as results from the item analysis. The results of analysis of both the closed and open-ended responses of both the attitude and behaviour questionnaires are presented. A discussion of the results and their meaning in the study completes the Results section.

Discussion of Demographic Data

The mean age of participants was 20.6, with very little difference between groups, i.e. Control Mean = 20.8, Intervention 1 Mean = 20.5, Intervention 2 Mean = 19.9. The researcher also explored the modes of all groups and each individual group. Overall the age of participants was bimodal; 18 and 19 yrs.

Subjects were asked about their ethnic/cultural background. Twenty-five of the 31 subjects (80%) defined themselves as Canadian. One person was identified as Irish, another person identified themself as Chinese, and a third identified their culture as Norwegian, a fourth was Brazilian, a fifth Portuguese, and a final subject identified that they were British. Of the group who identified themselves as Canadian, most identified a European heritage, particularly Scottish (6), Irish (7), and English (8). There was one subject of the group of 31 who particularly identified that they were a Newfoundlander. Five out of the 25 students (20%) who identified themselves as Canadian also identified
as being caucasian, with 4 out of the five identifying that themselves as white males.

The ratio between males and females participating in the study was 12 males to 19 females. There were 80% of the subject group who identified themselves as strictly heterosexual. Four out of thirty-one (13%) rated themselves as a two on a scale of one to six from “strictly heterosexual” (1) to “strictly homosexual” (6). One subject rated self as strictly homosexual. The amount of post secondary experience of the subjects involved in the study ranged from first year to graduate work. The mean for years of post secondary study was found to be 2.2 years, using a 5 to represent the 4+ category.

The most frequently occurring responses presented as bimodal with first year being the response for 10 subjects and second year being the response for 10 further subjects. The majority of subjects, 19 (61%), reported having some information about HIV provided for them in high school. The most frequent types of information given by respondents were such things as information about contraction, high risk behaviour, and condom use.

Twenty-four out of the 31 subjects (77%) reported speaking to their families very rarely, or occasionally about HIV. The family member most mentioned as the person to whom they had spoken about this topic was their mother. Twenty-nine of the subjects (93%) reported speaking to friends about HIV. When asked if they communicate with a partner around HIV, 26 of the subjects said that they did, the others responded with a “no” or “not applicable”. Of those who responded with a negative, several made the qualification that they have had no sexual experience and thus the question would not necessarily be applicable to them. The subjects were asked if they knew anyone who was HIV+. In this question 20 out of the 31 subjects (64%) responded with a negative.
Eight of the 31 subjects, about 26%, said that they had been tested for HIV in the last six months. Most subjects reported having learned about HIV from the media, high school, parents and friends. It is interesting that of the 31 subjects involved in this study, 8, or 26%, of them reported that they had not yet had sexual intercourse.

When questioned about whether subjects felt that it was important for them to learn more about HIV, 90% responded affirmatively. The most common reasons given for this response reflected personal risk and the necessity to keep up on information to decrease personal risk. Although termed in a variety of ways, 17 subjects addressed the importance of education in prevention of HIV. Another common response revolved around acknowledgement of danger in others. Several subjects responded by saying that they could also help others to protect themselves. Other subjects acknowledged that they did not know enough about HIV. Two subjects responded with a "no" to this question. One subject appeared to be basing some of this decision on having a homosexual orientation. "I'm not worried, although I probably should be ... but everyone downplays the possibility of lesbians contracting". The second subject revealed making lifestyle decisions in which contraction was not a problem as the major reason for their belief that they did not need to learn more about HIV.

In Table I, a summary of responses to the demographic questionnaire is presented. Type refers to the types of questions asked on the questionnaire, (ie. I am _Male _Female) and number of subjects refers to the number of subjects for whom a particular type was reflective. Mode is used to reflect the responses given by the majority of the sample group.
Table 1

Summary of Demographic Data

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of Subjects</th>
<th>Mean</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>20.6</td>
<td>18 &amp; 19</td>
</tr>
<tr>
<td>Age-Control</td>
<td></td>
<td>20.8</td>
<td>24</td>
</tr>
<tr>
<td>Age-Intervention 1</td>
<td></td>
<td>20.5</td>
<td>20</td>
</tr>
<tr>
<td>Age-Intervention 2</td>
<td></td>
<td>19.9</td>
<td>19</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male-Control</td>
<td>3</td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Female-Control</td>
<td>6</td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Male-Intervention 1</td>
<td>5</td>
<td></td>
<td>Male &amp; Female</td>
</tr>
<tr>
<td>Female-Intervention 1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male-Intervention 2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female-Intervention 2</td>
<td>8</td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>strictly heterosexual</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>strictly homosexual</td>
<td>1</td>
<td></td>
<td>Strictly Hetero</td>
</tr>
<tr>
<td>other</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV Info. Provided in Highschool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>19</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>no or no response</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication with Family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication with Friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication with Partner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>No/NA</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact with PLWH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Tested in Last 6 Months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning About HIV is Important</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Intervention 1 = Intervention Group 1; Intervention 2 = Intervention Group 2; PLWH = Persons living with HIV.
Presentation of Results

Item Analysis

In the Item analysis two considerations became part of the decision to accept or reject an item that did not have an acceptable correlation. The number of subjects in this study was 31, therefore, an item with a correlation below -0.31 would not be acceptable as it demonstrated a significantly (p < 0.05) negative correlation with the rest of the instrument. The other consideration for deciding to retain items was the value of inclusion of that particular item in the data analysis. The item analysis of the attitude questionnaire presented acceptable correlations for all items.

In the behaviour scale, several questions were explored to decide whether to retain them. All questions where the correlation was < -0.30 were explored. Question #12, r = -0.53, was omitted from the analysis. This question dealt with personal responsibility in provision of condoms/protection. While the question was considered to be valuable, disparity between acceptable correlation and r value for this particular item was too great to include the item in the analysis. Question #14, r = -0.28, while within acceptable range, dealt with needle sharing which was not considered to be a major concern and, therefore was omitted. Question #15, r = -0.36, and Question #17, r = -0.37, dealt with alcohol influenced behaviour and response to coercion respectively. The researcher made the decision to retain these two items due to the importance of the items to the scale and due to the relatively small differential between correlational scores and the acceptable limit -0.30. Questions #10 r = -0.27, and #19 r = -0.29, were considered as well due to their proximity to -0.30. Both questions dealt with the issue of multiple
partners. The questions were reflective of each other, therefore, the researcher made the assumption that the problems with these questions were either a result of the wording or the single concept covered by both questions. Questions #10 and #19 covered a very important concept to HIV prevention.

In Table II, the researcher provides a summary of some of the information from the data analysis.

Table II

**Summary Table for Item Analysis of Questionnaires**

<table>
<thead>
<tr>
<th>Source</th>
<th>No. Items</th>
<th>No. Examinees</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Alpha</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>32</td>
<td>31</td>
<td>2.1</td>
<td>0.4</td>
<td>.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Behaviour</td>
<td>31</td>
<td>31</td>
<td>2.8</td>
<td>0.4</td>
<td>.7</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Note: Demographic Survey was not included in Item Analysis;

Alpha = Cronbach’s Alpha; SEM = Standard Error of Measurement

For both scales the standard error of measurement was 0.2. The closer the standard error of measurement is to 0, the less variance between the true and obtained scores (Sax, 1989). The standard error of measurement is interpreted as a standardized deviation for measurement error. In this case a person who obtained a score of 2.1 would be expected to obtain mean scores of 1.9 to 2.3 68% of the time. For the behaviour scale, the standard error of measurement was the same as that of the attitude scale, with a mean of 2.8 there could be a variance from 2.6 to 3.0. With this range of 0.2, the reliability of the scale is judged acceptable for their intended
purposes.

Close Ended Responses

An ANOVA was carried out to test for possible attitude difference among the three groups prior to the treatment. No significant difference was found. Summary ANOVA results are given in Table III.

Table III

One Way Analysis of Variance for Attitude - Pre Test

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F-Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>0.69</td>
<td>0.51</td>
</tr>
<tr>
<td>Within Groups</td>
<td>28</td>
<td>(42.73)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Value enclosed in parentheses represents mean square error; df = degrees of freedom. *p < .05.

As the F ratio is less than 1, it is clear that there is no significant difference between the groups in the attitude questionnaire. The procedure was repeated for the Behaviour questionnaire. Results are given in Table IV.

Table IV

One-Way Analysis of Variance for Behaviour - Pre Test

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F-Ratio</th>
<th>F-Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>1.41</td>
<td>0.26</td>
</tr>
<tr>
<td>Within Groups</td>
<td>28</td>
<td>(368.64)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Value enclosed in parentheses represents mean square error; df = degrees of freedom. *p < .05
According to the results of the ANOVA for the behaviour questionnaire, the F-ratio was not sufficient to reject the null hypothesis. While the ratio was above 1, it did not approach the critical F; F Ratio: 1.41 < F critical: 3.34.

Results of the above ANOVA showed no significant difference among the three study groups as measured on either the Attitude or Behaviour tests. Two more One Factor ANOVA were performed to determine any significant change within groups pre and post intervention. The ANOVA was executed using gain scores determined as a difference post scores - pre scores. Results of the One Factor ANOVA are presented in Tables V and VI.

Table V

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F-Ratio</th>
<th>F-Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>.83</td>
<td>.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>28</td>
<td></td>
<td>(394 65)</td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Value enclosed in parentheses represents mean square error; df = degrees of freedom. * p < .05

No significant difference was found in attitude among the groups. As the critical F (2,28) is 3.34 and the R ratio is .83; the null hypothesis is retained.
Table VI

One Way ANOVA with Behaviour GAIN scores

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F-Ratio</th>
<th>F-Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>4.44*</td>
<td>.02</td>
</tr>
<tr>
<td>Within Groups</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td>(394.65)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Value enclosed in parentheses represents mean square error; df = degrees of freedom. * p < .05

Significant difference was found in the behaviour questionnaire. A Tukey's honestly significant difference multiple comparisons test shows the areas in which significant difference was found. There was a significant difference in means between Intervention 1 group, $M = -2.9$ and Control group, $M = 21$. Due to the increased chance of Type II error is using the Tukey Test of Honestly Significant Difference (Glass & Hopkins, 1984), both the Neuman-Keuls and LSD were also run. Both of these tests for multiple comparisons showed the same results as the Tukey.

Open Ended Responses

The open ended questions provided an opportunity for the researcher to explore responses that may not have occurred in the Liker type scale. In this section, major themes occurring in the responses are presented. The relevance of the themes will be addressed in the next section. A general theme that occurred in all three groups was a decrease of information given by respondents. In the post test, respondents appeared to feed back more detailed information in their responses.
Attitude Questionnaire. In the attitude questionnaire, the questions explored such areas as, behaviours seen as preventive, importance of safer sex, beliefs about groups who contract HIV, opinions about abstinence as an option, perceived barriers to safer sex, and perceptions of group opinion on safer sex. At the pre test level, all three groups had reflected the use of condoms as the major method of preventive action. There was also a focus on knowing one’s partner. Abstinence was presented as an option, but one that was unrealistic. Little change was observed in responses of those in the Control group between pre and post test, with the exception that more subjects expressed the opinion that it was important for people to accept responsibility for their actions. This change was also reflected in the post tests of the other groups. It was observed, however, that responses for Intervention 1 expressed more concern about interaction and protection of self. The subjects presented communication with partner as a high priority, rather than merely knowing one’s partner. Subjects in this group also expressed concern about the fact that they could not identify someone who was HIV positive at the post test level, this was not reported in the pre test by any groups. Subjects in Intervention 2 were more information oriented and more specific. It was in this group that such information as using spermicides such as non-oxyl 9 were found. A further change from pre to post test responses in both Intervention 1 and Intervention 2, although stronger in Intervention 2, was that subjects were less inclined to express abstinence as an unrealistic option. The shift seemed to be from "nice, but it won’t work" to "it is a reasonable choice that may be taken by some people". In Intervention 2 there was a concern expressed that the promotion of abstinence as a viable option would
deter information being given about safer sex. This concern had not been mentioned in the pre test.

There was little to no change in responses at the pre and post levels regarding the opinion that it was important to practice safer sex. The vast majority of subjects from all groups agreed that this was important. Those who did not agree with this opinion did so because they were (a) in a monogamous relationship, (b) had not yet had sexual intercourse (c) purported to use condoms every time they had sex. One minor shift in responses occurred with Intervention 1 where the respondents expressed more caution around the belief that knowing their partners would protect them from HIV contraction.

All groups responded that they thought anyone could contract HIV. They also displayed knowledge of the groups that were considered to be high risk. The only change observed at the post test level was in Intervention 1 where some subjects focused on children and the potential for children to contract in vitro and from high risk parents.

All subjects at the pre and post levels seemed to respond in similar fashion to the types of barriers to safer sex. They presented irresponsibility, need to purchase condoms, lack of knowledge, embarrassment, lack of communication with partner, use of alcohol, perceived invulnerability, and peer pressure as barriers to preventive behaviours. Most respondents presented the belief that their peers generally supported the use of condoms and practice of safer sex, but were not practising the behaviours.

**Behaviour Questionnaire.** In the behaviour scale, the open-ended questions focused around communication with sexual partners, situation in which unprotected sex occurred, types of safer sex practices used. There was one question on the use of
intravenous drugs. No respondents admitted to having used intravenous drugs. Some of the responses changed between pre and post test also because sexual behaviour was not measured for as long a period of time at the post test. When subjects were asked if they communicated with their partners about safer sex, the majority in both pre and post tests responded affirmatively, again several of the no responses were a result of lack of sexual interaction. As was reported in the demographic discussion, eight out of the 31 subjects reported that they had never had sexual intercourse. One group, Intervention 1, showed a great difference between pre and post test responses. At the pre test level, five subjects reported that they had not communicated with partners around safer sex, and seven said they had. In the post test, only one person responded negatively to the question and Intervention 2 reported that they had spoken to partners about safer sex. The ways that subjects communicated were similar at pre and post levels, however, at the post level subjects in Intervention 1 gave more examples of the ways they communicated and were more detailed in their examples. For all groups at the pre and post test levels, the main situations in which subjects had engaged in unprotected sex were when they had been drinking, when they "got caught up" and didn't want to stop because there wasn't a condom available, or when they were in monogamous relationships. Both genders reported that they had engaged in unprotected sex due to pressure from their partner, although there was a higher concentration of women with this response. Using condoms was the most common response to the types of safer sex practice, although again several respondents in the various groups responded that they were abstinent with three qualifying that they intended to stay that way until marriage.
In Intervention 1 and Intervention 2, more respondents began to look at being tested for HIV as something that they should do. Respondents in Intervention 2 also reported, in the post test, that they were using spermicides with condoms. Generally there was a theme of increased caution around sexual activity in the responses to the post test. This theme was seen in all groups including the control.

Post Test Addition. An extra question was asked at the post test to explore subjects' ideas of their learning from the interventions. One subject from the Control group responded that they had been impacted by the questionnaire and realized that they needed to discuss sexual history with their partner. Only one subject responded that they felt they had not learned anything from the intervention they had attended (Intervention 1). However, this subject reflected enjoyment of listening to the guest speaker and that they were helped in seeing the relevance of HIV prevention to self. It is wondered if the subject actually learned nothing from the intervention. Very different themes were found in the responses of subjects from Intervention 1 and Intervention 2 to this question.

Subjects in Intervention 1 appeared to respond in a more emotional manner than those in Intervention 2. They reflected some of the specific HIV information they had heard and acknowledged their own lack of knowledge in certain areas. The subjects reported being moved emotionally by the treatment of the presenter by other people since she has been HIV positive - they expressed anger at those who had treated this person in a negative way. Several of the subjects reflected that they felt a deeper respect for persons living with HIV and their "bravery". One subject reflected that this affective intervention had given them a "wake-up call", that they needed to change their risky behaviour. Most of
the members of this group reflected that the intervention had helped them really understand that one could not tell a person was HIV positive by looking at them. One subject put it well when they said, "I always knew that you couldn't tell when someone had HIV, but I thought that I would still know". One client commented on the usefulness of the goal setting, and another spoke of coming to the conclusion that practising safer sex was "easy". A further theme was that these subjects did not want to have to experience what this woman had experienced, and expressed a desire to change what they were doing to help themselves avoid this risk. One subject added that they were helped to be aware that there was "life after HIV", which, in turn, helped them understand that HIV was not to be feared, but to be prevented.

Subjects who had attended Intervention 2 reflected a greater concern for others and for the part they could play in helping people increase their knowledge about HIV and in protecting themselves. They were also able to indicate the new knowledge that they had gathered through this intervention. These subjects also said that they became aware they did not know as much about HIV as they thought they should. They also fed back that accurate knowledge was one very major factor in preventing HIV. Two subjects referred specifically to wanting to become involved in educating in the area of HIV and many reflected a need to help their friends and people around them to become more informed about HIV. A major theme in these responses was personal responsibility. These subjects acknowledged that there were barriers to preventive behaviours, but that in most situations people had some control over their behaviours. Three of the respondents wrote about the importance of HIV testing and two reflected
that they intended to be tested. One interesting response was that a subject had learned
about the potentially different ways that men and women had to regulate sex and
protection. They also commented that they had become more aware of this factor in
their own relationship.

**Discussion of Results**

In this section of Chapter 4 discussion occurs around the results of the item
analysis, data analysis and scanning done on the open ended questions. An item analysis
showed that both the attitude and behaviour scales were reliable. This result allowed for
a continuation to the data analysis with only minor changes in the behaviour
questionnaire and no changes in the attitude questionnaire. Any measured lack of
difference among groups cannot be attributed to the unreliability of the instruments. The
items were shown to be measuring what they were designed to measure which increases
confidence in the results of the data analysis. The potential to use this questionnaire
package with some alterations is supported by the results of the item analysis.

The results of the first set of ANOVA for attitude and behaviour scales (see
Tables III and IV) at the pre test level showed no significant difference between the three
groups. This meant that the two intervention groups and the control were all considered
to be equivalent before the interventions took place. The result allowed the researcher
to follow through with analysis of gain scores to establish any difference from pre to post
test between the groups.

The ANOVA, done on gain scores for the attitude questionnaire, did not measure
significant differences between any of the groups. However, investigation of the open
ended responses did show some movement. Subjects who had attended the affective intervention (Intervention 1) showed an increase in caution around trusting that partners did not have HIV. This result could well have come from the woman’s relaying that neither she nor her partner had known that he was HIV positive. The attitude that knowledge of one’s partner being a primary method of HIV prevention appeared to shift for these subjects. This shift was not seen for the group who received the second intervention. Subjects in Intervention 1 also began to deal with the fact that they could not distinguish between people who were HIV positive and those who weren’t. This led them to stress the attitude that anyone could contract HIV. Subjects in Intervention 2 reflected more concern about personal responsibility and expressed the belief that people did have some control over their sexual behaviours. This trend was not seen in the pretest. Subjects in this group also expressed more concern about helping others to educate and protect themselves. While these changes were seen, it is quite possible that they did not occur in amounts that could be measured as statistically significant.

Significant attitude change may not have been measured due to the limited sample size. With a sample of 31, people it is difficult to attain a statistically significant score. For this reason, alpha levels for ANOVA’s with smaller groups can go as high as .10 (Glass & Hopkins, 1984). The alpha level used here was .05 to eliminate increased risk of Type 1 error. Another possibility is that the Likert scales did not measure all of the attitudes and beliefs impacted by the interventions. For example, while the items did measure beliefs about the need to communicate with and influence significant others, there was no measure for amount of concern or feelings of responsibility for the welfare
of others. This was one of the stronger themes in the open ended responses in the post test, particularly in Intervention 2. A more detailed exploration of the ways that subjects responded to the Likert scale and closer comparison to the themes in the open ended questions may help in exploration of the insufficiently significant result.

Results from the ANOVA done on gain scores for the behaviour scale showed significant difference. The two means with significant difference were the mean for control group at -2.9 and the mean for Intervention 1 at 21. This result pointed to positive change in behaviours of those subjects who had been involved with the affective intervention, Intervention 1. It would appear that an intervention exposing subjects to someone who has HIV, that also accesses emotions, is potentially effective in promoting positive attitude change. Open ended questions responded to by subjects in Intervention 1, also provided information to the researcher about change in behaviour that occurred. There was a strong change between pre and post test around communication with partners. At the pre test level seven subjects reported that they communicated with their partners about HIV, while at the post test level, 12 responded affirmatively to this question. There is a possibility that the process of being involved in the intervention itself and thoughts about the intervention just after it occurred promoted discussion among partners. More detailed investigation of individual questions in the behaviour scale and change in these questions pre and post test may aid in determination of the exact behaviours and how they were impacted by the interventions.

Summary

In this chapter responses to demographic items were explored. Results of item
and data analyses were reported and responses to open ended questions of both attitude and behaviour were investigated. Discussion of the responses to the questionnaires concluded the chapter. In Chapter 5 the study will be discussed in more general terms. Limitations will be explored and suggestions made for further research in this area.
CHAPTER 5

DISCUSSION

In Chapter 5, the study is discussed in general terms. Implications of the results of the study and conclusions drawn are highlighted. Limitations to the research are explored and ideas for further research in the area of HIV prevention are suggested.

General Discussion

This study involved the development of two interventions designed to promote positive attitudes and behaviours relevant to HIV prevention. Information that provided an added dimension to the overall interpretation of the study results was found in the open-ended responses to the attitude and behaviour scales post test. An analysis of the close ended responses showed a significant change in behaviour for those subjects who attended Intervention 1.

Hypothesis 1

The first hypothesis stated that an intervention in which subjects were presented with accurate HIV information, given the opportunity to interact with a peer who was HIV positive, and provided with the opportunity to set goals around preventive behaviour would promote positive attitudes and behaviours. The first intervention tested this hypothesis. A significant difference in behaviour pre and post test supported the hypothesis.

Subjects can be aided in changing behaviour through modelling (Bandura, 1977) and the first intervention was based on the premise that people can learn vicariously.
Cotton et al. (1994) stressed the importance of peers in persuasion. They pointed to the efficacy of print material relating stories of those who are living with HIV. This researcher hypothesized that an intervention in which a person living with HIV was present and relating her story would also be an effective method to promote positive attitudes and behaviours. The speaker was both a peer of the participants and a woman who had contracted HIV through heterosexual contact. Cohen and Bruce (1997) reported that people have a tendency to believe HIV risk to be stronger for peers than for self. This may have been a factor in lack of change in attitudes.

Sandfort and Zessen (1992) stated that interaction of people with someone who is living with HIV can decrease the tendency toward denial of personal susceptibility. The hypothesis that an intervention exposing subjects to a person living with HIV would be effective was supported by a statistically significant change on the behaviour scale completed by subjects.

Intervention 1 could bring several very powerful messages to educative programs:

1. Peers do contract HIV.
2. It is not possible to tell that someone has HIV by looking at them or through "scoping them out".
3. HIV is not to be feared but to be addressed and precautions should be taken to reduce risk.
4. Groups are not risk factors, behaviours are. The current study suggested that interaction of young heterosexuals with a peer, who is HIV...
positive, may add to the understanding that the threat of AIDS comes less from being a member of a particular group and more from engaging in risky behaviours.

This intervention could be a very powerful element in a prevention program. The amount of emotion expressed by the subjects in the intervention attests to its power. They expressed anger at the way persons living with HIV are treated. The subjects also reflected a growing sense of respect for people who are HIV positive. An interesting reaction that occurred in open-ended responses of these subjects was a highlighting of awareness of the interaction between pregnancy and high risk behaviour. Many subjects responded quite emotionally to the risk encountered by the woman's children due to her contraction while she was pregnant. It would be interesting to explore whether this consideration would be an added factor in deciding to practice safer sex, and whether this decision is different according to gender.

Hypothesis 2

An analysis of data taken from those subjects who attended the second intervention showed that no statistically significant change occurred between the three groups in either attitude or behaviour. In this case the null hypothesis could not be rejected and so hypothesis 2, subjects who were engaged in the development of preventive strategies for their age group would tend to develop more positive attitudes about and behaviours toward HIV, could not be supported. The open ended questions asked in the questionnaire package did reveal some interesting responses in the post test that had not occurred in the pre test. There is a possibility that the design of this
intervention rather than the premise behind the design presented the difficulty in achieving change. The Centers for Disease Control (1996) supported the use of peer educators in intervention activities. This organization reflected that "this method provides an opportunity for individuals to perceive themselves as empowered by helping persons in their communities and social networks, thus supporting their own health enhancing practices" (p. 3). The subjects were only involved in a very preliminary stage of intervention development which may not have allowed for time to begin to associate with the attitude object. Due to the time limitations, subjects would very likely not have felt any sense of ownership for the interventions they designed and so there would be less threat to them if their attitudes or behaviours did not change to reflect their intervention. While the second hypothesis was not supported in statistical analysis, this intervention is still seen as potentially very valuable. Intervention 2 is worthy of further exploration with extended time allowing for complete design and implementation of the interventions by the subjects.

Responses to open ended questions for both questionnaires pointed to the need for an educative component in interventions. While accurate knowledge is not sufficient to promote attitude and behaviour change, it is a very important element. In the post test, subjects from both intervention groups showed increased knowledge about certain aspects of HIV prevention. For example, subjects in Intervention 2 began to identify spermicides as a necessary part of the process of using a condom. Any intervention for health prevention must have an educational component in which up to date and accurate information is taught.
Interventions 1 and 2 shared two advantages for use alone or within a prevention program. The first advantage is that the interventions are versatile. They can be used for small group work, in larger groups, or on an individual basis. Because of the many challenges to HIV prevention, such as designing interventions that may be effective in several areas with several groups, versatility of interventions is of prime importance. While individual and group differences must be considered in any intervention, it may be time to explore common factors, established through structured studies, in risk behaviour for HIV to determine elements that can be used across programs and interventions.

A second advantage of both interventions is that a small number of resources are necessary for implementation. The information portion of both interventions was based on relevant literature made available, to the author, by the National AIDS Clearinghouse. Through this resource, tapes, posters, articles, books and full preventive program information was accessed. Quantity of materials was sufficient for all groups in Intervention 2 to complete their intervention planning. The only other requirements for these interventions was an overhead and the use of a large sized room. The young woman, who spoke to subjects about her experiences, did so on a voluntary basis. With limitations to funding it is presumed that interventions which require little monetary involvement would be very helpful.

Limitations

As in any study dealing with human attitudes and behaviours, there are factors that present limitations. The number of factors that contribute to the way a person
will think, feel and behave are extensive and very difficult to measure. Factors such as the influence of the larger system, the situations in which certain affective, mental or behavioural elements occur, and view of self all have an impact on how a person will think, feel and behave. Results in studies such as the one presented in this thesis must be interpreted with the acknowledgement that the vast array of contributing factors to human functioning cannot all be controlled in any experimental situation.

One limitation to this study involved the potential difficulties of use of verbal expression to measure change in behaviour. The inability to use observational methods to determine behaviour change (Sorenson et al., 1991) is a limitation. For example, a possible interaction would be the need for self presentation (Catania et al., 1993). Ostrow and Kessler (1993) suggested that subjects’ responses may not be fully representative of their behaviours due to need for privacy, self enhancement and embarrassment. Subjects may have reported attitudes and/or behaviours that presented themselves in a positive light, as defined by those subjects. A related limitation would involve the subjects presenting attitudes and/or behaviours for which they expected the researcher to be looking. In both of these cases, the attitudes and behaviours measured may have reflected more of an attempt to present the subject in a positive light or to please the researcher by responding in a way in which they felt the researcher wanted. If self presentation or responding to the researcher were occurring to any significant extent, it should have been reflected in all three groups at
the post test level. There was also an attempt to deal with social response bias, both
through instructions made by the researcher to the subjects that responding to the
researcher would not be helpful, and through the amount of effort that went into
maintenance of confidentiality.

A second limitation of the study was number of subjects (N = 31). This was
a small study, therefore, the results would be more difficult to generalize to the larger
population (all students 18 through 25 at the University of Northern British
Columbia). With a low sample number, there is less likelihood that all members with
different characteristics are represented. One way to investigate this would be to have
more socio-demographic characteristics measured in the demographic information.
The larger the number of subjects from a certain population involved in the study, the
greater the chance that major group characteristics are included and the greater the
power of the study (Howell, 1995).

Subjects' behaviour were measured over six months in the pre test and only 7
weeks in the post test. This must be considered a possible limitation to the study.
Sexual behaviours are related to many various factors such as involvement with a
partner at a particular time, amount of time spent in sexual activity and opportunity
for sexual activity. Behaviour, measured over a six month time period, may have a
marked difference to behaviour measured over a seven week period. A period of six
months would appear to present opportunity for more sexual behaviours to be
measured than a smaller period of time. However, at the pre test level, all groups were presumed to be equal according to the results of the two ANOVA done. If there had been a difficulty with the amount or type of sexual behaviour measured, due to time differences, it should have been seen in all three groups in the analysis for the post test. This was not the case and only Intervention 1 presented marked change in behaviours between the pre and post tests.

While preliminary behaviours showed significant change in Intervention 1, there was no follow-up to check relapse of behaviours. It is quite possible that the initial response to the intervention, particularly an affective intervention, dropped off quickly as the subjects moved back to habitual ways of behaving. To be able to state that behaviour did change in more than a preliminary fashion, a follow-up study would need to be done, to measure behaviour after an increased amount of time had passed. The researcher would project that the interventions may be more successful in behaviour maintenance with the inclusion of practice in sexual negotiation and condom use. Sexual negotiation was addressed in the information session and examples of successful methods of negotiation were presented. However, the subjects did not have the opportunity to practice these methods.

A further limitation to this study was the instruments used to measure change. The questionnaires were designed by the researcher and this study was the first in which they were used. External validity is increased when replication occurs.
Therefore, the questionnaires would need to be replicated with similar results before the researcher could begin to propose that the questionnaire was externally valid. To a great extent, the piloting process involved feedback from those on whom the package was piloted. This process may have been improved by more statistical exploration through an item analysis before the study was carried out. Item analysis would allow the researcher to make changes in the questions before they were used with the sample group in the main study. In this way, the amount of questions omitted from data analysis may be lowered.

The forms of sampling used in this study were convenience or accidental sampling and snowballing. It is suggested that, although convenience sampling is used extensively, there is a difficulty in generalizability in those studies in which convenience sampling occurs. Convenience sampling is not considered to be random sampling. Glass and Hopkins (1984) suggested that conclusions, made in studies in which sampling occurred, should be made with caution. Like the lack of sample size, this form of sampling can lead to an inability to generalize to the population. With convenience sampling, there is a possibility that the sample will not represent the parameters found in the population and, so, the results of any study could not be generalized to the population from which the sample was taken.

A final limitation is also related to the sampling used in this study. Participation in the study was strictly voluntary with no reward system in place for those who took part. Sampling was done through both convenience and snowballing techniques. The
subjects would be assumed to have some type of motivation to volunteer, they had either been pressured by friends to take part, or would have an interest in the area of HIV. With an increased level of motivation, the results of the study may also reflect a factor outside of the considerations of the study. Subjects were very likely motivated to at least learn more about HIV and preventive strategies, which could lead to results that would not necessarily be seen in samples that were gathered through random selection.

Suggestions for Further Research

This study resulted in the formulations of many more questions than were answered. In this section the researcher will explore some of the questions brought about by the process of the study, from design through fruition.

Although the researcher is satisfied with the interventions, as presented to the subjects, there are some procedures which may have added to the efficacy of those interventions. It may be useful to conduct a preliminary study of the coping strategies used by this group for threat of HIV contraction. A study of coping strategies could lead to a definition of those patterns of coping that could be detrimental to preventive behaviour. For example, if one of the strategies is to deny actual risk for contraction, then it would be necessary to address the denial in prevention programs.

The researcher’s exploration of literature relevant to this study led to a conclusion that more needs to be done to bring the literature together either by a meta-analysis or by some other means (ie. extensive bibliographic work). There is a vast
amount of information regarding AIDS, ranging from epidemiological research to prevention programs implemented through root systems such as those used in various Gay and Lesbian Associations as well as AIDS groups. However, no systematic way of organizing the literature has been attempted, as yet. Organizing the research that has been done in the area of HIV prevention would go far in aiding those who wished to develop prevention programs or continue research in this area.

Though the current demographic information provided an in depth exploration of characteristics of the sample groups, more research could be done with this type of information. For example, gender differences, cultural differences, and/or environmental differences can be researched in each of the groups with the intention of determining if either intervention was more effective for a particular gender in aiding behaviour and attitude change. The open ended questions, designed to look at types of AIDS knowledge and how that knowledge was acquired, could provide a valuable beginning to an exploratory study of the levels and paths of knowledge acquisition of students entering a post secondary institution in northern BC.

To determine the efficacy of either of these interventions in changing behaviour, a longitudinal study should be done following students through several years. In this type of study, several valuable pieces of information could be tested. Recidivism could be explored; if there is primary change of attitude and/or behaviour, do the subjects return to old patterns of behaviour over time. A recent longitudinal
study with interesting ramifications for prevention was done by Caspi et al. (1997) and pointed to the benefit of longitudinal studies. In this study, the researchers found a link between personality traits and behaviour that was considered risky to health. They suggested that in the future it may be important to identify personal characteristics of people in a group and design interventions that address these individual differences.

Due to the fact that HIV is not a primary concern for many young people, it may be more effective to deal with HIV within the parameters of a program geared toward prevention of all STD's. The World Health Organization (1994) reported that a study done in Zaire demonstrated the efficacy of STD prevention programs on HIV transmission. The types of preventive behaviours necessary to lessen risk for any STD including HIV is the same. It is possible that a program addressing STD's generally may be more effective in persuading groups to change behaviour than one directly dealing with HIV. If the perception of risk for HIV is low, the perception of risk for STD contraction is much higher and, possibly, perceived to be more realistic for the group addressed in this study. Both interventions included in the study could as easily be used in a general prevention program targeting all STD's.

Conclusion

In the final chapter of this thesis, the study was discussed in general terms. The fact that Hypothesis 1 was supported in the area of behaviour was discussed and the relevance of an affective intervention, Intervention 1, was explored. Possible reasons for the lack of support for Hypothesis 2, in the statistical analysis, were given and relevance of an intervention involving members of the target group, in design and implementation
of interventions, Intervention 2, was discussed. Perceived limitations of the study were examined and reasons given as to why these limitations may or may not have had a significant effect on the outcomes of the study. The final section of this chapter involved suggestions for research that could build on the study and/or research drawn from some of the perceived limitations of the study.

The study had mixed outcomes, according to statistical verification. Interaction by subjects with a person living with HIV did lead to behaviour change, of a significant level, and open ended responses showed some of the themes that were strengthened at the post test level. Involvement of the target group in design and implementation of intervention(s), did not lead to statistically significant difference in either attitudes or behaviours. Open ended responses did show some change in themes between pre and post test. However, it would be necessary to do more investigation around this intervention to ascertain lack of efficacy. The design used here to test the hypothesis related to this intervention could have been improved upon. The literature does support the involvement of members of target groups in design and implementation of interventions and concludes that this involvement is empowering for the individuals and for the group involved (Bryant et al., 1992).

Both Intervention 1 and Intervention 2 should be replicated with more subjects involved to establish further support for efficacy or lack of efficacy. UNBC presents a site for further exploration. These interventions could be used within the parameters of a section on general high risk activities, in such classes as Psychology and University 101. This would allow for testing of efficacy with a larger sample of the population - although
not random. The interventions could be integrated into a series of psycho-educational workshops that would formulate the framework for an HIV primary prevention program. These methods could also be used separately during specific times in the calendar year that are focused on promotion of health and wellness. The interventions could be carried through by members of the Counselling Centre at UNBC, in cooperation with the Health Nurse on campus who has already done a great deal around HIV prevention, STD's, and general wellness.

The interventions, that composed this study, could be very useful in future design of prevention programs. Even with the mixed results, from analysis of subjects undergoing the interventions, some important information about the way in which subjects of the target group involved in the study respond to the types of designed strategies was discovered. Both interventions have the advantage of replicability in areas other than HIV prevention or health promotion, therefore, are useful in a variety of situations, ie. education settings dealing with behaviour difficulties, peer mentoring, and working to promote more positive behaviour for youth at risk. Ultimately, the study proved to be very valuable and useful.
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APPENDIX A

SAMPLE CONSENT FORM
Sample Adult Consent Form for Participation in Experimental Study

Dear Student,

If you are currently a student at UNBC and are between the ages of 18 and 25, I would invite you to take part in an experiment which will occur between September 20, 1995 and December 4, 1995. I am a Master's student in Educational Counselling and the research in which I am inviting you to become involved is for my thesis. My area of interest is in primary prevention of HIV, and the study looks at two interventions and whether these interventions can be effective in promoting healthier lifestyles. I am interested in testing methods that may be effective in aiding people to lessen their risk of contracting HIV.

Your participation would involve:
A. Completion of a set of questionnaires before the study.
B. Participation in one of three groups who will each receive a different intervention.
C. Completion of a questionnaire package after the study.
D. Participation in a group discussion on the completion of the study.

Your part in this study will require approximately eight to ten hours of your time spaced over two and a half months.

Anonymity is a must for this experiment, therefore you will find at the top of this form a number which will be the only identifier of your answers. If you decide to take part you will be asked to enter this number as well as the letter of the group to which you are assigned on each page of the questionnaires. This will allow a match of the first test with the second test. There will be no way of identifying you with the numbers you are assigned. During the interventions you will be using your names, however, the numbers you use for the tests will not be mentioned during that time.

If you agree to take part in this study I would like to advise you that it is essential you not discuss the questions or details of the interventions in which you take part with other people until the study has been completed. A discussion group will follow the research to allow you the opportunity to discuss what has occurred, and your feelings about the process.

I would ask you to consider participating in this study and if you have any questions please do not hesitate to contact me. Maria Walsh

964-2527

Thank you for your time, and I hope you will consider helping me with this research,
APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE
Questionnaire #1

Please respond to the following questions. Your answers can be placed in the spaces provided in each question and by circling the correct answer when more than one is provided for you. There is no right or wrong answer, so please answer as accurately as possible.

1. I am _______ years old.

2. I am male female.

3. The sexual orientation that best describes me is:

   totally heterosexual  bisexual  totally homosexual
                       1   2   3   4   5   6

4. I am in my first second third fourth fourth+ year of university.

5. I attended another post-secondary institution before coming to UNBC. yes no

6. I entered university the September after I graduated from secondary school. yes no

7. I attended a secondary school of
   A. more than 800 students.
   B. between 600 and 799 students
   C. between 400 and 599 students.
   D. between 200 and 399 students.
   E. less than 200 students.
8. (a) How much information about HIV infection was provided at your secondary school?
   A. no information
   B. very little information
   C. some information
   D. much information
   E. complete information

(b) What kinds of information regarding HIV and prevention were you provided with?

9. (a) I speak with my family members about HIV infection.
   A. never
   B. very rarely
   C. occasionally
   D. frequently
   E. all the time

(b) The member of my family I most often talk to about this is

(c) Some of the issues around HIV that we have talked about are:

10. I know person/s who have contracted HIV.
    yes  no
11. I speak or have spoken with a partner about safer sex. yes no

12. I have been tested for HIV in the past six months. yes no

13. I learned about HIV from

14. My experience with sexual intercourse could best be described as
   A. no experience.
   B. very little experience.
   C. average experience.
   D. much experience.
   E. above average experience.

15. I was _____ years old when I first had sexual intercourse.

16. I speak with my partners about HIV. yes no

17. I grew up in a rural area an urban area both.

18. I speak to friends other than my partners about safer sex. yes no

19. During the semester I have learned this information about HIV and safer sex ...

20. (a) I think it is important for me to learn more about HIV. yes no

   (b) Why/WhyNot?
APPENDIX C
ATTITUDE QUESTIONNAIRE
PART A.
This is an opportunity for you to communicate to me your beliefs about certain areas of HIV prevention. There are no right or wrong answers. I would like you to respond to the questions with the response that comes IMMEDIATELY to your mind. Please do not go on to Part B without completing Part A.

1. I believe that the best ways to prevent HIV are .......

2. It is/is not (please circle) necessary for me to practice safer sex practices because....

3. The HIV virus affects these groups of people....

4. What I really believe about HIV and prevention of the virus is....
5. What I think about abstinence as a form of prevention is....

__________________________________________________________________________
__________________________________________________________________________

6. These are the things that I feel prevent people from living a preventive lifestyle (practicing safer sex or abstinence)............

__________________________________________________________________________
__________________________________________________________________________

7. This is how my peers feel about preventive lifestyles..............................

__________________________________________________________________________
__________________________________________________________________________

8. (a) There are people who do not need to practice safer sex. yes no

(b) If yes, the reason is.....

__________________________________________________________________________
__________________________________________________________________________
PART B.

Please read each statement very carefully and record your IMMEDIATE response by circling the letter that best represents your opinion. There are no right or wrong answers in this questionnaire, the answer is the one which best represents what you believe. Please avoid changing answers once you have responded to a statement. The answers are explained as follows:

VSA - very strongly agree
SA - strongly agree
A - agree
VSD - very strongly disagree
SD - strongly disagree
D - disagree

1. HIV is a punishment for immoral behaviour. VSA SA A VSD SD D

2. HIV is a virus that is not a concern for the straight community. VSA SA A VSD SD D

3. Using a condom during sex can be very erotic VSA SA A VSD SD D

4. If I were planning to have sex, it would be an insult if my partner insisted we use a condom. VSA SA A VSD SD D

5. It is easy to use the prevention methods that reduce one's chance of getting HIV. VSA SA A VSD SD D

6. I would be supportive of a person with HIV. VSA SA A VSD SD D
7. I would consider deciding not to have sex as a form of prevention.

8. Monogamy is an important factor in preventing The contraction of HIV

9. I will use condoms every time I have sex.

10. HIV is preventable.

11. Sharing IV drug needles has nothing to do with contraction of HIV.

12. I don’t think that speaking to a potential partner about safer sex is useful.

13. It is not necessary to ask a potential sex partner to get the HIV antibody test.

14. No one practices abstinence as a prevention of HIV infection.

15. People can influence their friends to practice safer sex behaviours.

16. The chance of my contracting HIV is so slim
17. The best way to prevent HIV infection is to know your partner.

18. Women have some difficulties in negotiating safer sex that men don’t experience.

19. If I wanted to I could practice safer sex every time I had sex with someone.

20. It is not difficult to practice safer sex.

21. Even if my partner resisted I would still resist using a condom.

22. AIDS is a preventable disease.

23. Using a condom during sex decreases pleasure.

24. Using someone else’s IV needle is an action that can lead to HIV contraction.

25. I would not practice monogamy just to avoid HIV infection.

26. It is important to speak to a sex partner about...
HIV prevention before having sex.

27. Peer groups are very influential for people developing attitudes about HIV.

28. I would not be able to practice safer sex in all of my sexual encounters.

29. I am not in a high risk group so I don't have to be concerned about living a preventive lifestyle.

30. Men and women have to negotiate sex in different ways.

31. I would trust potential sex partners who say they are not infected.

32. If I am going to get HIV there is nothing I can do about it, so why bother.
APPENDIX D

BEHAVIOUR QUESTIONNAIRE
PART A.

Please answer the following questions with as much accuracy as possible. Remember there is no right or wrong answer, only answers that reflect your behaviours. Please finish all of Part A before continuing on to Part B.

1. (a) Do you talk to potential partners about your need to protect yourself from HIV infection?   yes  no

    (b) If yes, how do you do this?

2. In what situations have you had unprotected sex?

3. (a) If you engage in sex what are the safer sex practices you use?

    (b) Do you use these safer sex practices all the time?   yes  no

    (c) If no, what are the situations in which you do use safer sex and how often do you use these preventive measures?

4. Have you failed to negotiate for safer sex with your partner but had sex anyway? Describe the situation including the difficulties you had with negotiation.

5. (a) Have you experienced any situation(s) where you have chosen to abstain from having sex because you knew you would not be protected?   yes  no
(b) If yes, what helped you decide that this was best for you at the time?

6. (a) Have you taken drugs intravenously? yes no

(b) If yes, how did you protect yourself?

PART B.

Please read each statement carefully and record your responses by circling the proper answer. There are no right or wrong answers in this questionnaire, the answer you give represents YOUR behaviours.

ET = EVERYTIME  TO = ONCE OR TWICE
ST = SOMETIMES  N = NEVER
NA = NOT APPLICABLE TO ME

IN THE PAST SIX MONTHS I HAVE.......

1. Refused to have unprotected sex while I was high or drunk. ET ST TO N NA

2. Planned and/or used techniques with my partner(s) that made safer sex more enjoyable. ET ST TO N NA

3. Refused to have anal intercourse because there was no condom. ET ST TO N NA

4. Depended on someone else to provide me with their needles so I could shoot up. ET ST TO N NA

5. Had sex with only one person ET ST TO N NA
6. Talked with friends about HIV contraction and prevention.

7. Did not practice safer sex because my partner(s) didn’t want to.

8. Asked my partner(s) if they had been tested for HIV.

9. Had unprotected anal intercourse.


11. Asked my partner(s) if they had ever shared needles.

12. Depended on my partner(s) to provide protection.

13. Had only vaginal intercourse.

14. Shared a needle while shooting up.

15. Had unprotected sex while I was drunk.

16. Did not ask my partner(s) if they had the HIV test.

17. Had unprotected sex under pressure from my partner(s).

18. Tried to discover my partner(s) sexual history.


20. Chose to remain abstinent.

21. Refused to have sex without a condom.

22. Maintained a monogamous relationship.
23. Took responsibility for deciding that a condom would be used when myself and my partner(s) had sex.

24. Decided not to engage in sexual intercourse.

25. Asked my partner(s) if they had a history of drug use.

26. Told my partner(s) that I wanted to use condoms when we were having sex.

27. Refused to take part in oral sex in an attempt to protect myself from HIV.

28. Refused to engage in anal sex.

29. Discussed with my partner(s) ways to make safer sex enjoyable for us.

30. My partner(s) and I discussed our past sexual histories.

31. Had discussed with peers our ideas around HIV contraction and prevention.