Sexual Behaviors and Knowledge of AIDS among Undergraduate Students

by

Nina Khehra

A Thesis submitted to the
Faculty of Graduate Studies and Research
in partial fulfillment of the requirements
for the degree of Master of Arts
in Counselling Psychology

Department of Educational Psychology and Counselling
McGill University, Montréal

September, 1989

Acknowledgements

The author wishes to thank the students of Professor Stewart Cooke's class for providing invaluable information about their personal lives. Without them, this study would not have been possible.

I would also like to thank the following people for contributing their time during the various stages of this thesis. Dr. Bruce Shore who assisted me in defining my research interests, Dr. Wendy K. Warren and her associates from Queen's University, Kingston for allowing me to adapt items from the Canada Youth & AIDS Study (1988), Dr. Margaret Duckett from the McGill Centre for Medicine, Ethics and Law for her valuable suggestions on AIDS, Dr. Socrates Rapagna from the Department of Educational Psychology, McGill University for his guidance during the stage of data analysis and Professor Alain Breuleux for reviewing the abstract.

I am especially indebted to Dr. George Mager, my advisor, who was patient, supportive, and stood by me with words of encouragement during the entire course of this thesis.

Special thanks to Suneeta Khetarpal, my close friend, who assisted me on the day of data collection and Marie Christine Busque for the French translation of the abstract. To my friends, thank you for lending your encouragement and humor, you always managed to put a smile on my face. I am grateful to my parents and sister for believing in me and providing me with the love and support that I needed. Most of all, I would like to thank Rick Gill, my fiancé, for his endless friendship and love.

Abstract

This study surveyed the sexual behaviors and knowledge of Acquired Immunodeficiency Syndrome (AIDS) among 117 undergraduate students from McGill University, Montréal. The sample consisted of 32 men and 85 women ranging from 18 up to 24 years of age. The total sample was split into three knowledge groups, Low, Medium, and High, based on answers provided to questions about AIDS. The data were analyzed separately for the total sample, men, women, and the three knowledge groups. The findings indicated that these students were relatively knowledgeable about AIDS (73.23% correct responses out of 21 items), but were engaging in high risk sexual activities. It appears that personal concern about contracting AIDS, not knowledge of this disease, is related to behavior change among undergraduate students. It was recommended that AIDS education programs focus more on increasing the personal concern than the AIDS knowledge of adolescents.

Résumé

Un sondage sur les comportements sexuels et les connaissances sur le Syndrome d'Immuno-Déficience Acquise (SIDA) a été effectué auprès de 117 étudiants du premier cycle, à l'université McGill, à Montréal. L'échantillon était composé de 32 hommes et de 85 femmes âgé(e)s de 18 à 24 ans. L'échantillon a été divisé en trois groupes de niveaux de connaissances, bas niveau, niveau moyen, et haut niveau, formés en séparant l'échantillon complet d'après les réponses fournies aux questions concernant le SIDA. Les données ont été analysées séparément pour chacun des six groupes suivants: l'échantillon au complet, les hommes, les femmes, et les trois groupes de niveaux de connaissances. Les analyses ont indiqué que les sujets étaient relativement bien renseignés sur le SIDA (moyenne de 73.23% sur un questionnaire de 21 questions), mais qu'ils avaient des comportements sexuels les exposant à contracter le SIDA. Il semble que la crainte de contracter le SIDA, et non les connaissances sur le SIDA, soit reliée à un changement de comportements chez les étudiants du premier cycle. Il est recommandé que les programmes d'éducation sur le SIDA visent

davantage à augmenter la préoccupation personnelle des adolescents face au SIDA qu'à améliorer leurs connaissances sur cette maladie.

Table of Contents

List of Tables

List of Appendices

Appendix

Chapter 1: Introduction

The literature on the period of adolescence deals with a great number of topics ranging from ego formation to substance abuse. One area which has been studied quite extensively is the sexual behavior of adolescents. Over the last four years, a number of studies have been performed concerning the sexual behavior and AIDS (Acquired Immunodeficiency Syndrome) knowledge of adolescents. Such studies are important in learning how much this age group knows about AIDS and how they are coping.

One theory which has been particularly useful in describing the formation of adolescent sexual behavior is Erik Erikson's theory of psychosocial development (1968). In his theory, Erikson proposed that an individual must pass through a series of stages in which he or she can choose how to interact with society. In this manner, behavior can go in either a positive or a negative direction.

Two stages which arise during the period of

adolescence to young adulthood are identity versus role confusion and intimacy versus isolation. The adolescent must deal successfully with each stage in order to form a firm sense of inner identity and be able to engage in social and intimate relationships (Erikson, 1968). During these stages, the adolescent is also dealing with the capacity to think abstractly (Inhelder & Piaget, 1958). This ability allows the adolescent to think in a specific manner in a situation without having to attempt all the possible routes of action. It is obvious then that the adolescent is experiencing changes in both his or her physical and mental states.

Many adolescents today are engaging in a variety of sexual behaviors at younger ages (Janus & Janus, 1985). They have attitudes which condone a greater openness and permissiveness with regard to sex. These beliefs may gradually be changing, however, as AIDS could become a reality for some of these adolescents.

Many of today's youth are engaging in behaviors which would be considered as high risk for contracting the AIDS virus (King, Beazley, Hankins, Robertson & Radford, 1988), so until there is a cure, the only means of controlling the spread of this disease is through education. Surveys on AIDS knowledge and sexual

behaviors of adolescents are important in providing educators with a current base of information which can be used to increase the effectiveness of AIDS education programs.

Many studies (Price, Desmond and Kukula, 1985; Diclemente, Zorn & Temoshok, 1986; Strunin & Hingson, 1987) have reported poor knowledge of AIDS among the adolescent age group. Keeling (1987) states that this is especially true of knowledge about the transmission of the AIDS virus. In general adolescents are known to have feelings of invulnerability (Keeling, 1987), therefore it is not surprising that these individuals will also feel invulnerable to AIDS. Adolescents, as well as many other members of society, feel that AIDS is a disease which is contracted only by "other" people.

With the assistance of the information gathered from surveys, researchers hope to determine how adolescents are thinking and responding to AIDS. The information which is collected from such studies could aid educators make effective amendments in their approach to dealing with AIDS education .

The present study involved a survey of the knowledge of AIDS and sexual behaviors of an undergraduate university sample. Its purpose was to poll

these students in the above areas and to determine how often they are engaging in behaviors ranging from low to high risk. As well, the knowledge of AIDS, its causes, transmission, and treatment were determined. The results were analyzed and the frequencies and relations between the variables were discussed. The results of this study may be important for persons involved with the teaching of AIDS. The next chapter will explore the current body of literature on adolescent sexual behavior, AIDS, and AIDS studies with adolescents.

Chapter 2: A Review of the Literature

Many young people believe that Acquired Immunodeficiency Syndrome or AIDS is a concern only for "other people". Because of this view, researchers find that the knowledge adolescents have about the transmission of HIV (Human Immunodeficiency Virus) the virus which causes AIDS, is quite poor (Keeling, 1987).

Alan C. King (1988) has been a forerunner in Canadian research on the sexual knowledge and behaviors of adolescents. He points out in the Canada Youth & AIDS Study (King et al., 1988) that researchers in the field of AIDS believe that adolescents are at a potential risk for HIV infection. There are two reasons for this belief. First, adolescents are under strong peer influence. This may create situations in which they feel pressure to use drugs or alcohol and the sexual behaviors which follow may not be safe. The second reason is that many patients with AIDS are currently in their mid-twenties. It is known that HIV has an incubation period of up to 7 or more years. This leads us to assume

that some of these young adults may have been infected in their teenage years (King et al., 1988).

There have been very few quantitative studies conducted with adolescents to identify their behaviors and knowledge of AIDS. Related studies have only begun to appear within the last four years. The literature on adolescent sexual behavior, AIDS, and studies on adolescents' knowledge of AIDS will be reviewed to give a greater understanding of the topic presently under consideration.

A Theoretical View of Adolescent Sexual Behavior

Adolescent sexual behavior in terms of Erik Erikson's theory of psychosocial development has its roots in identity and intimacy formation. During the formation of the identity, individuals pay attention to how significant others view them. Then, they perceive themselves in comparison to the views of others. This simultaneous reflection and observation is assumed to be an unconscious process (Erikson, 1968).

Erikson believed that there were three processes which were important in forming a healthy identity. The first is continuity in which individuals feel that similarities are being maintained between their childhood

and their future life. The second process requires that individuals know people who have shared in their past and who are able to affirm their memories of the past. The last process is concerned with the future and how prepared individuals are in dealing with the tasks awaiting them.

Erikson theorized that an individual life is a series of stages, one building upon another. Each stage represents a crisis or turning point with which the individual must favorably deal in order to progress to the next stage. The course of an individual's identity formation can be altered in either a positive or negative direction depending on how the person chooses to interact with society (Vander Zanden, 1985). For example at stage one, an infant's environment may give him or her a sense of trust. This approach would create in the infant a perception of the world as a safe and dependable place and would lead the personality in a positive direction. Erikson (1968) believed that each part of the personality has a particular time to develop in the life of an individual. If it does not develop during this time, then the individual will experience problems dealing effectively with reality (Vander Zanden, 1985).

The eight stages proposed by Erikson are outlined

in Table 1. The psychosocial crises and the favorable outcomes of each stage are briefly detailed. It is important to note the approximate ages at which these stages arise to gain a perspective of which social situations the individual is dealing with at that time. The interaction between the individual and society is important in determining how each stage will be resolved. The predominant social settings which the individual must contend with vary from stage to stage. For example, the child in stages one to three must deal with his family. It was already explained that an infant in stage one is able to view the world as a safe place, but this attitude can only be fostered by a family able to meet the needs of the infant through a genuine and affectionate manner.

In stage two, parents who are patient and responsive with a child who is beginning to explore his or her surroundings foster a sense of independence in that child. Similarly, a sense of confidence and initiative evolves in a child whose parents have allowed appropriate freedom (stage three). In contrast, parents who are overprotective and restraining may lead the child to develop a sense of shame and doubt. In stage three, this lack of freedom is associated with a child who considers him or herself as a nuisance and an intruder in

Table 1

Erikson's Eight Stages of Development

Developmental Stage	Psychosocial Crisis	Favorable Outcome
1. Infancy	Basic trust vs. mistrust	The child develops trust in itself, its parents, and the world.
2. Early childhood	Autonomy vs. shame, doubt	The child develops a sense of self-control without loss of self-esteem.
3. Fourth to fifth year	Initiative vs. guilt	The child learns to acquire direction and purpose in activities.
4. Sixth year to onset of puberty	Industry vs. inferiority	The child acquires a sense of mastery and competence.
5. Adolescence	Identity vs. role confusion	The individual develops an ego identity - a coherent sense of self.
6. Young adulthood	Intimacy vs. isolation	The individual develops the capacity to work toward a specific career and to involve himself or herself in an extended intimate relationship.

Table 1 (continued)

Developmental Stage	Psychosocial Crisis	Favorable Outcome
7. Adulthood	Generativity vs. stagnation	The individual becomes concerned with others beyond the immediate family, with future generations and with society.
8. Old age	Integrity vs. despair	The individual acquires a sense of satisfaction in looking back upon his or her life.

Note. Adapted from Human Development (3rd ed.) (p.39) by J.W. Vander Zanden, 1985, New York: Alfred A. Knopf.

the adult world (Vander Zanden, 1985).

The predominant social setting shifts from the family to the school in stage four. During this stage the child gains a sense of industry by being recognized for his or her achievements. Parents and teachers who do not support, reward or praise the child may encourage feelings of inferiority.

Stage five of identity versus role confusion and stage six of intimacy versus isolation are important in describing adolescent and young adult life. The salient social settings during these stages include peer groups, partners in friendship and in sex. As these stages are most relevant to the present study, they will be discussed in greater detail later.

Stage seven involves an individual in middle adulthood having to deal with a new family and an occupation. The person reaches beyond what is important to him or her and is concerned with the welfare of others. This sense of generativity suggests selflessness (Vander Zanden, 1985). In contrast, an individual who is preoccupied with him or herself and material possessions exemplifies stagnation. The latter behaviors may lead the personality into a negative direction.

The final stage occurs is old age and deals with an

individual who is summing up his or her life and thinking of retirement and death. The individual who is satisfied with his or her accomplishments experiences a sense of integrity. An individual who is unable to feel such satisfaction may experience despair (Erikson, 1968).

As mentioned earlier, the fifth and sixth stages of this eight stage theory are most relevant in explaining the future sexual behavior of adolescents. The fifth stage of identity versus identity confusion is experienced during puberty and adolescence. To experience a sense of wholeness the youth must feel progressive continuity between that which he or she has come to be during the long years of childhood and that which he or she promises to become in the anticipated future (Erikson, 1968). For the formation of an identity the adolescent must develop confidence that others see him or her as they see themselves. At this time, the selection of a career also aids in identity formation. This stage ends when a fairly firm sense of inner identity is achieved and and this sense of identity allows the individual to forgo self-repudiation (Erikson, 1968). The latter term describes the ability of the adolescent to criticize and reflect about him or herself and the world without feeling threatened.

Identity confusion occurs when the adolescent experiences the inability to select a career and identifies with a deviant clique. This may also lead the adolescent to isolate him or herself or even destroy those forces or people who are considered as dangerous to one's self. Erikson (1968) labels this process as distantiation, or the counterpart of intimacy.

Stage six of intimacy versus isolation is experienced during young adulthood. By this stage, if all other previous stages have been successfully completed, the individual should be ready for true intimacy. The person should be able to develop cooperative social and occupational relationships with others and select a mate. If these relationships cannot be developed, then the individual will feel isolated.

Formal Thought

The adolescent has many factors to contend with during the stage of intimacy versus isolation. These include a rapidly changing and growing body, worries about the future, and a mind which is becoming capable of higher-level abstractions. With this increased ability to think abstractly, the adolescent is capable of thinking about hypothetical future situations and events.

This is made possible through the mental theories which are constructed by the adolescent to discern the relationships between various classes of events. The use of analytical thought in this manner leads to the restructuring of the personality, and the individual becomes capable of evolving a personal set of standards regarding various social institutions, drugs and sexuality (Vander Zanden, 1985). Piaget (1958) suggests that the growth of formal thinking in adolescence is dependent more on social than on neurological factors.

Piaget (1958) indicates that the capacity for formal thought appears in early adolescence between the ages of twelve to fifteen years. In the formal operational stage, individuals are able to think about thoughts, rather than about things that exist (Pulaski, 1980). They are able to form second order relations which are based on the coordination of relations among relations (Dulit, 1972). In other words, they have the ability to consider the full range of possibilities inherent in a problem or situation and then determine what combinations of variables are active in the actual situation (Martorano, 1977). Adolescents who have the ability to think abstractly can act in a specific manner without having to try out all the possible routes of

action.

The ability to think abstractly or formally, is not achieved by all older adolescents or adults (Vander Zanden, 1985; Dulit, 1972; Roberge & Flexer, 1979). In fact, Roberge and Flexer (1979) found that only 50% of the eighth graders and 67% of the adults were rated as formal operational. Their criteria for classifying a subject as formal operational was if he or she had achieved the formal level on at least two of the three chosen Piagetian tasks.

Another study chose two tasks from the fifteen described in The Growth of Logical Thinking (Inhelder & Piaget, 1958). Four groups of subjects were tested: average younger adolescents, average older adolescents, gifted older adolescents and adults. The author concluded that formal stage thinking is fully developed in only a small proportion of the population and only partially developed in most. In the group of average older adolescents, only 20 to 35% functioned at a fully formal level. The sames percentages were applicable to a small group of average adults who were tested. Of the gifted older adolescent young men, 75% were at a fully formal level (Dulit, 1972).

Martorano (1977) has agreed with Piaget and has

suggested that formal thinking begins to emerge during early adolescence. However, this author has found that not even the oldest age groups have consistently evidenced formal operational performance across all tasks (Martorano, 1977).

The above findings indicate that formal operational thinking is not a rule of adolescence. This is significant and becomes important when considering how to educate adolescents on the issues of AIDS. Not all adolescents and adults are capable of comprehending complex concepts (Muuss, 1974). It is important that the content and form of AIDS information be presented in a way which will correspond to the cognitive structures of at least the majority of adolescents. This means information must be presented in a simple and direct manner without presupposing that this population has the capacity to think abstractly.

Identity Formation

The ability to think formally is important to the developing identity of the adolescent. For instance, skills which are employed to deal with familiar problems can be used to deal with unfamiliar or hypothetical situations. This ability to form logical abstractions

can aid the adolescent to feel confident in his or her future decision-making skills. A formed identity creates in the adolescent a sense of confidence and well-being. He or she is aware that an inner sameness, present from childhood, is being maintained. This new confidence allows the adolescent to take chances with his or her identity and to perhaps develop true intimacy. True intimacy requires the adolescent to give his or her self to another individual. This point reinforces the fact that an adolescent must establish a relatively healthy identity in order to engage in an intimate relationship. Once an individual is in such a relationship both identity and intimacy continue to depend on and strengthen each other.

During the crisis of identity formation the adolescent develops a capacity termed "fidelity", or faithfulness, loyalty and commitment (Kilpatrick, 1975). It is through fidelity that one is able to commit to long-term relationships that give continuity to one's sense of self. Therefore, fidelity guarantees something that is solid about the identity. Identity is never complete until it is shared, and for mature love, two separate identities are required.

The term intimacy as Erikson (1968) had described

it involves both sexual and interpersonal components. He suggested that sexual intimacies often preceded the capacity to develop a mature psychological intimacy with another individual. An adolescent who is unsure of his or her own identity will shy away from mutual intimacy and engage in promiscuous behaviors (Erikson, 1968). This will lead the adolescent to experience a deep sense of isolation.

Today, for a few people, intimacy has come to describe only the sexual components and has undergone many negative changes in meaning. Kilpatrick (1975) states that the word intimacy has "begun to take on a connotation of lovemaking without love" (p.15). He suggests that intimacy is being associated with sexual brevity. The interpersonal component of intimacy as Erikson had proposed is now being described by the word "love".

Changes in Adolescent Sexual Behavior

Many studies have reported a change in adolescent sexual behavior over the past fifteen years. This is probably due to the greater number of temporary encounters and varied sexual experiences of youth associated with a rapidly changing society (Kilpatrick,

1975). A greater openness and permissiveness with regard to premarital sex, homosexuality, and other sexual practices is being witnessed (Vander Zanden, 1985).

It has been found (Janus & Janus, 1985) that sexually active adolescents tend to start earlier in staying out late, dating, and making more demands for personal freedom from their parents. The authors compared the behaviors of 2,795 young women aged 8 to 17 years with what a group of 240 college women did a decade ago. They noted that young women today, in contrast to their sample of college-aged women, are entering into certain behaviors at earlier ages. Janus and Janus (1985) suggest that the culture is encouraging sexual exploration and downgrading romance. One must note that these activities are not mutually exclusive as sexual behavior has been found to be a good indicator of romance (Prentice, Briggs & Bradley, 1983).

A study by Darling & Davidson conducted in 1986 attempted to determine the sexual behaviors, concerns and challenges of coitally active university students. A total sample of 328 never married men and women undergraduate students from a U.S. university completed an anonymous questionnaire. It was found that the sexual behavior of youth progresses in this fashion: holding

hands and kissing, light and heavy petting, sexual intercourse and oral-genital stimulation (Curran, Neff & Lippold, 1973).

The incidence of oral-genital sex has been increasing among young people over the years. Newcomber and Udry (1985) studied the responses of Southern California adolescents in grades 10, 11 and 12. It was found that, statistically, there was no difference between young men and women when reporting how often they engaged in giving and receiving oral sex. Young women reported receiving cunnilingus as frequently as engaging in sexual intercourse. A possible reason for this was that cunnilingus was preferred by some young women as this activity could not get them pregnant.

Vander Zanden (1985) suggests that substantial changes have occurred in adolescent sexual activity over the past twenty years, resulting in a greater openness and permisiveness. With the coming of AIDS, this general attitude may now be changing as adolescents can no longer afford to be carefree with regard to their sexual behaviors.

The next section will provide a historical background to the Human Immunodeficiency Virus, its transmission, therapies and rate of prevalence in Canada.

AIDS: A Historical Perspective

Acquired Immunodeficiency Syndrome or AIDS as it is more commonly known, appears to have changed our lives and our attitudes toward sexuality. As one author has said "a world with AIDS can no longer be the world it was before" (Markova & Wilkie, 1987, p.389). This statement gives us an indication of how radically AIDS has affected our society.

Public discourse has changed in face of the AIDS epidemic. Subjects which previously may have been taboo are now more openly discussed, such as homosexuality, sexual practices and the use of condoms. This openness and willingness to discuss sexual matters appears to be a direct consequence of this disease (Fineberg, 1988).

Background to HIV and AIDS

A historical background to HIV and AIDS is required to understand its devastating effects. Serological data, or the use of blood samples, suggest that the virus was present in African people in the 1950s (Hersh & Petersen, 1988). The disease itself began to spread silently in the 1970s. The advent of AIDS came about in the 1980s, with the first report describing this disease in June 1981. The actual naming of the disease as we now know it

was in 1982 (Heyward & Curran, 1988).

AIDS is caused by a class of infectious agents termed retroviruses. They are so named because they reverse the ordinary flow of genetic information (RNA to DNA) to DNA to RNA (Haseltine & Wong-Staal, 1988). An enzyme labelled reverse transcriptase uses this viral RNA as a template for making DNA. This new DNA is then capable of making itself at home among the host's genes and remains latent until activated to make new virus particles.

A team effort led by Robert Gallo in 1980 isolated the first human retrovirus. It was termed the Human T-lymphotropic Virus type I or HTLV-I. In 1982, this same team discovered a similar but more chronic virus, HTLV-II. In 1983, French researchers headed by Luc Montagnier, uncovered a new virus which was named Lymphadenopathy-Associated Virus, or LAV. A few months later, the American Gallo team also uncovered another virus and it was named HTLV-III. It was soon determined that LAV and HTLV-III were in fact the same virus. Therefore, they were renamed HIV. Montagnier discovered a new virus HIV-2 in 1985. This virus is clearly related to the first HIV virus, but its pathogenic capacity is less known. It is now known that this HIV virus, plus

other less known factors are the cause of AIDS (Gallo & Montagnier, 1988).

HIV infects and kills the white blood cells or T4 lymphocyte cells which have a central role in immune response. A depletion of T4 cells is then expected in AIDS patients. HIV is also capable of crossing the blood-brain barrier via the macrophage (another type of white blood cell). This probably brings the virus to the brain and explains the central nervous system pathology seen in many AIDS patients.

People who are infected with the AIDS virus tend to experience an early brief mononucleosis like illness, with perhaps a fever, general malaise, and possibly a skin rash. These symptoms appear 2 weeks to 3 months after initial infection, and tend to correspond to the period when antibodies are being produced by the body against HIV. Another 8 to 9 years can pass before AIDS is fully developed (Mann, Chin, Piot & Quinn, 1988).

During the course of HIV infection, people can develop cancers, pneumonias and other opportunistic infections, such as Kaposi's sarcoma and Pneumocystis carinii. As well, they can develop disorders of the central nervous system, or AIDS dementia complex. This syndrome is characterized by a gradual loss of precision

in both thought and motion (Redfield & Burke, 1988). The above manifestations of HIV can be encompassed under the term AIDS Related Complex. It is believed that this complex is ten times more prevalent than full blown clinical AIDS (Hennessey & D'Eramo, 1986).

The Transmission of HIV

AIDS is still predominant in the at risk groups. One must note that it is the behaviors of individuals in high risk groups, and not group membership, which puts them at a greater risk for contracting AIDS (Carter, 1986). The following percentages by Adrien, Hankins and Remis (1989) show the breakdown of the AIDS disease in Canada.

- 83.2% homosexual and bisexual men
- 0.7% IV drug abusers
- 1.9% recipients of clotting factors
- 4.7% heterosexual immigrants from endemic regions
- 2.4% others with heterosexual contact
- 2.5% transfusion recipients
- 2.5% persons with no identified risk (Adrien, Hankins & Remis, 1989)

The means of HIV transmission are through the sharing of intravenous drug needles, perinatally,

sexually and through blood transfusions. The latter mode is no longer a significant problem due to the development of serological screening tests (eg. ELISA) in 1985.

AIDS is primarily transmitted through sexual relations, homosexual, heterosexual, or bisexual. Sexual behaviors which would be considered as high risk include insertive or receptive penile-vaginal intercourse without a condom, insertive or receptive penile-rectal intercourse without a condom, pre-ejaculation penile withdrawal without a condom and shared sex toys. Some sexual behaviors which have shown no evidence of transmission and appear to pose no theoretical risk, include fellatio, vaginal and anal intercourse with a properly used and effective condom, solo masturbation, dry kissing, rubbing, massaging and erotic talk (Canadian AIDS Society, 1989). It should be cautioned that anal intercourse is very dangerous due to the possible rupture of rectal muscles. This can lead to an increased possibility of AIDS virus transmission. Other cofactors which increase the risk of infection are having a high number of different sexual and casual sexual partners in which bodily fluids are passed during sex (Martin, 1986).

The risk of contracting HIV in health care

settings is generally low. It has been shown in one study involving health care workers that there is a 1.3 to 3.9 per 1,000 acquisition rate of HIV infection (Friedland & Klein, 1987). However, the fact that transmission is possible in these situations should alert health care workers to take precautions when handling blood products and other bodily fluids.

Heyward and Curran (1988) conducted a study on whether AIDS could be contracted through household contact. They found that even over tens of thousands of days none of over 400 family members had been infected. Exceptions to this rate were with sexual partners of the infected person and children born to infected mothers. It would then appear that the risks of transmission in other social settings would be even lower than in household settings. There have been no reported cases of HIV transmission through insect vectors (Bennett, 1987; Heyward & Curran, 1988).

AIDS Therapies

There are at present few effective treatments for viral diseases, and almost none for retroviruses. The problem is that drugs that are effective against viruses tend to damage mammalian cells. An important aspect to

be viewed of any new drug is its therapeutic index, or the ratio of toxic dose to effective dose (Yarchoan, Mitsuya & Broder, 1988). For minor illnesses we would want a high therapeutic index, but for diseases such as AIDS, we would allow for a lower therapeutic index. In other words, to reach an effective treatment dose with a new drug, we must be ready to accept the possible high degree of toxicity. Therefore a few patients might be treated with a new drug, while others are not. This process, although it is a long and slow one, is often the way in which new drug therapies are discovered.

By the late spring of 1985, various drugs were being tested as treatments for HIV infection. For example CD4, a viral receptor in its soluble form, is found to bind to the AIDS virus and inhibit it from injecting into new cells. Syncytium formation studies have been conducted in test tubes and involve the fusion of an infected cell with healthy cells. Testing for these treatments is in its earliest stages (Yarchoan et al., 1988).

A potential anticancer drug first synthesized by Jerome P. Horwitz in 1964 appears quite useful. Azidothymidine, or more commonly known as AZT, has been shown to prolong the lives of certain AIDS patients.

Unfortunately, its toxicity is unknown (Gallo & Montagnier, 1988). Newer therapies are now alternating the use of AZT and a related compound dideoxycytidine, and this approach appears promising. Little is known of the toxicity of any of these therapies and only the next few years will provide proof of their effectiveness.

AIDS in Canada

Most of the research conducted on AIDS has been carried out in the United States. The conclusions drawn from such research are important in that the prevalence and any future trends can be determined. But one must also consider that the U.S. has over ten times the population of Canada and that extrapolating from such research may not always be appropriate. Therefore knowledge of Canadian statistics is important.

The prevalence of seropositive individuals in Canada has been estimated at 50,000 as of May 1988. Of these, there are 1,700 to 2,337 known cases of AIDS (Boyd & Jackson, 1988). The highest incidence of AIDS cases has been found in Ontario, followed by Quebec and British Columbia (King et al., 1988). All other provinces have reported AIDS cases but the numbers are not as high as these provinces.

In Quebec, the number of persons testing seropositive has been estimated at between 10,000 to 15,000 people. Seven hundred cases of AIDS have been reported in this province as of February, 1989 (Government of Quebec, 1989). Of these 700, approximately 100 are women and children, 100 are heterosexual men and the remaining 500 are homosexual or bisexual men. To date, half of these people have died (Government of Quebec, 1989). Though these numbers are not as high as those found in the U.S., they are still a cause for concern.

AIDS Surveys

Many surveys have been administered to find out what the public knows about AIDS and how this knowledge is affecting behavior. Questions have been asked in terms of the awareness of the disease, concern about AIDS as a general medical problem, perceptions about the likelihood of its spread, beliefs about methods of transmission, attitudes toward measures for protecting the public, and reported changes in one's own behavior to avoid exposure (Singer, Rogers & Corcoran, 1987). The Gallup report has been a forerunner in polling the public for their opinions on these and other issues. The

samples used by Gallup are considered to be representative of the U.S. adult population.

A survey by Gallup in 1986 found that there was a 98 percent awareness of AIDS (Gallup. 1986). This percentage is probably slightly higher today as the media has had such a large role in publicizing the disease and its effects. The public is fairly informed on the transmission of AIDS. Two thirds of adults in the same poll said that they would allow their child to attend school with an AIDS student. This is consistent with the consensus that this disease cannot be contracted through casual social contact. Public opinion appears to be divided with respect to other social behaviors such as kissing, eating food prepared by a person with AIDS or sharing a drinking glass (Singer et al., 1987). To date these behaviors are considered as safe by public health experts. The majority of the public knows that AIDS is transmitted by sexual contact, be it homosexual or heterosexual, and by blood transfusions.

The public has mixed feelings as to which kinds of preventative measures should be taken to reduce the risk of AIDS transmission. A 1987 Gallup poll found that 43 percent of the sample felt that not associating with a suspected victim would be beneficial in risk reduction.

This method would only be effective if sexual behaviors were going to be avoided. Many people feel that banking their own blood for future use or the avoidance of elective surgery are important preventative measures. Others have decided to avoid the use of public restrooms (28%) or not to donate blood (20%) (Gallup, 1987). Many of these preventative measures are effective, but others such as not donating blood or avoiding homosexuals, show that the public is fearful and misinformed.

In general, there appears to be greater public agreement than disagreement across surveys on the public's awareness of AIDS. As well, the public does have some rudimentary knowledge of its transmission. Those individuals who feel that they are in a high risk group also tend to say that they are more concerned about contracting AIDS and are attempting to take the necessary precautions (Singer et al., 1987).

Knowledge of AIDS and Behavior

A study cited in an article by Fineberg (1988) surveyed the effects of a 1987 New York City advertising campaign for AIDS prevention. The survey indicated that 80% of all respondents agreed that sexually active people should carry condoms, but in actual fact, more than 60%

said they failed to use a condom more than just some of the time. It is evident then, that if the effectiveness of AIDS education is measured by behavior change, success will be difficult to come by (Fineberg, 1988). Educating the public about HIV and its modes of transmission appears to be the best defense against the spread of AIDS, at least until a cure is found. Therefore surveys which compile information on the AIDS knowledge and behaviors of individuals are necessary to evaluate present AIDS campaigns and to develop new ones.

AIDS Studies with Adolescents

Gradually more and more studies are being published on the knowledge of AIDS, attitudes and their effects on sexual behavior. The majority of these studies tend to focus upon homosexual men (Klein, Sullivan, Wolcott, Landsverk, Namir & Fawzy, 1987; Martin, 1986; Romanowski & Brown, 1986; Puckett, Bart, Bye & Amory, 1985) or health care workers (Richardson, Lochner, McGuigan & Levine, 1987; Kelly, St. Lawrence, Smith, Hood & Cook, 1987; Katz, Hass, Parisi, Astone & McEvaddy, 1987; Treiber, Shaw & Malcolm, 1987). Over the last year however, the student population has become a target group for study in this area.

Students at an Edmonton high school accused the news media of "hyping up information of AIDS" (Mullen, 1989, p.A1). They felt that many of them would not be affected by AIDS and that the media was guilty of presenting the disease as deadly. This attitude appears to be extremely prevalent amongst adolescents. They believe that this disease affects other people and not them. Keeling (1987) s tates that in general, knowledge about the prevention of HIV transmission is still generally poor and that most high school and college students have not necessarily changed their sexual behavior because of AIDS.

A study by Alan C. King in 1984 summarizes the results of a Canadian survey of health knowledge on 9 to 15 year olds. A section with items on communicable diseases (AIDS was not included in the survey items) found that all age groups scored very low. The researcher concluded that there is a great need for improvement in knowledge in the topics of alcohol, STDs, and human sexuality.

Royse, Dhooper and Hatch (1987) measured undergraduate and graduate students' attitudes towards AIDS. Among their 219 respondents, they found that whether a student was an undergraduate or graduate did

not indicate how empathic or fearful he or she was towards AIDS patients. Student status (undergraduate or graduate) was also not a good predictor of knowledge of AIDS. These authors did find that a greater knowledge of AIDS was associated with greater empathy. This one study provides support for the fact that knowledge of AIDS may aid in reducing fear and increasing empathy in individuals.

Price et al.(1985) examined the knowledge, beliefs and sources of information of junior and senior high school students about AIDS. The subjects included 118 men and 132 women aged 16 to 19 years. These subjects were convenience samples collected from four local high schools. They found that students had a limited knowledge of AIDS, though men were more knowledgeable than women. Only 27% of the sample were personally worried about contracting AIDS. The remainder were not.

Most students reported television as their primary source of AIDS information, while school was rarely mentioned. A disheartening finding was that those students with the highest level of AIDS knowledge still only answered 47% of the items correctly (Price et al., 1985). The authors concluded that schools should strive to provide more accurate information on AIDS as the media

might be a superficial and inadequate source of information.

In a similar manner the knowledge, attitudes, and beliefs about AIDS in San Francisco adolescents were surveyed. A self-report questionnaire was administered to 1,326 adolescents ranging in age from 14 to 18 years. The authors had hypothesized that knowledge about high risk behaviors associated with AIDS virus infection could help to prevent the spread of the disease in this population. Thirty questions on the knowledge of the cause, transmission and treatment of AIDS were included. Another eleven questions measured student attitudes and beliefs on their personal susceptibility, disease severity, and the need for AIDS information to be included in their high school curriculum.

These authors found that the knowledge which these students had was uneven, especially with regard to the precautionary measures to be taken during sexual intercourse. The students did not have sufficient knowledge with respect to the treatment of AIDS. For example, only 25.3% were aware that "no new vaccine was available for treating AIDS" (Diclemente et al., 1986, p.1443)

This study had a 99% return rate for questionnaires

which is extremely high. Unfortunately, the sample was non-random as the students were chosen from a Family Life Education class. No information was given on how the questionnaire was developed.

A telephone survey of 829 adolescents aged 16 to 19 years by Strunin and Hingson (1987), indicated that many were still misinformed or confused about AIDS and AIDS transmission. It was indicated that the sample was random, but this assumption must be questioned as the survey was conducted over the telephone and problems associated with telephone surveys have been well-documented. These researchers found no difference in the knowledge of AIDS between sexually active versus sexually inactive respondents.

Of all the respondents 70% were sexually active. Only 15% reported changing their sexual behavior because of AIDS. Of these 15%, only 20% were using truly effective precautions (Strunin & Hingson, 1987). Further research to assess AIDS knowledge was recommended by these authors, as they felt that most adolescents continued to be misinformed about AIDS.

A study by Winslow (1988) attempted to assess student knowledge of how the AIDS virus is transmitted. A questionnaire was developed by asking 100 upper

division students, from the author's class, ways in which they might become personally infected with the AIDS virus. This questionnaire was then administered to 375 San Diego State University undergraduate students.

Factor analysis was conducted on the data and three dimensions were found: casual, wet and saliva contact. The first which accounted for 30% of the variance was "casual contact", and involved AIDS virus transmission through "dry" contact. An example would be touching or shaking hands. The second dimension was "wet" contact which involved transmission through oral ingestion, such as drinking from the same glass as a person with AIDS. It accounted for 15% of the variance. The last dimension which accounted for 8% of the variance was HIV transmission through saliva transmission, such as kissing. The students in this study were most concerned with the possibility of HIV transmission through the wet or the saliva mode.

Winslow (1988) discussed that "casual contact" may not be a unidimensional variable as is usually thought. Instead, he stated that it is composed of two types of contact, dry and wet. In general, students agreed that AIDS could not be transmitted through dry contact, but they disagreed with respect to wet contact.

The Alberta AIDS Survey (1987) and the Canada Youth & AIDS Study (1988) are two Canadian studies which have surveyed the knowledge adolescents have about AIDS and their behaviors. The Alberta AIDS Survey (1987) surveyed 1,000 adults and 500 teens separately on the subject of AIDS and HIV infection. For the teens, high levels of knowledge were found for three of the main routes of transmission of HIV. Those being, sexual contact, receiving a blood transfusion, and sharing intravenous equipment. The transmission of HIV from mother to child was a lesser known route. These teens were confused as to whether mosquitoes or kissing were modes of transmission. It was felt that Albertans needed to increase knowledge of how one contracts HIV.

When questioned about the reported changes in their sexual habits, about one in three teens strongly agreed that the threat of AIDS caused them to change their behaviors. Of those that made changes, the greater the level of fear that these teens had that they or someone close to them would get AIDS, the more likely they were to agree to have made changes. It has been shown in many other studies (Carroll, 1988; Leishman, 1987; Ishii-Kuntz, 1988) that there is a higher possibility for sexual behavior change in individuals who perceive

themselves to be at risk for contracting the AIDS virus.

The Alberta survey should be commended on two points. First, the representative samples were selected by stratification on the basis of the most recent population statistics by Census Canada 1986. Second, a description was given as to how the questionnaire was developed. Even though this sample was representative of the Alberta population, the fact that it was a telephone survey may have caused problems. For example, the questions may not have been properly understood over the phone. The response scaling of items such as very safe, somewhat safe, somewhat dangerous, very dangerous, do not know may have been difficult to remember. As well, such scaling may have caused ambiguities as to what differentiates "very" from "somewhat".

The Canada Youth & AIDS Study (1988) by King et al. provides more recent research in this area. This study, like the Alberta one, is also representative and gives information as to how the questionnaire was developed. The focus of this study was on the knowledge, attitudes and behavior of Canadian young people with regard to AIDS and other STDs.

The sample consisted of 38,000 adolescents between the ages of 11 and 21 drawn from all of the 10 Canadian

provinces. The researchers concluded that

> In general, it appears that young peoples' knowledge of AIDS and other STDs has not been sufficient to deter many of them from taking risks while engaging in sexual activities (King et al., 1988, p.135).

A comprehensive study in which many variables, such as knowledge, concern, and behaviors were considered was performed by Ishii-Kuntz (1988). Ishii-Kuntz examined how knowledge and concern about AIDS affects the perceived change in sexual behavior. The sample consisted of 450 undergraduate students enrolled in Sociology courses at the University of California, Riverside. Data were reported on a subsample of 135 male and 167 female non-virgins from a twelve page questionnaire. Non-virgins were selected because it is believed that sexual behavior change due to knowledge and concern is more probable in this sample.

Six indicators were measured, these being indirect sexual practices (eg. increasing length of time before engaging in intercourse, asking about partner's sexual history), and direct sexual practices (eg. condom use, oral sex); accuracy of knowledge, concerns about AIDS, homosexual experiences and source of AIDS information.

The results indicated that the female college students were more likely to report changes in their sexual behavior than the male college students, except for condom use. For example, the women were willing to date longer before engaging in sexual intercourse and more likely to ask the previous sexual history of a potential mate. Knowledge of the sexual transmission of AIDS was not a predictor of this changed behavior. Ishii-Kuntz (1988) found that previous homosexual experience or using friends as one's major source of AIDS information were better predictors of behavior change.

For more direct sexual behaviors, Ishii-Kuntz (1988) found that knowledge of AIDS neither increased the likelihood of condom use nor decreased high risk sexual behaviors such as anal sex. As found in previous studies, the degree of students' concern was found to be strongly associated with these perceived changes. That is, those students who were more concerned about contracting AIDS were more likely to use condoms, and less likely to engage in anal sex.

Ishii-Kuntz (1988) summarized the findings by stating that the level of knowledge per se does not influence the perceived changes associated with sexual behavior. Instead, concern about AIDS is more

influential.

From the research findings, one notes that accurate knowledge of AIDS does not appear to be the determinant of whether an adolescent will make changes in their sexual behavior; rather, personal concern appears to be more important.

Recent research (Flora & Thoresen, 1988; Jaffe, Seehaus, Wagner & Leadbeater, 1988; Katzman, Mulholland & Sutherland, 1988; Keller, Schleifer, Bartlett & Johnson, 1988) has also indicated a lack of support for the hypothesis that an increased knowledge of AIDS will deter adolescents from engaging in high risk sexual behaviors. Ishii-Kuntz (1988) suggests that a possible reason for this is that students with a more accurate knowledge of the transmission of the AIDS virus will believe that they are taking the necessary precautions. Because they are taking precautions, they may not realize that they are engaging in risky sexual behaviors. For this reason, these students may report no change in sexual behavior.

The Present Study

With the results of the present study it is anticipated that we can gain information as to the basic knowledge students have about AIDS and if they have

altered their sexual activities. It is anticipated that accurate information given to adolescents will aid them in developing the competence and skill to make rational decisions. The next chapter will review the aims of the present study and discuss the research design.

Chapter 3: Research Methods

It is essential that surveys on AIDS knowledge and behaviors be conducted on a variety of ethnic, social and educational groups to provide the necessary data for the development of behavior change programs. In this manner, programs which are geared specifically towards the needs of these groups could be developed. The present study surveyed the behavior and AIDS knowledge of one group of undergraduate students. Research on adolescents, in particular, will allow educational programs to be targeted toward the needs of this age group. Since there is no cure for Acquired Immunodeficiency Syndrome (AIDS), the process of researching basic knowledge and behaviors is currently our most effective means of educating and halting the spread of HIV in the Canadian population.

Instead of testing a specific hypothesis, it was felt that a survey of undergraduate students' behavior and AIDS knowledge was necessary, since it is this data that will provide for the development of future educational intervention programs.

Rationale for use of the Survey Method

The survey method is widely used by researchers studying the behaviors and AIDS knowledge of adolescents. This method involves the examination and measurement of public opinion by the use of sampling and questionnaire techniques (Chaplin, 1985). Most survey research can be categorized as descriptive. Christensen (1985) explains that this approach attempts to provide an accurate description of a particular situation without "ferret[ing] out the so-called cause-and-effect relationships" (p.25). This means that the variables in a situation are identified without necessarily having to describe the relationships between them. Therefore the goal of most survey research is to obtain descriptive statistics, such as frequency data.

Surveys are often used in the preliminary phase of research in many studies. They allow for the collection of frequency data on the demographics, the social environment, the activities or opinions and attitudes of some group of people (Christensen, 1985; Moser, 1968). After the collection of this frequency data, hypotheses can be formulated between the variables and tested in the future.

The primary goal of using the survey method in the

present study is to obtain information from and about a selected portion of undergraduate university students. This information as stated before, will be useful for the creation of new AIDS programs targeted specifically toward this age-group. As well, it will be useful in determining the effectiveness of existing AIDS information programs.

Parten (1966) discusses many routes by which information can be gathered in the survey method. These include the personal interview, observational methods, telephone interviews, and mail questionnaires. The latter route has been described as the most widely used procedure in surveying a group (Parten, 1966). Questionnaires are usually the primary route to secure information from a sample. These can be self-administered or administered by an interviewer. In either case, questionnaires may consist of objective observable facts about the respondent to relatively complex attitudes and opinions about how the respondent feels in regards to a certain person or situation (Parten, 1966).

Questionnaires can be answered by the respondent in a simple, categorical way or in units or scales devised to quantify human reactions (Parten, 1966). If a random,

representative sample is used the results of this particular group can be generalized to the whole population. Kerlinger (1979) stresses that if random sampling is used "its results have usually been remarkably accurate and generalizable" (p.153).

The survey method has many advantages which make it extremely appealing to use. A wide scope of information can be gathered on a large sample of respondents with moderate expenses (Kerlinger, 1986). A questionnaire is relatively easy to give to one group at one time and the use of keys or scales in the response categories make the scoring simple and objective. Depending on the length, a questionnaire usually takes less time to administer than a personal interview. Respondents may be more likely to answer honestly as the results are anonymous and cannot be traced back to them. A survey administered to a group at one time will have questions which can be considered as standardized as all subjects are being given the same unaltered questions (Parten, 1966). On the other hand, the questions asked in a personal interview will not usually be thought of as standardized as they are often altered to fit the flow of the discussion.

Along with the advantages, there are many disadvantages to the survey method. As the questionnaire

is usually administered to a large group at one time, the individual personal characteristics of the respondents are overlooked. Some subjects may choose not to answer the questionnaire, leaving a sub-group of non-representative respondents. Parten (1966) suggests that if this does happen, most of the advantages of using the survey method will be outweighed. The researcher is unable to clarify any ambiguities or assist the respondents in answering items, therefore essential items may be omitted. The order of questions cannot be altered to fit the situation of each respondent. This may cause the respondent to answer questions incompletely to present themselves in a favorable light (Sudman & Bradburn, 1983). As there is no personal interview, checks on reliability and honesty are difficult as the researcher has not had an opportunity to "size up the respondent" (Parten, 1966, p.96).

In order that the survey method may be used efficiently, some degree of organization is required to plan an initial design and carry it out. This initial design is important as it is difficult to repair mistakes and oversights midway through the study (The Canada Council, 1976). One must be aware that there will be a degree of sampling error as the total population of

individuals is not being sampled. There will also be constraints on the length of the questionnaire as it must depend upon the interest and cooperation of respondents.

Limitations of Survey Research

Surveys are an important source of information, but they also provide researchers with many possibilities to encounter experimental errors. Studies which have been conducted in the areas of AIDS knowledge, attitudes and behavior have suffered from an array of methodological flaws. Limited funding for these studies has often precluded the use of representative samples (Feldman, 1985). Instead, convenience non-random samples with a low number of subjects are used decreasing the generalizability of conclusions. The samples are often biased due to the refusal of some respondents to complete questionnaires or to lie on questionnaires (Phillis & Gromko, 1985). With such biased data, there are dangers in making inferences and attributing a causal direction between factors.

The scope of the variables considered relevant to the study may also be too narrow to allow for the proper understanding of the interrelations among explanatory factors (Kaplan, Johnson, Bailey & Simon, 1987). It is

usually too difficult to consider all the known factors which place one at risk for HIV infection. Therefore direct or indirect effects of multiple precursors on the dependent variable may not be known. The variables themselves are usually not explicitly defined. For this reason it is difficult to compare the results of different studies as there is very little consistency.

Most studies fail to pay enough attention to the demographic variables. It has been shown that age, education and affluence just to name a few, can affect the attitudes and opinions held by individuals (Gallup, 1986).

The actual instruments are usually composed by the authors from the current literature and tend to cover a narrow range of topics. As well, little attention is given to the reliability or validity of the surveys (Newcomer, Udry & Cameron, 1983). Reliability estimates are usually not mentioned as very few studies undergo replication. Face validity appears to be the single most important determinant of a well-constructed questionnaire. Very few studies confirm the responses of subjects with the interview method. So one must not assume that a pencil and paper response is indicative of an actual sexual behavior. Follow-up studies tend to be

rare as it is quite difficult to assess accurate changes in sexual behavior over time.

AIDS researchers are primarily heterosexual which can cause biases in the questions asked, the wording of items, and the analyses of what are considered the most important relations in the experiment (Joseph et al., 1984). The heterosexual stereotyping of homosexuals can be reduced by creating questionnaires designed with the help of homosexual focus groups. Such group discussions are useful in outlining the important issues relating to AIDS and the associated behaviors.

Roiser (1983) accurately describes the survey method which fails to take into account the individual differences between subjects by writing that there is "nothing collective, nor necessarily democratic about a poll" (p.159). In other words, an average is taken of all the responses and it is assumed that the resulting answers are indicative of the whole group. This is not accurate as the ages, personal situations, education, mood and attitudes of the respondents are not being taken into account. These limitations plague other fields of study and should not be thought of as solely representing the research in the area of AIDS knowledge, behaviors and attitudes. Researchers are usually aware of these

limitations and attempt to minimize them as much as possible, yet it is a difficult task. It is important though to keep these shortcomings in mind when reviewing any studies.

A Review of the Canada Youth and AIDS Survey

The Canada Youth and AIDS survey (1988) was adapted by this author for use in the present study to record the behaviors and AIDS knowledge of adolescents. Permission for the use of certain items and questionnaire adaptation was granted by Dr. Wendy K. Warren, a co-author of the Canada Youth & AIDS Study (1988), Queen's University, Kingston.

The Canada Youth & AIDS Study (1988) was administered to over 38,000 Canadian youth aged 11 to 21 years (King et al., 1988) to determine their knowledge, attitudes and behavior with respect to AIDS and other STDs. The purpose of the study was to use this information to implement appropriate educational and social programs to halt the spread of AIDS and other STDs in this population. The authors examined the characteristics of Canadian youth, their knowledge of AIDS and other STDs, their sources of information, their attitudes toward AIDS and sexuality, and their sexual

behavior.

King et al. (1988) attempted to obtain a cross-sectional perspective by surveying students in Grades 7, 9, 11 and first year college and university. Another group of respondents was composed of street youth, aged 11 to 21 years, who had recently dropped out of school or spent most of their time on the streets (King et al., 1988). For the purposes of this study, the data and results obtained by these authors from the first year college and university sample will be discussed.

The sample of post-secondary respondents was obtained through a "two-stage cluster sampling procedure" (King et al., 1988, p.142). In other words, the institution was first selected and then the class. Instead of drawing a national sample, which would have resulted in the undersampling of smaller provinces, these institutions were stratified by region and then sampled. The authors suggest that this procedure results in the undersampling of the larger provinces, but the provincial differences were not large enough to warrant statistical adjustments.

These researchers used their previous work and items used in related studies, to adapt and formulate six scales designed to measure aspects of the lives of

adolescents. These scales included self-esteem, mental health, relationship with parents, relationship with peers, homophobia, and people with AIDS. The "Survey of undergraduate students' behavior and AIDS knowledge, 1989" was not focussing on attitudes, therefore none of these six scales were included.

The knowledge items in the Canada Youth & AIDS Study (1988) for the college/university level were developed by pre-pilot focus group interviews. Approximately 100 college and 125 university students were interviewed to find the range of knowledge of AIDS, the appropriateness of the subject matter, and the language used. These students were first given a short questionnaire followed by a discussion of AIDS-related issues. Then they were divided into smaller groups of five to six students, each group was interviewed in-depth to obtain more information. Pilot instruments were then developed and administered to 100 first year college and 100 first year university students across two disciplines (King et al., 1988).

Changes were made in the questionnaire after the pre-pilot and pilot studies were completed. The resulting instrument was composed of single concept items. Threatening questions, technical words and

confusing items were avoided.

Statistical reliability refers to the consistency of scores obtained by the same subjects when given the same test on different occasions, or under other variable examining conditions, or with different sets of equivalent items (Anastasi, 1982). King et al. (1988) were only able to measure the latter type of reliability, as it would have been almost impossible to reexamine the same subjects at another time or place. Internal reliability assumes that all related items should measure the same broad concept, for example knowledge of AIDS. The higher the items correlate with one another, the more reliable the survey. These researchers accepted a reliability coefficient of .65 or greater. This relatively low value was due to some easy items (not discriminating high and low scorers on the survey) which King et al. decided to keep.

King et al. (1988) also mentioned that their survey could not be considered as standardized. A standardized test is one in which there is a narrow range of item difficulty, so that the high and the low scorers can be easily differentiated. Their reasons for this lack of standardization were two-fold. First, highly important items had to be included even though they may have been

easy. Second, other items which were answered correctly by the majority of the respondents were maintained because they were high in face validity.

Anastasi (1982) defines validity as "what the test measures and how well it does so" (p. 131). King et al. were interested in maintaining high content and face validity. Content validity involves a systematic examination of the test content to determine whether it covers a representative sample of the variable to be measured. The researchers referred to the opinions of health experts, advisers, teachers and students to assess the content validity of the items.

Face validity is neither technical nor systematic, and pertains to what the test appears to be measuring on the surface. Once again, King et al. justified the inclusion or exclusion of an item based upon the opinions of those people who came in contact with the survey.

Rationale for the Adaptation of the Canada Youth and AIDS Survey

There were many reasons for deciding to adapt the Canada Youth and AIDS survey for the present study. The King et al. (1988) survey already contained sections on the behaviors of adolescents and their knowledge of AIDS.

It was decided to adapt the items in these sections, as they were useful for the purposes of the present study. The items within these sections were considered to be relatively high in face and content validity. As well, previous checks for internal reliability had been conducted by King et al.

The King et al. (1988) survey was developed on and administered to a Canadian sample, therefore the language used within it can be considered as appropriate for any citizen (French or English speaking). This research is also recent which assures that the items will be based on what is currently known about AIDS and its transmission.

It was decided that a similar response format be used in the present study. The Canada Youth and AIDS survey used a keying method which made answering the items a clear and simple task. This method required the respondent to pick a numbered response from a list of relevant statements. For example, the item "how much alcohol do you usually drink at one time?" could be answered by picking only one answer from a key. These answers were, 1=None, 2=1-2 drinks, 3= 3-4 drinks, 4=5 or more drinks (King et al., 1988, College/University survey). A respondent who never drinks alcohol would place a "1" on the response line.

The present study also grouped items under sections as did the Canada Youth and AIDS survey. These were demographics, behaviors and AIDS knowledge. The discussion on instrumentation will give a detailed account of which items were similar to those of the King et al. college/university survey, which were adapted, which were added, why they were asked and what interrelations and results are to be expected.

Method

Subjects

The "Survey of undergraduate students' behavior and knowledge of AIDS, 1989" was administered to a sample of students obtained from McGill University. McGill is a large English-language university which is located in the heart of Montreal, the second largest French-speaking city in the world. The enrollment of both full and part-time students at McGill University is approximately 13,323 undergraduates and 3,472 graduates. Of the 13,325 undergraduate students, about 6,044 are men and 7,279 are women.

The present questionnaire was administered to a non-random convenience sample of students enrolled in an undergraduate Spring session course in American

Literature. A total of 170 students were registered in the course, but only 136 were present on the day of testing. It was decided to collect data on young adults aged 18 up to 24 years. Therefore, of the 136 questionnaires 18 had to be dropped as they were completed by students aged 24 years and over. Another questionnaire was dropped as it was incomplete. For these reasons, data and results have been reported on the remaining 117 completed questionnaires.

Of the 117 students in the total sample, 32 were men and 85 were women. Table 2 summarizes the mean demographics for the genders and the total sample. It should be noted that the ages of the sample ranged from 18.83 to 23.92 years. The year of the program that the students were in ranged from 1st year to 4th year, and the average grade received last semester ranged from 60 to 94%.

Most of the 117 students were in Arts (75.20%), while the others were in Education (9.40%), Sciences (8.50%), Music (3.4%), Social Work (1.70%) or Commerce/Management (1.7%). Table 2 lists the percentages of men and women in each program. No men were represented in Education or Social Work, while women were represented in all programs.

Table 2

Mean Demographics for Men, Women, and Total Sample

Demographic	Group		
	Men (n=32)	Women (n=85)	Total (N=117)
Age (years)	21.26	21.17	21.19
Year of Program	2.41	2.29	2.33
Program (%)			
Arts	78.10	74.10	75.20
Science	12.50	7.10	8.50
Education	--	12.90	9.40
Music	6.30	2.40	3.40
Social Work	--	2.40	1.70
Commerce/ Management	3.10	1.20	1.70
Overall average grade last semester (%)	74.37	74.51	74.47

Note. -- designates that no subjects from this sample were in that program.

Instrumentation

One data-gathering technique was used in the present study:

Survey of Undergraduate Students' Behavior and AIDS Knowledge, 1989.

As mentioned previously, the Canada Youth & AIDS Study (1988) was adapted for use in the present study. The resulting questionnaire contained items to poll adolescents in the areas of demographics, behaviors and current knowledge of AIDS. It should be noted that due to the nature of the present study, to time constraints, and to the inavailability of manpower in the administration and analysis of data, only items which this author considered as most relevant were included in the questionnaire. The reasons why these items were considered as relevant will be discussed as each item is presented in this chapter. The aim was to focus on adolescent sexual behavior, substance use and their knowledge of AIDS.

It was attempted to keep the questionnaire relatively short and concise to hold the attention of the respondents. Christensen (1985) says that with a lengthy questionnaire, after a certain point, the interest and cooperation of respondents will diminish. Therefore some

items which are important, such as intravenous drug use, attitudes towards sexuality and relationships, were avoided as the inclusion of them would have increased the length of the survey. It is obvious then, that certain sacrifices such as including only those items relating to substance use, sexual behavior and knowledge of AIDS had to be made. Including only these items decreased the scope of the questionnaire, but allowed for greater manageability of the data during analysis.

The questionnaire consisted of a total of 38 items: six to assess the demographic characteristics of the respondents, eleven to assess behaviors, and twenty-one to assess knowledge of AIDS. Dr. Margaret Duckett, an expert in the field of AIDS research at the McGill Centre for Medicine, Ethics and Law, reviewed the questionnaire to point out any discrepancies. Any ambiguous or confusing items were either changed or deleted from the questionnaire.

The following discussion will describe each of the three sections included in the revised questionnaire. The reasons for adding, changing or deleting certain items will be ascertained. The findings which are to be expected in this study will also be presented using the results of previous research.

Demographics. The six items on demographics were useful in obtaining the basic characteristics of the sample being examined. They also made it possible to view any relations between the variables being studied. For example, is there a relationship between age and sexual behaviors? The sex, age, marital status, program and year, and overall average grade achieved last semester were asked. An additional item on the sexual orientation of the respondent was included, as researchers such as Leo Carroll (1988) have felt that the absence of such information has been a limitation to their own study. This item was included in the behavior section (item 9). If presented earlier in the demographics section, respondents may have queried its inclusion.

The items on demographics were all taken from the King et al.(1988) study, except for the ones which asked for the marital status and sexual orientation of the respondent. King et al. (1988) asked respondents "How would you describe your sexual orientation?" There were three responses in the key which was provided, heterosexual, homosexual and bisexual (King et al., 1988, College/University survey). King et al. (1988) found that 1% of college/university men and women identified themselves as homosexual. They felt that this number was

an underestimate and may be due to the adolescents being too young to take on an homosexual identity. One percent of men and women reported being bisexual.

Students were asked about their sexual orientation in a more indirect manner in the present study. With the aid of Dr. Duckett it was decided to word this item as follows: "Have you ever made love to a man in the past 2 years?" or "Have you ever made love to a woman in the past 2 years?" The students were to answer either yes or no to both items. It was hoped that respondents would be more honest in their responses to these items and not feel too uncomfortable. This is important as Dr. Duckett, as well as King et al. (1988), cautioned that many students who are homosexual may not be willing to identify themselves as such.

King et al. (1988) compared the sub-groups of homosexual and bisexual college/university respondents with the larger group of heterosexuals. They found that more homosexual men had engaged often in oral and anal sex. This group was also more concerned about contracting HIV. Lesbian women reported engaging in oral sex 16% more often than heterosexual women. As well, the sub-groups of bisexual men and women and homosexual men, more often reported having had greater than five sexual

partners than did any other sub-group (King et al., 1988).

The marital status of the respondent was asked, as this may make a difference in the number of partners or other behaviors engaged in. The program and year of study, as well as the average grade last semester were asked as these variables may influence the behaviors and AIDS knowledge of respondents. A positive relationship between average grade and knowledge of AIDS was found by King et al. (1988) in their samples of students in Grades 7, 9, and 11. Even though the sample used in the present study is older, it was expected that respondents who had a relatively high average grade may also be more knowledgeable about AIDS.

The other items in the demographics section were straight forward, for example "are you male or female?" Obvious differences between the responses of the two genders and individuals of differing ages were expected to be found, with regard to behaviors and knowledge of AIDS. King et al. (1988) found that this was true of their study and made every attempt to point out significant differences.

Behaviors. Eleven items were devoted to the behaviors of the respondents, they ranged from drug use, sexual involvement, and concern about personally contracting AIDS. Questions 6 ("How often do you use the following substances?") and 7 ("How much do you usually drink at one time?") were taken directly from the King et al.(1988) college/university survey. Questions 8 ("How often have you engaged in the following experiences?") and 12 ("For what reason(s) did you first have sexual intercourse?") also came from this survey, but were slightly modified to include more behaviors.

Respondents who had never engaged in any type of penetrative sexual intercourse were asked to skip questions 10 to 14 which dealt with the age of first sexual intercourse, number of sexual partners, condom use, reason(s) for first having sexual intercourse, and change in sexual practices and behaviors since hearing of AIDS. They continued on to question 15, which was not related to sexual behavior, and asked when the respondent had first heard about AIDS. Each of the items in the behavior section will now be described in detail.

The first question in the behavior section asked how often certain substances were used, for example alcohol and cannabis. The responses to this item are

important, as adolescents will be more likely to engage in risky behaviors when their sense of judgement is impaired while under the influence of these substances (King et al., 1988). With impaired judgement, they may also be less likely to take adequate precautions against the transmission of the AIDS virus.

King et al. (1988) found that older adolescents reported drinking alcohol once or more a week. Fifty-seven percent of the college/university sample drank three or more drinks at a time. Twenty-five percent of this sample reported using cannabis, with some students using it at least once a week.

These researchers found that there was little difference in the percentage of men and women who used drugs. For example, both sexes were equally likely to use cannabis. One exception was that the men who used drugs, usually did so more frequently and in heavier quantities than women (King et al., 1988). This information allows one to deduce that there appears to be a relation between a variety of harmful behaviors (King et al., 1988).

Many of the items in the behavior section of the present questionnaire listed a number of activities to which the respondent stated how often he or she had

engaged in them. For example, respondents were given an opportunity to state whether they had engaged never, once, a few times or often in behaviors ranging from those considered as having no risk of AIDS virus transmission (hugging, kissing, petting) to high risk (anal intercourse, any sexual intercourse without a condom).

It is known that hugging and petting are behaviors which do not lead to the transmission of HIV. They were listed to allow students who had not engaged in sexual intercourse an opportunity to feel comfortable and respond to some items. As well, these activities are usually considered as precursors to other sexual activities, therefore they are important to be asked.

This author decided to delete sleeping together which was listed in the original survey, as this item did not appear to be asking about any relevant sexual behavior. Other items which asked about certain sexual behaviors were added, for example masturbation and engaging in any type of penetrative sexual intercourse without a condom. The latter item, unlike the first, creates a situation in which it is highly likely that AIDS virus transmission can take place.

King et al. (1988) write that "the chances of being

infected with HIV through oral sex are remote but possible under certain conditions" (p. 83). Therefore, it was important to see how often the present sample of students had engaged in oral sex, as well as in vaginal and anal sex. The latter activity, when receptive in nature, provides the highest risk situation to contract HIV.

It was expected that many students in the present study would have engaged in vaginal sexual intercourse. King et al. (1988) found that over three-quarters of their sample of college/university students had had sexual intercourse at least once. Approximately half of this group indicated that they often had sexual intercourse. These researchers also found that approximately 15% of their sample had engaged in anal sexual intercourse at least once, with the majority engaging a few times. It was not expected that such a high percentage of respondents engaging in anal sex would be found in the present study. Many respondents could feel uncomfortable about answering this item honestly.

The present survey allowed students to state the age at which they had their first sexual encounter. King et al. (1988) state that many of today's youth are beginning sexual experiences by the age of 14. It was

expected that a similar average age would be found in the present study. Obtaining data about the age of first sexual encounter is important, as it gives an indication of when sex and AIDS education programs should be started. The number of sexual partners a respondent has had since this age was also asked. It is believed that the chances of not knowing a partner, the sexual history, or engaging in certain high risk activities increase with the number of partners. King et al. (1988) found that only 23% of men and 36% of women reported having had only one sexual partner. The remaining group of respondents reported having sexual intercourse with three or more partners.

Question 11 asked respondents to indicate how often they used condoms during penetrative sexual intercourse. Many articles (Wattleton, 1987; Fineberg, 1988) indicate that adolescents are engaging in sexual intercourse at earlier ages, but few of them are willing to use condoms consistently. King et al. (1988) found in their sample of college/university students that only 14% of those who reported having sexual intercourse often, always used condoms. Over one-quarter of those individuals engaging in intercourse never used condoms.

Another question asked the students to give their

reasons for first having engaged in sexual intercourse. Drugs and alcohol, curiosity, love, and loneliness were listed in the key as possible responses. Respondents were also given the opportunity to elaborate on other reasons which were not listed. This author decided to delete some of the reasons proposed by King et al. to shorten the list of responses. King et al. (1988) found that women tended to engage in their first sexual intercourse for love, while men did so for physical attraction. Both sexes listed curiosity as the second reason. These researchers indicated that 6% of men and women engaged in sexual intercourse due to substance abuse.

An item asked the respondents if they had changed their sexual practices since hearing of the disease AIDS. If they responded yes to this question, they were encouraged to elaborate in which behaviors these changes had taken place. Again the list of behaviors included those considered as having no risk to high risk of HIV transmission. One would expect that individuals would be more selective of a sexual partner, use condoms more often, and engage in less risky sexual behaviors such as unprotected penetrative sex. Studies (Feldman, 1985; Puckett, Bart, Bye & Amory, 1985) which asked questions

about the date the respondent had first heard of the disease AIDS and if there had been any associated behavior changes, were originally conducted with high risk groups such as homosexual men. It was felt that by including such items under one comprehensive questionnaire more information on adolescents could be obtained.

The last two questions in the behavior section asked respondents if they were personally concerned about contracting AIDS and if they had received enough information about AIDS to make informed decisions concerning their own sexual behavior. Ishii-Kuntz (1988) found that students who were personally concerned about contracting AIDS were more likely to make changes in their behaviors. It will be interesting to note if respondents in the present study who responded yes to being concerned, also answered yes to having changed their sexual practices since hearing of AIDS.

Most research (The Alberta AIDS Survey, 1988; King et al., 1988) indicates that adolescents are not comfortable with the amount of information they have received about AIDS. The consensus appears to be the need for greater information. It was expected that the present study would provide a similar finding.

Knowledge of AIDS. It was decided that items on the knowledge of AIDS follow those items on behavior. Reinisch, Sanders and Ziemba-Davis (1988) believe that such a presentation increases the accuracy of behavioral data. A reason for this is that if the knowledge items were presented first, respondents may use the answers to these items to respond to other questions within the survey. The response categories for the knowledge items were true, false and don't know. These responses have proven to be simple and efficient (Bruce & McLaughlin, 1986).

Twenty-one items were devoted to the knowledge of AIDS. The items included some original statements and some statements used in similar surveys. It was decided to include items in this section that were considered as important in the literature, such as the cause of AIDS and associated symptoms, transmission of HIV and protection. Separating the knowledge of AIDS items in this way also allowed this researcher to collect data on subscores. In this way, the results can describe what adolescents know, and in which areas they are deficient. It was hoped that the statements included in this section were common facts with which all adolescents should be familiar. All knowledge items were based on the current

level of scientific knowledge at the time of this survey.

An attempt was made to categorize items in the knowledge of AIDS section into sub-scores: cause and symptoms, transmission, and treatment. One should note that not all statements fell neatly into these three groupings. The first five items (numbers 18 to 22) dealt with the cause of AIDS and the associated symptoms. For example, "the cause of AIDS is unknown". The correct response to this item is <u>false</u>, as most current research (Gallo et Montagnier, 1988) suggests that the HIV virus is the cause of AIDS.

King et al. (1988) found that on two items in their survey, the higher the age of the group surveyed the greater the percentage of correct responses. These two items were included in the present questionnaire and it was expected that the sample should score relatively high. The items asked whether "most people who are infected with the AIDS virus appear healthy and show no obvious signs of the disease" and if "AIDS can be cured if treated early". The first statement was worded differently in the present study to make respondents aware that individuals with AIDS usually appear healthy and show no obvious signs of the disease. King et al. (1988) worded a similar item in their survey as follows:

"A person can have the AIDS virus for seven or more years without having symptoms of the illness".

It is important that adolescents learn that most people who have the AIDS virus appear healthy and show no obvious signs of the disease. Many people wrongly believe that it is easy to recognize a person with AIDS or HIV. The fact is that it is impossible to tell whether someone has AIDS or the virus just by looking at them. For this reason, two items out of five in the cause and associated symptoms sub-group asked the same questions. It is true that most people who have AIDS in Canada are homosexual men (Boyd & Jackson, 1988), but adolescents must also realize that it is not membership in a particular group which is associated with a high risk for contracting HIV, but the particular behavior engaged in.

The greatest number of items in the knowledge of AIDS section were devoted to the transmission of the AIDS virus, eleven items to be exact. This area is where similar studies (Winslow, 1988; Diclemente et al., 1986) have found the greatest number of discrepancies in knowledge. Many misconceptions about AIDS were addressed here. For example, some people wrongly believe that AIDS can be contracted from donating blood, through

spitting or wiping tears, or from mosquitoes.

Social contact with a person who has the AIDS virus was also addressed. For example, item 28 asked if "sharing kitchens and bathrooms with a person who has AIDS puts you at risk for contracting the AIDS virus". In general, most people are aware that this so called "dry" contact (Winslow, 1988) does not lead to HIV transmission. In fact, 96% of college/university students correctly responded to an item on the Canada Youth & AIDS Study asking whether the AIDS virus can be spread by hugging (King et al., 1988).

Item 24 asked if "AIDS can be passed from an infected female to her unborn child during pregnancy". People seem to be relatively aware of perinatal transmission as a mode for the HIV virus to be passed. For example, King et al. (1988) found that 84% of their sample of college/university students correctly answered an item on this means of transmission. Another item asked if blood, semen, or vaginal fluid must be passed for the AIDS virus to be contracted. It appears that adolescents lack sufficient knowledge that bodily fluids must be passed in order for HIV transmission (The Alberta AIDS Survey, 1987).

Statements on receptive anal intercourse as the

highest risk sexual activity and the risk of contracting HIV in homosexual male and lesbian samples were also included. The latter statement, was taken directly from the King et al. survey with the exception of one word. The original item had asked if "homosexual males" and "homosexual females" were equally at risk of contracting the AIDS virus. After a discussion with members of the Montreal Committee on AIDS, it was decided to change the term "homosexual females" to "lesbians". The latter term being more acceptable to members of this group.

Another item asked "although all blood is tested, there is still a one in a million chance of contracting the AIDS virus through transfusions". This information on the minute fallibility of blood tests was received from Kenneth Mews, AIDS Education Officer, of the Canadian Red Cross Society.

The last five items (34 to 38) dealt with the treatment of AIDS and precautionary measures. No vaccine has been developed for the treatment of AIDS at the writing of this paper. Two of the five items here were similar and asked about whether or not a person who is infected carries the AIDS virus for the rest of their life. It is important that adolescents realize that once infected, an individual will be so for life and may

develop AIDS.

A final question dealing with protection against HIV, asked if condoms used with a spermicidal foam or gel would give relatively effective protection from the AIDS virus. This item was taken directly from the King et al. survey, but it was decided to add the word "relatively", the reason being that condoms are not 100% effective and can tear during use. King et al. (1988) found that only 58% of their sample was aware that condoms with a spermicidal foam or gel would give protection from HIV. This finding suggests that adolescents have inadequate knowledge in the area of precautionary measures against HIV transmission.

King et al. (1988) when overviewing their section on knowledge of AIDS, found that academic average and aspirations after school graduation were important predictors of AIDS knowledge in samples studied in Grades 7, 9, and 11. This was not true of their college/university sample, though it would be interesting if a correlation were found in the present study. These researchers also found that, on average, 72% of this sample correctly responded to the items on AIDS knowledge. At the end of the "Survey of undergraduate students' behavior and AIDS knowledge, 1989" a comments

section was added for the students to provide any ideas, grievances or suggestions to the author.

Procedure

The "Survey of undergraduate students' behavior and AIDS knowledge, 1989" was administered during class time on Friday June 2, 1989 between 9:00am and 9:30am. Prior permission was granted by Dr. Stewart Cooke to utilize his American Literature class at McGill University with an enrollment of 170 students. This Spring session class was being held from 9:00am to 11:00am Mondays to Fridays.

The questionnaire was handed out to the students by this author with the help of Dr. Cooke and an assistant. The instructor and test administrators remained in the room the entire time.

Before the students began, this author introduced herself and her assistant. The students were informed by the author that the questionnaire was voluntary and that they may skip any items to which they were unsure of how to respond. It was stressed that the questionnaire was anonymous and confidential, and that the students should not write their names. They were asked to answer as honestly as possible.

Most of the items used a keying technique for the

responses. This method can be a little confusing, therefore students were reminded to check from time to time that they were completing the questionnaire correctly. They were given an example of an item from the demographics section which asked the sex of the respondent. The students were asked to write "1" for Male and "2" for Female on the line provided, instead of "M" and "F" respectively.

The students were told that they could use either a pen or a pencil, and that the questionnaire should take approximately 20 minutes to complete. They were encouraged to raise their hands if they had any questions while completing the survey. They were thanked for their participation and then allowed to commence.

The questionnaire took between 15 to 25 minutes to complete. This author and the assistant walked between the aisles and collected the questionnaires as they were completed. In this way, students would be discouraged from discussing their answers with their peers. After all the questionnaires were gathered, they were placed in a box at the front of the classroom.

The students were informed that two answer sheets for the AIDS knowledge items would be placed on each of the two classroom doors. If they had any further

questions about AIDS or a related topic, they were referred to the Montreal Committee on AIDS (CSAM) or, they could leave a message for this researcher during school hours at her office.

Finally, Dr. Cooke and his students were thanked again for their participation in this study. The two answer sheets were then taped to the classroom doors. In general, the atmosphere during the administration of this questionnaire remained relaxed and the students appeared comfortable.

The data produced from this survey was analyzed to obtain means and any correlations between the variables. It was hoped that the data from this survey would aid in the development and implementation of programs to correct misperceptions about HIV transmission and reduce behaviors resulting in HIV infection. Furthermore, the information collected from this survey can be utilized by counsellors, educators and health care providers to respond to students' questions about AIDS. The next chapter will summarize the data collected from the "Survey of undergraduate students' behavior and AIDS knowledge, 1989" and discuss the findings.

Chapter 4: Results and Discussion

The data from the "Survey of undergraduate students' behavior and AIDS knowledge, 1989" was analyzed and interpreted. It was decided to use statistics such as frequencies, cross-tabulations and correlations to describe the data.

The data was first analyzed for the total sample (N=117). Then the total sample was split into 3 groups based on their scores on the knowledge of AIDS items. It was attempted to maintain an equal number of students within each group, for example Low scorers (n=39), Medium scorers (n=39) and High scorers (n=38). One student failed to complete the knowledge of AIDS subsection, therefore the group of High scorers contained one subject less than the other groups.

The total number of correct responses on the knowledge of AIDS subsection was 21. The scores for the Low group ranged from 7 - 14, for the Medium group they ranged from 14 - 17, and for the High group they ranged from 17 - 21. A score of exactly 14 or 17 could make

the difference between a subject being in the Low or Medium group, or in the Medium or High group. Therefore, it was decided to randomly assign subjects who scored exactly 14 or 17 to the appropriate groups.

Statistics were also carried out separately for the men (n=32) and the women (n=85). This process allowed one to distinguish between the responses of the genders on their behaviors and knowledge of AIDS.

It was attempted to determine how the findings of the present survey were similar to others conducted with an adolescent age group. These findings were then discussed in order to discern in which areas adolescents require more information. As well, the implications of these findings on the development of future AIDS educational programs were ascertained.

Results

Demographics

In the demographics subsection, students were asked for their sex, age, marital status, program and year currently in, and overall average grade last semester. As mentioned previously, of the 117 subjects, 32 were men and 85 were women. All subjects were single and their ages ranged from 18.83 to 23.91 years, with a mean age of

21.19 . Many of the students were in Arts (75.20%), while others were in Education (9.40%), Science (8.50%), Music (3.40%), Social Work (1.70%) and Commerce/ Management (1.70%). The year of program for the total sample was 2.33, indicating that many students had completed their second year of study. The average grades last semester ranged from 60.00% to 94.00%, with a mean of 74.47 for the whole sample.

The mean age of the men was 21.26 years. Many men had completed their second year of study. This was shown by a mean of 2.41 for the year of program presently studying in. The average grades which the men had received last semester ranged from 64.00 - 90.00% with a mean of 74.37.

There were few differences between the demographics of the men and the women. For the 85 women, the mean year of program was 2.29 indicating that many had already completed year two of university. The mean age of the women was 21.17 years which was slightly lower than the mean of 21.26 years for men. Women reported an average grade last semester of 74.51%.

Demographics for each of the three knowledge groups (Low, Medium and High scorers) were also collected. The means are summarized in Table 3. It is interesting to

Table 3

Mean Demographics for Three Knowledge Groups

Demographic	Knowledge Group		
	Low (n=39)	Medium (n=39)	High (n=38)
Men (%)	23.10	35.90	23.70
Women (%)	76.90	64.10	76.30
Age (years)	21.28	20.96	21.35
Program (%)			
Arts	74.40	71.80	81.60
Science	5.10	10.30	10.50
Education	12.80	7.70	5.30
Music	2.60	7.70	--
Social Work	2.60	--	2.60
Commerce/ Management	2.60	2.60	--
Year of program	2.26	2.23	2.50
Overall average grade last semester (%)	73.27	74.97	75.00

Note. -- designates that no subjects from this sample were in that program.

note that in comparison to the other groups, the Low knowledge group contained more Education students and less Science students. The Medium group contained relatively more men than the other two groups. There were also no students from Social Work present in this group. No students from Music or Commerce/Management were present in the High knowledge group. Students in the High group reported being in their program longer than students in the other groups. The High group also had the highest mean grade last semester of 75.00%.

Behaviors

Many of the students in this sample reported using alcohol at least on special occasions. Men reported drinking 2 - 3 times a week (34.40%), while many women only drank on special occasions. Members of the High knowledge group reported drinking more per week than the members of any other knowledge group. Along with the men, members of the High knowledge group also reported drinking greater quantities of alcohol at one sitting (3 - 4 drinks). All the other groups drank 1 - 2 drinks at one time.

About one-half of the total sample reported never using cannabis, while 29.10% used it on special

occasions. More than 90% of students had never used cocaine or other substances. Men were more likely than women to have used either cannabis or cocaine. There was no real difference in substance use between the three knowledge groups.

The mean age of first sexual intercourse for the total sample was 17.48 years. There was no real difference in this age for the three knowledge groups. In terms of gender, men were slightly younger (16.96 years) than women (17.66 years) at the time of first intercourse. Men also reported having a greater mean number of sexual partners since this age. For instance, men had an average of 7.00 sexual partners, while women had 3.72. Members of the Low, Medium and High knowledge groups respectively reported means of 3.48, 5.23 and 4.90 for sexual partners.

Love for the other person was reported by all groups as their main reason for first having engaged in sexual intercourse (48.70% of the total sample). The second reason for having intercourse, also true of all groups, was curiosity (20.50%). Other reasons reported by the total sample included "lust", loneliness and the use of alcohol or drugs (2.60%).

Students were asked to respond to many items on

sexual behavior on the following scale: never, once, a few times, often. From 60% to over 90% of the students reported that they had often engaged in hugging, deep (open mouth) kissing, petting above the waist, and petting below the waist. Men were more likely to state that they had often engaged in these activities when compared to women, with the exception of hugging. More women (90.60%) reported that they had engaged in hugging than men (84.40%). Members of the High knowledge group were more likely to have engaged often in these activities. In fact for deep kissing, petting above the waist, and petting below the waist, there was an increase in frequency from Low to High knowledge group. For example, students in the Low group engaged often in deep kissing 66.70%, in the Medium group 79.50%, and in the High group 86.80% of the time.

Men and members of the High knowledge group were more likely to say that they had often engaged in masturbation (53.10% and 44.70% respectively). Many members of the other groups stated that they had never engaged in masturbation. High numbers of the men, women, Low and Medium group members reported never having engaged in mutual masturbation. In comparison, 39.50% of the High knowledge group had often engaged in this

activity.

Of the total sample, 78.70% had engaged in vaginal sexual intercourse at least once. Over 56% had often engaged in this behavior. A fewer percentage of students had often engaged in oral sex (46.20%), and even fewer in anal sex (1.70%). It should be noted however, that 10.20% of the sample did report that they had engaged at least once in anal sexual intercourse. Men and members of the High knowledge group reported engaging in vaginal and oral sex more often than members of any other group. The High knowledge group was more likely to report that they had engaged in anal sex once (10.50%).

Students were asked how often they had engaged in penetrative sexual intercourse without a condom. Approximately 38% of the Low knowledge group said that they had never engaged in sexual intercourse without a condom. All the other groups, unlike this one, were more likely to say that they had often not used a condom during intercourse. The High knowledge group reported that they had often done this over 60% of the time. The frequency of not using a condom was reported about equally for both men and women (43.80% and 42.40% respectively).

Students were asked whether they had made love to

either a man or a woman in the past 2 years. This item attempted to determine the sexual orientation of the respondents in an indirect manner. For example, 93.80% of the men reported never having made love to another man. Over six percent of men refused to answer this item. They may have felt that it was too personal, was not stated clearly, or did not describe their sexual orientation. For these or other reasons, none of the men in the present study reported having a homosexual identity. Seventy-five percent of the men did say that they had made love to a woman in the past 2 years. The remaining 25% either had not had sex in the past 2 years, or had never had sexual relations with a woman.

Over 89% of the women stated that they had never made love to a woman and just over 9% refused to answer this item. The reasons for not responding are probably similar to those stated for the men. One woman, or 1.20% of the 85, reported having had sex with another woman in the past 2 years. Like the men, about 75% of the women had made love to a man in the past 2 years. Of the total sample, 15.70% refused to answer the items relating to sexual orientation. The reasons, as previously mentioned, probably included the unwillingness of respondents to divulge personal information, the item was

unclear, or the respondents did not feel that the item described their situation. Therefore it is difficult to conclude whether 1.20% of the women and no men could be thought of as having a homosexual identity. It was also impossible to calculate statistics on such a low percentage of reported homosexuals.

Of the total sample, many reported that they had heard about the disease AIDS by February of 1985. Men reported having heard of AIDS in July of 1984 which is earlier than women who reported May of 1985.

Approximately half of all groups reported that they had not changed their sexual practices since hearing of AIDS. Members of the Low knowledge group and women (when compared to men) were slightly more likely to state that they had not changed their behaviors. Students who had changed their sexual behaviors were asked to report whether they had increased, decreased, stopped or not changed certain practices.

Of the students who reported changing their sexual behaviors since hearing of AIDS, 30.80% reported that they were more selective of a prospective sexual partner. Women and members of the High knowledge group were more likely to report this. The Medium and High knowledge groups reported being more monogamous. The Medium group

also had increased their use of condoms. Of the other behaviors, many group members stated that they had not changed in regard to avoiding homosexuals, looking at pornography, hugging and touching, masturbation, mutual masturbation, vaginal sexual intercourse, oral sex and anal sex. Men were usually more likely than women to state that they had not changed their behaviors.

Students were also asked whether or not they were personally concerned about contracting AIDS. Forty-seven percent of the total sample said that they were concerned, while 48.70% said that they were not. Men reported being more concerned about contracting AIDS (59.40%) than women (42.40%). With the three knowledge groups, the Low group was the least concerned (35.90%) and the High group was the most concerned (57.90%). There was an equal number of students in the Middle group who reported being concerned and not concerned about contracting AIDS.

From 80% to just over 90% of all students in this sample reported that they had received enough information about AIDS to make informed decisions concerning their sexual behavior. Men and members of the High knowledge group were more likely to report that they had received enough information (90.60% and 89.50% respectively).

More members of the Low knowledge group, in comparison to all other groups, reported that they had not received enough information about AIDS.

Knowledge of AIDS

In this section, data will be reported on men, women, and the three knowledge groups. Since the latter groups were formed on the basis of their total knowledge of AIDS scores, it is being anticipated that there will be differences in their knowledge subscores and item responses.

The knowledge of AIDS section, or Part III of the survey, contained items which could be divided to give subscores on: Cause, transmission, and treatment of AIDS. A total knowledge of AIDS score, out of 21, was also reported for each group. Table 4 provides the mean correct responses and standard deviations for the knowledge of AIDS subscores by groups. It is interesting to note how the number of correct responses increases from the Low to High knowledge groups.

The mean percentage of correct responses on the knowledge of AIDS section for the total sample was 73.23%. They answered 66.20% of the cause, 77.09% of the transmission, and 71.80% of the treatment of AIDS items

Table 4

Mean Correct Responses and Standard Deviations for Knowledge of AIDS Subscores by Group

Group	Knowledge Subscores			
	Cause (5)	Transmission (11)	Treatment (5)	Total (21)
Men	3.41 (1.27)	8.59 (1.68)	3.81 (1.20)	15.81 (2.85)
Women	3.27 (1.12)	8.44 (1.44)	3.50 (1.06)	15.21 (2.60)
Low Knowledge	2.33 (.93)	7.10 (1.25)	2.95 (1.21)	12.39 (1.52)
Medium Knowledge	3.33 (.93)	8.64 (1.01)	3.56 (.85)	15.54 (.85)
High Knowledge	4.29 (.65)	9.74 (.86)	4.26 (.80)	18.29 (.96)

Note. Total number of correct responses per subscore listed under cause, transmission, treatment and total. Numbers within parentheses refer to standard deviations.

correctly. Men answered an average of 15.81 items out of 21 correctly, or 75.29%. Women answered 72.43% of the items correctly, which is slightly lower than the men. Both genders received roughly equivalent scores on the cause, transmission, and treatment subscores.

As anticipated, the High knowledge group had a mean of 18.29 items correct out of 21, or 87.10%. The Medium group had a mean of 74.00% correct items, and the Low group 59.00%. The High group also received relatively higher scores on the cause, transmission, and treatment of AIDS.

The standard deviations for the High and Medium knowledge groups were relatively smaller than the other groups. This suggests that the subjects in the High and Medium groups were more likely to receive about the same number of correct items on all subscores, and that there was low variability between these scores. The variability between the number of correct responses for the total knowledge score, as well as the subscores, was higher for the men, women, and Low knowledge group. This suggests that there was a greater range between the total number of correct responses for the subjects in these groups.

The percent correct responses for AIDS items by

knowledge groups are listed in Table 5. The High knowledge group did perform relatively better on many, but not all, of the items. A trend is sometimes visible between these groups, as the percentage of correct responses often increases from Low to High knowledge group. The percentage of men and women who answered some items correctly was about the same. For other items, more men than women would respond correctly and vice versa.

The first five items dealt with the cause of AIDS. The next eleven dealt with the transmission of the AIDS virus, and the last five with the treatment of AIDS. The data collected on each of the items will be described in this order.

It is true that most people who have AIDS in Canada are homosexual men. Just under 40% of the total sample correctly responded to this item. More men (62.50%) and the High knowledge group (57.90%) answered this item correctly when compared to the women (30.60%) and other groups.

The cause of AIDS has been traced back to the HIV virus. Over 61% of the total sample was aware of this. Women were more likely to respond correctly to this item than men. Well over 86% of the High knowledge group

Table 5

Percent Correct Responses for AIDS Items by Knowledge Group

Item	% Correct Responses		
	Low	Medium	High
1. Most people who have AIDS in Canada are homosexual men. (True)	12.80	48.70	57.90
2. The cause of AIDS is unknown. (False)	35.90	64.10	86.80
3. Most people who are infected with the AIDS virus appear healthy and show no obvious signs of the disease. (True)	33.33	48.70	86.80
4. It is impossible to tell whether someone has the AIDS virus just by looking at them. (True)	64.10	76.90	97.40
5. Anybody can get AIDS. (True)	87.20	94.90	100.00

Table 5 (continued)

Item	% Correct Responses		
	Low	Medium	High
6. AIDS can be contracted through spitting or wiping tears. (False)	84.60	97.40	100.00
7. AIDS can be passed from an infected female to her unborn child during pregnancy. (True)	84.60	97.40	94.70
8. Blood, semen, and vaginal fluid must be passed for the AIDS virus to be contracted. (True)	87.20	76.90	89.50
9. Although all blood is tested, there is still a one in a million chance of contracting the AIDS virus through transfusions. (True)	51.30	71.80	76.30
10. AIDS can be contracted from donating blood. (False)	71.80	87.20	92.10

Table 5 (continued)

Item	% Correct Responses		
	Low	Medium	High
11. Sharing kitchens and bathrooms with a person who has AIDS puts you at risk for contracting the AIDS virus. (False)	79.50	84.60	92.10
12. Most people who get AIDS usually die from the disease. (True)	84.60	87.20	89.50
13. Receptive anal intercourse is the highest risk sexual activity for contracting the AIDS virus. (True)	35.90	69.20	78.90
14. The AIDS virus can enter the blood stream through sores, cuts or rashes. (True)	51.30	74.40	89.50
15. It is possible to get AIDS from mosquitoes. (False)	51.30	74.40	86.80

Table 5 (continued)

Item	% Correct Responses		
	Low	Medium	High
16. Homosexual males and lesbians are equally at risk of contracting the AIDS virus. (False)	28.20	43.60	84.20
17. AIDS can be cured if treated early. (False)	79.50	89.70	97.40
18. A new vaccine has recently been developed for the treatment of AIDS. (False)	33.30	41.00	44.70
19. Once infected, a person carries the AIDS virus for the rest of their life. (True)	74.40	92.30	92.10
20. A person without any AIDS symptoms tests positive for AIDS virus antibodies in the blood. This means that the person is not necessarily infectious to others and is not likely to develop the disease. (False)	41.00	53.80	97.40

Table 5 (continued)

Item	% Correct Responses		
	Low	Medium	High
21. Condoms used with a spermicidal foam or gel give relatively effective protection from the AIDS virus. (True)	66.70	79.50	94.70

answered correctly.

The next two items asked whether "most people who are infected with the AIDS virus appear healthy and show no obvious signs of the disease" and "it is impossible to tell whether someone has the AIDS virus just by looking at them". Both of these items are true. About 55% of the total sample answered the first item correctly. A greater number, 78.60%, answered the second item correctly. For both items, women were more likely to answer true than men. Once again, the High knowledge group was more likely to answer these items correctly.

All groups were more aware of the fact that anybody can get AIDS. The percentage of correct responses for this item ranged from 87.20% (Low knowledge group) to 100.00% (High knowledge group).

In the next eleven items, students were questioned about the transmission of the AIDS virus. Of the total sample, 93.20% knew that AIDS could not be contracted through spitting or wiping tears. Women (94.10%) and members of the High knowledge group (100.00%) were more likely to respond correctly to this item.

Many people were also aware that "AIDS can be passed from an infected female to her unborn child during pregnancy". More women (92.90%) than men (87.50%) were

aware of this. Of the three knowledge groups, more members of the Medium group (97.40%) answered this item correctly when compared with the High group (94.70%).

The next item asked whether "blood, semen, and vaginal fluid must be passed for the AIDS virus to be contracted". This item was worded wrongly, instead of "and" the word "or" should have been written. This wording caused problems in the interpretation of the question, therefore this data needs to be viewed with caution. Many students correctly answered true. A higher percentage of Low knowledge group members (87.20%) answered this item correctly when compared to the Medium group (76.90%). Members of the High knowledge group, when compared to all other groups, were more likely to respond correctly to this item.

It is true that "although all blood is tested, there is still a one in a million chance of contracting the AIDS virus through transfusions" (personal communication with Kenneth Mews of the Canadian Red Cross Society). Of the total sample only 65.80% were aware of this. Men and members of the High knowledge group were more likely to answer this item correctly (75.00% and 76.30% respectively).

Over 82% of the sample knew that AIDS could not be

contracted from donating blood. More men (87.50%) and members of the High knowledge group (92.10%) knew this than any of the other groups.

Slightly greater numbers of students knew that AIDS could not be contracted from sharing kitchens and bathrooms. In fact 84.60% of the total sample was aware of this. Once again, members of the High knowledge group (92.10%) and men (90.60%) were more likely to respond correctly to this item than women (82.40%) and other groups.

Women (89.40%) and the High knowledge group (89.50%) knew that "most people who get AIDS usually die from the disease". Members of other groups were less aware of this, especially the men (78.10%).

Receptive anal intercourse is considered the highest risk sexual activity for contracting the AIDS virus. Only 60.70% of the total sample knew this. As expected, more members of the High knowledge group (78.90%) correctly responded to this item than any other group. Only 35.90% of the Low knowledge group, and 55.30% of the women answered correctly.

It is true that the AIDS virus can enter the blood stream through sores, cuts or rashes. Over 70% of the total sample, and about the same percentages of men and

women knew this. Approximately 89% of the High knowledge group responded correctly to this item.

It is not possible to get AIDS from mosquitoes. Only 70.10% of the total sample answered this item correctly. Men and members of the High knowledge group were more likely to respond correctly to this item (75.00% and 86.80% respectively). Only 51.30% of the Low knowledge group were aware that AIDS could not be contracted from mosquitoes.

Homosexual males and lesbians are not equally at risk of contracting the AIDS virus. Only 51.30% of the total sample answered correctly. About 28.20% of the Low and 43.60% of the Medium knowledge groups answered this item correctly. Women (52.90%) were more likely to respond correctly to this question than men (46.90%).

The next five items were grouped into the treatment of AIDS subscore. Eighty-eight percent of the total sample knew that AIDS can not be cured if treated early. More men (93.80%) and members of the High knowledge group (97.40%) were aware of this.

Very few students knew that no new vaccine has recently been developed for the treatment of AIDS. In fact, only 39.30% of the total sample responded correctly to this item. More men and members of the High knowledge

group were likely to answer this item correctly, 43.80% and 44.70% respectively.

More students were aware that "once infected, a person carries the AIDS virus for the rest of their life". Out of the total sample 85.50% answered correctly. Men (90.60%) and the Medium knowledge group (92.30%) responded correctly more often than any other group.

Another item in the treatment subscore asked whether a person who tests positive for AIDS virus antibodies in the blood, but without any symptoms, is not necessarily infectious to others and is not likely to develop the disease. The correct response is <u>false</u>. Only 41.00% of the Low knowledge group knew this, compared to the High knowledge group in which 97.40% responded correctly. More men (68.80%) were aware of this than women (61.20%).

The final item regarding the treatment of AIDS was more indicative of taking precautions against the spread of HIV. The item asked whether "condoms used with a spermicidal foam or gel give relatively effective protection from the AIDS virus". This item is <u>true</u>. Approximately 79% of the total sample answered this item correctly. Men (84.40%) and members of the High

knowledge group (94.70%) were more likely to respond correctly than any other group.

Relations between the Variables

Pearson correlation coefficients were calculated between all the variables for the total sample. After the most relevant relations were established, correlations were then determined for the three different knowledge groups, men and women.

Table 6 shows the intercorrelations between certain behavior items for the total sample. The majority of the correlations were significant at the .01 level. A moderate correlation was found between alcohol use and the number of drinks consumed at one sitting (r= .56). Therefore, as the alcohol use of an individual increased per week, so did the likelihood that this individual would drink more than 1-2 drinks per sitting. The frequency of vaginal sexual intercourse, and engaging in any type of penetrative sexual intercourse without a condom also increased with alcohol use (r= .25 and r= .34 respectively).

The frequency of engaging in oral sex was highly related to the frequency of engaging in vaginal sex (r= .69). Therefore, as the frequency of vaginal sex

Table 6

Intercorrelations between certain Behavior Items for the Total Sample

	Alcohol Use	Drinks at one time	Frequency Vaginal Sex	Frequency Oral Sex
Alcohol Use	--			
Drinks at one time	.56**	--		
Frequency Vaginal Sex	.25**	.24**	--	
Frequency Oral Sex	.12	.06	.69**	--
Any type of penetrative sex without a condom	.34**	.32**	.77**	.52**

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

increased, the frequency of oral sex did also and vice versa. As individuals engaged more often in vaginal and oral sex, the chances of them engaging in sex without a condom at least once, tended to increase (r= .77 and r= .52, respectively).

In general, it was more likely that students who had used alcohol often had also used cannabis and cocaine. In terms of sexual behaviors, these students were also more likely to engage in hugging, deep kissing, petting above and below the waist, vaginal and oral sex, and any type of sex without a condom. Increased participation in anal sex due to alcohol use was not true of these students.

Students who had been at university longer were more likely to report increased alcohol consumption, cannabis use and engaging in sex without a condom. Therefore the length of time the students had been at university, and not the age, was associated with how much they drank. There was a low correlation between the age of the respondent and the age that they had first engaged in sex (r= .22) As the age of first sexual intercourse increased, the alcohol use of students decreased (r= -.18), as did cannabis and cocaine use. Students who were older than others at the time of their first sexual

intercourse, also reported engaging less in vaginal sexual intercourse (r= -.26). They were also more likely not to have engaged in any type of penetrative sexual intercourse without a condom (r= -.33), unlike their peers who had engaged in sexual intercourse at earlier ages.

The number of sexual partners that students had had tended to increase with the length of time they had been at university (r= .25). The more sexual partners that students had, the more likely they were to use alcohol and cannabis. As well, they were more likely to have engaged in various sexual behaviors including oral sex, vaginal sex, and any type of sexual intercourse without a condom.

Most of these correlations described the three knowledge groups, men and women. The only differences were that due to the smaller sample sizes of the subgroups, correlations that were significant for the total sample were not necessarily significant for the smaller groups.

A crosstabulation of personal concern about contracting AIDS by having changed sexual practices since hearing of the disease AIDS is listed in Table 7. It should be noted that the High knowledge group was more

Table 7

Crosstabulation of Personal Concern by Changed Sexual Practices for All Groups

Have you changed your sexual practices since hearing of the disease AIDS?		Personally Concerned about contracting AIDS	
		Yes	No
Low Knowledge Group	Yes	13.80	17.20
	No	20.70	48.30
Medium Knowledge Group	Yes	33.30	13.30
	No	13.30	40.00
High Knowledge Group	Yes	34.40	9.40
	No	25.00	31.30
Men	Yes	32.00	12.00
	No	28.00	28.00
Women	Yes	25.40	13.40
	No	16.40	44.80
Total Sample	Yes	27.17	19.57
	No	13.04	40.22

Note. The values represent percentages.

likely to report being personally concerned about AIDS and having changed their sexual practices (34.40%) when compared to all other groups. The majority of the Low knowledge group was not personally concerned about AIDS, nor had they changed their sexual practices since hearing of this disease (48.30%).

Men were more concerned and had changed their sexual behaviors (32.00%), when compared with women (25.40%). For the overall sample, students were more likely to report not being personally concerned about AIDS or having changed their sexual behaviors.

Table 8 shows a crosstabulation of personal concern about contracting AIDS by whether or not the students have received enough information about AIDS to make informed decisions con[illegible] their sexual behavior. In general, many students [illegible]ted being personally concerned about contracting AIDS and felt that they had not received enough information about this disease (47.75%).

Members of the High knowledge group and men (54.30% and 53.30% respectively) when compared to other groups, were more personally concerned about AIDS, but felt that they had received enough information.

Pearson correlation coefficients were also

Table 8

Crosstabulation of Personal Concern by Received Enough Information about AIDS for All Groups

Have you received enough information about AIDS to make informed decisions concerning your sexual behavior?		Personally Concerned about contracting AIDS	
		Yes	No
Low Knowledge Group	Yes	27.00	54.10
	No	10.80	8.10
Medium Knowledge Group	Yes	39.50	10.50
	No	47.40	2.60
High Knowledge Group	Yes	54.30	40.00
	No	5.70	--
Men	Yes	53.30	40.00
	No	6.70	--
Women	Yes	34.60	50.60
	No	9.90	4.90
Total Sample	Yes	39.64	9.00
	No	47.75	3.60

Note. The values represent percentages.

calculated between the subscores of the Knowledge of AIDS section of the present survey. The subscores were cause (5 items), transmission (11 items) and treatment of AIDS (5 items). A cumulative knowledge score, out of 21, was also determined.

Table 9 provides the intercorrelations between the knowledge of AIDS subscores for the three knowledge groups. One would expect that the subscores would correlate quite highly with the total knowledge score as they were measuring knowledge of AIDS, but this was not found. For the Low knowledge group, the transmission and treatment subscores varied significantly with the total knowledge score (r= .51 and r= .58). This indicates that the greater the number of correct items in these subscores, the more likely the total knowledge score will be higher. The cause subscore, though it positively varied with the total knowledge score, was not significant (r= .19).

For the Medium knowledge group, there was a moderate inverse relation between the cause and transmission subscores (r= -.60). This means that as the student scores on the cause of AIDS items increased, the scores on the transmission of AIDS items decreased and vice-versa. The treatment of AIDS subscore for this

Table 9

Intercorrelations between Knowledge of AIDS Subscores for the Three Knowledge Groups

Group	Cause	Transmission	Treatment
Low Knowledge Group			
Cause	--		
Transmission	-.35*	--	
Treatment	-.17	-.14	--
Total Knowledge	.19	.51**	.58**
Medium Knowledge Group			
Cause	--		
Transmission	-.60**	--	
Treatment	-.18	-.28*	--
Total Knowledge	.20	.26	.48**
High Knowledge Group			
Cause	--		
Transmission	-.29*	--	
Treatment	-.10	-.33*	--
Total Knowledge	.34*	.42**	.47**

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

group, was significantly correlated with the total knowledge score (r= .48).

Significant correlations were found between the three subscores and the total knowledge score for the High knowledge group. In general, there appeared to be inverse correlations between cause with transmission and treatment, and transmission with treatment. This was true of all the knowledge groups indicating that a high number of correct responses on one subscore often meant a low number of correct responses on another subscore. In general, most subscores were positively correlated with total knowledge score, which is to be expected.

Intercorrelations between these subscores were then determined for men, women and the total sample. Table 10 shows that the inverse relations between the subscores were not true of members of these groups. In fact, all intercorrelations were related positively from low to moderately high. The transmission subscore for men was the best predictor of their overall total knowledge score (r= .78). The same was true of the women as these variables correlated at .77.

It was expected that the average grade received by the students last semester would correlate with how much they knew about AIDS, its causes, transmission, and

Table 10

Intercorrelations between Knowledge of AIDS Subscores for Men, Women and the Total Sample

Group	Cause	Transmission	Treatment
Men			
Cause	--		
Transmission	.23	--	
Treatment	.13	.20	--
Total Knowledge	.64**	.78**	.60**
Women			
Cause	--		
Transmission	.30**	--	
Treatment	.29**	.22*	--
Total Knowledge	.71**	.77**	.65**
Total Sample			
Cause	--		
Transmission	.28**	--	
Treatment	.24**	.22**	--
Total Knowledge	.69**	.77**	.64**

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

treatment. It was found that grade last semester correlated significantly with the cause subscore for the total sample and the women (r= .17 and r= .18 respectively). For the rest of the groups, no other subscores were related to the grade last semester.

All the relations between the knowledge subscores for the total sample were significant at the .01 level. This suggests that all the variables increased as a function of one another. The best subscore predictor of the total knowledge score for the entire sample was transmission. The two variables correlated at .77, suggesting that about 50% of the variance in the total knowledge score was explained by the transmission subscore. Cause and treatment were also relatively good predictors of the total knowledge subscore for the entire sample (r= .69 and r= .64 respectively).

Student Comments on the Survey

At the end of the survey, a comments section was provided in which the students were able to voice any grievances or suggestions. Twenty-two students out of the total sample of 117 chose to write comments. The comments ranged from a high to a low interest in the questionnaire. Many felt that it was important and

necessary to conduct such surveys among university students. They felt that "scientific facts should be made available to all individuals", especially to students "on campus", in a free and non-threatening fashion. A few students asked how it would be possible to see the results of this survey as they found it "very interesting".

Other students felt that such surveys were a waste of valuable class time and that many "stupid questions" were asked in the survey. These students felt that the results would "be used in sensationalizing the ignorance of college-age students [with respect to AIDS] in the media".

The respondents felt that some of the items in the questionnaire, especially those concerning the knowledge of AIDS, were ambiguous and "depend[ed] on other things". For example, regarding item 20 which asked "most people who are infected with the AIDS virus appear healthy and show no obvious signs of the disease", a student mentioned that the answer to this depended on "what stage the person is in". Another item asked if "AIDS can be contracted through spitting or wiping tears". A student suggested that the answer to this item should have been "don't know" meaning that doctors "don't know if it

[AIDS] can be transmitted this way".

Many students commented that they were in monogamous relationships and that both partners had been virgins when they met. They felt that the items on the survey were skewed to make monogamous relationships seem "ignorant w.r.t. [with regard to] the AIDS virus". Many considered the questionnaire as not applicable to their situations. Therefore, items such as number 14, which asked whether the students had increased, decreased, stopped or not changed certain behaviors were often overlooked or not answered for these reasons. A student suggested that instead of asking whether individuals had changed their sexual behaviors, a scale which measured how concerned people were about those sexual behaviors as a source for contracting HIV should have been given.

Some students failed to see the relationship between increased alcohol use and their possible involvement in high risk sexual behaviors. One student believed that this survey was correlating chemical abuse with the knowledge of AIDS, when in fact it was not. Others were not aware that the term AIDS virus was synonymous with HIV. As well, many were not sure of the meaning of the term penetrative sexual intercourse, some students assumed that it included oral sex.

One student had "wondered for a long time about the safety of oral sex". This student stated that the information which was available to the public was not sufficient and therefore a counsellor had to be consulted. The student described this process as "embarrassing". The students requested that better information be given out so that they did not have to go to doctors' offices to find out more about AIDS. Another student felt that "much more information is needed about AIDS, not just commercials about condoms because no one ever thinks it can happen to them".

This survey was conducted during the Spring of 1989. At this time, an international conference on AIDS was being held in Montreal. The fact that so much information about AIDS was being distributed then may account for why these students felt so comfortable with the information they had about AIDS, and why so many did not have questions or comments about it. Many students had asked whether this survey was affiliated with the conference. Other students were angry that AIDS was being given so much attention during the conference, but wondered "how much attention the issue will receive two months from now!"

In general, these students had favorable reactions

to the questionnaire. A student commented that such questionnaires show how little the public knows and how these questionnaires "...can be very important in learning about AIDS and knowing the necessary precautions to take so as not to contract the virus".

Discussion

This study was designed to find out what a sample of undergraduate students at McGill University knew about AIDS and how this knowledge was affecting their sexual behaviors. Generally speaking, the students appeared to know what sexual behaviors were considered as high risk, but few reported taking adequate actions to reduce the transmission of HIV.

The students in this study had engaged in a variety of sexual behaviors, ranging from hugging to anal sex. They had used alcohol, cannabis, cocaine, and other substances from special occasions to quite often. With increased alcohol use, the students were more apt to engage in other drug use, as well as in a variety of sexual activities.

This sample of students was quite well-informed about the transmission of AIDS. They were less knowledgeable about the cause and the treatment of this

disease. The best predictor of the total knowledge of AIDS score was the transmission subscore. Men and women were approximately equally knowledgeable about AIDS.

Just under one half of the total sample was personally concerned about contracting AIDS. Of the students who were personally concerned, one-quarter reported that they had changed certain sexual practices. These truly effective precautions included being more selective of a prospective sexual partner, more monogamous, and an increased use of condoms. Many students were not concerned about AIDS and had not changed their sexual behaviors.

A very high number of students felt that they had received enough information about AIDS to make informed decisions concerning their sexual behavior. Under one half of these students were personally concerned about contracting AIDS. Also, about one half were personally concerned and felt that they had not received enough information about AIDS.

None of the students in this sample reported being bisexual, but about 1.20% did report a homosexual identity. This is similar to the percentage found by King et al. (1988) in their sample of college/university respondents.

It was found that men were more likely to use drugs and in heavier quantities than women. This finding is similar to King et al. (1988) who reported that both sexes were equally likely to use drugs, but the men did so more frequently and in heavier quantities than women. These researchers also reported that older adolescents were drinking alcohol at least once a week. This was not found in the present study. It was not the older adolescents, but the ones who had been at university longer, who were more likely to drink alcohol more times per week. A correlation between age and length of time at university is to be expected, but in this study only the latter variable significantly correlated with other variables. About the same percentage of students reported using cannabis in both studies.

Many similarities were noted between the group of men and the High knowledge group in this study. This was to be expected as men did comprise just under a quarter of the High knowledge group; however, about the same percentage of men were also in the Low and Medium knowledge groups. The members of the High knowledge group and the group of men were more likely to use drugs often and in heavier quantities than other groups. They were also more likely to engage in sexual activities and

high risk behaviors (such as anal intercourse) often without the use of condoms. Members of these groups were also similar in their responses to the knowledge of AIDS items, though the High knowledge group did perform better overall. Such similarities were not noticed between any of the other groups.

The mean age of first sexual intercourse for the present sample was 17.48 years. This age is higher than that reported by King et al. who suggested 14 years as an average age. Over three-quarters of the students in the present study had engaged in vaginal sexual intercourse at least once. The percentage of students in the King et al. (1988) study who had engaged in vaginal sex was the same. Over 10% of the sample reported that they had engaged in anal sex at least once. For anal sex, a higher percentage of approximately 15% was reported by King et al.

Students in the present sample were quite comfortable with the information that they had received on AIDS. As mentioned previously, this may have been due in part to the many articles which were published and made available to the public during the international conference on AIDS. In fact, less than 15% felt that they required more information. Students in other

studies (The Alberta AIDS Survey, 1988; King et al., 1988) were not this comfortable and stated that they required greater information on AIDS.

As mentioned before, this sample of students was quite knowledgeable about AIDS and had an average of 73.23% items correct. Other studies have reported percentages of correct responses ranging from 47% (Price et al., 1985) to 72% (King et al., 1988). Such data can only be used for reference as the questions which are asked about AIDS in various studies are not always comparable and therefore cannot be thought of as measuring the same factor. This sample of students was most knowledgeable on the transmission of the AIDS virus. They knew relatively less about the treatment and causes of AIDS.

Students in this sample need to learn that the cause of AIDS has been attributed to HIV. They are not aware that most people who have the disease in Canada are homosexual men, as only 39.30% of the total sample responded correctly to this item. They must also understand that most people who are infected with the AIDS virus appear healthy and do not show obvious signs of the disease (55.60% of the total sample answered this item correctly).

The majority of the sample (93.20%) knew that anybody can get AIDS and that it is not a disease to be caught only by members of certain high risk groups. It appears that students are beginning to understand that group membership does not predispose a person to contracting the AIDS virus. Instead, drug use and the sexual behaviors of individuals are being recognized as important contributing factors in contracting AIDS.

With regards to the transmission of HIV, students were well aware that it could not be transmitted through spitting or wiping tears, donating blood, or through sharing kitchens or bathrooms. One misconception that many individuals still had was that the virus could be transmitted by mosquitoes, over one-quarter of the students in the sample felt this way. Students were also not aware that engaging in receptive anal intercourse was a very high risk sexual activity creating an extremely conducive environment for the AIDS virus to be transmitted.

When asked about the treatment of AIDS, very few students (39.30%) knew that no new vaccine had recently been developed to treat AIDS. Many students (85.50%) knew that once the AIDS virus had been contracted by an individual, then that individual would carry it for the

rest of his or her life. Just under 80% of the students were aware that condoms used with a spermicidal foam or gel could give relatively effective protection from the AIDS virus. But even though students knew this, few were willing to use condoms on a regular basis. In fact, 42.70% reported that they had often engaged in penetrative sexual intercourse without a condom.

This sample of students knew much about AIDS, but appeared to be continuing to engage in sexual behaviors which would be considered as high risk. For example, 10% reported that they had engaged at least once in anal sex. An explanation for this could be that many of the students felt that their own sexual behaviors were not putting them at risk of contracting HIV, and therefore they did not need to make any changes in them. These students may either be engaged in monogamous relationships, or may not be engaging in any type of sexual intercourse at all. Ishii-Kuntz (1988) came to a similar conclusion when attempting to explain why students were not reporting behavior changes.

Many researchers (Ishii-Kuntz, 1988; Carroll, 1988; Leishman, 1987) have indicated that individuals who are personally concerned about contracting the AIDS virus are more likely to make changes in their sexual behaviors.

Results from this study support a similar conclusion. It appears to be personal concern, and not knowledge of AIDS or lack of AIDS information, which leads an individual to make changes. This finding suggests that AIDS education programs should teach adolescents the facts about AIDS, as well as attempt to increase their level of personal concern.

The majority of the findings of this study are consistent with what previous research in this area has discovered. In the next chapter, conclusions will be drawn regarding the limitations and research implications of this study. Recommendations to AIDS programs targeted toward a student population will also be provided.

Chapter 5: Conclusion

The present study examined the sexual behaviors and knowledge of AIDS among undergraduate students. The aim was to determine what behaviors these students are engaging in and how much they actually know about AIDS. The information gathered from this study suggests that counsellors and educators need to increase the level of personal concern among students, as well as teach them about AIDS.

A sample of 117 undergraduate students enrolled in a Spring session American Literature class at McGill University was administered a questionnaire which polled their behaviors and AIDS knowledge. The questionnaire was relatively concise and took less than half an hour to complete. While completing it, the students were encouraged to ask any questions which would assist them in understanding the items.

The data collected from this questionnaire was analyzed separately for the men and the women. Three groups, low, medium and high knowledge, were also formed

according to the knowledge scores of the respondents. The demographics, frequencies of various behaviors that the sample was engaging in, and the percentages of correct responses to the knowledge of AIDS items were obtained. As well, any significant correlations between the variables were determined.

The findings indicated that this sample of students was relatively knowledgeable about AIDS, but was engaging in some high risk sexual activities. For instance, the sample reported engaging in penetrative sexual intercourse without a condom quite often and to a lesser degree anal sex.

Alcohol use was moderate and was positively associated with the frequency of vaginal sex, sex without a condom, cannabis use, and cocaine use. The majority of the sample reported that they had never used the latter drug. In general, men were likely to report using drugs more often and in greater quantities than women.

The total sample of students answered just under three-quarters of the items on the knowledge of AIDS correctly. This was a relatively high percentage when compared with the results obtained by other similar studies (Price et al., 1985; King et al., 1988). Knowledge was greatest in the area of AIDS transmission,

but was slightly lower in the treatment and cause of AIDS. From the results of this study, it was determined that knowledge of AIDS does not appear to be related to behavior change among students. Instead, personal concern seems to lead to greater changes in behavior. As mentioned before, it appears that students should be taught the facts about AIDS with an emphasis on increasing their personal concern about contracting the disease.

Students who reported changing their behaviors because of the advent of AIDS appeared to be taking effective precautions. These included being more selective of a prospective sexual partner, more monogamous and increased condom use. Other changes in sexual behavior were not reported. This may be due to some students who believe that their own sexual behaviors will not put them at risk for contracting AIDS. The majority of the sample felt that they had received enough information about AIDS to make informed decisions concerning their sexual behaviors. This finding was not consistent with the results of other studies (The Alberta AIDS Survey, 1988; King et al., 1988) which found that individuals of this age group usually felt uncomfortable about the amount of AIDS information which they had.

Limitations of the Study

A pilot study in which the present questionnaire could have been tested would have greatly clarified the wording and scoring of some items. Furthermore, technical changes to the questionnaire such as drawing lines to separate each item completely would have assisted in obtaining more effective responses.

The response scales which were used for two items in this questionnaire may have led to ambiguous results. The students were asked to respond using the scale never, once, a few times, and often. The first two terms allow for meaningful interpretations, whereas the second two do not. The frequency of a behavior may be categorized as a few times by one student, but with another, the same frequency may be categorized as often.

For students who were involved in relationships, an item which asked the nature of the relationship should have been included. This item could ask whether the student had been monogamous, engaged in many short-term relationships, or had just had sex in the context of one night stands.

The results of this study are relatively non-generalizable when compared with similar studies that have been conducted in the area of students' AIDS

knowledge and sexual behaviors. The students composed a non-random convenience sample and were not representative of the various programs which were available at the undergraduate level. There were also an unequal number of men and women in the sample. This was not a major concern in this study as the findings were presented by gender.

Conclusions and Research Implications

Adolescents today appear to be engaging in various types of behaviors at earlier ages for example, dating, drinking, and engaging in sexual activities. Such changes have resulted in a greater tendency of this age group to be open and permissive with regard to sex. However, this attitude may be changing as the threat of AIDS could become a reality for some adolescents in the future.

Gradually, a greater number of studies are being conducted to poll adolescents' knowledge of AIDS and their involvement in high risk sexual behaviors. These studies should also include questions which ask students how concerned they are about personally contracting AIDS. Such questions are important, as this study and many others (The Alberta AIDS Survey, 1988; Ishii-Kuntz,

1988), are showing evidence of personal concern as being a greater factor in behavior change, than knowledge of AIDS. The findings of such studies are necessary as it appears that increasing the personal concern of students, as well as their knowledge of AIDS, will be the only reasonable method of halting the spread of AIDS in this population, at least until a cure is found.

Many of these studies have reported a limited knowledge of AIDS among students. Very few respondents are aware of the main routes of HIV transmission. Others do not appear to be personally concerned about contracting HIV, and have not reported changes in their sexual activities. With such an array of findings, it is not difficult to understand why educational programs which are appropriate for one group are not simply going to be appropriate for another (Boyd & Jackson, 1988). Therefore, it is important that more research be conducted with adolescent samples to provide adequate models for educational programs.

Any future research which would involve studying the AIDS knowledge and sexual behavior of students would greatly profit from pilot studies for a number of reasons. Firstly, the research instrument to be used could be tested with a smaller sample to discover any

ambiguities or problems in the items. Secondly, if response scaling was to be used, the meaningfulness of the response categories could be checked. Thirdly, any technical changes to the questionnaire which would increase the understanding of the responses could be made.

After testing the questionnaire in this way, amendments could be made to increase the validity of it. As well, the inclusion of items which would ask the students' sources of AIDS information and the nature of their present relationship (e.g. monogamous) would make the questionnaire more comprehensive. It could then be tested on a larger, more representative sample to increase the generalizability of the results.

Research in this area needs to increase the reliability of its results. This can be achieved by replicating the study with the same or a different sample, or with the same or another form of the questionnaire. Following-up the results can greatly increase the reliability of a study.

It would be advantageous to poll persons of various ages about AIDS and their behaviors and then determine any trends among the age groups. This approach could lead to an increased ability to predict which individuals

are at risk of contracting HIV and which are not. Conducting a longitudinal study would also be beneficial in increasing the predictability of who is more likely to contract the AIDS virus, but due to the nature of such a study this may not be feasible.

Recommendations for AIDS Programs targeted toward Student Populations

The following recommendations are for counsellors and educators who are involved in teaching students about AIDS and its effects. The conclusions have been drawn from the present study and from similar studies in this area. It is important that all AIDS information, be it in the form of pamphlets, television programs or in lectures, be presented in an accurate, clear, simple and direct manner. Such an approach would not assume that all adolescents are capable of formal operational thought, and would therefore involve concrete language and examples.

Some students in the present study stated that they were embarrassed to seek AIDS information from counsellors or from doctors. It is essential that this information be made available to all students in a non-threatening environment. Therefore it is being

recommended that AIDS information be taught, with the consent of parents, as a requirement in the school curricula in a clear and direct manner.

Students also need to be taught which behaviors are considered as high risk and how drug use can increase the chances of AIDS virus transmission. Alcohol use, for example, can impair the judgement of an individual leading one to engage in risky behavior. It is important that students understand these issues as there is no cure for AIDS. Engaging in responsible behavior appears to be the only method of reducing the risk of HIV transmission.

Educators and counsellors should be made aware that programs which express complete sexual abstinence as a policy are not effective (King et al., 1988). Students will continue to engage in sexual intercourse whether or not they understand the effects and implications of AIDS. Therefore, it is being recommended that students be given safer sexual alternatives.

As the research has indicated, many students fail to make changes in their sexual behaviors unless they believe that they are personally susceptible or are concerned about contracting AIDS. Educators must play a role in increasing the personal concern of students. This can be achieved by helping students to realize that

it is their own behavior which can put them at risk for AIDS virus transmission, and not the behavior of others. In this manner, it is expected that students will behave in a more responsible fashion to avoid dangerous behaviors and situations.

Future research should investigate whether implementing recommendations from this and other relevant studies will increase the effectiveness of AIDS educational programs targeted toward the adolescent age group.

This research has provided data about the sexual behaviors and AIDS knowledge of undergraduate university students. It has also offered suggestions for future research in this area, and has made recommendations for current AIDS educational programs.

Appendix A

Appendix B

(photo-reduced 20%)

Survey of Undergraduate Students' Behavior and AIDS Knowledge, 1989

SURVEY OF UNDERGRADUATE STUDENTS' BEHAVIOR AND AIDS KNOWLEDGE, 1989

McGill University

PART I: DEMOGRAPHICS

Please note that this questionnaire is totally anonymous and confidential. Do not write your name. The more honest you are in your answers the greater the validity of results.

Please read each question carefully. Answer each question by choosing a number from the **KEY** and writing it in the line(s) beside the question.

1. Are you male or female? _____

   1 = Male
   2 = Female

2. How old are you? Years _____ Months _____

   eg. if you are 20 years and 8 months old, you would place 20 after Years and 08 after Months.

3. What is your marital status? _____

   1 = single
   2 = married
   3 = separated
   4 = divorced
   5 = widowed

4. What program and year are you in? Program _____

   eg. programs could include arts, science, nursing, business. Year _____

   Enter 1 if you are in your first year, 2 if you are in your second year, etc.

5. What was your overall average grade last semester? _____

   Enter your overall average grade in terms of percentages. If your average was about 62 percent, then enter 62.

Please go on to the next page...

PART II: BEHAVIORS

Please read each question carefully. Answer each question by choosing a number from the KEY and writing it in the line(s) beside the question. For some questions a list of behaviors will be listed, please be sure to read and respond to all of them.

6. How often do you use the following substances?

1 = never
2 = on special occasions
3 = about once a month
4 = 2-3 times a month
5 = once a week
6 = 2-3 times a week
7 = every day

a) Alcohol (beer, wine, liquor) _____

b) Cannabis (hashish or marijuana) _____

c) Cocaine _____

d) Other non-medical substances (eg. speed, solvents such as glue or gasoline, or heroin). Please specify_____ _____

7. How much do you usually drink at one time? _____

1 = none
2 = 1-2 drinks
3 = 3-4 drinks
4 = 5 or more drinks

8. How often have you engaged in the following experiences?

1 = never
2 = once
3 = a few times
4 = often

a) Hugging _____

b) Deep (open mouth) kissing _____

c) Petting above the waist _____

d) Petting below the waist _____

e) masturbation _____

f) mutual masturbation _____

1 = never
2 = once
3 = a few times
4 = often

g) vaginal sexual intercourse _____

h) oral sex _____

i) anal sexual intercourse _____

j) any type of penetrative sexual intercourse without a condom _____

9. a) Have you ever made love to a man in the past 2 years? _____

b) Have you ever made love to a woman in the past 2 years? _____

1 = Yes
2 = No

If you have not had any type of penetrative sexual intercourse, please go on to Question 15.

10. If you have had intercourse:

a) what was your age of first sexual intercourse? _____

b) how many sexual partners have you had since this age? _____

11. How often would you say that you use condoms during penetrative sexual intercourse? _____

1 = never
2 = once
3 = some times
4 = often

12. For what reason(s) did you <u>first</u> have sexual intercourse?

1 = it was expected by friends
2 = curiosity
3 = under the influence of alcohol or other drugs
4 = loneliness
5 = forced (eg. date rape)
6 = love for the person
7 = other (please specify) _____

a) 1st reason _____

b) 2nd reason _____

13. Have you changed your sexual practices since hearing of the disease AIDS? _____

1 = Yes
2 = No

14. If YES, have you increased, decreased, stopped, or not changed the following behaviors:

1 = increased
2 = decreased
3 = stopped
4 = not changed

a) more selective of a sexual partner _____

b) avoid homosexuals _____

c) looking at pornography _____

d) hugging and touching _____

e) masturbation _____

f) mutual masturbation _____

g) more monogamous _____

h) use of condoms _____

i) vaginal sexual intercourse _____

j) oral sex _____

k) anal sexual intercourse _____

15. When did you first hear about the disease AIDS? Year _____ Month _____

16. Are you personally concerned about contracting AIDS? _____

1 = Yes
2 = No

17. Have you received enough information about AIDS to make informed decisions concerning your sexual behavior? _____

1 = Yes
2 = No

PART III: KNOWLEDGE OF AIDS

Please read each statement carefully. Indicate whether the statement is true, false, or don't know by placing a number from the KEY on the appropriate line.

1 = True
2 = False
3 = Don t Know

18. Most people who have AIDS in Canada are homosexual men. _____

19. The cause of AIDS is unknown. _____

20. Most people who are infected with the AIDS virus appear healthy and show no obvious signs of the disease. _____

21. It is impossible to tell whether someone has the AIDS virus just by looking at them. _____

22. Anybody can get AIDS. _____

23. AIDS can be contracted through spitting or wiping tears. _____

24. AIDS can be passed from an infected female to her unborn child during pregnancy. _____

25. Blood, semen, and vaginal fluid must be passed for the AIDS virus to be contracted. _____

26. Although all blood is tested, there is still a one in a million chance of contracting the AIDS virus through transfusions. _____

27. AIDS can be contracted from donating blood. _____

28. Sharing kitchens and bathrooms with a person who has AIDS puts you at risk for contracting the AIDS virus. _____

29. Most people who get AIDS usually die from the disease. _____

30. Receptive anal intercourse is the highest risk sexual activity for contracting the AIDS virus. _____

31. The AIDS virus can enter the blood stream through sores, cuts or rashes. _____

32. It is possible to get AIDS from mosquitoes. _____

1 = True
2 = False
3 = Don't know

33. Homosexual males and lesbians are <u>equally</u> at risk of contracting the AIDS virus. _____

34. AIDS can be cured if treated early. _____

35. A new vaccine has recently been developed for the treatment of AIDS. _____

36. Once infected, a person carries the AIDS virus for the rest of their life. _____

37. A person without any AIDS symptoms tests positive for AIDS virus antibodies in the blood. This means that the person is not necessarily infectious to others and is not likely to develop the disease. _____

38. Condoms used with a spermicidal foam or gel give relatively effective protection from the AIDS virus. _____

Comments: _____

_____

_____

_____

_____

Thank you for taking part in this study.

References

Adrien, A., Hankins, C., & Remis, R. (1989). Canadian experience with AIDS and HIV infection. In PAHO. AIDS Profile of an Epidemic. Washington, DC: WHO.

Anastasi, A. (1982). Psychological Testing (5th ed.). New York, NY: MacMillan Publishing Company.

Bennett, F.J. (1987). Aids as a social phenomenon. Social Science and Medicine, 25(6), 529-539.

Boyd, N.T., & Jackson, M.A. (1988). Reducing the risks of pleasure: responding to aids in Canada. Canadian Public Policy, 14:4, 347-360.

Bruce, K.E.M., & McLaughlin, J. (1986). The development of scales to assess knowledge and attitudes about genital herpes. Journal of Sex Research, February, 22(1), 73-84.

Canadian AIDS Society. (1988). Safer Sex Guidelines: A Resource Document for Educators and Counsellors. Ottawa, Ontario.

Carroll, L. (1988). Concern with aids and the sexual behavior of college students. Journal of Marriage and the Family, 50(2), May, 405-411.

Carter, D.B. (1986). Aids and the sex therapist: "just the facts please ma'am". Journal of Sex Research, August,

22(3), 403-408.

Chaplin, J.P. (1985). Dictionary of Psychology (2nd ed.). New York, NY: Dell Publishing Company.

Christensen, L.B. (1985). Experimental Methodology (3rd ed.). Massachusetts: Allyn and Bacon, Inc.

Curran, J.P., Neff, S., & Lippold, S. (1973). Correlates of sexual experience among college students. Journal of Sex Research,9, 124-131.

Darling, C.A., & Davidson, J.K., Sr. (1986). Coitally active university students: sexual behaviors, concerns, and challenges. Adolescence, 21(82), Summer, 403-419.

Diclemente, R.J., Zorn, J., & Temoshok, L. (1986). Adolescents and aids: a survey of knowledge, attitudes and beliefs about aids in San Francisco. American Journal of Public Health, 76(12), 1443-1445.

Dulit, E. (1972). Adolescent thinking a la Piaget: the formal stage. Journal of Youth and Adolescence, 1(4), 281-301.

Erikson, E.H. (1968). Identity, Youth and Crisis. New York, NY: W.W. Norton and Company.

Feldman, D.A. (1985). Aids and social change. Human Organization, 44(4), Winter, 343-348.

Fineberg, H.V. (1988). The social dimensions of aids. Scientific American, October, 259(4), 41-48.

Flora, J.A., & Thoresen, C.E. (1988). Reducing the risk of AIDS in adolescents. American Psychologist, November, 43(11), 965-970.

Friedland, G., & Klein, R.S. (1987). Transmission of the human immunodeficiency virus. The New England Journal of Medicine, 317(18), 1125-1135.

Gallo, R.C., & Montagnier, L. (1988). Aids in 1988. Scientific American, October, 259(4), 41-48.

Goedert, J. J. (1987). What is safe sex? The New England Journal of Medicine, 316(21), 1139-1142.

Government of Quebec. (1989). Understanding AIDS. Ministere de la Sante et des Services Sociaux, brochure (English), supplement to English speaking newspapers, February 26.

Haseltine, W.A., & Wong-Staal, F. (1988). The molecular biology of the aids virus. Scientific American, October, 259(4), 52-62.

Hennessey, N.P., & D'Eramo, J.E. (1986). Update: aids-related complex (ARC). Medical Aspects of Human Sexuality, December, 20(12), 22-35.

Hersh, E.M., & Petersen, E.A. (1988). The aids epidemic. Life Sciences, 42(20), i-iv.

Heyward, W.L., & Curran, J.W. (1988). The epidemiology of aids in the U.S. Scientific American, October, 259(4),

72-81.

Inhelder, B., & Piaget, J. (1958). The Growth of Logical Thinking. U.S.A: Basic Books.

Ishii-Kuntz, M. (1988). Acquired immune deficiency syndrome and sexual behavior changes in a college student sample. Sociology and Social Research, 73(1), October, 13-15.

Jaffe, I.R., Seehaus, M., Wagner, C., & Leadbeater, B.J. (1988). Anal intercourse and knowledge of acquired immunodeficiency syndrome among minority-group female adolescents. Journal of Pediatrics, June, 112(6), 1005-1007.

Janus, S.S., & Janus, C.L. (1985). Children, sex, peers, culture: 1973-1983. Journal of Psychohistory, Winter, 12(3), 363-369.

Joseph, J.G., Emmons, C.A., Kessler, R.C., Wortman, C.B., O'Brien, K., Hocker, W.T., & Schaefer, C. (1984). Coping with the threat of aids. American Psychologist, 59(11), 1297-1302.

Kaplan, H.B., Johnson, R.J., Bailey, C.A., & Simon, W. (1987). The sociological study of aids: a critical review of the literature and suggested research agenda. Journal of Health and Social Behavior, June (28), 140-157.

Katz, I., Hass, G., Parisi, N., Astone, J., & McEvaddy, D.

(1987). Lay people's and health care personnel's perceptions of cancer, aids, cardiac, and diabetic patients. Psychological Reports, 60, 615-629.

Katzman, E.M., Mulholland, M., & Sutherland, E. (1988). College students and aids: a preliminary survey of knowledge, attitudes, and behavior. Journal of American College Health, November, 37(3), 127-130.

Keeling, R.P. (1987). Effects of aids on young Americans. Medical Aspects of Human Sexuality, September, 22-23.

Kelly, J.A., St. Lawrence, J.S., Smith, S., Hood, H.B., & Cook, D.J. (1987). Medical students' attitudes towards aids and homosexual patients. Journal of Medical Education, 62, 549-556.

Keller, S.E., Schleifer, S.J., Bartlett, J.A., & Johnson, R.L. (1988). The sexual behavior of adolescents and risk ofd aids [letter]. Journal of the American Medical Association, December 23-30, 260(24), 3586.

Kerlinger, F.N. (1979). Behavioral Research: A Conceptual Approach. New York, NY: Holt, Rinehart and Winston.

Kerlinger, F.N. (1986). Foundations of Behavioral Research (3rd ed.). New York, NY: Holt, Rinehart and Winston.

Kilpatrick, W. (1975). Identity & Intimacy. New York, NY: Dell Publishing Company.

King, A.J.C. (1984). Summary Report: Canada Health

Knowledge Survey: 9, 12 and 15 year olds 1982-1983. Kingston, Ontario: Queen's University.

King, A.J.C., Beazley, R.P., Warren, W.K., Hankins, C.A., Robertson, A.S., & Radford, J.L. (1988). Canada Youth & AIDS Study. Kingston, Ontario: Queen's University.

Klein, D.E., Sullivan, G., Wolcott, D.L., Landsverk, J., Namir, S., & Fawzy, F. (1987). Changes in aids risk behaviors among homosexual male physicians and university students. American Journal of Psychiatry, 144(6), 742-747.

Leishman, K. (1987). Heterosexuals and aids. The Atlantic Monthly, February, 39-58.

Mann, J.M., Chin, J., Piot, P., & Quinn, T. (1988). The international epidemiology of aids. Scientific American, October, 259(4), 82-89.

Markova, I., & Wilkie, P. (1987). Representations, concepts and social change: the phenomenon of aids. Journal for the Theory of Social Behavior, December, 17(4), 389-409.

Martin, J.L. (1986). Aids risk reduction recommendations and sexual behavior patterns among gay men: a multifactorial categorical approach to assessing change. Health Education Quarterly, 13(4), 347-358.

Martorano, S.C. (1977). A developmental analysis of performance on Piaget's formal operations tasks.

Developmental Psychology, 13(6), 666-672.

McMurray, C. (Ed.). (1987). Public favors aids testing for many groups. The Gallup Report, June, 261, 3-13.

McMurray, C. (Ed.). (1986). Majority would permit children to attend school with aids victims. The Gallup Report, March, 246, 19-22.

McMurray, C. (Ed.). (1986). Public expresses compassion for aids victims, but holds them responsible for contracting disease. The Gallup Report, August, 263, 12-19.

Moser, C.A. (1968). Survey Methods in Social Investigation. London, Great Britain: Heinemann Educational Books Ltd.

Mullen, C. (1989), Teens dismiss aids fears as media hype. The Edmonton Journal, February 11, p.A1.

Muuss, R.E. (1974). Theories of Adolescence (3rd ed.). New York, NY: Random House.

Newcomer, S.F., & Udry, J.R. (1985). Oral sex in an adolescent population. Archives of Sexual Behavior, 14(1), 41-46.

Newcomer, S.F., Udry, J.R., & Cameron, F. (1983). Adolescent sexual behavior and popularity. Adolescence, 18:71, Fall, 515-522.

Parten, M. (1966). Surveys, Polls, and Samples: Practical Procedures. New York, NY: Cooper Square Publishers, Inc.

Phillis, D.E., & Gromko, M.H. (1985). Sex differences in sexual activity: reality of illusion? The Journal of Sex Research, 21(4), 437-448.

Prentice, D.S., Briggs, N.E., & Bradley, D.W. (1983). Romantic attitudes of American university students. Psychological Reports, 53, 815-822.

Price, J.H., Desmond, S., & Kukulka, G. (1985). Highschool students' perceptions and misperceptions of aids. Journal of School Health, March, 55(3), 107-109.

Puckett, S.B., Bart, M., Bye, L.L., & Amory, J. (1985). Self-reported behavioral changes among homosexual and bisexual men--San Francisco. Journal of the American Medical Association, 254(18), 2537-2538.

Pulaski, M.A.S. (1980). Understanding Piaget. New York, NY: Harper & Row Publishers.

Quadland, M.C., & Shattls, W.D. (1986). Aids, sexuality and sexual control. Journal of Homosexuality, 13(1), 277-298.

Quality Control Research, Inc. (1987). The Alberta AIDS Survey, December, Edmonton, Alberta.

Redfield, R.R., & Burke, D.S. (1988). HIV infection: the clinical picture. Scientific American, October, 259(4), 90-98.

Reinisch, J.M., Sanders, S.A., & Ziemba-Davis, M. (1988).

The study of sexual behavior in relation to the transmission of human immunodeficiency virus. American Psychologist, November, 43(11), 921-927.

Richardson, J.L., Lochner, T., McGuigan, K., & Levine, A.M. (1987). Physician attitudes and experience regarding the care of patients with aids and arc. Medical Care, August, 25(8), 675-685.

Roberge, J.J., & Flexer, B.K. (1979). Further examination of formal operational reasoning abilities. Child Development, 50, 478-484.

Roiser, M. (1983). The uses and abuses of polls: a social psychologist's view. Bulletin of the British Psychological Society, 36, 159-161.

Romanowski, B., & Brown, J. (1986). Aids and changing sexual behavior. Canadian Medical Association Journal, 134:872.

Royse, D., Dhooper, S.S., & Hatch, L.R. (1987). Undergraduate and graduate students' attitudes towards aids. Psychological Reports, 60, 1185-1186.

Siegal, K., & Gibson, W.C. (1988). Barriers to the modification of sexual behavior among heterosexuals at risk for acquired immunodeficiency syndrome. New York State Journal of Medicine, February, 88(2), 66-70.

Singer, E., Rogers, T.F., & Corcoran, M. (1987). The

polls--a report--aids. The Public Opinion Quarterly, Winter, 51(4), 580-595.

Strunin, L., & Hingson, R. (1987). Acquired immunodeficiency syndrome and adolescents: knowledge, beliefs, attitudes and behaviors. Pediatrics, 79(5), 825-828.

Sudman, S., & Bradburn, N.M. (1983). Asking Questions: A Practical Guide to Questionnaire Design. San Francisco, CA: Jossey-Bass Publishers.

The Canada Council, Report of the Consultative Group on Survey Research (1976). Survey Research. Ottawa, Ontario: Printing and Publishing Supply and Services Canada.

Treiber, F.A., Shaw, D., & Malcolm, R. (1987). Acquired immune deficiency syndrome: psychological impact on health personnel. The Journal of Nervous and Mental Disease, 175(8), 496-499.

Vander Zanden, J.W. (1985). Human Development. (3rd ed.). New York, NY: Random House.

Wattleton, F. (1987). American teens: sexually active, sexually illiterate. Journal of School Health, November, 57(9), 379-380.

Winslow, R.W. (1988). Student knowledge of aids transmission. Sociology and Social Research, January,

72(2), 110-111.

Yarchoan, R., Mitsuya, H., & Broder, S. (1988). Aids therapies. Scientific American, October, 259(4), 110-119.