University of Alberta

COMPARING COGNITIVE AND SKILLS-BASED HIV/AIDS EDUCATIONAL APPROACHES WITH ADOLESCENTS OF DIFFERENT AGE AND GENDER GROUPS

by

MARK ROBERT PARADIS ©

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled COMPARING COGNITIVE AND SKILLS-BASED HIV/AIDS EDUCATIONAL APPROACHES WITH ADOLESCENTS OF DIFFERENT AGE AND GENDER GROUPS submitted by MARK ROBERT PARADIS in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in FAMILY STUDIES.

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Abstract

As adolescents persist in engaging in sexual practices that place them at risk for AIDS, so does the search for educational programs which can effectively reduce their risky behaviors. Many current HIV/AIDS educational programs utilize cognitive and/or skills-training methods. The effects of these programs have shown to vary across gender and age variables. These differences likely arise from developmental changes in adolescent cognition, self-esteem and social influence. Determining which approach is most effective for a particular adolescent group is an important step towards maximizing the use of the programs currently in existence. Accordingly, the following study compares cognitive programs with cognitive programs that incorporate skills-training to determine how they differ in their effects on the knowledge, attitudes and behavior intentions of adolescents in different age and gender groups.

The sample for the present study consists of 247 grade 9s and 311 grade 11s from schools in rural and urban Alberta. A 2 x 2 x 2 factorial posttest design was used to compare the students who were grouped according to age, gender and educational approach variables. ANOVA was then used to determine how these groups differed in their knowledge, attitudes and behavior intentions.

Results found differences existed primarily between gender groups. Females had significantly higher knowledge

scores than males about transmission of HIV, expressed more tolerant attitudes towards individuals with AIDS, and had more inclination to talk to partner about sexual history. Other results found interaction effects between grade and education experience as grade 9's with cognitive and skills training were more knowledgable grade 9 students receiving cognitive education alone. For grade 11 students, those receiving only cognitive knowledge had healthier behavior intentions than those receiving both cognitive and skills training.

These findings suggest females are more conscientious about the AIDS threat than males, regardless of which educational approach is used. There is also correspondence with adolescent literature which suggests that younger adolescents need supplements in addition to cognitive experiences to counter egocentrism and lack of formal operational fluency in their thinking. Older adolescents may be more responsive to cognitive approaches due to greater rational ability and an increased desire to think for themselves. The implications these findings have for adolescent AIDS education planning is discussed.

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CHAPTER 1: INTRODUCTION

AIDS (Acquired Immune Deficiency Syndrome), is one of the deadliest diseases today, and youth are at risk for contracting it. According to the Centers for Disease Control (1985), the syndrome results when a virus called the Human Immunodeficiency Virus (HIV) attacks the immune system and disables the individual's natural defense against infections, leaving him or her vulnerable to all other diseases in the environment. Because there is no known medical remedy for the condition, it is inevitably fatal for those who contract it. The HIV virus is transmitted by direct contact of genital or rectal mucosa with infected semen or vaginal secretions or by blood (Centers for Disease Control, 1985). As such, AIDS is primarily contracted as a result of sexual activity.

In recent times, concern has been focused on adolescents since they, as a group, have been shown to exhibit behaviors that put them at risk for contracting HIV. Studies reveal that many adolescents engage in frequent sexual intercourse (Alexander, 1989; Hayes, 1987), but few use condoms on a regular basis (Keycles, Adler & Irwin, 1988). It has also been found that adolescents tend to have multiple sex partners over an annual time period (Zelnik, 1983). As a result, the potential for spreading sexually transmitted diseases among the adolescent population becomes much more salient as consecutive partner changes allows the

disease of one infected person to become spread throughout the entire population. In studies performed by Kerche (1981), it was found that the proportion of adolescents with sexually transmitted diseases was higher than any other age group in the population. Since AIDS is a sexually transmitted disease, concerns about adolescents contracting it are justifiable.

These concerns have resulted in the creation of various educational programs aimed at promoting healthy behavior changes in adolescents in order to reduce the risk of their contracting HIV. The first strategies used to combat the AIDS threat emphasized arming adolescents with information. AIDS prevention programs initially focused on providing comprehensive, detailed information about the nature of AIDS, its modes of transmission, and on ways to avoid contracting (King & Wright, 1993). These approaches are referred to as cognitive and their advocates assumed that informing adolescents about the potential lethality of their sexual behaviors would inspire them to modify these behaviors.

Evaluations of cognitive AIDS education programs showed them to be successful in increasing adolescents' knowledge about AIDS, and in promoting more tolerant attitudes toward individuals infected with HIV (Brown, 1989; Miller & Downer, 1989; Ruder, Flan, Flatto & Curran, 1990). However, there was little impact on adolescents' actual sexual behaviors

as most persisted to take risks in spite of their awareness of the AIDS threat (Kirby, 1984; Roscoe & Kruger, 1990; Weinstein, Atwood & Rosen, 1990). Programs that did show success in changing students' behavior intentions had inconsistent results. Some studies found differences between males and females (Petosa & Jackson, 1991; Zimet, Bunch & Anglin, 1992), while others found differences between age groups (Brown, Barone, Fritz, Cebollera & Wassau, 1991; Oswald & Pforr, 1990).

The fact that most adolescents could retain the information about AIDS but seemingly lacked interest in utilizing it, lead to the assertion that these youths must be lacking expertise in putting their knowledge into actions (Brown & Fritz, 1988; Lawrence, Levy, & Rubinson, 1990). Perhaps by giving them the opportunity to develop AIDS prevention techniques (such as, rational thinking, assertiveness and effective communication) would orient them to the reality of AIDS in their lives. This rationale outlines the impetus behind a second major educational approach developed towards promoting healthy behavioral practices in adolescents. Here educators supplemented their cognitive programs with the teaching of various skills designed to aid young people to execute the appropriate precautionary behaviors in sexual situations. Skills commonly targeted by these programs include: effective communication with partner, assertiveness training, and

proficiency in condom use. Although more programs with skills training than those without reported an affect on adolescents' behavior intentions, the overall impact on the adolescent population was again inconsistent (Pendergrast, DuRant, & Gaillard, 1992; Jemmott & Jemmott, 1992).

Explanations to account for the inconsistent effects of educational programs on adolescents primarily focus on developmental differences. To this effect researchers tracked the cognitive, biological, and social changes during the adolescent years and found striking differences between age groups and genders. For instance, Mitchell (1992) describes how factors such as egocentrism and narcissism can confound the thinking of younger adolescents making them less likely to apply the information they receive. Other factors such as susceptibility to peer and media influence (Muth & Alvermann, 1992) as well as levels of self esteem (Steinberg, 1993) also varies between age groups and gender among adolescents. With such a myriad of factors operating during adolescence, it is not surprising that results for AIDS education approaches vary dramatically among adolescents. Such variability suggests that no particular strategy is suitable for the entire adolescent population. Instead, different approaches may be more appropriate for different genders and age groups of adolescents. Determining the best match between an approach and an adolescent group first requires comparing the effects of

common approaches on different adolescent groups. This has yet to be done.

Thus, it is apparent that both cognitive and skills education can be effective in increasing knowledge and promoting healthy attitudes and behavior intentions; however, it is also clear that neither of these methods has a universal effect on adolescents. Combining skills approaches with cognitive methods does seem to have advantages over cognitive approaches alone (Allensworth & Symons, 1989). For instance, it would seem plausible that skills approaches would be more beneficial with younger adolescents who exhibit more egocentric tendencies, and that cognitive approaches may be adequate for older adolescents who tend to be more rational and better able to comprehend technical information. Thus the ideal place for either approach in the education of adolescents cannot be definitively known without side by side comparisons of these two approaches to treatment on the same sample of adolescents. Ultimately, the persisting question in regards to these two popular classroom approaches is: What are the differences, if any, between adolescent groups of varying age and gender, exposed to either cognitive programs or cognitive programs that incorporate skills training? The following study proposes to help provide resolution to this issue.

An overview of the conceptual framework used in the present study is presented in chapter two which will outline the educational variables of interest and describe their relationship within the behavioral change process. Chapter three will summarize the literature on: adolescent factors, cognitive and skills-based programs, and developmental factors which account for the varied program effects. Chapter four describes the design and methodology devised for the following study. The results will then be presented in chapter five, followed by a discussion on their relevance and implications in chapter six. The primary focus of the study is to compare the effects between cognitive approaches which employ skills-training and cognitive approaches which do not. The findings from these comparisons will be related to and interpreted in light of research from the developmental literature.

CHAPTER 2: CONCEPTUAL FRAMEWORK

Fishbein and Ajzen (1975) provide a useful theoretical framework for understanding the relationships among the variables involved in changing the behaviors of individuals (see figure 1).

The model was developed through a desire to establish a comprehensive framework for explaining and predicting human behavior. Initially, many behavior theorists recognized the importance of subjective, cognitive factors in accounting for the behaviors one engages in. Attitude was the term frequently used to refer to some of these subjective processes. The problem was that attitude was loosely applied to a number of these cognitive factors in intuitive ways by different researchers. For instance, the term attitude has been used by various researchers as a label for such diverse concepts as satisfaction, opinion, intention, liking, attraction and attribution. The result was a literature amassed in confusion and ambiguity as there was little consistency between researchers' definitions and approaches to measuring this construct.

Fishbein and Ajzen (1975) engaged in an ambitious effort to resolve the confusion surrounding the attitude concept. Their strategy mainly involved distinguishing it from other cognitive variables. Their efforts resulted in a four component scheme outlying the covert processes linked

to one's overt behaviors. The scheme postulates a knowledge component (one's beliefs), impacting an affective component (attitudes), in turn affecting a behavioral disposition component (behavior intentions), and finally interacting with outside factors to produce a particular behavior.

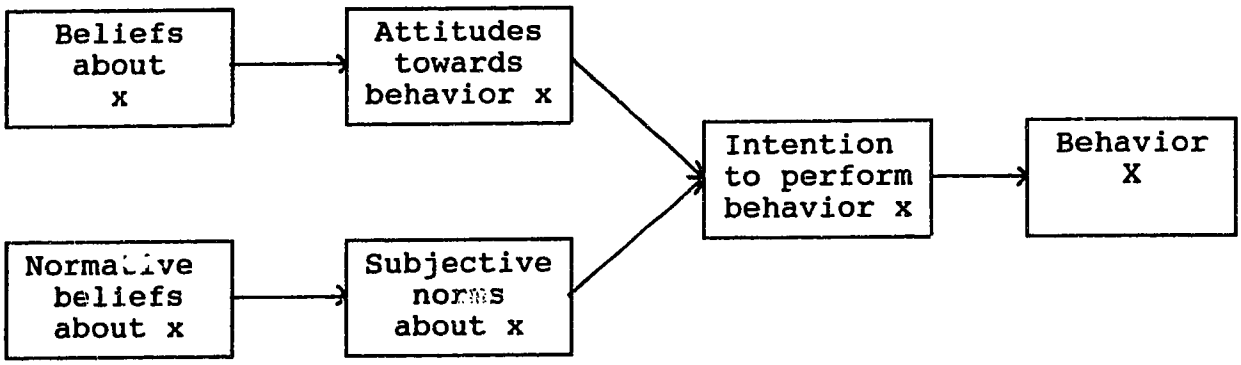

Figure 1: Conceptual Framework for the Prediction of Intentions and Behaviors

The fundamental component to Fishbein & Ajzen's (1975) scheme is one's set of beliefs. Belief consists of the associations one makes between objects and attributes. For instance, one's association of the object: "use of condoms" with the attribute: "prevents venereal disease" would constitute a belief. One attains his or her beliefs either by learning them from others or by independently forming them through the processes of perception and reasoning. In either case, one's collection of beliefs comprises their knowledge. For adolescents, possessing a knowledge of what

AIDS is, how it is transmitted and, how it can be prevented is the initial step towards their developing safer sexual practices.

One's attitude is based on whether the attributes one holds towards an object are positive or negative. If an individual's beliefs consist primarily of associating favorable attributes with the object, then the individual's attitude will be positive. If beliefs consist of primarily negative associations of attributes with an object than his/her attitude will be negative. In either case, attitudes refer to "the amount of affect for or against some object" (11). For example, a person who believes the AIDS threats and is convinced of the protection provided by condoms is likely to sustain a positive attitude towards them even though they may be uncomfortable to use. If this person believed, however, that condoms were immoral and that they constituted an illicit business, he or she would likely feel negative towards them since his or her attributions linked to condoms are primarily negative.

Fishbein and Ajzen (1975) assume that an attitude predisposes a person to act in general rather than specific ways. Thus, they expect that an attitude would not always translate into particular behaviors. A person with a positive attitude towards an object would therefore be expected to demonstrate favorable behaviors towards it on most, but not necessarily all occasions. For example, a

person with a positive attitude towards condoms may buy them, carry them, and use them on most occasions except when he is with someone he feels he can trust. An individual's attitude toward some object is therefore related to a set of beliefs about an object but not necessarily to any specific belief. The primary attitudes of interest for HIV/AIDS educators are those constituting how people feel towards individuals with AIDS, and how they feel towards AIDS prevention practices. Though promoting favorable attitudes towards people with AIDS or towards using condoms is an important educational goal, it cannot be assumed that these attitudes will always lead to the specific behavioral changes that an educator may be hoping for such as consistent condom usage on every sexual encounter.

Following from one's attitude towards an object is the person's inclination to respond to that object in either a positive or negative manner. A person with a positive attitude towards condoms will be inclined to engage in a number of behaviors which correspond to that particular attitude orientation. For example, he or she may wish to join a safe sex committee, may want to visit schools to encourage their usage, and may also intend to use them him or herself. These aspirations for particular behaviors are called "behavior intentions". Attitudes are, therefore, assumed to influence behavioral intentions which in turn lead to particular behaviors. Behavior intentions can,

therefore, be regarded as a special variety of beliefs in which "the object is always the person and the attribute is always the belief" (Fishbein & Ajzen, 1975; p. 12). With regards to sex related behaviors, most researchers distinguish between high risk behaviors and low risk behaviors. The former is defined in terms of behaviors which increase the likelihood of contracting HIV. Common examples include: engaging in frequent unprotected sexual intercourse, and having multiple sex partners. Low risk behavior refers to that which decreases one's likelihood of contracting HIV. Examples of low risk behavior include: learning sexual history of partner, using condoms, practice of abstinence, and engaging in monogamous relationships.

The concepts outlined in Fishbein and Ajzen's (1975) framework thus provide a useful description of human behavior. They stress that knowledge is the primary component and assume that humans are rational beings and will act according to what they believe. Knowledge about an object then leads to positive or negative feelings for it. A person then is either compelled to pursue or avoid an object and, thereby, plans his or her behaviors accordingly. These behaviors then become engaged on the appropriate occasions so long as other situational factors do not interfere.

Behavioral Change Process

The process of behavior change according to the Fishbein and Ajzen (1975) model is primarily centered around influencing one's beliefs, that is, adding to and/or changing one's knowledge. Fishbein and Ajzen identify two primary means of achieving changes in beliefs (see figure 2). One involves providing the individual with information; that is, informing him or her about the attributes related to an object (knowledge-based or cognitive approach). The other approach consists of allowing the individual to form the associations themselves thro gh experience (skills-based approach). Use of either approach will result in attitude changes if the information provided has an impact on those beliefs that are most related to one's attitude. Successfully changing one's attitudes towards an object, by either creating more favorable or unfavorable associations with the object or by changing the beliefs underlying a particular attitude, will lead to changes in behavior intentions and then in actual behaviors provided that outside factors do not interfere with this process.

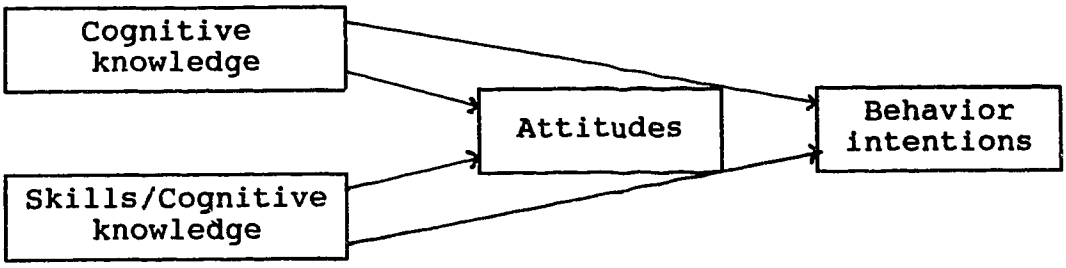

Figure 2. Conceptual Framework for the Effects of Cognitive verses Cognitive and Skills HIV/AIDS Educational Approaches

Most behaviors, however, are performed in a context in which the person's action is subject to the approval or disapproval of others. A person's perception of how others will react to a particular behavior creates an additional source of beliefs about how favorable or unfavorable a behavior is (see figure 1). These normative beliefs can influence a person's behavior intentions beyond his or her basic attitude orientation towards the behavior. The influence of how a person thinks others will respond to a particular behavior intention is termed "subjective norm". Behavior intentions then are determined by two factors: a person's attitude towards the behavior and the person's subjective norm. For example, learning about the benefits of condom use or abstinence with respect to HIV prevention, while dispelling myths about discomfort or social rejection should be effective in promoting healthier behavioral intentions in previously high risk individuals. These changes in intentions should then lead to changes in

behavior. A person's belief about the importance of contraception, however, may not translate into an intention to use condoms if a person perceives that others disapprove of such actions.

Research has determined the correlation between behavior and behavioral intentions to lie between .6 and .9 (Ajzen & Fishbein, 1980). Therefore, behavior intentions are often used by researchers as indicators of actual behavior when direct behavioral measures are not attainable. Such interpretations of behavioral intentions must be handled with caution because sexual behavior is often influenced by social factors which may influence behavior that is contrary to one's intentions. Context must always be taken into consideration when using intentions as measures for behavior (Petosa & Jackson, 1991). It is apparent that Fishbein and Ajzen's theoretical framework for behavior change is very appropriate for educators interested in promoting healthy changes in adolescents' behaviors.

CHAPTER 3: REVIEW OF LITERATURE

The essential subject areas in the literature for this research project include: the evidence to support the belief that Canadian youth are at risk for AIDS, the various cognitive and skills programs that have emerged in response to this threat, the research on the relative effectiveness of these approaches, how developmental research can account for the inconsistency in programs, and why a comparison between cognitive and skills based treatments is necessary at this time. The following section will explore these subject areas in depth and then relate them to the specific research objectives of this study.

Risk Factors

Studies show that adolescents, as a group, engage in sexual practices which place them at high risk for transmitting and contracting HIV. Although the research in this area is predominantly on American samples, the few studies on Canadian youth reflect similar findings. Therefore, the findings from the American studies are assumed to be indicative of the trends in Canada. The following section first presents the American studies illustrating the current status of youths' sexual practices and susceptibility towards AIDS. These will be followed by

the Canadian studies in which similar trends are apparent.

One factor placing adolescents at risk is their high rate of sexual activity. Hayes (1987) reports that 18% of females have engaged in sexual intercourse by age 15. This number increases 10% each year up to age 19 where it is estimated that 66% of females have had intercourse. Other studies report percentages of sexually active rural grade eight students to be as high as 47% for females and 65% for males (Alexander et al 1989). Additional reports on 19 year-olds found 79% of females (Hofferth, Kahn & Baldwin, 1982), and 86% of males (Somenstein, Pleck & Ku, 1989) to be sexually active. Rates of sexual activity are typically higher for male adolescents than females, and higher among black and hispanic adolescents than white adolescents (Alexander et al, 1989; Hofferth & Hayes, 1987).

Coupled with this high rate of sexual activity is the low rate of condom usage. A report of teens attending a clinic indicated that only 27% of females and 41% of males have used a condom on at least one occasion while only 2% of females and 8% of males used condoms regularly (Keycles, et al 1988). A different study on a more representative sample found that a slightly higher but still inadequate percentage of adolescents (12%) were using condoms on a regular basis, while 33% of adolescents were still not using any contraception at all (Guttmacher, cited in Siegel & Lazarus, 1991). Even rural areas evidence poor contraceptive usage

as one study on a typical rural community revealed that even though 75% of adolescents used condoms at least once, only 40% intended to use them in the future (Bowie & Ford, 1989).

These other factors create an especially dangerous situation when combined with the fact that teens are more likely than individuals in other age groups to have multiple sex partners. According to Zelnik (1983), over half of sexually active adolescents report having had at least two or more sexual partners. Hass (1979), reported that 16 percent of high school females had four or more partners. More over, Sorensen (1973), indicated that a group of 19 year olds had as many as 17 different sexual partners annually. The obvious concern is that such frequent partner exchanges increases the chances of spreading HIV among the adolescent population.

The reality of the potential spread of the HIV virus is well illustrated by the alarming rate at which other sexually transmitted diseases are spread throughout the adolescent population. It has been demonstrated that individuals between the ages of 10 and 24 account for 63% of gonorrhoea cases, and 40% of syphilis cases (Herche, 1988). The spread of venereal diseases in the adolescent age group as compared to adult females had been attributed to physiological differences in that lower estrogen levels in younger adolescents result in greater susceptibility to

organism penetration through the cervix. Thus adolescent females have lesser natural resistances to the HIV virus (Bell, 1984).

Typical behavior patterns among adolescent groups constitute further conditions of risk for HIV infection. Adolescence is characteristically a time when youths seek to separate themselves from the regulations and norms of the adult world and engage in experimental activities (Siegel, 1988). Often these activities combine alcohol and/or drug consumption with sexual activity. Under such conditions, judgement is impaired and risky sexual activities are more likely to occur (Hein, 1987).

The above findings illustrate the severity by which the morbid consequences of AIDS threatens the lives of youths in North America. Though very few AIDS cases are diagnosed during adolescence, one must consider that the HIV virus has an average incubation period of seven years during which time an individual may be infected but yet not show any visible symptoms. An indication of prevalence for adolescents contracting HIV is based on figures of AIDS diagnoses in young adults. A significant proportion of AIDS cases (21%) occupy this age group (Hayes, 1987).

Research on Canadian youths is more sparse but still shows that similar risk factors are in existence. One national survey found Canadian adolescents to be quite sexually active as it estimated that 25% of grade nine and

50% of grade eleven students had engaged in sexual intercourse (Malcolmson, 1990). This finding is significant since it has been determined that sexual activity is the main source of HIV transmission in Alberta, accounting for 89% of AIDS victims. Other routes of transmission occupy a much smaller percentage of AIDS cases. For example, 3.4% receive the virus through intravenous drug use, 5.5% from tainted blood, and 0.5% from being exposed prenatally (Waters, 1994).

Similar to the states, Canadian studies show that young people are increasingly coming into contact with HIV. It has been found that most individuals (40%) with AIDS in Alberta, are between the ages of 25 and 34, suggesting that they must have been exposed to the HIV virus during their adolescent or early adulthood years (Waters, 1994). These findings indicate that trends in AIDS transmission in Canada reflect those in the United States. Clearly the American research concerning the present threat of AIDS to youth has relevance for youths in Canada.

Because AIDS within Alberta is primarily transmitted through sexual activity (Waters, 1994), educational programs aimed at instilling healthy behavior changes have been regarded as the best means of preventing and reducing the prevalence of AIDS. Unfortunately, many of the AIDS programs implemented have not shown to be effective. Although most are successful at increasing adolescents'

knowledge and in altering some of their attitudes, very few report significant changes in behavior.

Such findings have been somewhat perplexing in that one would assume that informing someone of the hazards inherent in certain sexual behaviors would encourage a change in behavior patterns. Such logic, however, does not seem to apply to adolescents in that many continue to engage in high risk behavior in spite of being informed about AIDS (King & Wright, 1993). Mitchell (1986), describes how various developmental factors in different age groups of adolescents interfere with their ability to incorporate what they learn into their behaviors. A better understanding as to how such developmental factors intervene and in what ways they may be overcome would be of vital interest to program planners for AIDS and human sexuality education.

It is quite likely that the effects of a given educational approach will vary across adolescent groups according to age and gender variables. Although some researchers have considered developmental factors in designing and evaluating AIDS educational programs (Lewis, Battistich & Schaps 1990; Pies & Stoller, 1987), there has not been enough emphasis on comparing the effects between different approaches on the same individuals. Such comparisons are necessary in order to determine what factors are responsible for promoting healthy changes in the sexual behaviors and attitudes of adolescents.

For the purposes of this paper, the model proposed incorporates and describes components considered to be paramount to any educational program: knowledge and attitudes. When given knowledge, attitudes can be altered, thereby, resulting in a change of behaviors. A discussion of why people often behave contrary to what they believe is also presented.

Educational Approaches

Cognitive Approaches

Fishbein and Ajzen's model is a cognitive educational approach based on providing technical information about the nature, transmission and prevention of AIDS, should be effective for implementing changes in knowledge and attitudes. The literature supports this model in that most if not all information-based studies reveal significant increases in knowledge and changes in attitudes. For example, in some studies where short information sessions were provided to adolescents of different age groups, researchers measured significant changes in knowledge about the nature, transmission and prevention of AIDS and in the adopting of healthier attitudes towards individuals with AIDS (Brown, Fritz & Barone, 1989; Miller & Downer, 1989; Ruder et al, 1990).

Most cognitive approaches, however, focus on knowledge

and attitude variables and do not provide any measure for changes in behavior. In the studies that do provide behavioral measures, most do not report any significant changes in behavior (Jemmott & Jemmott, 1992; Kirby, 1984; Kjoller, Hansen & Sejest, 1989; ;Melchert & Burnett, 1990; Oswald & Pforr, 1992; Pendergrast et al, 1992; Rickert, Gottlieb & Jay, 1990; Roscoe & Kruger, 1990).

In studies that found correlations between knowledge and behavioral intentions, these relationships were intimately tied with other variables like age and gender. In a study where the impact of gender differences in adolescents were observed, it was found that knowledge about AIDS influenced healthy behavior intentions in males but not in females (Zimet et al, 1992). A study conducted by Brown et al. (1991) examined the impact of AIDS education on different age groups of adolescents by sampling a population of junior and senior high school students who all had been exposed to the same cognitive AIDS educational program. They were compared in terms of their knowledge, attitudes, and behavioral intentions. The major finding was that high school students had greater knowledge gains and were more inclined to report safe sex intentions than the junior high school students. Other comparisons in the study found that attitudes did not significantly differ between the two groups and that females tended to exhibit more pronounced changes on one or the other measures than the males.

A similar study by Brown, DiClemente and Beausoleil (1992) examined the differences in AIDS related knowledge, attitudes and behavior intentions between a large sample of seventh and eighth grade students who had been exposed to a common cognitive educational approach. Similarly, the results indicated that the older adolescents, in grade 8, acquired significantly more knowledge and healthier behavior intentions than the younger group.

Contrary findings regarding age and gender were derived by Petosa and Jackson (1991) who compared junior and senior high school students and found that knowledge and perception were more related with the behavior intentions of younger adolescents than with older adolescents. The relationship between knowledge and behavior intentions appeared to diminish with older adolescents as knowledge no longer seemed to be a determining factor in their behaviors. Instead, gender differences were more of an indicator of intentions than knowledge of AIDS was. Similar findings were reported by Oswald and Pforr (1990) in their studies of German adolescents where the use of condoms was found to be higher in the high school population as compared to the junior high age group.

These studies illustrate some important facts. One is that knowledge in itself does not directly determine behavior. Although there appears to be a strong relationship between knowledge and attitudes, providing

students with facts about AIDS does not mean their behavior will be altered. Another important fact is that other influences must be involved in promoting adolescents' utilization of AIDS knowledge and of their acting on their attitudes.

One of the influential factors appears to be age, as the relationship between knowledge and behavior intentions varies among adolescents according to what age group they belong to. Gender is another factor that seemingly accounts for some variance of how cognitive AIDS education approaches impact on different adolescents, though the exact relationship among these factors is not clear at this point. What is certain is that knowledge based educational approaches by themselves cannot shoulder the task of creating healthy sexual behavior changes in adolescents. Acknowledging the fact that knowledge may be necessary as a precursor to behavioral change, it cannot be considered a sufficient cause in itself.

Skills-Based Approaches

Other approaches combine providing AIDS education with the developing of various skills. Such skills include: communication with partner (eg., inquiring about sexual history, discussing safe sex), assertiveness training (eg., refusal skills, responding to persuasion), thinking skills (eg., problem solving), and prevention skills (eg.,

learning how to use condoms).

A reasonable account for why adolescents do not utilize the AIDS information they receive is that they simply have not developed the appropriate behaviors in their repertoire. Safe sex acts involves more than just a knowledge about the strategies, it requires an ability to execute the strategies in an effective manner. One lacking such ability would expectedly be apprehensive towards utilizing strategies and therefore may be reluctant to perform safe sex behaviors.

One study in particular illustrates how adolescents' tendency towards risky sexual practices result from a lack of skills rather than from a deficit in knowledge. Lawrence et al. (1990) examined a group of black pregnant females and found them to be lacking skills (that is, they reported low self efficacy) in being able to discuss sexual history with partners. It is assumed that giving them training and practice to develop their abilities for these tasks would enable them to utilize safer sexual practices.

As such, educational researchers have been suggesting that less emphasis be placed on simple cognitive methods (lecturing, teacher-lead discussions) and more emphasis be placed on communication strategies, decision making exercises, cognitive rehearsal and assertiveness training (DiClemente & Houston Hamilton, 1989; Quakenbush & Nelson, 1988; Melchert & Burnett, 1990; Muth & Alvermann, 1992). The tendency of educators' to favor skills training

approaches over cognitive methods was demonstrated in a survey by Scwhaab (1982) who found that public schools in Illinois regarded the inquiry method of teaching (involving problem solving and discovery learning) to be the most effective approach and lecture methods to be the least effective in facilitating student learning.

The merits of skills building approaches have been shown in a variety of areas. For instance, in a study comparing approaches for preventing smoking in teens, it was shown that skills building methods were more successful for maintaining non-smoking attitudes than group discussion methods (Schinke, Gilchrist, Snow & Schilling, 1985).

Favorable outcomes have also resulted when skills approaches were applied to the field of AIDS and sexuality education. Teaching decision making and communication skills focused on developing the ability of one sample of females to say "no" and thus take control of sexual situations. This training was followed with lower reported rates of sexual activity (Blythe et al, 1981). A similar study found significant increases in positive attitudes and in safe sex behaviors under simulated conditions following a combined informational problem-solving program (Gilchrist & Schinke, 1983).

Skills approaches may also promote healthier sexual behaviors by increasing one's self-efficacy, that is, one's confidence in the ability to execute the particular

behaviors required to produce a certain outcome. A study by Jemmott and Jemmott (1992) examined the impact of an AIDS intervention program focused on improving one's ability and confidence with condom use and in influencing cooperation from a partner. It was found that these variables were significantly related with greater condom use intentions. Pendergrast et al. (1992) found that intentions to use condoms were related to factors like: the adolescents' confidence in accurate use, low perceived hassle and greater self confidence. Researchers also noted a greater inclination towards condom use by younger adolescents which they attributed to their greater fear of AIDS. Additional evidence about the effectiveness of skills training for increasing condom use, decreasing high risk behavior and creating positive changes in attitude has also been cited (Boyer & Shafer, 1990; Rotherham-Borus et al, 1991).

It is apparent that the combination of skills teaching and informational learning more effectively promotes favorable sexual behavior intentions than cognitive methods alone. Though the latter procedures are effective in increasing knowledge and changing attitudes, they fall short of altering behavior intentions and behaviors because of their inability to deal with or to influence outside social factors which play a significant part in adolescents' behaviors.

Skills approaches, on the other hand, concentrate more

on preparing individuals to deal with the external factors that may confound them from behaving according to what they know and value. By training adolescents to use protective measures correctly and to effectively communicate their wishes to their partners, they become empowered to resist and counteract the forces that would otherwise compel them to behave in unfavorable ways. Along with the ability to successfully execute healthy sexual practices, the acquisition of such skills reduces the anxiety or discomfort in using such methods as well as endows the individual with a sense of confidence in his or her ability to exercise control over situations. The skilled individual is then more free to choose the outcome he or she wants to occur because he or she has the power to determine the course of events rather than being the helpless victim of circumstance.

Clearly, skills education has shown great promise in creating favorable changes in adolescents' sexual behaviors. However, the absence of real life observations and long term evaluations make it difficult to be certain as to the extent of the effectiveness of such approaches. Again, a grossly overlooked factor is how program effects vary depending on the age and sex of the adolescent. Some literature on adolescent development (Coleman, 1992; Mitchell, 1986; Muth & Alvermann, 1992; Steinberg, 1993) highlights extensive qualitative and quantitative developmental differences

between adolescents of different age groups. Differences in cognitive ability, physiology and social environment would certainly influence how a particular approach will impact an adolescent. One would suspect that similar programs would have diverse effects on adolescents of differing age and gender. Although a number of studies do compare gender and age differences among adolescents (Brown et al, 1992; Rickert, 1990; Roscoe & Kruger, 1990; Zimet et al, 1992), they do not clearly account for the specific developmental factors that underlie the behavioral differences. One certainty is that effective evaluation of adolescent AIDS education programs cannot be achieved without considering the extensive and diverse factors within the adolescent population.

Developmental Factors in Adolescence

In general, the studies on the different approaches towards AIDS/sexuality education show cognitive methods to be useful in increasing knowledge and changing attitudes, but not reliably effective in changing actual behaviors. Skills-based approaches, by contrast, seem capable of inducing actual behavior changes although these effects are not found across all studies.

A possible factor in accounting for the effectiveness of some approaches over others is the distinct developmental

differences between adolescents of differing age groups and gender. Recent developmental literature suggests that it is the discreet qualities in thinking, social relations and context that distinguish young adolescents from older ones. These developmental differences may be useful in accounting for the varying effectiveness of AIDS educational approaches, as well as the superiority of some approaches over others.

Cognitive Differences

According to the literature (eg. Arnett, 1992; Mitchell, 1986; Rosenroll, 1987), younger adolescents occupy a stage in which the combined effects of faulty thinking, lowered esteem and stronger social influences creates unique educative challenges that are not present in later stages of adolescence.

Early adolescent thinking is characterized by a pervasive egocentrism which interferes with their acquisition and utilization of information (Rosenroll, 1987). Both male and female adolescents are believed to exhibit this faulty form of thinking that is thought to culminate when an individual begins to attain formal operational capacity around twelve to fourteen years of age (Hudson & Gray, 1986). Though some investigators question Elkind's original assertion that egocentrism is a direct outgrowth of an individual's cognitive development (Buis &

Thomas,1989; Lapsley et al, 1986), the fact remains that for whatever the cause, young people follow a pattern of being highly egocentric during their middle school years and progressively less egocentric thereafter (Pesce & Harding, 1986; Rosenroll, 1987). One of the ways egocentrism manifests itself is in a condition known as the "personal fable". Here the individual is overcome with the sensation that their thinking and feelings are utterly unique (Elkind, 1967). Such self absorption has educational implications in the sense that these young adolescents tend not to assign much credibility to the advice of others whose views are contrary to their fables. A example of a fable common to young adolescents is a sense of invincibility in which they become convinced that "bad things happen to other people but will not happen to me" (Buis & Thompson, 1989), or that "AIDS only inflicts those who deserve it" (Eiser, Eiser & Long, 1990). Adolescents who uphold such a conviction will predictably not pay much heed to the warnings and dangers outlined by others. Egocentrism also manifests itself through the young adolescents adoption of narcissistic tendencies, characterized by their intense fascination with themselves and continuous over inflation of their self-image. Arnett (1992), describes their thinking in terms of a probability bias in which they accurately assess other people's susceptibility to a set of conditions (contracting HIV for example), but they do not associate themselves with

the same susceptibility. The drawback to such a tendency is that it often leads them to over-estimate their abilities and achievements, and to set unrealistic goals which result in large blows to the self esteem when their expectations are not fulfilled (Mitchell, 1986).

Another way that young adolescents' thinking differs from older adolescents is in their less effective use of formal operational thinking capacity. Formal operations is a term coined by Piaget and refers to a cognitive capacity for propositional logic that emerges at a particular age and provides the foundation for problem solving and abstract thinking (Cole & Cole, 1989). Studies by Brooks, Fusco and Grennan, (1983) found that only 15% of adolescents develop formal operations by age 14. The implication of this is that young adolescents will be less competent at considering the consequences of their actions and they will be less able to conceive of hypothetical information and apply it to real life situations. As such, educational approaches concentrating on providing information didactically would not have as much impact on young adolescents as compared with older adolescents who are better able to process information presented in such a manner (Walsh & Bibace, 1991). Even for young adolescents who demonstrate formal reasoning abilities in some areas, research has shown how they are less likely to utilize it in areas of personal significance like sexuality. Instead their reasoning

centers around solutions that are the most egocentrically gratifying rather than those which are most sensible (Coleman, 1992). Hence, along with being hampered by elevated senses of grandeur, younger adolescents are less inclined to rely on the rational thinking ability they possess when making decisions regarding sexuality.

Another potential source for adolescent faulty thinking is fear. It has been suggested that fear about AIDS can be a great source of adolescent anxiety which they relieve themselves from by creating their own explanatory models for why some individuals attain the disease (Siegel, 1988). However these subjective explanations tend to be based on idiosyncratic experience and stereotyping rather than scientific facts. As such the individual builds a false sense of security which can lead to lethal consequences if they fail to acknowledge the danger of their high risk behaviors. Such explanatory thinking was found to be associated with younger adolescents who have less experience and a less developed sense of identity (Moore & Barling 1991). Girls tend to exhibit a greater fear of AIDS than boys (King & Gullone, 1990).

It appears that fear may promote adoption of healthy or unhealthy sexual practices in adolescents, depending on whether they choose to deal with the threat or ignore it. A study by Zimet and others (1992) found that those who were more fearful of contracting AIDS were more likely to utilize

preventative measures. Older adolescents in Pendergrast and others' (1992) study were more likely to see themselves as safe since their behavior had not inflicted the condition on them thus far. These findings reveal the importance of making the threat of AIDS real to adolescents but not so overwhelming that they use defences to repress the information. Instead they should be made to feel secure with the means at their disposal to defend against AIDS.

Self-Esteem Differences

Besides being more hindered in their thinking, young adolescents also have to contend with a barrage of contextual factors which have a negative impact on their self-esteem. For instance, most girls experience dramatic losses in self esteem during school transitions from elementary to junior high, and from junior high to high school. This lowered self esteem is primarily due to the loss of their social network which leaves them feeling anonymous, alienated and lonely. Though males may also feel anonymity upon entering junior high school, their self-esteem quickly recovers as they maintain ties with former friends and become involved in a greater variety of clubs and activities offered at the junior high level. Social factors do not become a significant factor for them until they enter larger and more impersonal high schools where they, like females, suffer from loneliness and alienation

and exhibit lower measures of self-esteem (Steinberg, 1993).

Both males and females, however, are likely to experience loss of self-esteem after entering junior high when the change involves the switch from a cooperative educational format to a competitive one. Under a competitive scheme student performance suddenly becomes ranked according to the relative performance of others, and thus the majority of students are often made to feel less competent and capable as only a few are rewarded with high marks (Denny & Thomas, 1986). School factors such as these are more pertinent for younger adolescents who have had less time and experience adjusting to such new situations than older adolescents.

Amid these numerous contextual changes are the various physical changes that accompany early adolescence. These changes too create distress for young adolescents either because the person's features become the targets of other youths' ridicule or because the lacking or delayedness of change elicits others' scorn. In general, boys are more apt to suffer rejection if they mature late, while females are likely to suffer more ridicule if they mature early (Steinberg, 1993).

These factors help account for differences in self esteem found in younger and older adolescent males and females. It seems that junior high school is a period of lowest self-esteem for most adolescents, especially females.

Lowered self-esteem created by these circumstances are accompanied by a reduced sense of efficacy and self-confidence. These characteristics may predispose the youth to greater AIDS risk by reducing their confidence in their ability to perform protective measures as well as making them more susceptible to negative peer or media influence as they come to rely on them to make up for their perceived self-deficiencies (Jemmott & Jemmott, 1992). Self-esteem then is a relevant developmental factor to be considered in accounting for developmental differences since it varies between adolescent age groups and gender.

Social Differences

Social factors also play a role in the differing impacts of educational approaches on younger and older groups of adolescents. The most pertinent of these is the much greater reliance and susceptibility to peer influence of early adolescents. Older adolescents have significantly more social skills, a better sense of personal identity, and higher self-esteem and confidence. They therefore are less reliant on peer acceptance and are better able to select and engage in friendships which promote their own growth. By contrast, young adolescents' lack strong identities and social skills, and possess low self esteem. They also experience intense loneliness and insecurity. Together these factors create an intense need to identify with and

become accepted by a peer group (Mitchell, 1992).

Unfortunately, such groups adopt values and beliefs that are contrary to those professed by teachers or parents and thus often impose behaviors on their members that are not healthy. Particularly significant is peer groups' tendency to identify with anti-school norms and with unfavorable media ideals. Such peer group influence can be especially problematic for AIDS/sexuality educators as children become more apt to follow the promiscuous, spontaneous approach to sexuality depicted by the media rather than the more precautious preplanned approach advocated by the school (Mellanby & Phelps, 1992). Overall, the literature on adolescence identifies many differences between younger and older adolescents which may have implications for the type of educational approach used and for the differing impact of different approaches.

According to the literature on adolescents, developmental factors have a more inhibiting impact on the learning and practising of safe sex skills of younger adolescents of junior high school age than that of older adolescents of high school age. Factors like faulty formal operational thinking coupled with pervasive egocentrism, lower self esteem, poor self concept and more susceptibility to peer pressure and media influence would seem to limit the impact that regular classroom educational methods would have on altering the behavior patterns of individuals in the

younger age group. Accordingly, measures to overcome these impediments to healthy behavior should emphasize providing the individual the opportunity to attain necessary skills and to put his or her learning into practice.

The influence of inhibiting factors is not believed to be as significant among older adolescents of high school age. These individuals assumingly have a more developed formal operational reasoning ability and thus possess better capacity to anticipate experiences and to solve problems. Older adolescents also have had more time to develop a secure sense of identity and are not as susceptible to the influence of peers. Thus cognitive approaches should seemingly suffice in promoting the behavior change of these more rational beings.

Yet, as previously shown, not all empirical studies support this contention. In fact the opposite trend has been reported in that younger adolescents have registered healthier behavior intentions than older adolescents following an AIDS educational program. Apparently, other factors including older adolescents' lesser susceptibility to fear tactics, increased interest in sexuality, increased capacity for more trusting and committed sexual relationships and their prior disenchanting experiences with contraception may play a part in this reversed trend (Oswald & Pforr, 1990).

Although the relationship between educational

approaches and developmental ages of adolescent males and females is not clear, it is obvious that younger and older adolescents occupy distinct developmental stages which will impact the way each responds to AIDS educational approaches. What is necessary now is to examine the nature of these relationships so that appropriate and effective methods of AIDS education can be designed for these different age groups of adolescent males and females.

Accordingly, the following research project focuses on determining how the effects of cognitive programs by themselves compare with programs that combine cognitive and skills approaches (comprehensive education)on adolescents groups differing in age and gender. Specifically, the study is broken down into three research objectives. These are:

1. To compare the difference between cognitive education and comprehensive education on the knowledge levels of adolescents of different age groups and gender.
2. To examine how cognitive and comprehensive educational approaches differ in their impact on the attitudes of adolescents representing different ages and genders.
3. To examine how cognitive and comprehensive approaches differ in their impact on the behavior intentions of adolescents from different age and gender groups.

CHAPTER 4: METHODOLOGY

Design

The present investigation is a secondary analysis of a previous study titled, "HIV/AIDS Education in Schools Evaluation: Research Report" (Alberta Health, 1990). The former study constituted four groups: pretest-treatment, posttest-treatment, pretest-control and posttest-control, and utilized a quazi-experimental design. Its objectives were twofold. The first involved assessing the effects of different HIV/AIDS instructional strategies on the level of knowledge, attitudes and behavior intentions of junior and senior high school students. The second objective was to determine the effects of supporting HIV/AIDS instruction with specific printed materials on knowledge, attitudes and behavior intentions on junior and senior high school students.

The present study consists of a sub-sample of participants having had cognitive or skills training from the original sample. It follows a 2 x 2 x 2 factorial, posttest design and in which the independent variables (ie. educational approach, sex and age) are examined in terms of their effects on the dependent variables (ie. student knowledge, attitudes and behavior intentions). Effects on different adolescent groups are measured using the ANOVA

procedure.

In the following sections, background information in regards to the participants involved, the methods of sampling applied, the instruments used, and the procedures for collecting data will be provided for both studies. A discussion on the issues of informed consent and of the study's limitations will follow. The final section presents a detailed account of the steps involved in the data analysis.

Sample

The sample for the original study involved a total of 3098 grade 9 and 11 students from 128 schools comprising 28% of school jurisdictions in Alberta. Of the grade 9 students: 639 were in the pre-control group (52% males, 48% females), 620 were in the post-control group (51% males, 49% females), 1233 were in the pre-treatment group (51% males, 49% females), and 949 were in the post-treatment group (50% males, 50% females). Of the grade 11 students: 309 were in the pre-control (50% males, 50% females) 285 were in the post-control group (50% males, 50% females), 916 were in the pre-treatment group (52% males, 48% females) and 793 were in the post-treatment group (50% males, 50% females).

The present sample consists of the 578 cognitive and skills educated students from the 1742 post-treatment students of the original sample. The sub-sample contains

only students who received training in all three areas of skill (assertion, communication or contraceptive use) with their cognitive training, and students who received no skills training at all. The distribution of sexes for this sample is nearly equal as 52% of the students are male and 48% are females. More of these students are in grade eleven (57%) than in grade nine (43%). A much larger number of these students received skills training with their cognitive information (82%) rather than just information alone (18%). Apparently, most educators from the original sample incorporated skills training techniques into their HIV/AIDS programs. Although a more equal representation of cognitive versus skill candidates would have been preferable, statistical analyses involving comparisons between group means are tenable so long as groups consist of at least 15 subjects (Glass & Hopkins, 1984). Since the smallest group in the present study consists of 105 students, the numbers in each of the groups are large enough to allow meaningful comparisons between the various groups. Therefore, unequal cell sizes are not a concern for the present investigation.

Table 1

Distribution of Participants by Sex, Grade and Education

	Sex		Grade		Education	
	Male	Female	9	11	Cog	Skill
N	299	279	247	331	105	437
%	51.5	48.3	42.7	57.3	18.2	81.8

Note: Cog = Cognitive

A general description of teachers for both the original and secondary investigation was based on the responses of 68 teachers to the teacher questionnaire. Of the 38 grade nine teachers, 53% were female, 44% were male and 3% did not respond. Of the 30 grade eleven teachers, 50% were female, 47% were male and 3% did not respond. . s the ratio of male and female teachers was nearly equal. the proportion of teachers from metro and rural schools approached proportions that were similar to the general population except for a slight over-representation of rural schools.

Sampling Methodology

The exact procedure for the collecting of the sample is outlined in the following steps.

1. A list of all public schools teaching grade 9 and 11 was generated. Each school was then weighted according to number of teachers.
2. Letters were sent to every school superintendent in the province, inviting them to enlist their schools to participate. Superintendents were requested to indicate whether or not they wished to participate by checking off "yes", they would like to participate or "no", they would rather not participate on an index card provided. These cards were then mailed back to the researchers. Some superintendents declined to participate the schools in their district.
3. Principals of enlisted schools were given the invitation to participate to which they responded. Again, some principals decided not to involve their school in the study.
4. 250 grade 9 and 250 grade 11 teachers, were randomly selected from list. From this list of teachers, 150 grade 9 and 150 grade 11 classes were randomly selected.
5. Classes were selected from participating schools according to the number of times the school appeared on the list of 150 randomly selected schools (eg., if school came up 3 times, than 3 classes would be picked from that school).

6. Teachers of selected classes were then invited to participate. Some teachers declined due to scheduling difficulties.

7. Due to high attrition rate, more classes were needed to obtain the number of classes required for the study. Researchers non-randomly recruited more classes from already participating schools.

8. Classes were originally divided into experimental and control groups, but a small number of teachers changed their assigned grouping in order to accommodate their schedules.

The sampling strategy for the present study was to include all individuals who received either cognitive only or comprehensive education so that sample sizes would be as large and representative as possible. As a result, all participants from the original sample were included who were in grade nine or eleven and who received either complete skills training or no skills training at all with their cognitive training.

Question 6 of the class profile (see appendix 1) asks teachers to indicate which AIDS topics they covered. Three of the topics (identified as f, g and h) relate to the teaching of skills. These topics include: skills in negotiation and assertiveness (item f), skills in partner selecting (item g), and the importance of asking sexual history (item h). Classes will be grouped according to whether or not they covered skills topics. As such,

students whose teachers indicated that they received all three types of skills training on the class description questionnaire (see appendix 1, question 6, items f, g and h) will constitute the skills group, while students whose teachers did not report them as having any skills training but only cognitive training (neither f, g nor h) will make up the cognitive group. Although information on the effects of individual skills or combinations of skills (that is fg, fh and gh) would be useful, such comparisons were not possible due to the insufficient sizes of these individual subgroups.

Since any type of AIDS education necessarily involves some form of knowledge exchange, it seems reasonable to assume that all skill groups also incorporated some technical fact-learning as well. A cross-tabulation of the sample proved this assumption to be correct as it revealed that all of the students in both skill and cognitive groups had equal amounts of cognitive training. Thus, it is not necessary to compare skill groups with those providing no knowledge-training since no such groups exist in the present study.

Measures

The instruments for this study include: the AIDS Education Survey (Seaman, 1990) which served as the pre-test and post-test instrument for all students, a Teacher

Questionnaire and a class description form that was completed by teachers and sent back by pre-payed courier along with completed pre and post-tests of students.

All instruments achieved significant measures of reliability and validity. A knowledge index consisted of several questions assessing the different categories of HIV/AIDS knowledge (description, transmission, prevention and risk). The maximum score possible was 39. Since knowledge is an index rather than a scale, it was not necessary to provide measures for internal reliability. Attitudes were measured according to a Likert type scale (1 strongly disagree, 4 strongly agree) consisting of 12 questions. The maximum score reflecting the most "tolerant" attitudes was 48. Internal reliability calculations for the attitude scale is high (Chronback's alpha 0.86). Behavior intentions for this study were measured using three questions coded to produce a Likert type scale (1 strongly disagree, 4 strongly agree). A maximum score of 20 reflected the most positive intentions to engage in preventative behavior. Internal reliability measures for this scale again were quite high (Chronback's alpha 0.80). Face validity for all the instruments was insured by having all the items reviewed and approved by a panel of experts.

Data Collection Procedure

The following outlines the steps taken to collect data in the original study. In February of 1990, participating teachers were couriered a package of instruments including 30 student pre-test questionnaires, a letter and a set of instructions. In March of 1990, teachers were couriered a package of instruments including 30 student post-test questionnaires, one teacher questionnaire, and one class description form. Students completed the questionnaires anonymously (not putting their name on the form), sealed questionnaires in the envelope and handed it back to teacher. Teachers then sent completed tests and forms back to researcher by pre-payed courier.

Informed Consent

In the original study, informed consent was secured by first sending letters to various levels of school representatives (superintendents, principals, teachers) which explicitly described the procedure of the study and its purpose. The representatives then freely chose whether or not they wished to involve their schools or classrooms and responded and signed the form accordingly. Permission forms outlining procedure and purpose of investigation was also sent home with students to have their parent respond on their behalf. No persuasion nor inducement was used to get individuals to comply and all students and representatives

were free to refrain from participating.

Students were also assured of the anonymity of their responses by not having students write their names on forms or in any other way identify themselves. As such, data analyses had to be done according to classes rather than by individuals.

Limitations of Study

Sampling Constraints

The attrition of some randomly selected schools occurred as some principles and superintendents declined to participate. As a result, a total random selection of classes out of all districts in Alberta could not be achieved and therefore the sample is not representative of all schools in Alberta. In spite of this drawback, the sample gathered remained quite large with sufficient representation of urban, metropolitan and rural schools. As such, the results provide a good indication of educational trends for most schools. However, caution must be taken when making generalizations to specific sub-populations since not all sectors of the population in Alberta may be adequately represented by the sample.

Also, the insistence of some teachers to assign themselves to the experimental or control group upset the initial random assignment of classes. Thus a quasi-

experimental rather than a true experimental design was employed as equivalence between comparison groups could not be assuredly achieved. However, it is important to note that teachers' desire to be placed in one group or the other was simply to accommodate their class schedules and was not due to any outstanding quality of their class. As such, the interruption in the random assignment of teachers was not due to any systematic bias or error. Random assignment, after all, was successfully achieved for most of the classes involved.

Another sampling issue concerns the disproportionate representation between urban and rural classes in the two samples. The grade 9 sample involved an over-representation of rural classes and an under-representation of urban classes, while the grade 11 sample consisted of an over-representation of urban classes and an under-representation of rural students. A similar imbalance in the distribution occurred in the sub-sample of the participants selected for the present study. The concern over such a difference in representation between the two grades is that it could introduce an extraneous source for the differences between age groups. However, such sources of bias have been controlled for by a pretest which showed no significant differences between rural and urban subjects. Therefore, differences in performance can more confidently be attributed to effects of the independent variables rather

than extraneous factors.

Methodological Constraints

A frequent difficulty in conducting secondary analysis of previously collected data is in operationalizing all dimensions in a given construct of interest. Such difficulties were encountered in the present study with regards to the construct of skill-based education. While skills training involves a number of different skills including: communication, assertiveness training, problem solving and prevention skills, the present study only included communication and assertiveness skills. Transmission skills were not included because it was found that nearly all students were provided with this training, and problem solving skills could not be included since this item was not supplied in the teacher questionnaire.

The drawback to not being able to compare students with all skills to students with no skills would be that significant differences between the two approaches may not be obtained due to not having ascertained all of the effects of skills training. In other words, differences between skills and non-skills groups will be reduced by having fewer dimensions of the independent variable present in the treatment group than it would if all dimensions were present. Yet despite this limitation, a range of significant differences between the skills and non-skills

(cognitive) groups were found. One can suspect that the investigation would have revealed more profound differences between the two groups if all aspects of skills could have been included.

Data Analysis

Analysis for the present study was divided into three sections corresponding to each of the three dependent variables (knowledge, attitudes and behavior intentions). The following discussion of the analysis procedure describes the instruments used, the steps followed, and the operationalized measures selected for each dependent variable.

Most of the measurements for the present investigation utilized parametric instruments. However, some comparison groups violated the basic assumptions by not having normalized distributions with equal variances. In these cases, non-parametric devices were used to verify the findings. Of the parametric procedures, ANOVA was the statistical tool for most of the group comparisons. ANOVA was used because it best fit the scientific scheme of the study; which was to compare mean scores between multiple groups across a number of variables yielding a range of scores. ANOVA is also useful in that it reveals the

presence of interactions between the variables and allows for statements to be made about the simultaneous effects of certain variables. T-tests were used in comparing the subvariables of the behavior intentions since these items were dichotomous. Though Chi-squares are normally used for dichotomous variables, t-tests were selected since they provide more useful information about means and standard deviations, and they allow for further analyses to be performed.

All of the non-parametric strategies were used in relation to the behavior intentions variable since the groups corresponding to this variable violated the parametric assumptions of having normal distributions with equal variances. The concern was that use of only parametric procedures under such circumstances could result in inflated alpha levels which would increase the likelihood of committing a type II error. Therefore, the Whitney-Mann and the Kruskal-Wallis tests were used to verify analysis of the main effects and the interaction effects respectively on the behavior intention subvariables. A rank scoring procedure, involving the conversion of raw scores to rank scores, was also used to verify the finding on analyses of the global behavior intentions variable.

A Student-Newman-Keuls multiple comparison test was used to identify exactly which groups significantly differed from one another on knowledge and attitude measures. The

Student-Newman-Keuls was chosen over other multiple comparison tests because its moderate level of strictness allows for a sensitive enough detection of group differences without artificially creating differences that do not actually exist. Other multiple comparison strategies like, Tukey's Honest Significant Difference test, was not selected because it contains a family critical level which requires less than the specified alpha level for significance. It was a concern that an overly stringent test would likely not register all significant group differences. Conversely, a more lenient one like the Duncun's test would probably register non-actual group differences since it is highly prone to type II error (Glass & Hopkins, 1984).

A different multiple comparisons procedure was used for exploring the interactions of the dichotomous behavior intentions subvariables. A modified version of the Bonferroni was developed by first dividing the desired alpha level by the number of interaction groups (.05 divided by 6). Next, the interaction groups were compared using multiple t-tests at the newly assigned alpha level (approximately .01). Both the Bonferroni and the Student-Newman-Keuls have similar level of stringency and so yield comparable findings. The Bonferroni, however, is more flexible because it sustains a consistent stringency level for each subgroup comparison and so does not unwarrantingly discriminate against the order in which the comparisons are

performed.

The steps involved for analyzing the knowledge and attitude variables were similar and began with an analysis of the main effects by the independent variables (sex, grade and education approach). Next, the interaction effects of the independent variables were examined for each dependent variable. Finally, the knowledge and attitude variables were broken down into their subvariables. The subvariables for knowledge include: description, transmission, risk and prevention. The subvariables for attitudes involve: attitudes towards contraception and towards individuals with AIDS. Main effects and interaction effects of the independent variables were then calculated for each set of these subvariables.

The same steps were followed for analyzing the behavior intentions variable, except that each part of the analysis was backed up with a related non-parametric procedure. The subvariables for behavior intentions include: intention to discuss sexual history, intention to discuss condoms, and intention to use condoms. Main effects of the subvariables were analyzed using the Whitney-Mann test for two independent groups. The interaction effects were then calculated for each subvariable using the Kruskal-Wallis test for multiple independent groups.

The items on the pre/posttest questionnaire corresponded to the dependent variables in the following way

(see appendix 2). Knowledge measures include items pertaining to transmission (#34 & #35), prevention (#36), risk (#38), and to the nature of AIDS (#29). Attitudes were measured in terms of levels of tolerance to condoms and towards people infected with HIV (#37). Behavior intentions of each student were measured according to whether they intended to talk to future partners about sex and sexual histories, and whether they intended to use condoms (last three items of question #31).

This comprehensive examination of the factors involved in AIDS education should provide the information necessary to answer the question of which variables or combination of variables is most relevant in affecting the knowledge, attitudes and behavior intentions of adolescents of different ages and gender.

CHAPTER 5: RESULTS

Procedures for this study were outlined in the methods section. As previously described, ANOVA was used to compare the mean scores of different groups of adolescents on measures of knowledge, attitudes and behavior intentions. Following a brief description of the sample, results from the analysis of each dependent variable and dependent variable subgroup will be presented.

Differences in knowledge, attitudes and behavior intentions were measured on various groups of the 578 students selected for the sample (see table 1). The distribution between the sexes was similar except for a slightly higher number of males than females. Slightly more of the students of either gender were in grade 11 than in grade 9. The distribution of students with skills training was similar between the grade 9s and 11s. However there was a greater representation of students with cognitive training in grade 11 than there was in grade 9.

Results on Knowledge Measures

The first objective of the investigation was to determine how incorporating skills training with cognitive educational approaches influences students of different age groups and gender in regards to their knowledge of AIDS. Results from the analysis reveal that each of the three

independent variables has an impact on students' knowledge. Table 2 shows how students who receive skills training (M = 26.67, SD = 3.15) are generally more knowledgable about AIDS than students receiving only cognitive information (M = 25.76, SD = 3.35), $F(1, 570) = 12.65$, $p < .001$. Knowledge level also appears to be related to gender as females, with a group mean of 26.81, scored significantly higher than males whose group mean is 26.22 $F(1, 570) = 8.01$, $p < .01$. In comparing younger adolescents with older adolescents, it is apparent that grade eleven students have significantly higher knowledge scores (M = 26.81, SD = 3.02) than grade nine students (M = 26.10, SD = 3.26), regardless of age or educational approach $F(1, 570) = 13.04$, $p < .001$. An examination of possible interaction between variables uncovered a relationship between age and educational approach which is shown in table 3. Here it can be seen how adolescents in grade nine who received only cognitive information have a significantly lower mean knowledge score (M = 24.51, SD = 3.37) than all other adolescent groups including: grade nine students with skills training (M = 26.36, SD = 3.17), and grade eleven students with either cognitive (M = 26.41, SD = 3.22) or skills training (M = 26.91, SD = 2.96), F (1, 570) = 4.381, $p < .05$). No other interactions were significant, thus there are no significant differences in knowledge between males and females of differing educational approaches or age groups.

Table 2

Means and standard deviations of knowledge, attitude and behavior intentions scores by sex, grade and educational approach

	Knowledge			Attitudes			Behavior Ints		
Variable	M	SD	N	M	SD	N	M	SD	N
Sex									
Male	26.2	3.1	299	33.2	6.0	294	10.7	2.1	291
Female	26.8	3.2	279	36.0	5.3	277	11.1	1.9	271
F	8.01**			13.16**			8.16*		
Grade									
Nine	26.1	3.3	247	35.2	5.8	244	10.8	2.1	241
Eleven	26.8	3.0	331	34.1	5.7	327	10.9	1.9	321
F	13.04***			0.09			4.83		
Education									
Cognitive	25.8	3.3	105	34.7	5.8	104	10.8	2.1	100
Skills	26.7	3.2	473	34.6	5.8	467	10.9	2.0	462
F	12.65***			0.11			1.68		
Total	26.5	3.2	578	34.6	5.7	571	10.9	2.0	562

Note. Ints = Intentions. Totals for M and SD are averages

*p < .05. **p < .01. ***p < .001.

Table 3

Means and standard deviations of knowledge, attitude and behavior intention scores on education by grade groups

	Knowledge			Attitudes			Behavior Ints		
Group	M	SD	N	M	SD	N	M	SD	N
Gr 9 Cog	24.5[b]	3.4	36	34.1	5.4	36	10.1[b]	2.7	35
Gr 9 Skill	26.4[a]	3.2	211	35.3	5.8	208	10.9	1.9	206
Gr 11 Cog	26.4[a]	3.2	69	35.0	6.1	68	11.1	1.6	65
Gr 11 Skill	27.0[a]	3.0	242	33.9	5.6	259	10.6[a]	2.0	256
Total	26.1	3.2	558	34.6	5.7	571	10.7	2.1	562
F	4.31*			3.27			4.98*		

Note. Ints = Intentions. Cog = Cognitive. Totals for M and SD are averages.

a,b Groups are significantly different using Student-Newman-Keuls test at .05.

*$p < .05$.

An examination of the different subgroups of knowledge reveals exactly which areas of AIDS knowledge that student groups scored differently on. Students who received skills training answered correctly more questions that dealt with knowledge about transmission of HIV (M = 9.96, SD = 1.18), than students who received only cognitive information (M =

9.56, SD = 0.87), F(1, 567) = 12.00, p < .01. There were no significant differences in scores between students of cognitive and skills groups in their knowledge of prevention, nature or risk.

In exploring which area of knowledge that male and female groups differ in, it was found that females specifically scored higher than males on knowledge about prevention of AIDS. The means (with standard deviations in parentheses) were 4.09 (1.65) and 3.80 (1.56) respectively, F(1, 566) = 8.53, p < .01. Males and females did not significantly differ in their knowledge scores on transmission, nature or risk.

Adolescents in different age groups differed in their knowledge about prevention and risk. On items regarding prevention, grade 11s scored significantly higher (M = 4.04, SD = 1.59) than grade nine adolescents (M = 3.81, SD = 1.58), F(1, 566) = 10.31, p < .01. Students in grade 11 had higher scores than the grade 9 students on items dealing with knowledge about risk factors in AIDS. On these items, the eleventh graders possessed a group mean (with standard deviation in parentheses) of 5.22 (1.47) while the mean for the grade 9 group was 4.81 (1.57), F(1, 563) = 17.53, p < .001. There were no significant differences between grade 9s and 11s on their knowledge about the nature of AIDS or on its transmission.

Table 4

Means and standard deviations of knowledge subvariables by sex,grade and educational approach

	Prevention			Transmission			Risk		
Variable	M	SD	N	M	SD	N	M	SD	N
Sex									
Male	3.80	1.6	295	9.85	1.1	296	4.93	1.5	294
Female	4.09	1.6	279	9.90	1.2	279	5.18	1.5	277
F	8.53**			3.38			0.80		
Grade									
Nine	3.81	1.6	245	9.90	1.2	246	4.81	1.6	243
Eleven	4.04	1.6	329	9.88	0.9	329	5.22	1.4	328
F	10.31**			0.01			17.53**		
Education									
Cog	3.82	1.7	103	9.56	0.9	103	4.93	1.5	103
Skills	3.97	1.6	471	9.96	1.2	472	5.07	1.5	468
F	3.70			11.99**			3.49		
Total	3.94	1.6	574	9.89	1.1	575	5.05	1.5	571

Note. Cog = Cognitive. Totals for M and SD are averages.

**p < .01.

Significant interactions were found between age and education variable with regards to knowledge about prevention of AIDS and in the risk factors involved in AIDS. Here, grade 9 students receiving only cognitive information scored significantly lower on items about prevention and risk than all other groups. Mean scores for grade 9s with cognitive training were 3.17 (1.70) for prevention items while mean scores on the same items were 3.92 (1.54) for grade 9s with skills training, 4.16 (1.60) for grade 11s with cognitive training and 4.00 (1.59) for grade 11s with skills training, $F(1, 566) = 7.46$, $p < .01$. The mean score on risk items for grade 9 students with cognitive training was 4.17 (1.50), while mean scores on the same items were 4.92 (1.56) for grade nines with skills training, 5.20 (1.46) for grade 11s with skills training and 5.32 (1.42) for grade 11s with cognitive training, $F(1, 563) = 6.77$, $p < .05$. No other significant interactions existed within the subgroups of knowledge.

In summarizing the result on the first research objective, it was found that knowledge scores were significantly higher for students with skills training than students with cognitive training on transmission items. Females scored significantly higher than males on items regarding transmission. Grade 11s scored significantly higher than grade 9s on items of prevention and risk. The only significant interaction involving knowledge was that

grade 9 students with cognitive training scored significantly lower on the prevention and risk items than grade 9 students with skills-training and grade 11 students with either cognitive or skills training.

Table 5

Means and standard deviations of knowledge subvariables on grade x education groups

	Prevention			Risk		
Group	*M*	*SD*	*N*	*M*	*SD*	*N*
Gr 9 Cog	3.2[b]	1.7	36	4.2[b]	1.5	35
Gr 9 Skill	3.9[a]	1.5	209	4.9[a]	1.6	208
Gr 11 Cog	4.2[a]	1.6	67	5.3[a]	1.4	68
Gr 11 Skill	4.0[a]	1.6	262	5.2[a]	1.5	260
Total	3.8	1.6	574	4.9	1.5	571
F	7.46**			6.77*		

Note. Cog = Cognitive. Totals for *M* and *SD* are averages

a,b Groups are significantly different using Student-Newman-Keuls test at .05.

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

Results on Attitude Measures

The second research objective involved comparing the effects of age, gender and educational approach on students' attitude towards individuals with AIDS and towards contraceptive practices. An examination of the variances between group means provides evidence of a significant gender difference (see table 2). In this study females attained an average attitude score of 36.01 (5.24), while the average score for males was 33.22 (5.88), indicating significantly less tolerant attitudes for males than females, $F(1, 563) = 13.16$, $p < .001$. Attitudes did not significantly differ between the two educational approaches or the two age groups of adolescents.

The specific types of attitudes where males and females differed can be seen in table 6. According to the table, females scored significantly higher on measures of tolerance of individuals with AIDS ($M = 19.58$, $SD = 4.22$) than their male counterparts ($M = 17.51$, $SD = 4.62$), $F(1, 563) = 10.78$, $p < .01$. Females' attitudes did not significantly differ from males' with regards to attitudes about contraception or about keeping the confidentiality of AIDS victims.

In summarizing the finding regarding the second research objective, students exposed to cognitive or comprehensive educational approaches do not differ in their attitudes. Females in general, however, tend to exhibit more tolerant attitudes than males.

Table 6

Means and standard deviations of attitude subvariables by sex, grade and educational approach

	Confidential			Tolerance			Contraception		
Variable	M	SD	N	M	SD	N	M	SD	N
Sex									
Male	5.8	1.5	294	17.5	4.7	294	9.9	1.6	294
Female	6.2	1.3	277	19.6	4.2	277	10.2	1.7	277
F		3.55			10.78**			3.28	
Grade									
Nine	6.07	1.4	243	18.99	4.7	244	10.01	1.7	244
Eleven	5.93	1.4	328	18.17	4.4	327	10.02	1.6	327
F		0.03			0.25			0.14	
Education									
Cog	5.96	1.5	103	18.37	4.6	104	10.34	1.5	104
Skills	6.00	1.4	468	18.55	4.6	467	9.94	1.7	467
F		0.08			0.66			3.54	
Total	5.99	1.4	571	18.52	4.5	571	10.01	1.6	571

Note. Confidential = Confidentiality. Cog = Cognitive. Totals for M and SD are averages.

**p < .01.

Results on Behavior Intention Measures

The third objective of the study was examine how variables of age, gender and educational approach related with the various measures of students' behavior intentions. Measurements of significant differences were followed through using non-parametric procedures due to alpha error concerns. Results, however, are reported in terms of mean scores (from t-tests) rather means ranks (from Whitney-Mann and Kruskal-Wallis procedures) since the former is more visually descriptive. It must also be noted that mean scores in the following instances were conducted on dichotomous dependent subvariables. As a result, the reported means refer to frequencies of observations responding rather than to actual mean scores.

In comparing the independent groups with respect to their general level of behavior intentions, it was found that main differences occurred between the sexes (see table 2). Specifically, females (M = 11.1, SD = 1.9) showed significantly healthier behavior intentions than males (M = 10.7, SD = 2.1), $F(1, 554) = 8.16$, $p < .05$.

Measures of the subvariables for behavior intentions provided evidence of one main effect and two 2-way interactions. A significant main effect was found between the sexes for the behavior intention of discussing sexual histories. Table 7 shows how females as a group (M = 0.79, SD = 0.41), more often than males (M = 0.71, SD =

0.45), intended to discuss histories with sexual partners, $t(565) = 2.28$, $p < .05$). No other main effects on the subvariables were found, that is, there were no significant differences in intentions to talk about condoms or to use condoms between males and females of different age groups or educational groups.

Table 7

Means and standard deviations of behavior intention subvariables by sex, grade and educational approach

	Talk History			Talk Condoms			Use		
Variable	M	SD	N	M	SD	N	M	SD	N
Sex									
Male	.71	.45	294	.91	.28	294	.95	.22	293
Female	.79	.41	271	.93	.26	276	.96	.19	277
F		2.28*			.70			.87	
Grade									
Nine	.75	.44	242	.90	.30	244	.95	.22	244
Eleven	.72	.43	323	.93	.26	107	.95	.21	106
F		.12			1.31			.53	
Education									
Cog	.72	.45	105	.93	.26	107	.95	.21	106
Skills	.75	.43	544	.92	.27	546	.96	.20	546
F		.63			.21			.14	
Total	.75	.44	578	.92	.27	578	.96	.21	578

Note. Cog = Cognitive. Totals for M and SD are averages. Totals for N is the number of participants in sample.

*p < .05.

Only two significant differences in the behavior intentions of the dependent groups was related to interactional effects of the independent variables (see table 8). The first of these involved interactions between sex and grade variables and revealed that more females in grade 11 ($\underline{M}$ = 0.82, $\underline{SD}$ = 0.38) intended to talk to partners about sexual histories than males in the same grade ($\underline{M}$ = 0.69, $\underline{SD}$ = 0.47), $F(1, 554) = 2.66$, $p < .05$.

The other significant difference in behavior intentions was related with the interaction between grade and education variables. Here it was found that more grade 11 receiving only cognitive training intended to use condoms in the future than any of the other adolescent groups ($\underline{M}$ = 4.00, $\underline{SD}$ = 0.00), $F(1, 554) = 4.07$, $\underline{p} < .01$, including: grade nine students with cognitive training ($\underline{M}$ = 3.57, $\underline{SD}$ = 0.36) or skills training ($\underline{M}$ = 3.90, $\underline{SD}$ = 0.18), and grade eleven students with skills training ($\underline{M}$ = 3.85, $\underline{SD}$ = 0.22). Educational groups did not significantly differ with regards to their intentions to talk with partners about sexual history or about contraception.

Table 8

Means and standard deviations of behavior intention subvariables by grade x sex and grade x education

Talk History				Use			
Group	M	SD	N	Group	M	SD	N
Gr 9 M	.74	.44	124	Gr 9 Cog	3.6[b]	0.4	35
Gr 9 F	.75	.43	118	Gr 9 Skill	3.9[b]	0.2	309
Gr 11 M	.67[b]	.47	170	Gr 11 Cog	4.0[a]	0.0	67
Gr 11 F	.82[a]	.38	153	Gr 11 Skill	3.9[b]	0.2	259
Total	.74	.43	565	Total	3.8	0.2	570
F		[illegible]**		F		4.07**	

Note. Cog = Cognitive. Totals for M and SD are averages.

a,b Groups are significantly different using Bonferonni test at .05.

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

In regards to the third research objective these results indicate that differences in intentions to talk to partners about sexual history occurred between older adolescent males and females. No differences in intentions to talk about sex histories or about condoms was recorded

between any other age or educational group. It was also found that intentions to use condoms were more common among grade 11 students with cognitive training than any other adolescent group.

CHAPTER 6: DISCUSSION

According to Fishbein and Ajzen's educational model, successful transmission of knowledge is accompanied with the development of an attitude which then translates into particular behavioral motives and actions. However, numerous studies on AIDS education programs showed that many adolescents do not behave according to what they believe. For instance, students learn of the grave risk involved in unprotected sexual intercourse, yet many proceed to ignore the behavioral precaution of using condoms.

Plausible explanations for such discrepancies between knowledge and behaviors is supplied in the developmental literature. Here various researchers generally speak of the natural inclination for adolescents to distort information in egocentric ways and to be more sensitive to the influence of outside norms (Arnett, 1992; Mitchell, 1986; Rosenroll, 1987). Thus, it follows that the success of AIDS education programs would vary among adolescent groups as some are more prone to cognitive distortion and outside influences than others. The current challenge then, is to sort out the influence of the various influential factors and to determine which type of approach is most beneficial for a given group of adolescents according to the developmental context they reside in.

Within the preceding investigation, the researcher attempted to provide some insight into these questions by comparing how AIDS education programs that incorporate skills training compare with those that do not. Specifically examined was how differences in education approaches, age and gender play a role in students acquisition of AIDS knowledge, how these differences affect student attitudes towards condom usage and towards individuals with AIDS, and whether these differences influence students' future behavior intentions. In the following sections, the most important findings in the investigation will be reviewed and interpreted in light of the current literature. Their implications will then be discussed, followed by recommendations for future research.

Discussion on Knowledge

Results from the study indicate that students who receive skills training along with cognitive information generally are more knowledgable about AIDS than those who receive only cognitive information. Specifically, the participants in this study who received skills training knew more about the transmission of AIDS than did the students who were exposed to only technical information. Similar findings were found by Gilchrist and Schinke (1983). Although the differences were not significant, skills-education students also scored higher than the cognitive

students in their knowledge about the nature of AIDS and its prevention and risk to health. This difference in knowledge between cognitive and skills groups is somewhat unexpected as the AIDS education literature reveals that both approaches are effective in increasing student knowledge. The difference in knowledge scores in this study implies that even though cognitive methods increase knowledge, skills training enhances knowledge acquisition more for some adolescent groups.

An explanation for the greater retention of information demonstrated by the skills education groups may have to do with the fact that skills training involves a more in depth form of learning. Cognitive education, which mostly involves rote learning, is more subject to memory decay as the information resides in an abstract form which does not become associated with other knowledge and thus does not become associated in long term memory (Muth & Alvermann, 1992). Skills training, by contrast, forces the student to act on and practice the information, making it a more real experience.

Examining how age interacts with the effectiveness of skills-training in knowledge acquisition and retention provides insight into the influence of adolescent developmental characteristics. The fact that skills-training enhanced the learning of students in grade 9 but did not create any measurable difference in the knowledge of

grade 11s, supports the notion of there being developmental differences between adolescent age groups. It has been suggested that most younger adolescents do not utilize formal operational thinking even though they possess the capacity for it (Brooks et al, 1983), or they have difficulty applying formal operations to areas of personal significance (Mitchell, 1992). In the absence of formal thinking operations, one would be less able to comprehend abstract information and to correctly associate it with their own lives (Cole & Cole, 1989). The information would therefore not be as meaningful to the individual and so he or she would be less inclined to remember it. The developmental differences in children's ability to understand and retain information is well demonstrated in a study by Walsh and Bibace (1991). Here the theorists found that children's level of understanding of the cause and treatment of AIDS correlated with the developmental stage they are in. For instance , children in Piaget's concrete operations stage tended to understand AIDS in terms of a specific concrete agent and could not think of it in terms of the multiple combination of factors that are actually involved. By contrast, children in the formal operations stage could grasp the more abstract multiple factor explanation.

Developmental theorists have described adolescent egocentrism by which younger adolescents are more apt to

regard themselves as invulnerable to the dangers that threaten others (Buis & Thompson, 1989; Mitchell, 1986; Rosenroll, 1987). Such individuals would be less inclined to consider the threat of AIDS as a personal concern and therefore lack the interest to retain any detailed information on it. Accordingly, one would expect that these individuals would remain less informed than others, even though they received the same information. Support for this contention is paralleled in the study as subjects in grade 9, who received only cognitive information, scored lower than students in grade 11 who received a similar program. The literature implies that the reason for the lower scores of grade nines is that they fail to associate the AIDS threat with their own high risk behaviors. Though they may realize that other people contract AIDS, they retain an sense of invincibility against such danger, and therefore they do not see the value in learning such information.

The lack of concern on the part of younger adolescents of becoming infected with HIV is reflected in their significantly lower knowledge about the risk factors and the ways of preventing HIV infection. The presence of an inferior capacity to learn the information on account of age is ruled out as the grade 9s scored equally with the grade 11s on the other knowledge areas dealing with the nature of AIDS and its routes of transmission. Thus the younger adolescents were equally capable of learning all the

information they were given, yet they did not absorb the knowledge on risk and prevention. Their tendency to dismiss such information lends credence to the idea that they do not see it as relevant to themselves and so choose to simply ignore it.

Developmental theorists further proceed to describe how egocentric tendencies subside with age and rational, systematic thinking becomes more consistent (Mitchell, 1986; Worell & Danner, 1989). Here, it would be expected that older adolescents would be better able to comprehend and retain the information they receive, and at the same time would be less prone to distort or dismiss it. This trend is evident in the study as both cognitive and skills groups in grade 11 were more knowledgeable about the transmission and risk associated with AIDS than the grade 9 cognitive group. The fact that knowledge scores did not significantly differ between the two grade 11 groups is an indication that the older adolescents are more advanced thinkers and are less likely to distort information as they were able to learn equally well from either cognitive or skill-training method.

The effectiveness of skill-training in aiding the learning of the younger adolescent age group is apparent as the grade 9 skills training class learned significantly more than the grade 9 class receiving only technical information. Since egocentrism is commonly believed to be more pronounced at this age, it is reasonable to assume that skills training

must have penetrated the cognitive barriers that normally confound younger adolescents' learning of pertinent information. As expected then, the younger adolescents who received skill-training are able to learn equally well as older adolescents who are not so limited by egocentric tendencies. Apparently, skills-education may be more reliable for teaching younger adolescents about important personal information in situations when normal cognitive approaches are not effective.

In examining gender differences between the different knowledge areas of AIDS, it was found that females are generally more knowledgeable than males. Specifically, the females in the study knew significantly more about the means and procedures involved in preventing AIDS than did their male counterparts. These finding correspond to other research on AIDS knowledge which similarly found women to be more knowledgeable than men (Brown et al, 1991). The fact that women in the present study appear to be more interested in condom use stem from the fact that they have more direct personal fears than males. Other studies have similarly shown women to be more concerned about contracting AIDS than men (King & Gullone, 1990; Wicks, 1991; Zimet et al 1992).

Since there were no significant differences between males and females on any of the other knowledge areas, it is not likely that the knowledge difference indicates any discrepancy in intelligence or learning capacity between

male and female subjects. Rather, it seems likely that differences in transmission knowledge exist as a result of differing interest levels on the topic. Females know more about transmission because they have to deal directly with the consequence of becoming pregnant while males do not. Other research similarly found women to be more knowledgable than men about transmission of HIV (Roscoe & Kruger, 1990).

Discussion on Attitudes

According to Fishbein and Ajzen (1975), the feelings one associates with a topic like AIDS is either favorable or unfavorable depending on whether the beliefs associated with it are generally positive or negative. The attitudes examined in this study included each person's feelings (positive or negative) towards contraception and their feelings towards those who are infected with HIV.

Overall, attitudes varied mostly according to gender as females exhibited more tolerant attitudes than males. Specifically, the female adolescents were much tolerant about individuals with AIDS. Apparently, the women were more inclined to feel empathy and therefore respond with acceptance than were the men. Brown et al. (1992) also found women to be more tolerant of individuals with AIDS than men. The females also scored higher on the other types of attitudes although these differences were not significant. The implication is that females also have a

tendency to be more in favor of preserving the confidentiality of individuals with AIDS as well as having a slightly more favorable attitude towards using contraception.

Attitudes did not differ between age groups indicating that AIDS attitudes are not determined by physical or cognitive maturity. Accordingly, females' empathy for people with AIDS was not hindered by egocentric thinking as their attitudes were similar to those of the older females. Attitudes also did not vary with respect to educational approach indicating that gender-based attitude differences may be more determined by factors outside the classroom environment. It is likely that gender differences in these attitudes stem from differences in the more fundamental sources. For instance, the work of Mead (1950) has given rise to the claim that masculine and feminine traits are the products of socialization experiences relative to one's culture. Other writers believe gender differences arise from genetic inheritance (Bronson, 1973; Hamburg & Lund, 1966). Whatever the source of gender differences, they were apparent in the present study and were seemingly beyond the influence of the different educational strategies employed.

Discussion on Behavioral Intentions

Two significant differences in behavior intentions were found in the present study. One involved sex differences in talking to partners about sexual histories. The other consisted of differences in intentions to use condoms and was related to age and educational variables.

Regarding sex differences, it was found that females were significantly different in their behavior intentions from males. Specifically, it was discovered that more females were inclined to take sexual precautions, such taking to partner about sex history, than were males. According to Fishbein and Ajzen's (1975) model, such differences in behavior intentions towards preventing AIDS would arise from fundamental differences in attitudes towards AIDS. This rational connection between attitude and behavior intentions could not be assimilated in the present study. The attitude difference measured, tolerance of individuals with AIDS, does not logically correspond with differences in sexual behavior intentions. Other researchers however, have found attitude differences between males and females which can be related to the behavior intention differences found in the present study. Included among these are: attitudes towards AIDS and attitudes towards sexual activity.

In regards to attitudes towards AIDS, both King and Gullone (1990) and Brown et al. (1991) find safer sex

intentions to be correlated with levels of fear of contracting AIDS. The more adolescents realize that they are at risk, the more likely they will be motivated to change their behavior. It is possible that the females' greater inclination to talk to partner about sexual history reflects a greater concern for contracting HIV. A more intense fear of AIDS also provides an explanation for the sex differences in knowledge of AIDS prevention. Presumably, individuals fearful of contracting AIDS would be more motivated to learn ways for preventing it.

Other research indicates, however, that fear of AIDS may also lead to unhealthy behavior intentions, particularly if the fear is excessive. A study by Siegel, (1988) found that excessive fear of AIDS can be a detriment to attaining healthier sexual practices as people who experienced excessive anxiety over AIDS had a tendency to shield themselves form such threatening information by dismissing it or disassociating themselves from it. The researcher asserts that excessive fear ceases to be useful in motivating healthy behavior changes when it leads one to engage in defense mechanisms like denial, which obscure the dangerous reality of the situation and prevent the person from effectively dealing with it (Siegel, 1988).

The above research on fear of AIDS suggests that fear induction is curvilinear. An optimal level can inspire behavior change in an individual while too low or high

levels will not induce behavior changes. Thus, one may speculate that the females in the present study may have had a greater fear of AIDS than males. This fear could then have lead to their more frequent intention to take sexual precautions like discussing sexual histories with sexual partners. The fear may also be reflected in their having learned more about prevention of AIDS.

Attitude differences towards sexuality could also help explain the difference in sexual behavior intentions between males and females. One study assessed male and female attitudes in regards to sexuality and found males were more "fun-oriented" (Wicks, 1991). They were more inclined to concern themselves with the immediate pleasure of sexuality and were less prone to consider the consequences of sexual behavior. Conversely, females were found to be more "problem oriented". They took the AIDS threat more seriously and were more inclined to resolve AIDS related issues prior to engaging in sexual activity. These gender differences in attitudes relate well with the behavior intention differences found in the present study. An attitude disposition towards pleasure for males and towards caution for females provides a feasible explanation for why females would be more inclined to engage in the sexual precaution of discussing sexual histories with partner prior to sexual intercourse.

Sex differences in behavior intentions in the present

study were also found to be related with age. It was found that males' inclination to perform the sexual precaution of discussing sexual histories with partner significantly diminishes as they become older. These results were recorded by Petosa and Jackson (1991) who similarly found that males' healthy behavior intentions decline from junior to senior high school age. The investigators attributed this reduction to decreased health behavior motivation caused by a heightened interest in sexual activity. Similar conclusions were drawn by Oswald and Pforr (1992) whose study found that adolescents who are sexually experienced are more concerned with condoms interfering with sexual pleasure than about the protection they provide from HIV. Since more males are sexually ac[illegible]han females at high school age, the lesser incli[illegible]ke protective measures might be explai-

Therefore sexual c[illegible]ing to talk to partner about sexual hi[illegible]ined by factors including: fear relate[illegible]ds AIDS and pleasure related attitudes towards [illegible] activity. If it is true that sexual interest increases from early to middle adolescent periods (Mitchell, 1986) and that males are less fearful of AIDS (Brown et al, 1991) and are more pleasure oriented in their thinking (Wicks, 1991), than it is not a surprise that the males in the present study recorded having less healthier behavior intentions than the females.

The other significant behavior intention difference found in the study was related to condom usage. It was found that intentions to use condoms were related to educational and developmental factors. Grade 11s with only cognitive training expressed more of a tendency to use condoms than grade 11s with skills-training and grade 9s with either cognitive or skills- training. These results would seem to indicate that skills-training is not necessary for adolescents of high school age. Such a finding is not inconsistent with developmental literature that describes how adolescent egocentrism declines with age while formal operational thinking becomes more consistent (Mitchell, 1992; Worell & Danner, 1989). Accordingly, older adolescents are more positive in their self perceptions and do not rely on their peers for their identity and acceptance to the extent that younger adolescents do (Steinberg, 1993). Thus they can behave according to their own views and judgements and are not so strongly influenced negative peer influences. The seemingly greater effectiveness of cognitive approaches for older adolescents may reveal a preference by these individuals for a program that provides the plain facts and allows them to utilize their own capacity to make judgements about what they should do. Perhaps incorporating skills training at this age is not necessary and creates an undesirable tediousness which detracts from their interest in the basic information.

In examining the impact of applying skills approaches to grade 9 classes, it is worth noting that although the difference was not significant, grade 9s who received skill training had a greater tendency towards using condoms than grade 9s with only cognitive training. The effectiveness of skill training on influencing the behavior intentions of younger adolescents has been reported in other studies (Boyer & Shafer, 1990; Blythe et al, 1981; Gilchrist & Schinke, 1983; Rotherham-Borus et al, 1991). Perhaps more significant differences would have been detected on this variable in the present study had sample sizes been larger and were more evenly distributed so that more sensitive parametric procedures could have been used.

In summary, it was found that older adolescent females are more inclined than males of the same age group to talk to sexual partners about histories. Possible factors related to this finding include: females' greater fear of AIDS, their less intense desire for sexual intercourse, and their more practical "problem oriented" approach towards sexual situations. These sex-related variables likely arise from different socialization experiences. The other significant finding is that cognitive approaches are related with greater condom usage for grade 11s than approaches that combine cognitive and skill training. Related factors include: more developed formal thinking, less egocentric distortion and less negative peer influence.

Implications of Study

The present study provides some direction as to how cognitive and skills approaches can best be implemented in the classroom to create a desired impact on students. In regards to learning differences, it was found that cognitive approaches were less effective than skills approaches for teaching knowledge to junior high students but are equally effective in teaching AIDS knowledge to high school students. This finding corresponds with developmental researcher's acknowledgement of how younger adolescents are more prone to distortions in their thinking and to the influence of outside norms, and of how these qualities disappear with age. These results would suggest that either cognitive or skills approaches may be used for the purpose of teaching AIDS related information to students of high school age, but that the cognitive approach is not as effective at the junior high level. Therefore combining skills-training with technical information would be advisable for enhancing the learning and retaining of AIDS related information at the junior high school level.

For the purpose of shaping behavior intentions, it was found that skills education was more influential at the junior high school level and that cognitive information was more effective at the high school level. Though the differences were not significant, more students in grade 9 who received skills training adopted intentions to use

condoms than those in the same grade with only cognitive training. Perhaps skills-training not only aides in knowledge acquisition by alleviating young adolescents' thinking distortions (egocentric avoidance of how their sexual behavior places them at risk), but also helps remove some of the reluctance to practice the knowledge they attain by supplying them with skills to do so. Skills-training provides younger adolescents with the ability and confidence to carry out healthier sexual practices and is therefore highly recommendable for this age group.

By contrast, it was found that adolescents in grade 11 receiving only cognitive information as a group had the healthiest behavior intentions. Seemingly, the older students' greater capacity to think rationally better enable them to comprehend the significance and practical application of AIDS information when it is presented in a comprehensive, technical way. Perhaps attempts to teach particular skills is perceived as a violation of their independence and their ability to think. Whatever the case may be, it was made apparent in this study that providing cognitive information without skills-training is more effective in influencing healthy sexual behavior intentions of older adolescents of high school age.

Effects which could not be sorted out by examining age and educational factors were those related to differences in gender. Females consistently displayed greater knowledge,

more tolerant attitudes, and healthier behavior intentions than males. These differences existed regardless of the age group they belonged to or the educational approach to which they were exposed. Findings from other investigators provided clues as to what attitude differences underlie these differences between the sexes. However it can not be ascertained as to what the basic source of these sex differences may be. Likely, the differences relate to more fundamental sources of sex differences such as socialization or possibly even genetics. In either case, such factors extended beyond the influence of the two educational approaches examined in this study. As a result, educators should be aware of the likelihood that sex differences will emerge from their educational efforts. It would is also advisable for them to look for factors that could control these differences.

In conclusion, it is apparent that the different educational approaches vary in their effects on adolescents of different age and gender groups. Because of this, educators must take into account developmental differences and gender differences when supplying HIV/AIDS information to adolescents. Attaining a better idea of what works for different groups of adolescents will greatly aid the process of effective curriculum development and of successfully educating and preparing youth to defend themselves against the danger of the life threatening syndrome of AIDS. To a

lesser extent, school boards could save a lot of money by not having to implement extravagant educational schemes and resources where they are not necessary. Knowing what approaches work for who thus enables schools to be much more cost efficient and effective in their goals.

Implications for Future Research

The findings in the study were successful in discovering that combining skills-training with cognitive HIV/AIDS education does lead to different educational outcomes and that these differences vary according to age and gender variables of adolescents. However, scientific discovery takes time before it can be confidently regarded as scientific fact. Researchers in this area should seek to replicate and verify these findings on larger, more evenly distributed samples so that more precise and detailed information may be obtained. It is also imperative that greater efforts be put towards examining the factors underlying the differences between the sexes so that strategies providing a more equally favorable impact can be developed.

As the AIDS threat continues to grow, so does the need for effective preventative education. Evaluations of educational approaches in the literature reveal that there is still great promise in using in-class educational strategies. The fact that over 90% of youth regularly

attend school, in-class methods remain as the most convenient and economically feasible way of providing youth with the necessary preventative information. However, as the study has shown, different adolescent groups do not respond to different educational strategies in the same way. It is necessary, therefore, to continue developing studies which examine the factors involved in different age and gender groups of adolescents to determine the methods each group best responds to. Classroom educational methods show great promise in implementing healthy knowledge, attitude and behavioral changes in adolescents. Now it is important to continue evaluating the different methods and determine where and when each is best suited.

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Please complete one of these forms for <u>each</u> of your classes participating in the Alberta AIDS Survey.

Alberta AIDS Survey
Description of Class

If you have more than one class participating, complete a separate form for each class, then put the completed form on top of the student questionnaires for each respective class and bundle each class separately.

Please do not mix student questionnaires or forms from more than one class.

---

1. DATE THAT POST TEST WAS ADMINISTERED TO THIS CLASS:

_____

2. CLASS SECTION NAME OR NUMBER _____

3. TEACHER'S NAME _____

4. TREATMENT OR CONTROL?

*To be part of the **Treatment Group** all AIDS instruction must have been provided since date of the pre test (February 5).*

*To be part of the **Control Group** no AIDS instruction should have been provided so far in 1990.*

DID THIS CLASS PARTICIPATE IN THE ALBERTA AIDS EDUCATION SURVEY AS PART OF THE TREATMENT GROUP OR THE CONTROL GROUP? (Circle appropriate number.)

Class was in Treatment Group	*Class was in Control Group*
1	2

If you are unsure about the answer to question 4, please call Dr. Seaman, 420-0799 collect to discuss this form.

5. AIDS INSTRUCTION WAS PROVIDED TO THIS CLASS AS PART OF: (Circle <u>ONE</u>)

a. Health and Personal Life Skills (Junior High School)

b. Career and Life Management (CALM)

c. Personal Living Skills (Home Economics, Senior High)

d. Science

e. Social Studies

f. Religious Studies

g. Other (specify_____)

6. WHICH OF THE FOLLOWING TOPICS DID YOU INCLUDE IN THE CLASSES ON AIDS FOR THIS CLASS? (Circle **ALL** that apply):

a. History of AIDS

b. Different rates of transmission for differing sexual practices (eg. oral, anal, and genital sex)

c. Sharing of needles during IV drug use as a means of transmission

d. Receiving blood as a possible source of AIDS

e. Abstinence from sexual intercourse as a means of preventing AIDS transmission

f. Skills in negotiating personal relationships, such as assertion skills, expectations of sexual intimacy

g. Importance of selectivity when choosing sexual partners to reduc risk of AIDS transmission

h. Importance of asking a potential sexual partner about his/her sexual history

i. Use of condoms to prevent AIDS transmission

j. Attitudes toward those infected with the AIDS virus.

k. Social, political and economic implications of AIDS.

7. HOW MANY CLASS PERIODS ABOUT AIDS WERE INCLUDED FOR THIS CLASS?

_____ PERIODS

8. HOW LONG WAS EACH CLASS, IN MINUTES? _____ MINUTES

9. a. DID THE STUDENTS USE *AIDS - WHAT YOUNG ADULTS SHOULD KNOW* BY YARBER IN THE CLASSROOM? (This booklet is illustrated on page 4 of the Students' Questionnaire.)

Yes	*No*
1	2

b. WERE THE STUDENTS GIVEN A COPY OF *AIDS - WHAT YOUNG ADULTS SHOULD KNOW* BY YARBER TO TAKE HOME AND KEEP?

Yes	*No*
1	2

c. HOW WOULD YOU RATE *AIDS - WHAT YOUNG ADULTS SHOULD KNOW* AS A STUDENT RESOURCE?

Not at all useful	*Not very useful*	*Fairly useful*	*Very useful*
1	2	3	4

10. a. DID YOU USE THE TEACHER'S GUIDE BY YARBER *(AIDS - WHAT YOUNG ADULTS SHOULD KNOW. TEACHER GUIDE.)*

Yes	*No*
1	2

b. HOW WOULD YOU RATE THE TEACHER'S GUIDE BY YARBER?

Not at all useful	*Not very useful*	*Fairly useful*	*Very useful*
1	2	3	4

11. a. DID THE STUDENTS USE *AIDS - THE CHOICES AND THE CHANCES* IN THE CLASSROOM? (This booklet is illustrated on page 6 of the Students' Questionnaire.)

Yes	*No*
1	2

b. WERE THE STUDENTS GIVEN A COPY OF *AIDS - THE CHOICES AND THE CHANCES* TO TAKE HOME AND KEEP ?

Yes	*No*
1	2

c. HOW WOULD YOU RATE *AIDS - THE CHOICES AND THE CHANCES* AS A STUDENT RESOURCE?

Not at all useful	*Not very useful*	*Fairly useful*	*Very useful*
1	2	3	4

12. a. DID THE STUDENTS USE THE EDMONTON CATHOLIC SCHOOLS BOOKLET *YOU ALMOST HAVE TO CHOOSE TO GET AIDS* IN THE CLASSROOM ? (THIS BOOKLET IS ILLUSTRATED ON PAGE 8 OF THE STUDENTS' QUESTIONNAIRE.)

Yes	*No*
1	2

b. WERE THE STUDENTS GIVEN A COPY OF *YOU ALMOST HAVE TO CHOOSE TO GET AIDS* TO TAKE HOME AND KEEP?

Yes	*No*
1	2

c. HOW WOULD YOU RATE *YOU ALMOST HAVE TO CHOOSE TO GET AIDS* AS A STUDENT RESOURCE?

Not at all useful	*Not very useful*	*Fairly useful*	*Very useful*
1	2	3	4

13. a. DID YOU USE *TEACHING AIDS: A RESOURCE GUIDE ON ACQUIRED IMMUNE DEFICIENCY SYNDROME* BY QUACKENBUSH AND SARGENT?

Yes	*No*
1	2

b. HOW WOULD YOU RATE THE RESOURCE BY QUACKENBUSH AND SARGENT?

Not at all useful	*Not very useful*	*Fairly useful*	*Very useful*
1	2	3	4

14. WERE OTHER STUDENT PRINT RESOURCES USED?

Yes	*No*
1	2

If yes, please specify _____

_____

15. WERE OTHER TEACHER REFERENCES USED?

Yes	*No*
1	2

If yes, please specify _____

_____

APPENDIX 2

Alberta HEALTH EDUCATION

AIDS EDUCATION SURVEY

A JOINT PROJECT OF ALBERTA HEALTH AND ALBERTA EDUCATION

March, 1990

Dear Student:

We are now asking you to complete the AIDS questionnaire a second time to see if students' knowledge and attitudes have changed since it was first answered. Again, it is not a test. It is a confidential survey. We are not asking for your name or any other personal information. We are not evaluating you or your teacher. We want to find out what students, in general, know and think about AIDS and its prevention.

The questionnaire contains several types of items. Some request information such as age or grade. Other questions ask about attitudes, values or knowledge related to AIDS. Consequently, ***there may be no single right answer to a particular question.*** In each case, give the answer that you believe is best.

If there are any questions which you do not wish to answer, cannot answer, or which do not apply to you, leave the item blank.

After you have completed the questionnaire, seal it in the accompanying envelope. It will be forwarded with all student questionnaires directly to Lorne Seaman & Associates, the consulting firm conducting this project for the provincial departments of Health and Education. Your teacher will not see your answers.

Thank you for your participation.

Yours truly,

Lorne D. Seaman, Ph.D., CMC
Chartered Psychologist
President,
Lorne Seaman & Associates

AIDS EDUCATION SURVEY

DATE _____ .

1. ARE YOU MALE OR FEMALE? (Circle appropriate number)

Male	*Female*
1	2

2. HOW OLD ARE YOU? (use age at time of your last birthday) ___

3a WHAT GRADE ARE YOU IN? (Circle appropriate number)

8 9 10 11 12

3b WHAT IS THE NAME OF THE CLASS SECTION IN WHICH AIDS INSTRUCTION IS PROVIDED TO YOU?

_____

4. WHAT SCHOOL DO YOU ATTEND?

_____ ☐☐☐

5. IN WHAT CITY, TOWN OR VILLAGE IS THIS SCHOOL LOCATED?

_____ ☐☐☐

6. WHAT IS THE NAME OF THE REGULAR TEACHER OF THE CLASS IN WHICH YOU ARE COMPLETING THIS SURVEY?

_____ ☐☐☐

7. HOW WELL INFORMED DO YOU FEEL YOU ARE ABOUT ACTIONS THAT YOU CAN TAKE TO AVOID BECOMING INFECTED WITH THE AIDS VIRUS? (Circle appropriate number)

Not at all informed	*Not too well informed*	*Fairly well informed*	*Very well informed*
1	2	3	4

USE THE FOLLOWING CODE TO ANSWER QUESTIONS 8 AND 9.

1. Family
2. Friend
3. Church, Synagogue, etc.
4. School (including resource material, such as books, films etc.)
5. Doctor/Nurse/Clinic
6. Television/Radio
7. Magazines/Newspapers/Books
8. Other

8. WHAT HAVE BEEN YOUR ***TWO MAIN*** SOURCES OF INFORMATION ABOUT THE FOLLOWING? (Use code from above)

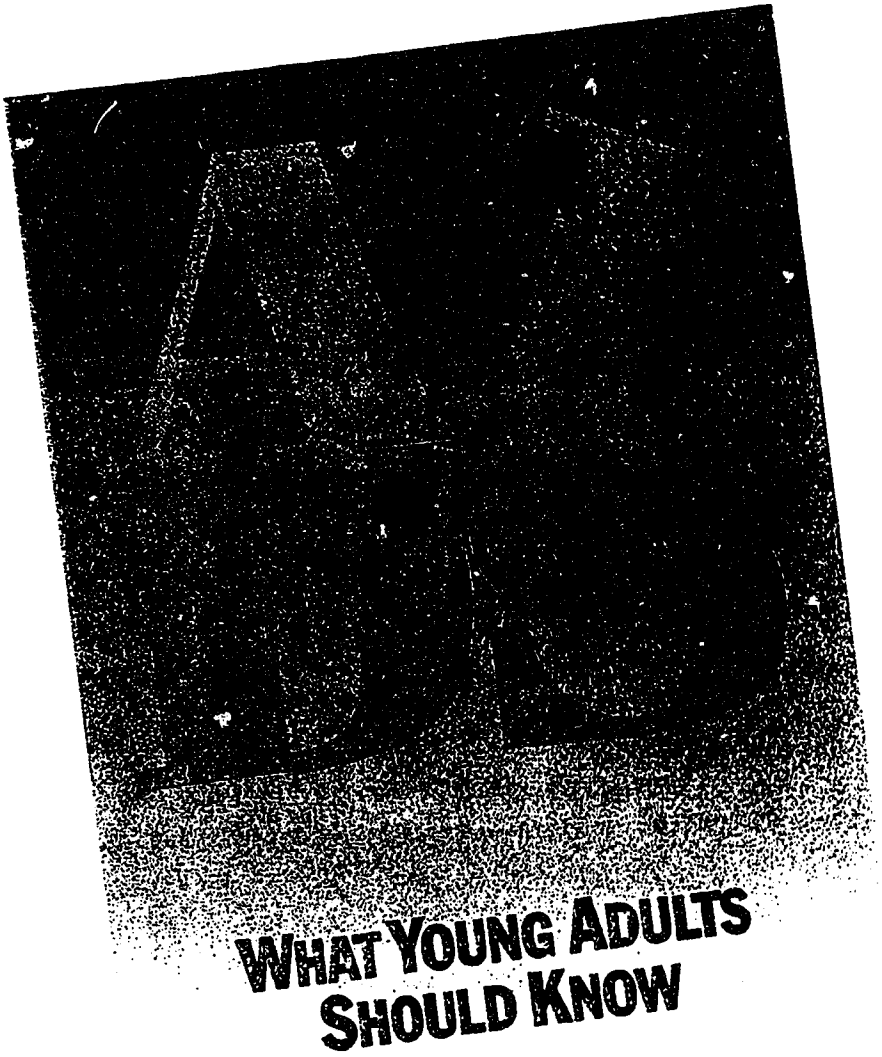
	First source	*Second source*
Human Sexuality	_____	_____
AIDS	_____	_____
Other sexually transmitted diseases (STDs) such as syphilis, gonorrhea, chlamydia, and herpes	_____	_____

9. FROM WHICH ***SINGLE*** SOURCE WOULD YOU ***PREFER*** TO LEARN ABOUT THE FOLLOWING? (Use code from above)

Human Sexuality	_____
AIDS	_____
Other sexually transmitted diseases (STDs) such as syphilis, gonorrhea, chlamydia, and herpes	_____

10. HOW GOOD A JOB DO YOU THINK EACH OF THE FOLLOWING IS DOING IN INFORMING YOU ABOUT AIDS AND ITS PREVENTION? (Circle the appropriate number for each item)

	Very Poor	*Fairly Poor*	*Fairly Good*	*Very Good*
Family	1	2	3	4
Friends	1	2	3	4
Church, Synagogue, etc.	1	2	3	4
School (including resource material)	1	2	3	4
Doctor/Nurse/Clinic	1	2	3	4
Television/Radio	1	2	3	4
Magazines/Newspapers/Books	1	2	3	4



WHAT YOUNG ADULTS SHOULD KNOW

ALBERTA EDITION

11. HAVE YOU SEEN THE AIDS BOOKLET PICTURED ON PAGE 4? (If yes, go to 12, otherwise go to 16)

Yes	*No*	*Don't Know/Can't Say*
1	2	3

12. HOW MUCH OF IT HAVE YOU READ?

Not at all	*Scanned it a little*	*Read most of it*	*Read it all*
1	2	3	4

13. WAS THIS BOOKLET USED AS A RESOURCE IN YOUR AIDS CLASS(ES)?

Yes	*No*	*Don't Know/Can't Say*
1	2	3

14. IF THE BOOKLET WAS USED IN YOUR SCHOOL CLASS, WERE YOU GIVEN A COPY OF YOUR OWN TO KEEP?

Yes	*No*	*Don't Know/Can't Say*
1	2	3

15. HOW WOULD YOU RATE THIS BOOKLET ON THE FOLLOWING QUESTIONS?
(Circle appropriate rating for each item)

	Very Low Rating	*Fairly Low Rating*	*Fairly High Rating*	*Very High Rating*
How interesting is this booklet?	1	2	3	4
How much did you learn from it?	1	2	3	4
How easy is it to understand?	1	2	3	4
How informative is this booklet?	1	2	3	4
Overall, how good do you think this booklet is?	1	2	3	4


AIDS
The Choices and Chances
Alberta
HEALTH
AIDS Info: 1-800-772-AIDS

16. HAVE YOU SEEN THE AIDS BOOKLET PICTURED ON PAGE 6? (If yes, go to 17, otherwise go to 21)

Yes	*No*	*Don't Know/Can't Say*
1	2	3

17. HOW MUCH OF IT HAVE YOU READ?

Not at all	*Scanned it a little*	*Read most of it*	*Read it all*
1	2	3	4

18. WAS THIS BOOKLET USED AS A RESOURCE IN YOUR AIDS CLASS(ES)?

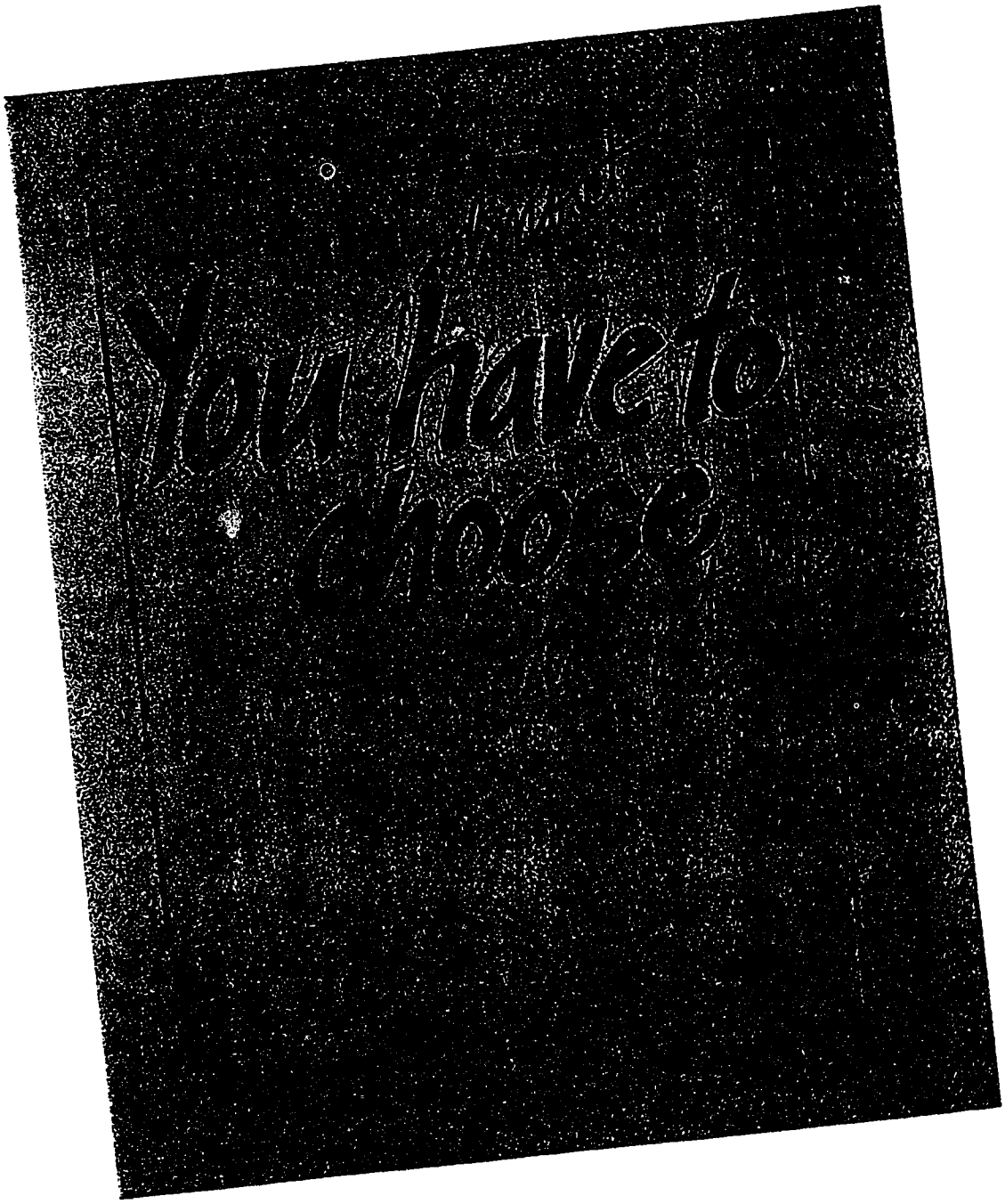
Yes	*No*	*Don't Know/Can't Say*
1	2	3

19. IF THE BOOKLET WAS USED IN YOUR SCHOOL CLASS, WERE YOU GIVEN A COPY OF YOUR OWN TO KEEP?

Yes	*No*	*Don't Know/Can't Say*
1	2	3

20. HOW WOULD YOU RATE THIS BOOKLET ON THE FOLLOWING QUESTIONS?
(Circle appropriate rating for each item)

	Very Low Rating	*Fairly Low Rating*	*Fairly High Rating*	*Very High Rating*
How interesting is this booklet?	1	2	3	4
How much did you learn from it?	1	2	3	4
How easy is it to understand?	1	2	3	4
How informative is this booklet?	1	2	3	4
Overall, how good do you think this booklet is?	1	2	3	4


You have to
Know

21. HAVE YOU SEEN THE AIDS BOOKLET PICTURED ON PAGE 8? (If yes, go to 22, otherwise go to 26)

Yes	*No*	*Don't Know/Can't Say*
1	2	3

22. HOW MUCH OF IT HAVE YOU READ?

Not at all	*Scanned it a little*	*Read most of it*	*Read it all*
1	2	3	4

23. WAS THIS BOOKLET USED AS A RESOURCE IN YOUR AIDS CLASS(ES)?

Yes	*No*	*Don't Know/Can't Say*
1	2	3

24. IF THE BOOKLET WAS USED IN YOUR SCHOOL CLASS, WERE YOU GIVEN A COPY OF YOUR OWN TO KEEP?

Yes	*No*	*Don't Know/Can't Say*
1	2	3

25. HOW WOULD YOU RATE THIS BOOKLET ON THE FOLLOWING QUESTIONS? (Circle appropriate rating for each item)

	Very Low Rating	*Fairly Low Rating*	*Fairly High Rating*	*Very High Rating*
How interesting is this booklet?	1	2	3	4
How much did you learn from it?	1	2	3	4
How easy is it to understand?	1	2	3	4
How informative is this booklet?	1	2	3	4
Overall, how good do you think this booklet is?	1	2	3	4

26. QUESTIONS ON THIS PAGE ARE RELATED TO CLASSES YOU HAVE TAKEN ON THE SUBJECT OF AIDS. IF YOU HAVE NOT RECEIVED AIDS INSTRUCTION IN 1990 PLEASE SKIP TO QUESTION 27. (Please circle the number which describes the class(es) you received.)

	Yes	*No*
Was the AIDS instruction provided mainly by one of your teachers?	1	2
At least part of your AIDS instruction was presented by a public health nurse or some other health professional.	1	2
At least part of your AIDS instruction was presented by a speaker from a community AIDS organization.	1	2
Your class(es) about AIDS included a visit by a person who has the virus that causes AIDS.	1	2
Your classes were taught with boys and girls in the class.	1	2
Were any films, videos etc. used in your AIDS classes?	1	2

	Not at All	*Very Little*	*Somewhat*	*Very Informative*
If films, videos etc. were used, how informative were they?	1	2	3	4

	Yes, AIDS class was as usual	*No, AIDS class was different*
Were AIDS classes taught as part of your regular classroom activities or were the classes set up differently? (e.g., everybody called to the gym for a film or lecture.)	1	2

If AIDS instruction was different, specify in what way _____

_____

27. SINCE JANUARY 1, 1990, HOW MANY CLASSES HAVE YOU ATTENDED IN SCHOOL ABOUT AIDS ?

# of periods _____

28. ***SINCE SEPTEMBER 1987***, HOW MANY CLASS PERIODS HAVE YOU ATTENDED IN SCHOOL ABOUT AIDS?

# of periods _____

29. FOR EACH OF THE FOLLOWING STATEMENTS, CIRCLE 1 OR 2, TO INDICATE TRUE OR FALSE. (1 = True, 2 = False)

	True	*False*
AIDS interferes with the body's ability to fight off other diseases.	1	2
A person can carry the AIDS virus, and be able to infect others, for several years without having signs of illness.	1	2
A person can be infected with the AIDS virus for up to six months before it can be detected, even by a blood test.	1	2
AIDS can be cured if treated early.	1	2
Homosexual females and homosexual males are equally at risk of catching the AIDS virus.	1	2
Condoms made from natural material are more effective than latex condoms in preventing transmission of the AIDS virus.	1	2
The AIDS scare isn't real, it's mostly a media hype.	1	2

30. IF YOU THOUGHT YOU MIGHT HAVE CONTRACTED THE AIDS VIRUS OR ANOTHER SEXUALLY TRANSMITTED DISEASE (STD), WHERE WOULD YOU GO ***FIRST*** FOR HELP? (Circle ***one*** number.)

1. Doctor
2. An STD Clinic
3. Health unit or public health nurse
4. Minister, priest, rabbi, etc.
5. Teacher, school counsellor, or school nurse
6. Parent(s)
7. Friend
8. Hospital
9. Don't Know
10. Other (specify)

_____

31. FOR THE FOLLOWING STATEMENTS, CIRCLE 1 OR 2, INDICATING WHETHER YOU AGREE OR DISAGREE. (1 = Agree, 2 = Disagree)

	Agree	*Disagree*
If you carry a condom, people will think you are promiscuous (have many sexual partners).	1	2
I would be afraid to carry a condom in case it was discovered.	1	2
Before having sexual intercourse, I would talk with my partner about using a condom for our protection.	1	2
Before having sexual intercourse, I would ask my partner about his/her sexual experiences.	1	2
I would use a condom during sexual intercourse.	1	2

32. IF YOU WOULD NOT USE A CONDOM, WHY NOT? _____

_____

_____ ☐☐

33. THE TERM "AIDS" COMES FROM WHICH OF THE FOLLOWING? (Circle appropriate number)

1. Advanced Infectious Disease Symptoms
2. Amnio Inflammatory Diotic Secretion
3. Acquired Immune Deficiency Syndrome

34. CAN A PERSON BECOME INFECTED WITH THE AIDS VIRUS IN THE FOLLOWING WAYS? (Circle 1 or 2 for each item)

	Yes, AIDS can be caught this way	*No, AIDS cannot be caught this way*
from food	1	2
from mosquitoes	1	2
from receiving blood through a transfusion	1	2
by giving (donating) blood	1	2
from public toilets	1	2
from a swimming pool	1	2
by hugging a person who has AIDS	1	2
by working with someone who is infected with the AIDS virus	1	2

35. CAN THE AIDS VIRUS BE SPREAD IN THE FOLLOWING WAYS?
(Circle 1 or 2 for each item)

	Yes, AIDS can be spread this way	*No, AIDS cannot be spread this way*
from a woman to a man during sexual intercourse	1	2
from a man to a woman during sexual intercourse	1	2
from a mother to her baby during pregnancy	1	2

36. HOW EFFECTIVE ARE THE FOLLOWING WAYS TO AVOID CATCHING THE AIDS VIRUS?
(Circle appropriate number for each item)

	Not at all Effective	*Not Very Effective*	*Fairly Effective*	*Very Effective*
abstain from sexual intercourse	1	2	3	4
have sexual relations with only one person	1	2	3	4
use a condom during sexual intercourse	1	2	3	4
use a spermicide with a condom during vaginal intercourse	1	2	3	4
use vaseline with a condom during sexual intercourse	1	2	3	4
for a woman, use the birth control pill	1	2	3	4
abstain from using drugs intravenously	1	2	3	4
abstain from sharing needles	1	2	3	4
clean needles with bleach if they are shared	1	2	3	4
avoid crowded public places, like night clubs	1	2	3	4
avoid socializing with gays	1	2	3	4

37. FOR EACH OF THE FOLLOWING, INDICATE YOUR OPINION ON WHETHER THE FOLLOWING THINGS SHOULD BE DONE IN CANADA TO HELP PREVENT THE SPREAD OF THE AIDS VIRUS. (Circle appropriate number for each item)

	Strongly Disagree	*Disagree*	*Agree*	*Strongly Agree*
provide more AIDS education	1	2	3	4
allow employers to test for AIDS before hiring employees	1	2	3	4
ensure that AIDS test results are kept confidential (released by a doctor only to the patient)	1	2	3	4
publicize the names of people who are infected with the AIDS virus	1	2	3	4
quarantine (isolate) people who are infected with the AIDS virus	1	2	3	4
prohibit gays from working in schools	1	2	3	4
prohibit people who are infected with the AIDS virus from working in schools	1	2	3	4
prohibit students infected with the AIDS virus from attending school	1	2	3	4
prohibit people who are infected with the AIDS virus from working in restaurants	1	2	3	4
make condoms more available to teenagers	1	2	3	4
provide demonstrations on how to use a condom	1	2	3	4
have people with AIDS talk to students about their illness	1	2	3	4

38. FOR EACH OF THE FOLLOWING DESCRIPTIONS, INDICATE HOW SAFE OR RISKY YOU FEEL THE SITUATION IS FOR BECOMING INFECTED WITH THE AIDS VIRUS. (Circle appropriate number for each item)

	Very Risky	*Somewhat Risky*	*Somewhat Safe*	*Very Safe*
sexual intercourse with a recent acquaintance	1	2	3	4
having had two or three different sexual partners over the past five years	1	2	3	4
two people who have had sexual intercourse only with each other over the past five years	1	2	3	4
abstaining from sexual intercourse over the past five years	1	2	3	4
passionate or deep kissing with no sexual intercourse	1	2	3	4
sexual intercourse with a man who has had sex with another man	1	2	3	4
sexual massage or petting with no sexual intercourse	1	2	3	4
anal intercourse without a condom	1	2	3	4
oral-genital sex without a condom	1	2	3	4
sexual intercourse with an intravenous drug user	1	2	3	4

39. IN THE LAST TWO MONTHS, WHAT HAS MOST AFFECTED YOUR KNOWLEDGE AND ATTITUDES REGARDING AIDS AND ITS PREVENTION?

1. _____ ☐☐
2. _____ ☐☐

40. IF YOU ARE COMPLETING THIS QUESTIONNAIRE ON OR AFTER TUESDAY, APRIL 3, PLEASE TELL US IF YOU WATCHED ***TALKING ABOUT AIDS*** ON CBC TELEVISION ON MONDAY, APRIL 2.

Yes	*No*
1	2

41. WHAT IS THE NAME OF THE VIRUS THAT CAUSES AIDS? (Use abbreviation if you wish)
(Please print) _____ ☐

42. WHAT ARE ***THREE*** COMMON WAYS THAT PEOPLE BECOME INFECTED WITH THE AIDS VIRUS?
(Please print - Use point form)

1. _____ ☐☐
2. _____ ☐☐
3. _____ ☐☐

43. WHAT DO YOU THINK IS THE ***SINGLE*** MOST IMPORTANT THING WHICH MUST BE DONE TO HELP YOUNG PEOPLE AVOID BECOMING INFECTED WITH AIDS? (Please print - Use point form)

_____
_____
_____ ☐☐

Thank you for your participation.
The results of this survey will help fight the spread of AIDS.