HIGH-RISK SEXUAL BEHAVIORS OF YOUNG ADULTS: 
AIDS PREVENTION

DISSERTATION

Presented to the Graduate Council of the 
University of North Texas in Partial 
Fulfillment of the Requirements 

For the Degree of

DOCTOR OF PHILOSOPHY

By

Martha Madden Bloodgood, B.S., M.S. 
Denton, Texas 
August, 1994
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similar to Hoffman's (1992) results in that many items cross loaded on several factors and the items appeared to represent different factors than the originally named variables.

The results of the confirmatory factor analysis on the MDHLOC yielded similar results to other research which found this to be a good model. Where the AIDS-HBM model provided a poor fit to the data, the MDHLOC scale provided a very good fit with only minor modifications.

The final running model contained four exogenous variables: a) Sensation Seeking, b) Self-Efficacy, c) Susceptibility, and d) Perception of Friends. This model has four endogenous variables: a) Perception of Self, b) Sexual Behaviors, c) Age Sex Initiated, and d) Number of Sex Partners. The final fit of this highly modified model was only adequate.

The Health Belief Model was used to study HIV/AIDS beliefs of 419, 18 to 24 year old, never married, sexually active, heterosexual college students and predict their AIDS preventive behaviors from a larger sample of 662 college students. The structural properties of the scales used were evaluated using confirmatory factor analysis. Recent preventive behaviors were predicted in a LISREL Structural Equation Modeling analysis.

Results of the confirmatory factor analysis demonstrated five factors for the AIDS-HBM model consisting of 26 items: a) Susceptibility, b) Severity, c) Benefits, d) Knowledge of AIDS Risks, and e) Self-efficacy. As can be seen, the fit of this modified AIDS-HBM measurement model is not good, suggesting only a tentative relationship between HBM theory and this data. In an attempt to improve the fit of the AIDS-HBM, a confirmatory factor analysis was run doing a variety of log transformations on the items in order to improve their distributive characteristics. These transformations did not improve the resultant model and thus were not utilized. The results of this factor analysis were
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CHAPTER I

INTRODUCTION

Few people in the United States were aware of a Human Immunodeficiency Virus (HIV) and/or Acquired Immunodeficiency Syndrome (AIDS) twenty years ago. Within a short span of 10 years, particular segments of the population began to experience severe illnesses generally accompanied by extreme disability. The segments of the population most affected were hemophiliacs who routinely received blood transfusions and blood clotting factors. Today, the risk of contracting AIDS from a blood transfusion has been greatly reduced by the practice of screening donors for risk factors and then testing donated blood for the AIDS antibody (Koop, 1988). The two other segments of the population in the United States found at high risk for HIV and AIDS as a consequence of precarious sexual behaviors were gay/bisexual males and intravenous drug users (Barrick, 1990; Dondero, Pappaioanou & Curran, 1988; Pappaioanou, et al., 1990). Through intervention programs that addressed specific high risk behaviors, a decline in HIV/AIDS seroconversion rates in these two populations has been verified (Coates, 1990).

To date, spread of AIDS in the heterosexual community of the United States and Europe has not materialized as
expected (Padian, 1987). However, evidence suggests that AIDS is a heterosexually transmitted disease in many parts of Africa and Haiti, and it is spread bi-directionally (Melbye, 1986; Pape et al, 1985; Van de Perre et al., 1985). While a lack of data in the U.S. impedes true estimations of heterosexual infection rates, a strong argument exists for directing health education and prevention campaigns toward anyone who is sexually active (Temoshok & Baum, 1990).

Risk of infection with Sexually Transmitted Diseases (STDs) has always existed for young, sexually-active, heterosexuals; however, the presence of AIDS makes the risk of unprotected or high risk sexual activity even more dangerous. Reduction of Risk for HIV infection is dependent on behavioral alterations that also reduce the risk of other Sexually Transmitted Diseases (STDs). Risk of HIV/AIDS is dependent on both the type and frequency of behaviors that expose a person to the virus (e.g., an Intravenous Drug User (IVDU) is at higher risk than a monogamous heterosexual and a highly sexually active gay male is at a higher risk than a person who does not engage in similar behaviors). One reason for studying groups considered to be at relative less risk, such as sexually active young adults, is that they will become one of the new, very large, high risk groups (Temoshok & Baum, 1990).
Epidemiology of HIV/AIDS

A little over ten years ago, the Center for Disease Control in Atlanta reported incidences of an uncommon cancer and a rarely observed form of pneumonia in formerly healthy homosexual men (Barrick, 1990). With a decade of hindsight consisting of multitudes of medical and public health research studies, these are recognized as the first occurrences of Acquired Autoimmune Deficiency Syndrome (AIDS) in this country.

Recent work by Schneiderman, Antoni, Ironson, LaPerriere, and Fletcher (1992) defines AIDS as an assortment of health problems resulting from infection with the human immunodeficiency virus, type 1 (HIV-1), a retrovirus of the human T-cell leukemia/lymphoma strain. It leaves the immune system compromised so that the victim is unable to fight commonly occurring infections. Instead, the person with AIDS (PWA) becomes immunologically defenseless and extremely susceptible to illnesses and diseases caused by bacteria, viruses, parasites, fungi, and neoplasms (Schneiderman, Antoni, Ironson, LaPerriere, and Fletcher, 1992, p. 67).

Since the diagnoses of the initial cases of AIDS related rare illnesses in 1981, through May 1990, approximately 1 to 1.5 million people in North America had been infected with the human immunodeficiency virus (HIV).
The World Health Organization estimates that 5 to 10 million people worldwide are infected with the virus (Mann, 1988; World Health Organization, 1989).

Initially, the risk factors constituting probable methods of infection had to be identified. Once recognized, they were utilized to mark the epidemic patterns in different geographical regions and in different countries. Each national epidemic is comprised of many epidemics each of which has its own rate of spread, pattern of infection, and future trend (Pappaioanou et al., 1990).

In Western Cultures, three groups were at high risk for HIV/AIDS. Hemophiliacs, because of the number of transfusions they typically receive each year and the multiple blood sources used to create clotting factor concentrates, were originally at greatest risk. With improvement in blood testing for HIV infection and removal of contaminated blood and contaminated clotting factor concentrates from the blood supply, the epidemic among hemophiliacs has essentially been curtailed (Dondero, Pappaioanou, & Curran, 1988; Pappaioanou et al, 1990). The gay population, because of promiscuous sexual practices which involve trauma to soft tissues, were and are the largest group at risk. Intravenous drug users (IVDUs) were and are also at high risk because they often share needles and syringes which increases their risks of exposure to HIV
contaminated blood. Additionally, IVDUs often engage in sexual activities while under the influence of chemical substances which diminish their self-protective judgment. Also IVDUs may have multiple sexual partners if they have sex for money or drugs.

Immigrants from certain African nations and Caribbean countries (Pattern II) were known to be at high risk for AIDS infection from heterosexual transmission (Dondero, Pappaioanou, & Curran, 1988; Pappaioanou, et al, 1990). Because of the differences in geographical, cultural, and racial variations of the above individuals (Piot, 1988) and the participants of this study, gay/bisexual, IVDUs, and Pattern II country immigrants are not included in this study.

While reductions in high risk behaviors and diagnosed cases of HIV/AIDS in the gay/bisexual (Becker & Joseph, 1988; CDC, 1985; Winkelstein, Samuel & Padian, 1987) and the IVDU communities (Chaisson, Moss, Onishi, Osmond, & Carlson, 1987; Friedman, Des Jarlais, & Sotheran, 1986) were noted, increases in the HIV infection rate within the heterosexual community have also been observed. In fact, the World Health Organization projects that heterosexual transmission will be responsible for 90 percent of the HIV infections in the world by the year 2000 (Aral & Holmes, 1991).
A recent analysis predicted that AIDS cases in the United States will include an increase in the infection rate among non-drug using heterosexuals over the next 5 years, with the result that heterosexual AIDS cases will double by 1995 (Brookmeyer 1991). AIDS case reports to the CDC from the national surveillance system indicated that 10,279 heterosexually transmitted cases have occurred through July 1991 (Allen & Setlow, 1991).

Heterosexual Young Adults and HIV/AIDS

The young adult group has exhibited increases in HIV infection rates (Becker & Joseph, 1988; Petosa & Wessinger, 1990). Recent cases of HIV/AIDS in young adults have been contracted through heterosexual activities while previous infection rates for young adults were generally low and cases were usually traced to infection from blood transfusions, blood products, or other risk factors. As the worldwide epidemic of HIV/AIDS spreads to encompass heterosexual populations, increased risk of infection along with changes in transmission routes for the adolescent and young adult age group have transpired.

The reality of heterosexual transmission of HIV in the United States has been accepted slowly (Legion, Levy, Cox, & Shulman, 1990). Without an appreciation for the differences between distinct age related and culturally related AIDS epidemics and how to diminish them, efforts to reduce
heterosexual spread of HIV transmission will be thwarted (Legion, Levy, Cox, & Shulman, 1990).

The Center for Population Options estimates that as many as one-fifth of the current AIDS cases may have become infected with HIV as teens (Haffner, 1988). Although the seroconversion rate still appears to be low among young people, it is doubling every year. Increases in these AIDS infections may be due to sexually active youth engaging in the same unsafe behaviors that enabled HIV to spread in the adult gay male population: unprotected sexual intercourse, with frequently changing partners (Legion, Levy, Cox, & Shulman, 1990).

Presently, sexual activity represents one of the two most common HIV transmission routes in this country. Sexual behavior is difficult to study because of its extremely personal nature and the confidentiality surrounding it. Furthermore, religious and cultural sexual restrictions cause embarrassment when sexual activity is discussed. This in turn suppresses accurate accounts of sexual behavior and prevents changing sexual behaviors (Temoshok & Baum, 1990).

Adolescents and young adults explore sexuality at their stage of development. They have not proven to be effective users of contraception, and they likewise exhibit a high rate of sexually transmitted diseases compared to members of other age groups (Temoshok & Baum, 1990). Their risk for
HIV infection is inferred from the rates of other STDs among young people, as behaviors associated with HIV infection are identical to behaviors associated with infection of other STDs. Over 60% of the STD cases reported yearly in this country occur in individuals under the age of 24; with 25% of those infected between 15 and 19 years old (Boyer & Kegeles, 1991). Currently, the prevalence of syphilis, gonorrhea, and chlamydia is highest among adolescents (Bell & Hein, 1984). STDs and the resulting disorder, pelvic inflammatory disease (PID) are highest among sexually active female adolescents, and the infection rate declines significantly between the ages of 29 to 34 years (Boyer & Kegeles, 1991). In addition, an STD may serve as a cofactor for HIV infection. The association between the HIV antibody and genital ulcer diseases (syphilis, chancroid, and herpes) continues even after controlling for the number of sexual partners. Thus young adults with STDs may be at even greater risk for HIV transmission than initially estimated (Aral & Holmes, 1991; Bell & Hein, 1984; Bell & Holmes, 1984; Boyer & Kegeles, 1991).

Although the Center for Disease Control (CDC) has reported only 530 cases of AIDS in the 13 to 19 year old age group in the U.S. as of 1989, more recent data indicate that the rate of HIV infection among American teenagers is doubling each year. In addition, the prevalence of reported
AIDS cases may underestimate the actual rate of HIV infection among this population since the period from infection to manifestation of symptoms and diagnosis is approximately 10 years (Becker & Joseph, 1988; Petosa & Wessinger, 1990; Rutherford et al., 1990). As a result of a prolonged asymptomatic period with HIV infection, many of the 27,561 young adults who are 20 to 29 years old and presently diagnosed with AIDS (20% of reported U.S. cases) are assumed to have acquired HIV during their adolescent period (Boyer & Kegeles, 1991).

Knowledge of HIV/AIDS Transmission and Risk Behaviors

Originally, knowledge of how HIV/AIDS is transmitted and identification of risky sexual behaviors was expected to increase participation in AIDS Preventive Behaviors. However, studies have shown that even when adolescents and young adults have been provided with adequate sexual information regarding risks, they continue to engage in risky sexual behaviors (Petosa & Jackson, 1991; Petosa & Wessinger, 1990; Cochran & Peplau, 1992; Catania, Coates, & Kegeles, 1992). After completion of sex education courses, students conceded that they still seldom used condoms or they used them inconsistently. They acknowledged use of alcohol and drugs during sexual activities, which further reduced participation in AIDS Preventive Behaviors (Strunin & Hingson, 1990). Many adolescents and young adults
continued to engage in sexual intercourse with multiple partners and new acquaintances without protection.

Although the factor, Knowledge about AIDS Preventive Behavior, is important to induce behavioral change, it appears to be insufficient to overcome other factors influencing participation in risky sexual behaviors. These other proposed concepts influencing participation in risky sexual behaviors must be considered also.

The Influence of Reference Group and Cognitive/Psychosocial Development

During this period of development, a desire for acceptance by peers strongly enhances the effects of perception of sexual behavior norms on one's personal sexual behaviors (Fisher, 1988; Miller & Simon, 1980). Furthermore, individuals, especially males, feel a sense of invulnerability. This increases their participation in sensation seeking behaviors (Farley, 1986; Weinstein, 1989).

In an effort to understand additional perceptions of young adults concerning AIDS risk, Temoshok and Zorn (1990) addressed two problematic areas among young adults and adolescents: (1) current trends in sexual activity and (2) the influence of their cognitive/social developmental stage.

At this developmental stage, the strong desire for acceptance by the group and extreme fear of sanction leads young adults to conform to their perception of peer group
behaviors. The thought of possible rejection by peers is sometimes enough to eliminate any possibility of distinctive behaviors (Fisher, 1988). Desire for acceptance and fear of rejection also influence sexual behavior. If perceptions of peer group behavior include high risk sexual activities, young adults struggling for acceptance are likely to engage in similar high risk behaviors. Even strong personal beliefs and commitments about AIDS Preventive Behaviors may be suppressed in a desire for acceptance and approval by a sexual partner (Fisher, 1988; Pucket & Bye, 1987).

Walter, Vaughan, Gladis, Ragin, Kasen, and Cohall (1992) developed a scale based on Fisher’s proposed model for a Social Reference Network Group model in accord with the model of social influence. This scale is based on Ajzen and Fishbein’s (1980) Theory of Reasoned Action and identifies behavioral norms and values as important influences on sexual behavior. Behavioral norms (beliefs about how people typically act) and values (beliefs about how people ought to act) combine to generate a normative standard to which individuals aspire to comply (Fisher, 1988). This normative standard is theorized to influence the adoption and maintenance of preventive health behaviors.

In a study of high school students, Walter et al. (1992) found that: (a) most of the young people believed that 50% or more of their peers and friends were sexually
active during the past year; (b) more than 50% of their friends had never or inconsistently used condoms in the past year; and (c) 60% of the males and 25% of the females believed that people their age should have intercourse. These findings substantiated results of other recent studies which concluded that beliefs about norms and personal values influence young people’s involvement in AIDS risk behaviors (Anderson, Kann, Holtzman, Arday, Truman, & Kolbe, 1990; Goodman & Cohall, 1989; Hingson, Strunin, & Berlin, & Heeren, 1990; Keller, Bartlett, Schleifer, Johnson, Pinner, & Delaney, 1991; Kotloff, Tacket, Clemens, 1991; MacDonald, Wells, & Fisher, 1990).

Manning et al. (1989) recognized that college students while, intellectually aware that AIDS has a fatal outcome, refrained from participation in AIDS preventive behaviors because the social barriers are too great. Because of the importance of the peer reference group, or the perception of sexual behaviors engaged in by close friends, peers, as well as personal values concerning sexual behavior, were evaluated in this study.

Developmental stage influences also contribute to perceptions of invulnerability which interfere with preventive behaviors (Temoshok & Baum, 1990). Elkind (1967) identified an idealistic attitude in young adults which strengthens perceptions of egocentrism and invincibility.
Young adults perceive themselves as invincible to negative incidents; this may also affect attitudes toward health preventive behaviors. High risk taking behaviors (e.g., reckless driving, smoking, refusal to wear seat belts, substance abuse, and frequent unprotected sexual activity) reflect attitudes of invincibility and egocentrism commonly found among members of this age group (Allard, 1989).

Sensation Seeking behavior is also commonly observed in young adults especially males (Tonkin, 1987; Zuckerman, 1971, 1984; Zuckerman, Kolin, Price, & Zoob, 1964; Zuckerman & Neeb, 1980). Zuckerman (1971) described sensation seeking as a motivator for participation in high risk behaviors. Zuckerman and Link (1968) suggested that a high sensation seeker is oriented to body sensations, focused externally, a thrill seeker, and physically active; that high sensation seekers were physiologically predisposed to seek activities which create and maintain arousal. High sensation seekers were more likely to engage in occupations which satisfied this motivation for arousal (e.g., enforcement officers, paramedics).

Additionally, high sensation seekers pursued more physically arousing hobbies (e.g., parachuting). The desire for arousal increases the likelihood that high sensation seekers will experiment with alcohol, drugs, and sexuality by engaging in numerous unprotected, high risk sexual
practices with numerous partners. A risk seeking behavior (e.g., use of alcohol and drugs) interferes with preventive health intentions of people who believe in safer sex practices (Hingson et al., 1990). The present study hypothesizes that high sensation seekers will report more barriers to participation in preventive behaviors and perceive less benefits from AIDS Preventive Behaviors. Furthermore, they will be less likely to perceive themselves at risk or to view HIV/AIDS as a serious illness. In spite of numerous cues, it is theorized that they will be likely to ignore the warnings because of a sense of personal invulnerability to the threat of AIDS.

Warwick, Aggleton, and Homans (1988) found that medical explanations of HIV/AIDS and risks of infection were insufficient to facilitate young people's development of functional perceptions of risk. Factors associated with young adults' cognitive/developmental stage obscure their understanding of HIV/AIDS risk, thus affecting their attitude and behavior concerning AIDS Preventive Behaviors.

Melton (1988) theorized that young people may require a phase of experimentation. This experimentation phase may act as a reinforcement to verify their advancement to the next stage of development, that of the adult world (Melton, 1988). With the onset of HIV/AIDS, the period of late adolescence and young adulthood has become increasingly
dangerous due to the cognitive/developmental factors commonly experienced: desire for acceptance, perception of sexual behavior norms, feelings of invulnerability, and sensation seeking behaviors (Fisher, 1988; Weinstein, 1989).

Health Belief Model

The Health Belief Model (HBM), developed in the early 1950s by social scientists for the U.S. Public Health Service, was derived from Lewinian field theory, Azjen and Fishbein’s (1980) Theory of Reasoned Action, and Tolman’s Theory of Learning (Kegeles, 1980; Rosenstock, 1966; Rosenstock, Strecher, & Becker, 1988). This model has served as an important framework for understanding people’s involvement in health care and has engendered more research on health related behaviors than any other theoretical model (Rosenstock, Strecher, & Becker, 1988). The HBM has also been used to understand both negative and positive variables affecting preventive and screening health behaviors.

Together, Rosenstock, Hochbaum, Kegeles, and Leventhal (Rosenstock, 1974) expanded and developed the factors of health behavior. The primary factors addressed in the HBM include: motivation to avoid illness unless efforts to avoid it resulted in greater discomfort than the illness itself, and the individual’s perception of the world around him or her. For one to avoid disease, one would have to believe that four factors are present: (a) one was susceptible to
the disease (i.e., Susceptibility), (b) if one contracted the illness one would experience at least a modest discomfort or disruption in some area of one's life (i.e., Seriousness), (c) a particular action would be effective either in reducing one's risk of infection or in decreasing the severity if one contracted it (i.e., Benefits of preventive behaviors), and (d) that one would not encounter significant obstructions such as expense, untimeliness, inconvenience, or embarrassment in pursuing a specific preventive action (i.e., Barriers to participation in preventive behaviors).

This system of beliefs is explained in terms of five Health Belief Model factors; (a) perceived Susceptibility; (b) perceived Seriousness; (c) perceived Benefits from health behaviors; (d) perceived Barriers to participation in health behaviors and (e) Cues to action. The last factor, Cues, which defined a stimulus to prompt the decision making process, was added to the original four HBM factors by Rosenstock (1974). Cues are assumed to act as stimuli for participation in health behaviors (Janz & Becker, 1984).

Susceptibility refers to the perceived risk of contracting an illness. It was theorized that a wide variability existed among individuals regarding one's perceptions of personal vulnerability. While some people feared infection and perceived themselves to be at high
risk, others did not identify the disease as a personal threat to themselves. Others acknowledged the possibility of illness, but perceived it to be an unlikely personal occurrence (DiClemente, Zorn, & Temoshok, 1987). A person who perceived himself or herself to be vulnerable was believed to be more likely to engage in preventive health measures if the measures were perceived to be viable and effectual (Janz & Becker, 1984).

Seriousness of the disease was based on the amount of emotional turmoil produced by the thought of the disease, the hindrance, pain, and/or discomfort accompanying infection. Also considered was, whether or not the disease would ultimately prove fatal, interfere with efficiency of mental and physical capabilities, result in permanent disability and dependence, and/or initiate emotional upheaval. The effect of illness on family, vocational endeavors, economic well-being, and social relationships was also considered emotionally discomforting (Janz & Becker, 1984). While genuine Susceptibility and Severity were not shown to be associated with compliance, perceptions of these two factors were related to participation in health behaviors (Becker & Maiman, 1975). The belief that one is susceptible to a disease believed to be serious, was thought to compel action, but not a particular course of action (Rosenstock, 1974). In this way the combined effect of
Susceptibility and Severity can be viewed as a non-specific motivator.

Perceived Benefits of health behaviors in reducing the threat and/or severity of a disease, is considered necessary to influence participation in specific health behaviors. Thus, the individual must acknowledge the existence of preventive measures and believe that, if utilized, the measures will be effective (Rosenstock, 1974). In regard to AIDS preventive behaviors, confidence in the effectiveness of condoms and the practicality of questioning partners about past sexual partners and history of STDs, reducing sexual partners, and changing sexual acts would be necessary.

Perceived Barriers or costs of participation in preventive behaviors was believed to hinder prevention, especially if they outweighed the benefits. A form of cost-benefit analysis is thought to occur when one weighs the effectiveness of the behavior against perceptions of participatory cost. Barriers affecting a negative result include expense, embarrassment, prolonged investment of time, and side effects from the preventive behavior (Janz & Becker, 1984). Benefits and Barriers are, in this way, added to Susceptibility and Severity to determine what, if any, preventive behavior will be undertaken.
An additional factor, Cues to action, was appended to Rosenstock's original HBM factors. Cues were incidents that were believed to make the subject aware of consequences. Cues may be internal (i.e., symptoms) or external (e.g., radio and TV announcements, interpersonal interactions, or brochures). Depending upon one's perception of Susceptibility and Seriousness, determination of the degree of Cue necessary to initiate participation in particular health behaviors would be established. Because the perception of Susceptibility and Severity have a strong cognitive component, the developers thought that the combination of these two variables could, by themselves, serve as a Cue to take action for some individuals (Rosenstock, 1974).

Factors derived from the Health Belief Model are based on the expectancy-value theory predicting that perception of personal Vulnerability to illness (Susceptibility) and Severity of illness if contracted (Seriousness), will result in risk reduction behaviors (Janz & Becker, 1987). These two factors are considered to have a strong cognitive component since they are partly dependent on knowledge (Rosenstock, 1974). Thus, level of Susceptibility and Severity should relate to level of Knowledge about HIV/AIDS.

The belief that specific behavioral changes will result in effective preventive measures (i.e., Benefits) is
theorized to increase participation. However, Benefits of risk reduction behaviors must be perceived to outweigh the Barriers that interfere with risk reduction behaviors. A person might believe that a particular preventive action will be effective in reducing the risk of potential disease. However, he or she may also perceive the action to be expensive, inconvenient, or unpleasant. A conflict such as this will most likely result in inaction. It was theorized that if Benefits were perceived as highly worthwhile and Barriers were insignificant, participation in preventive behaviors was likely. In contrast, if the Barriers outweighed the Benefits, participation in preventive behaviors was highly unlikely.

Hochbaum initiated research utilizing the Health Belief Model and detection of tuberculosis in asymptomatic people. He found that among individuals who perceived themselves to be susceptible and believed that early detection was beneficial for them, 82% had taken advantage of chest X-ray voluntarily. In contrast, only 21% of people without perception of Susceptibility or belief in advantage of early detection, had participated in screening. His study exhibited a preventive health behavior resulting from a combination of two Health Belief Model variables, perceived Susceptibility and perceived Benefits of participation (Rosenstock, 1974). A study by Leventhal, Hochbaum, and
Rosenstock on participation in preventive health measures for influenza yielded results that showed Susceptibility and Severity are instrumental in determining preventive health behavior (Rosenstock, 1974).

Several researchers advocated the use of theoretical frameworks to help evaluate constructs believed to influence high risk behaviors (Boyer & Kegeles, 1991; Cochran & Peplau, 1991; Petosa & Wessinger, 1990). The Health Belief Model has been used as a major framework in a great deal of primary health prevention research (Janz & Becker, 1984) and was used in the present study.

**Self-Efficacy**

Rosenstock added the Self-Efficacy (Bandura, 1977) construct to the HBM in an effort to better predict health preventive behavior. He determined that perceiving a personal risk of contracting a severe illness, knowing that treatment was cost effective and not inconvenient, was insufficient when attempting to predict participation in preventive behaviors. The behavioral focus of the early HBM was on simple preventive actions. Most people in these study groups, were assumed to have enough Self-Efficacy to perform the desired simple health behaviors. In chronic illness, especially those requiring lifetime habit changes, one must possess enough self-confidence to change specific lifestyle practices. To insure successful behavioral change
one must have the incentive to participate in the preventive behavior, realize that present behaviors are threatening, and believe that the behavioral alterations will be beneficial. One must also believe that the outcome is worthwhile, the cost is reasonable, and feel competent enough to effect the change (Rosenstock, Strecher, & Becker, 1988). Much research supports the claim that Self-Efficacy helps account for initiation and maintenance of behavioral change (Bandura, 1977, 1986; Schunk & Carbonari, 1984).

Rosenstock et al., (1988) eventually added Bandura's Self-Efficacy theory to the HBM.

Catania, Kegeles, and Coates, (1988) found that higher levels of Self-Efficacy were correlated with reduced high risk behaviors. Other researchers observed Self-Efficacy to be the factor most highly related to level of risk behavior (Charles, 1985; McKusick, Coates, Wiley, Morin, & Stall, 1987). Those at lowest risk for HIV infection had high Self-Efficacy while those with high risk for HIV infection had low Self-Efficacy. Kegeles et al. (1989) found that Self-Efficacy for protecting one's health was positively correlated with condom use in female teenagers.

In regard to AIDS Preventive Behaviors, negotiating safer sex practices with partners and publicly carrying out preventive acts, such as buying condoms and other prophylactic devices, requires Self-Efficacy. In a sample
of high school students, females reported having more negative experiences in buying condoms than males, but almost half of the sample, both genders included, had trouble paying for condoms and other STD prevention supplies, according to National Adolescent Student Health Survey 1989 (Barbanal, 1990).

A Self-Efficacy factor was included in Hoffman’s development of the Health Belief Model for AIDS Questionnaire (Hoffman, 1992). She suggested that this factor is somewhat similar to an original HBM factor, perceived Barriers. Self-Efficacy relates more specifically to: (a) expectations about the outcomes that will result from one’s engaging in a behavior; and (b) expectations about one’s ability to engage in or to execute the behavior (Strecher et al., 1986). Self-Efficacy in regard to AIDS Preventive Behavior, may require complex negotiations with one’s sexual partner(s) who may not have the same degree of dedication to behavior change (Catania et al., 1990). Thus, Self-Efficacy must also encompass confidence in one’s ability to persuade sexual partners to alter their behaviors.

Kasen, Vaughan, and Walter (1992) commented that Self-Efficacy, the judgment that one is self-competent in a specific behavioral situation, has been implicated in health-behavioral changes in past studies (Bandura, 1977;
1982; 1986). Evaluations of Self-Efficacy fluctuate with each new specific situation in which one is implicated. At the developmental stages of adolescents and young adults, numerous new situations arise in which Self-Efficacy is tested (e.g., sexuality and interpersonal relationships). Kasen, Vaughan and Walter (1992) identified areas involving sexuality in which Self-Efficacy is challenged: in delaying sexual activity and following safer sex practices since AIDS protective behaviors are often in conflict with pressure from friends and peers. Desire for acceptance, pressure to conform, and fear of embarrassment, are known barriers to AIDS Preventive Behaviors. The lower an individual’s Self-Efficacy, the more likely the individual is to engage in AIDS risk behaviors.

Two previous studies revealed different theories concerning Self-Efficacy. Hoffman (1992) believed that Self-Efficacy is a factor of the AIDS-HBM, while Kasen et al. (1992) theorized that Self-Efficacy is a factor directly contributing to AIDS Preventive Behavior. Given this disagreement, Self-Efficacy will first be modeled after Hoffman’s study, (1992) (See Figure 1). Alternately, it may be tried as a direct factor to AIDS Preventive Behavior.

**Homophobia**

In conjunction with these developmental influences, an additional issue involves young adult males’ Homophobic
attitudes. Previously, it was assumed that many heterosexual males considered AIDS to be a disease of gay males only; hence, they saw themselves as invulnerable since they only had sex with females.

Contradictory results by Cochran and Peplau (1991) found that Homophobia was considered an irrational variable which increased worry about contracting AIDS. The result of the fear was believed to influence young male adults to reduce risky sexual behaviors. The basis for this hypothesis was that during epidemics of the plague, people often avoided infected individuals. Since homosexuality is strongly associated with AIDS in most Americans' minds, it was inferred that heterosexuals with existing homophobic attitudes may increase their worry about AIDS infection, which influenced reduction of high risk behaviors. Studies have found that homophobic attitudes in heterosexual American males was higher than in heterosexual American females (Kite, 1985). In their 1991 study, Cochran and Peplau found that homophobia in males was a significant predictor of men's level of worry and consequently in their self-reported AIDS preventive behaviors.

AIDS: Implications for Using Additional Constructs with the Health Belief Model

Originally, the HBM centered on preventive and screening actions for diseases such as small pox and
Figure 1. AIDS-Health Belief Model

- Susceptibility (11 items)
- Severity (11 items)
- Benefits (10 items)
- Barriers (13 items)
- Cues (16 items)
- Self-Efficacy (11 items)
tuberculosis. The behaviors required, such as immunization and screenings, were generally simple to carry out and within most people's capability. However, with chronic illnesses, especially those that require life time changes in behaviors, compliance becomes much more demanding. In the case of AIDS, neither a vaccine nor a sufficient antiviral medication exists. As a result, elimination of high risk behaviors with lifetime maintenance of safer behaviors is currently the only acceptable recourse.

Differences between outcomes of earlier and later studies was revealed in two major reviews of the HBM (Becker, 1974; Janz & Becker, 1984). Before 1974, perceived Susceptibility was found to be a predictor of preventive behaviors in 10 of 11 studies and the other factors were found to be significant in approximately 76% of the studies in which they were tested. In contrast, perceived Barriers was found to be the most likely factor to influence preventive behaviors in all 10 later studies. Perceived Severity appeared to be the least likely to predict preventive behaviors while perceived Susceptibility and perceived Benefits were intermediate predictors of preventive behaviors.

In a HBM-AIDS study, Emmons et al. (1986) found that the perceived utility of behavior alterations (perceived Benefits) was related to measures of risk reduction. Coates
et al. (1987) found that value of engaging in low risk sexual activity resulted from such changes, implying the worth of perceived benefits. McCusker, Zapka, Stoddard, and Mayer, (1989) detected that perceptions of Susceptibility and Severity of AIDS were predictive of people’s participation in preventive behaviors to reduce the risk of AIDS transmission. Baldwin and Baldwin (1988) found an opposite outcome in a recent study. Heterosexual college students who rated high on perception of Susceptibility, reported engaging in high risk sexual activities with multiple sexual partners. Present participation in high risk behaviors appeared to correctly influence their perception of Susceptibility.

Cochran and Peplau, (1991) used measures of personal probability of: (a) ever contracting an STD, (b) developing herpes, and (c) being exposed to HIV, as indices of perceived vulnerability. Women were more likely than men to report past treatment for another STD. Both men and women had moderate levels of worry over contracting an STD while neither gender showed more concern about contracting AIDS than they did about another STD. Subjects who worried most about STD transmission regardless of gender were most likely to report participation in safer sexual practices. It was found that the only significant predictor of worry for women was sexual history. This seemed to represent a cognitive
sense of Susceptibility since actual levels of behavioral risk were estimated. For men, worry was based on two cognitive factors: perceptions of personal vulnerability (Susceptibility) and Homophobia. From these findings inference of face validity for the HBM construct of vulnerability (Susceptibility) in predicting AIDS Preventive Behaviors are assumed.

Allard (1989) studied relationships between knowledge and beliefs as defined in the Health Belief Model in a Montreal sample of individuals between the ages of 18 and 65 years. In this Canadian sample, AIDS Preventive Behaviors were more frequent among the young or single and among those who held one of the four perceptions: belief of personal risk to AIDS (Susceptibility), conviction that the disease was particularly severe (Severity), belief that particular behavioral changes would reduce risk of infection (Benefits), and a strong general health motivation. Backing for forced measures to curtail AIDS epidemics (i.e., mandatory HIV/AIDS testing) was stronger in those with less education, married, and with a high level of one of the following beliefs about AIDS perceived: Severity, Susceptibility, belief that health behaviors engaged in would be effective (Benefits), and lack of Barriers to treatment. Perceived Severity and perceived Susceptibility were the most important determinants of AIDS preventive
practices. These two factors also predict support of forced measures (i.e., mandatory testing) to control the AIDS epidemic.

Klein, Sullivan, Wolcott, Landverk, Namir, and Fawzy (1987) looked at the relationship between behavioral risk reduction and variables representing Susceptibility. They found that homosexual male physicians and homosexual male university students who believed they were at high risk for AIDS infection and considered themselves vulnerable to AIDS, were more likely to reduce high risk behaviors.

Manning, Barenberg, Gallese, and Rice (1989) examined the variables of the Health Belief Model (HBM) related to AIDS prevention and to reducing high-risk sexual behaviors. Their sample was comprised of undergraduate college students. Information concerning students' perceptions about practicing safer sex correlated to level of knowledge, with low level of Knowledge correlating with higher perception of Barriers to practicing safer sex. Older students in Petosa and Wessinger's (1990) sample reported lower Barriers to prevention, about 18% reported that condoms were embarrassing to use and 50% reported difficulty talking about past sexual experiences with a partner.

Melton (1988) explained that recent personal emotional experiences helped determine risk perception and decisions to alter behavior because these experiences serve as
"availability" or as the cognitive salience of an event (Tversky & Kahneman, 1973, cited in Melton, 1988). Applying this to AIDS, the sight of someone that has the wasting syndrome commonly associated with AIDS has positively influenced AIDS preventive behaviors in gay men in San Francisco (McKusick, Horstman, & Coates, 1985). Such salient emotional experiences may act as strong Cues to action.

Baldwin and Baldwin (1988) found that worry appeared to act as a Cue and to be positively associated with AIDS Preventive Behaviors with people who had few sexual partners. In contrast, worry did not appear to motivate students who had numerous sexual partners to use safer sex practices. Worry was theorized to act as a motivation to use caution in sexual encounters. However, it was found that although students who engaged in risky sexual behaviors worried more about personal risk, they were less inclined to engage in safer sexual practices. Incidentally, most young people in two studies (DiClemente, Zorn, & Temoshok, 1986; Petosa & Wessinger, 1990) stated they would be concerned about personal risk of HIV infection if a classmate had become infected. In a study by Valdisseri (1988), knowledge that a personal friend or acquaintance was infected with HIV, was correlated with use of condoms. Cochran and Peplau (1991) found that worry about contracting an STD such as
gonorrhea, syphilis, or genital herpes, and being exposed to HIV served as a cue to reduce risky sexual behaviors.

**Multidimensional Health Locus of Control**

In the 1950's researchers explored the possibility of an association between ability to cope with everyday life and success in worldly endeavors, with Locus of Control. Rotter was one of the first investigators of this concept. Rotter (1966) defined Locus of Control as a construct by which individuals perceive the source of reinforcement contingencies. Persons with an internal Locus of Control were believed to experience reward or punishment as a result of their own actions thus perceiving control over their own destinies. Persons with an external Locus of Control were believed to attribute reward or punishment to forces outside their personal control, (i.e., Luck, Fate, Chance, or Powerful Others). The Generalized Locus of Control scale based on Rotter's original construct (1966), identified a unidimensional factor with a single score. However, results of McDonald's factor analysis revealed a multidimensional, two factor scale (i.e., internal and external LOC). Levenson (1974) believed that prediction could be additionally improved by separating the external factor into two separate components: Chance/Fate and Powerful Others. Like Rotter (1966), Levenson did not include items relating specifically to health. The original Health Locus of
Control (HLC) scale was developed by Wallston, Wallston, Kaplan and Maides (1976) to measure whether a person believed that one’s behavior did or did not determine the status of one’s health. Based on this scale and refinements in the Generalized Locus of Control Scale, Wallston, Wallston, and DeVellis (1978) developed the Multidimensional Health Locus of Control (MHLOC) scale with items for each of the three factors: Internality, Chance, and Powerful Others. The original HLOC included a combination of personal and generalized items however, Levenson argued that beliefs about one’s own control would have more predictive power than beliefs about people in general. As a result, the MHLOC was reconceptualized along multidimensional lines similar to Levenson’s findings and included personally worded items only. This additional construct, Multidimensional Health Locus Of Control (MHLOC) will be used in this study (Wallston, Wallston, & DeVellis, 1978). The purpose is to determine the influence of the MHLOC constructs, Internality, Chance, and Powerful Others on subsequent AIDS Preventive Behaviors.

Kasl and Cobb (1966) assigned the term health-related behavior to actions related to prevention, in an effort to distinguish it from illness and sick role behavior. Much of the research concerning Locus of Control has been done with health behavior because of the strong association between
Internality and compliance. Research studies on Locus of Control indicated that Internal single, female, college students are more likely to engage in contraception (MacDonald 1970). In another sample of single college females, Lundy (1972) found that sexually active contraceptive users were more internal than sexually active nonusers. Darrow (1973) found that perceptions of control were relatively poor predictors of condom acceptance in a study of prophylactic use for venereal disease prevention. However, he found that internal females with venereal disease were more likely to return for treatment with the appearance of new symptoms than were external females. Price-Greathouse & Trice (1986) found that young adults with Internal HLOC sought more AIDS related information than young adults with an External HLOC. Trice (1991) found that young adults who believed in Internal control, were more knowledgeable about AIDS and AIDS prevention. Furthermore, individuals with high levels of knowledge had significantly reduced their high risk sexual activities. Attitudes about self responsibility in maintaining health were found to be relatively stable with a positive correlation between these attitudes and with AIDS preventive behaviors.

These studies suggest that the Internal health Locus of Control construct is relevant to the prediction of health behaviors. In general, Health Locus of Control research has
found consistent evidence of greater health-information seeking among internals (Wallston & Wallston, 1978). Levenson's Internal, Powerful Other and Chance Locus of Control dimensions has been found helpful in clinical and research settings (Wallston & Wallston, 1978). Specific behaviors in which HLOC is important to AIDS Preventive Behaviors include: Seeking health information and compliance with appropriate preventive measures.

Wallston, Wallston, and Devellis (1978) suggested combining several variables with the HLOC to help determine contributing factors. Some of those variables will be included in this study: perceived Severity and Susceptibility (HBM constructs); health motivation, social supports; previous behaviors (sexual behavior history); perceived costs and Barriers; Benefits of specific actions (also, HBM constructs); and finally, demographic factors such as obtained educational level, age, race, religious orientation, and social class.

**Purpose**

This study will look at several constructs theorized to influence intentions to engage in risk reduction behaviors. The subjects of interest will be young adult, single, heterosexual, college students who have had at least one life-time sexual experience. Level of knowledge concerning AIDS and HIV transmission routes will be evaluated along
with past sexual history. Rational factors gleaned from the Health Belief Model such as Susceptibility, Severity, Benefits of action, Barriers to action, and Cues to motivate participation in health behaviors and also Self-Efficacy will be surveyed. In addition, factors identified by the Multidimensional Health Locus of Control such as Internality, Externality, or Powerful Others will be tested. Additional scales to measure Homophobia and Sensation Seeking will also be used. It is theorized that the combination of five constructs, the first three being the social cognitive theories (the HBM; Self-Efficacy; and MHLOC); and (Homophobia and Sensation Seeking), provide better prediction of engagement in AIDS Preventive Behaviors than previous studies in which only one or two predictive constructs have been used (See Figure 2).

Previous research on AIDS prevention has been concentrated on the high-risk populations engaging in high risk behaviors, such as homosexual males and intravenous drug-users. Recently, the heterosexual, sexually active, young adult has been recognized as a participant in high risk practices. Young adults are especially vulnerable to STD infection due to increased, unprotected, sexual activity with numerous partners and as a result of the added influence of their cognitive/development stage (Allard, 1988). In previous generations, developmental transitions
Figure 2. Causal Model Following Modification of Measurement Models

Susceptibility
Severity
Benefits
Barriers
Self-Efficacy
Cues

Intimacy
Powerful Others

Susceptibility
Severity
Benefits
Barriers
Self-Efficacy
Cues

MDHLOC
(14 items)

AIDS-HBM
(26 items)

Sensation
Seeking
(10 items)

Homophobia
(15 items)

Knowledge
(27 items)

Health
Motivation
Health Behavior
(6 items)

Sex Risk Taking

Social Norms
(7 items)

AIDS Preventive
Behaviors

Perception
of Self
(13 items)

Sex Reductions

Sexual
Behaviors
(10 items)

Risk History

Age
Sex Initiated
(1 item)

Number of
Sex Partners
(1 item)

Note: Error terms are not shown.
have taken place during early adolescence before sexual development had become so salient. However, changes in male and female sexual roles have led to an increase in sexual activity at a younger age and expansion of the transition to include the college years when sexuality is of prime concern (Manning et al., 1989). The focus of this study is this recently recognized population at risk.
CHAPTER II

METHOD

Subjects

The entire sample consisted of 662 students from the University of North Texas from the fall semester of 1992 through the summer semester of 1993. A subsample of 437 unmarried, male and female, heterosexual, undergraduate students, between the ages of 18 and 24 who reported having at least one lifetime sexual experience was selected. Descriptive statistics on the entire sample of 662 students and the subsample of 437 male and female, undergraduate students, between the ages of 18 and 24 who have had at least one sexual experience are shown in Table 1.

Examining the distribution of number of lifetime sexual partners, a further subsample of 419 were selected. These 419 represent those of the subsample of 437 who had fewer than 16 lifetime sexual partners. The excluded 18 people are thought to represent highly sexually active outliers in this group of young adults.

Instruments

The questionnaires utilized in this study are based on a review of the literature concerning psychological constructs used in studies of AIDS risk behaviors and AIDS
Table 1

Demographics

Entire Sample (N=662)

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<th>Categorical Variables</th>
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<tr>
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<td>Class Year:</td>
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<tr>
<td>Junior</td>
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<tr>
<td>Senior</td>
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<td>32.3</td>
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<tr>
<td>Other</td>
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<td>5.9</td>
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<tr>
<td>Race:</td>
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<tr>
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<tr>
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<tr>
<td>Hispanic</td>
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</tr>
<tr>
<td>Asian-American</td>
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<td>2.9</td>
</tr>
<tr>
<td>Native-American</td>
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<td>0.6</td>
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<tr>
<td>Other</td>
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<td>2.0</td>
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(table continues)
### Table 1 (continued)

#### Continuous Variables

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<th>SD</th>
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<td>Age (years) (range 16 to 64)</td>
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<tr>
<td>Personal Income¹</td>
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<tr>
<td>Family Income¹</td>
<td>4.62</td>
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#### Subsample (n=437)

#### Categorical Variables

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<td>Marital Status: Single</td>
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<td>Class Year:</td>
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<td>Senior</td>
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<td>Asian-American</td>
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<tr>
<td>Native-American</td>
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<tr>
<td>Other</td>
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*(table continues)*
Table 1 (continued)

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<th>Continuous Variables</th>
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<th>SD</th>
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<tbody>
<tr>
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<td>Personal Income(^1)</td>
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<tr>
<td>Family Income(^1)</td>
<td>4.91</td>
<td>1.98</td>
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Note: \(^1\)=\$0-$9,999; \(^2\)=\$10,000-$19,999; \(^3\)=\$20,000-$29,999; \(^4\)=\$30,000-$39,999; \(^5\)=\$40,000-or more.

Preventive Behaviors. Items concerning demographic information, sexual behavior history, and history of treatment for STDs were also included. The questionnaire included the following scales: (a) Health Belief Model for AIDS Questionnaire (Hoffman, 1992); (b) Multidimensional Health Locus of Control Scale (MHLOC) (Wallston, Wallston, & DeVellis, 1978); (c) a Social Network Reference Group Scale for perceptions of close friends' sexual behaviors (Walter et al., 1991); (d) a Social Network Reference Group Scale for perceptions of peers' sexual behaviors (Walter et al., 1991); (e) a Self-Efficacy Scale specific to AIDS Preventive Behavior (Walter, Vaughan, Gladis et al., 1992); (f) a Sensation Seeking Scale (Madsen, Daniel, Das, Bogen, & Grossman, 1987); (g) a Homophobia Scale (Hansen, 1982); (h)
AIDS risk Behavior Knowledge Scale (Kelly, St. Lawrence, Hood, & Brasfield, (1989); (i) General Health Motivation and Health Behavior scale; and (j) Crown-Marlowe Social Desirability Scale, (Crown & Marlowe, 1964).

Health Belief Model for AIDS Questionnaire. Numerous studies have used the HBM to attempt to determine participation in health preventive and screening practices. The HBM generally consists of the following components: a) Susceptibility, b) Severity, c) Benefits of action, d) Barriers to action, and e) Cues to motivate participation in health behaviors. Recently a Self-Efficacy factor has also been added (Kirscht, 1974; Strecher, DeVellis, Becker, & Rosenstock, 1986).

A HBM for AIDS questionnaire (Hoffman, 1992) was used to predict AIDS Preventive Behaviors. This is Section A-5, shown in the Appendix on pages 10-13. The five hypothesized factors of the questionnaire are: (a) Perceived Susceptibility, (b) Perceived Severity, (c) Perceived Benefits from preventive behaviors (d) Perceived Barriers/Costs of participation in AIDS Preventive Behaviors and, (e) Self-Efficacy specifically associated with STD preventive behavior. Hoffman reported alpha coefficients for the five subscales of the HBM for AIDS, consisting of ten items each, and the total score as follows: Susceptibility scale, $\alpha = .67$; Severity scale, $\alpha = .65$; Benefits, $\alpha = .71$;
Barriers, $\alpha = .70$; Self-Efficacy, $\alpha = .79$; Total HBM-AIDS, $\alpha = .84$. The factor structure of the HBM questionnaire has not yet been confirmed.

A pilot study was conducted using Hoffman’s (1992) HBM for AIDS Questionnaire with additional items for a Cues factor (unpublished study, Guarnaccia & Bloodgood, 1993). An Exploratory Factor Analysis was performed. The AIDS HBM scale, comprised of 62 items and an additional 5 items for Cues, loaded on six factors. It appeared there are at least four distinct factors. However, no clear break in eigenvalues lend confidence to a specific number of latent factors. A reliability analysis was then performed and based on this, a number of items were dropped.

For the present study Hoffman’s (1992) HBM for AIDS questionnaire was used. Her scale includes the four original factors (Susceptibility, Severity, Benefits and Barriers) and a Self-Efficacy factor. A separate scale was developed for Cues to help identify whether this factor influences participation in AIDS Preventive Behaviors.

A recently revised HBM for AIDS questionnaire (Hoffman, 1992) contains 62 items hypothesized to load on four factors: (a) Susceptibility, (b) Severity, (c) Benefits and (d) Self/Efficacy/Barriers combined into one factor. Results of Hoffman’s factor analysis revealed a five factor solution (a) Self-Efficacy/Barriers, (b) Susceptibility, (c)
Distancing (which was not predicted), (d) Benefits, and (e) Severity; accounting for 29% of the variance.

Hoffman's (1992) newly labeled factor, Distancing, combines nine negative loading items which came from all of the original five subscales. She interpreted the factor as a "sense that HIV results from distant, external factors outside the control or sphere of the impact of the respondent" (p.12). The facets of this construct have other components which do not seem well defined. Also, this factor has not been identified in any of the past HBM research (Hoffman, 1991; Janz & Becker, 1984). The new factor, Distancing, appears to be a less stable factor as it is somewhat ill-defined and has not been supported by other research.

Self efficacy. Bandura's Theory of Self-Efficacy represents the belief that one must feel competent to carry out the behavior necessary to effect a positive outcome. Results of previous studies on AIDS indicated that HBM variables are insufficient to predict AIDS Preventive Behaviors. That is a feeling of Self-Efficacy in conjunction with these variables must be present also before one is likely to engage in preventive health behaviors (Hoffman, 1991; Strecher, DeVellis, Becker, & Rosenstock, 1986). Therefore Bandura's theory of Self Efficacy, (1977) is included in the constructs of the HBM. This
questionnaire appears in Section A5 on page 10 of the Appendix.

Multidimensional Health Locus of Control Scale. The MHLOC (Wallston, Wallston, & DeVellis, 1978) determines the perception of control over one’s personal health related issues. Individuals identified as Internal that is, perceiving themselves to have control over their personal health, will feel responsible for acquiring knowledge and implementing preventive health behaviors. On the other hand, young adults who feel forces outside of themselves are responsible for their health or sickness are identified as External. This latter construct is divided into two subsets, Chance/Luck and Powerful Others. Chance encompasses causes such as viruses, bacteria, etc. over which the External believes one has no control. Powerful Others include physicians, health care workers, and family who are viewed as responsible for an individual’s health and well-being. An internally oriented person was theorized to take personal responsibility for one’s health, thereby engaging in preventive health behaviors. While an externally oriented person was likely to see personal control as ineffective in overcoming illness due to outside forces.

A Multidimensional Health Locus of Control Scale (MHLOC) was used to determine three dimensions of health
locus of control beliefs: a) Internality; b) Powerful Others; and c) Chance. This questionnaire appears in Section 3, on page 3 of the Appendix. It was hypothesized that Internality will be positively correlated with AIDS Preventive Behaviors; in contrast, Chance was hypothesized to negatively correlated with AIDS Preventive Behaviors. The third scale, Powerful Others, was theorized to show no correlation with AIDS Preventive Behaviors. The total item pool consisted of 18 questions: six Internality items, six Powerful Others items, and six Chance items. As an initial indication of predictive validity, correlations were computed between health status and the MHLC scores (Wallston, Wallston, & DeVellis, 1978). Health status correlated positively with Internality ($r = .40, p < .001$) negatively with Chance ($r = -.28, p < .01$) and no correlation with Powerful Others ($r = -.06$) was found. The reliabilities for the MHLOC ranged from $\alpha = .83$ to .86 which are an improvement over an 8 item scale devised by Levenson, with I,P & C scales ($\alpha = .50$ to .73). No correlations among the MHLC scales and demographic information was found (Wallston, Wallston, & DeVellis, 1978).

Wallston, Wallston and DeVellis (1978) stated that the MHLOC as a health-specific indicator of generalized expectancy of reinforcements based on Rotter’s social learning theory can not be expected to explain much of the
obtained variance in health behaviors. But in interaction with one or more additional constructs, the Locus of Control of health will play a significant role in the explanation of health behavior. Wallston, Wallston, and DeVellis (1978) recommended that other constructs should also be included in research on health-specific indicators. These authors also recommended combining additional constructs which will used in this study: (a) factors of the Health Belief Model (perceived Susceptibility and Severity, perceived cost and Benefits of specific actions); (b) social support; (c) previous behavior; and (d) demographic factors such as race and social network.

**Social Network Reference Group Scale.** Perception of AIDS Risk and Preventive Behaviors engaged in by close friends and peers has been found to influence personal sexual behavior in numerous studies of the gay population, IVDUs and young adults. These perceptions were measured by a questionnaire devised by Walter et al. (1992). This questionnaire appears in Section A2, on page 5 of the Appendix. It was hypothesized that perception of peer and close friends' use of AIDS Preventive Behaviors would correlate with personal AIDS Preventive Behaviors. In Walter et al. (1992) the majority of teenage students thought that more than 50% of their close friends and peers had been sexually active in the past year. And that the
same number of peers had never or inconsistently used condoms in the past year. While 60% of the males thought sexual intercourse by persons their age was acceptable, only 25% of females agreed. A large portion of the students were uncertain they could perform recognized AIDS Preventive Behaviors. It was hypothesized that this study would produce a similar outcome to the results of Walter and al., (1992).

**Personal Reference Scale.** A 13 item scale derived from social cognitive theory, constituting perceived Self-Efficacy was used by Walter et al. (1992). This is section A2.1, on page 5 of the Appendix. This scale consisting of a 4 point Likert-type scale, was used in a pilot study (Guarnaccia & Bloodgood, 1993) in which the perceptions of individual intentions to engage in AIDS preventive behaviors were studied. The results indicated an alpha coefficient of .80 with this population. An Exploratory Factor Analysis was used to examine this scale. A number of different exploratory factor analysis extraction methods were used. The factor structure was invariant to the extraction method used. This factor analysis revealed the presence of two strong factors. Six items had loadings above .35 on one of these factors (eigenvalue=4.9) which was labeled "Condom Use Self-Perception;" it consisted of items which represented questions concerning the use of Condoms. The loadings on
the second factor, labeled "Other Factors Effecting Self Perception," refer to questions involving personal intentions to engage in AIDS Preventive Behaviors other than condom use. Refusal of intercourse under risky conditions and questioning sexual partner about previous sexual and drug use history. The correlation between the two factors was $r = .42$ and the first factor was stronger accounting for 34.6% of the variance while the second factor accounted for an additional 14% of the variance.

A reliability analysis was then performed to determine the alpha internal consistencies for these two scales. The six items on the first factor displayed good internal consistencies with standardized item alpha of .86 with all items showing high inter-correlations. The second factor also displayed good internal consistencies with a standardized item alpha of .83 with all items showed high inter-correlations.

A LISREL measurement model with the 13 items loading on the two factors, Condom Use Self Perception, and Other Factors Effecting Self Perception, for other AIDS Preventive Behaviors was attempted. Error terms were free to vary with each item allowed to have unique error variance. Some correlation errors were found based on the modification indices and the examination of item content. Because of the similarity of wording some error terms on the items were
freed to covary. The fit between this model and the data was good, but not ideal, with a goodness of fit of .907 and the ratio of $\chi^2/df=2.8$, which is somewhat above the accepted maximum ratio of 2 for a good fit (Hayduk, 1987).

Results of the study by Kasen et al., (1992) indicated a deficiency in Self-Efficacy techniques when it came to AIDS Preventive Behaviors. Howard and McCabe (1990) obtained similar results in a study of adolescents and young adults. It was hypothesized that young adults will acknowledge an inability to act self-efficaciously in intimate social situations. The reason may be inexperience and a perception of inadequacy of necessary social proficiency (Kasen et al., (1992).

**Homophobia Scale.** To determine the influence of Homophobia on perception of participation in AIDS Preventive Behaviors, Hansen’s Homophobia scale was used (1982). This questionnaire appears in Section A3, on page 7 of the Appendix. Hansen developed a short form Homophobia scale, a 15 item measure which has item/total correlations of $r = .75$ or above. This questionnaire measures negative attitudes toward homosexuality excluding questions about the sexual behavior of homosexuals. It focuses on the three correlated dimensions: social freedoms for homosexuals, avoidance of homosexuals, and a desire to limit the social influence of homosexuals. In Hansen’s study the $\alpha = .96$ and the
correlation was $r = .98$ with a long-form. In Cochran and Peplau's (1992) sample, the internal reliability of the Homophobia scale was also quite high, $\alpha = .94$.

Based on previous studies, Hansen predicted that males would be more homosexist than females and that subjects who knew someone who was homosexual would be less homosexist than those who did not have a homosexual acquaintance. In Hansen's sample, a significant difference was found between males and females ($t = 1.85$, $df = 104$, $p < .05$). Moreover, a much larger difference was found between those who had a homosexual acquaintance and those who did not. For those who reported knowing homosexuals, the mean homosexism score was 33.71 while the mean score for those who did not was 47.67 ($t = 5.44$, $df = 105$, $p < .001$).

**Sensation Seeking Scale.** Sensation Seeking Scales evolved from constructs believed to be levels of stimulation and arousal; the underlying variable was believed to be a consistent individual trait (Zuckerman, 1971). Presently, Sensation Seeking is considered to be one of the few personality traits strongly affected by age (Zuckerman et al., 1978; Zuckerman & Neeb, 1980). Because the Sensation Seeking behaviors commonly associated with young adults (e.g., alcohol/drug use, unprotected sexual intercourse with numerous partners) increase their risk of AIDS transmission, a short form Sensation Seeking Scale (SSS) will be used in
this study. This questionnaire appears in Section 2.1, on page 2 of the Appendix. It was hypothesized that subjects measuring high on the SSS scale will engage more frequently in AIDS Risk Behaviors and less frequently in AIDS Preventive Behaviors. Those subjects measuring low on this scale engaged more frequently in AIDS Preventive Behaviors and less frequently in AIDS Risk Behaviors. The Short Form Sensation Seeking Scale designed by Madsen, Daniel, Das, Bogen, and Grossman (1987), consisting of one factor, is similar to previous Sensation Seeking Scales designed by Zuckerman (1974, 1978, 1979, 1980).

Knowledge of AIDS Risk Behaviors Scale. Although AIDS Risk Behavior knowledge has not been found sufficient to affect a change in AIDS Preventive Behaviors, information concerning methods of transmission and specific prevention techniques are necessary to reduce the spread of AIDS. Kelly, St. Lawrence, Hood, and Brasfield (1989) developed a 40 item questionnaire to determine knowledge about AIDS Risk Behaviors among university undergraduate students. This questionnaire appears in Section A4 on page 9 of the Appendix. Internal consistency of this scale was $\alpha = .75$ with K-R 20 of $r = .75$. Test retest reliability indicated a high degree of temporal stability also ($r = .84$) (Kelly et al., 1989). AIDS Knowledge of HIV/AIDS and transmission routes will be surveyed using this questionnaire.
Crown-Marlowe Social Desirability Scale. The Crowne-Marlowe Social Desirability scale has been found to load on two factors (Self-Deception and Impression Management) which measure desire for social approval. Paulhus (1984) speculated that both tendencies (Impression Management and Self-Deception) are necessary for an individual to display need for approval behavior. This scale has demonstrated behavioral correlates more clearly than other scales used to measure social desirability (Crowne & Marlowe, 1964; Millham & Jacobson, 1978; Strickland, 1977). It was used in this study as a control for determining whether subjects answered the questionnaires in a manner that suggested a desire for approval. This questionnaire appears in Section 2.2 on page 2, of the Appendix.

Procedures

Participants were recruited from undergraduate psychology classes. Questionnaires were distributed to those who wished to take part as noted at the top of the questionnaire (See Appendix). Students were informed that a decision not to participate will have no affect their class standings. Students who were willing to participate were asked to complete questionnaires in return for extra credit towards their psychology grade. Because of the personal nature of the items on the questionnaire, participants were not asked to sign consent forms so that anonymity would be
maintained. Informed consent was given by completing the questionnaire. Approval has been received from the University of North Texas Committee for the Protection of Human Subjects. Ethical guidelines of the American Psychological Association were followed (APA, 1992).
CHAPTER III

RESULTS

Overview of Data Analysis

Descriptive Data. First, Descriptive statistics was calculated for all demographic variables: age, gender, level of education, religious orientation, socio-economic status, sexual behavior history, and history of STDs. Secondly, t-tests were conducted to test for the significance of difference between women and men. This descriptive information was calculated for the entire sample of 662 and the subsample of 437.

Measurement Modeling. A confirmatory factor structure of Hoffman’s HBM for AIDS Questionnaire incorporating revised Cue items as a separate factor was attempted. Confirmatory factor analysis (Bollen, 1989; Hayduk, 1987; Joreskog & Sorbom, 1988) were run on the Multidimensional Health Locus of Control (Wallston & Wallston, 1982) and the Social Norms Scale which is a combination of two factors: Perception of Friends and Perception of Peers (Walter et al., 1992). See Figure 1 for this model.

Causal Modeling. A causal model incorporating the constructs shown in Figure 2. This Structural Equation Model (Bollen, 1989; Hayduk, 1987; Joreskog & Sorbom, 1988) was
utilized to assist in determining the importance of the exogenous constructs in predicting AIDS Preventive Behaviors.

**Descriptive Data**

**Sexual descriptive data.** Sexual behavior history, history of STDs, and psychosocial scales were analyzed for the entire sample of 662 participants and for the subsample of 437; 18 to 24 year old, never married, sexually active, heterosexual, undergraduates. T-tests or \( \chi^2 \) tests were conducted to test for the significance of differences between women and men on continuous and categorical variables for the entire sample of 662 and the subsample of 437.

Several identified risk factors for AIDS occurring after 1977 were included: a) reception of blood clotting factors, b) being a man who had sex with another man, c) use of illegal drugs by needle, d) having sex for money or drugs, e) having a history of sexually transmitted diseases, and f) having a sex partner who has engaged in any of the above risk factors. The 662 participants in the entire sample had low incidents of these risk factors. Descriptive statistics for the identified risk factors for AIDS in the entire sample of 662 participants and the subsample of 437 and comparisons between men and women are in Table 2. In the entire sample men had a marginally higher rate of IV
drug use and sex for money or drugs. These marginal differences were not maintained when only 18-24 year old, never married, sexually active, heterosexuals were selected. These differences between the sample and subsample may be due to the exclusion of those over the age of 24 and the exclusion of gay men and the exclusion from the subsample of those 18 participants reporting more than 16 sexual partners. Women in the subsample had a higher rate of sex partners with any risk factors and any personal risk factor. Both these risk factors for younger women may be due to having partners who are at risk and may infect these young women with STDs.

Reviewing Table 3, men in the entire sample are at more risk for STDs because of greater numbers of sexual partners and earlier age of first sexual encounters. Women became sexually active later than men and reported on average about half the number of sexual partners. In the subsample, men and women were sexually active for fewer years due to the younger ages of those in the subsample (18-24). However, the younger subsample became sexually active earlier than the entire sample which contained students between 18 and 69 years of age. Number of sexual partners was similar for both samples. This suggests that the younger subsample is somewhat more sexually indiscriminate.
Table 2

STD Risk Factors—Dichotomous Categorical Variables

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample (N = 662)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men (n = 189)</td>
<td>Women (n = 473)</td>
<td>Sex Diff</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>( \chi^2 )</td>
</tr>
<tr>
<td>Transfusion</td>
<td>3</td>
<td>1.6</td>
<td>9</td>
<td>1.9</td>
<td>.08</td>
</tr>
<tr>
<td>Male Homosexual</td>
<td>15</td>
<td>7.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IV drug use</td>
<td>5</td>
<td>2.6</td>
<td>4</td>
<td>.8</td>
<td>2.90</td>
</tr>
<tr>
<td>Sex for money</td>
<td>5</td>
<td>2.6</td>
<td>4</td>
<td>.8</td>
<td>2.90</td>
</tr>
<tr>
<td>STD history</td>
<td>32</td>
<td>16.9</td>
<td>82</td>
<td>17.4</td>
<td>.03</td>
</tr>
<tr>
<td>Partner risk</td>
<td>42</td>
<td>22.6</td>
<td>92</td>
<td>19.5</td>
<td>.75</td>
</tr>
<tr>
<td>Any risk</td>
<td>48</td>
<td>25.5</td>
<td>121</td>
<td>25.7</td>
<td>.00</td>
</tr>
<tr>
<td>Transfusion</td>
<td>3</td>
<td>2.6</td>
<td>3</td>
<td>.9</td>
<td>1.51</td>
</tr>
<tr>
<td>IV drug</td>
<td>2</td>
<td>1.7</td>
<td>3</td>
<td>.9</td>
<td>.43</td>
</tr>
<tr>
<td>Sex for money</td>
<td>2</td>
<td>1.7</td>
<td>2</td>
<td>.6</td>
<td>1.00</td>
</tr>
<tr>
<td>STD history</td>
<td>16</td>
<td>13.8</td>
<td>60</td>
<td>18.9</td>
<td>1.57</td>
</tr>
<tr>
<td>Partner risk</td>
<td>16</td>
<td>13.8</td>
<td>70</td>
<td>21.9</td>
<td>3.49</td>
</tr>
<tr>
<td>Any risk</td>
<td>23</td>
<td>19.8</td>
<td>87</td>
<td>27.4</td>
<td>5.92</td>
</tr>
</tbody>
</table>

Note. df=1. Male homosexual = Being a man who has had sex with men; Sex for money = Ever had sex for money or drugs; Partner risk = Sexual partner at risk for any of these risks; Any risk = Presence of any of the above risks factors. Only heterosexual were included in the subsample, therefore no data was present in the subsample on men who had sex with men.
## Table 3

**Sexual Behavior Risks—Continuous Variables**

### Entire Sample \((N) = 662\)

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(n=189)</strong></td>
<td>(n=473)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>10.7</strong></td>
<td>4.9</td>
<td><strong>4.90</strong></td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td><strong>16.3</strong></td>
<td>6.7</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Number of sex partners</strong></td>
<td><strong>16.4</strong></td>
<td><strong>17.4</strong></td>
<td><strong>3.42</strong></td>
</tr>
<tr>
<td><strong>Years sexually active</strong></td>
<td><strong>16.5</strong></td>
<td><strong>17.5</strong></td>
<td><strong>-3.50</strong></td>
</tr>
<tr>
<td><strong>Age sex initiated</strong></td>
<td><strong>15.9</strong></td>
<td><strong>16.8</strong></td>
<td><strong>-3.58</strong></td>
</tr>
</tbody>
</table>

### Subsample \((N)=437\)

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(n=116)</strong></td>
<td>(n=321)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>10.2</strong></td>
<td>5.0</td>
<td><strong>4.10</strong></td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td><strong>13.6</strong></td>
<td>5.6</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Number of sex partners</strong></td>
<td><strong>4.9</strong></td>
<td><strong>3.6</strong></td>
<td><strong>4.28</strong></td>
</tr>
<tr>
<td><strong>Years sexually active</strong></td>
<td><strong>15.9</strong></td>
<td><strong>16.8</strong></td>
<td><strong>-3.58</strong></td>
</tr>
<tr>
<td><strong>Age sex initiated</strong></td>
<td><strong>2.3</strong></td>
<td><strong>2.1</strong></td>
<td>.00</td>
</tr>
</tbody>
</table>
Few people in the sample or subsample are at risk for infection of AIDS because of blood transfusions and/or being a man having sex with other men. IV drug use and sex for money or drugs was also found to be low risks in these samples. In comparison, risk of AIDS due to having a history of STDs was 16.9% for men and 17.4% for women in the entire sample and 18.9% for women and 13.8% for men in the subsample.

**Sexual behavior history.** Several sexual behaviors were also studied including vaginal, oral, and anal sex with and without a condom. Some of these behaviors increased risk of acquiring STDs, while use of a condom has been associated with a reduction in risk compared to the same activity without a condom. Results of sexual behavior questions for the entire sample of 662 participants and the subsample of 437 participants can be found in Table 4. The sexual behavior history questions can be found in the questionnaire in the Appendix. In the entire sample and the subsample, women were more likely to report using a condom for vaginal intercourse. Men in the entire sample reported using a condom more frequently for anal sex which is in accordance with expected values with approximately 10% of the population being homosexual. Men in both samples reported using condoms more frequently for oral sex than do women.
Table 4

**Sexual Behavior History**

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample (N=662)</th>
<th>Men (n=189)</th>
<th>Women (n=473)</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Vaginal intercourse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with a condom</td>
<td>141 74.6</td>
<td>388 82.0</td>
<td>4.48 .03</td>
<td></td>
</tr>
<tr>
<td>without condom</td>
<td>152 80.4</td>
<td>377 79.7</td>
<td>.04 NS</td>
<td></td>
</tr>
<tr>
<td>Active oral sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with a condom</td>
<td>24 12.7</td>
<td>38 8.0</td>
<td>3.28 .07</td>
<td></td>
</tr>
<tr>
<td>without condom</td>
<td>129 68.3</td>
<td>341 72.1</td>
<td>.96 NS</td>
<td></td>
</tr>
<tr>
<td>Receptive oral sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with condom</td>
<td>27 14.3</td>
<td>28 5.9</td>
<td>11.33 .00</td>
<td></td>
</tr>
<tr>
<td>without condom</td>
<td>130 68.8</td>
<td>271 57.3</td>
<td>7.61 .01</td>
<td></td>
</tr>
<tr>
<td>Active anal sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with condom</td>
<td>21 11.1</td>
<td>5 1.1</td>
<td>32.00 .00</td>
<td></td>
</tr>
<tr>
<td>without condom</td>
<td>36 19.0</td>
<td>12 2.5</td>
<td>48.42 .00</td>
<td></td>
</tr>
<tr>
<td>Receptive anal sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with condom</td>
<td>12 6.3</td>
<td>24 5.1</td>
<td>.41 NS</td>
<td></td>
</tr>
<tr>
<td>without condom</td>
<td>11 5.8</td>
<td>56 11.8</td>
<td>5.93 .01</td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
(Table 4 continued)

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=116)</td>
<td>(n=321)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n   %</td>
<td>n   %</td>
<td>χ²   p</td>
</tr>
<tr>
<td>Vaginal intercourse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with a condom</td>
<td>101 87.1</td>
<td>303 94.4</td>
<td>5.92  .01</td>
</tr>
<tr>
<td>without condom</td>
<td>106 91.4</td>
<td>287 89.4</td>
<td>.38   NS</td>
</tr>
<tr>
<td>Active oral sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with a condom</td>
<td>13 11.2</td>
<td>24  7.5</td>
<td>1.45   NS</td>
</tr>
<tr>
<td>without condom</td>
<td>84 72.4</td>
<td>256 79.8</td>
<td>2.57   .11</td>
</tr>
<tr>
<td>Receptive oral sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with condom</td>
<td>15 12.9</td>
<td>16  5.0</td>
<td>4.31   .01</td>
</tr>
<tr>
<td>without condom</td>
<td>88 75.9</td>
<td>199 62.0</td>
<td>7.56   .01</td>
</tr>
<tr>
<td>Active anal sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with condom</td>
<td>11  9.5</td>
<td>3   .9</td>
<td>17.14  .00</td>
</tr>
<tr>
<td>without condom</td>
<td>18 15.5</td>
<td>7   2.2</td>
<td>24.07  .00</td>
</tr>
</tbody>
</table>

Note: df=1.
Only 22% of the entire sample of women reported a bisexual or homosexual orientation or sexual preference. Such activity has not been identified as high risk behavior.

Sexual risk reduction. Sexual risk reduction behaviors were measured with the questions shown in the appendix. These risk reduction behaviors are reported in Table 5 for both the entire sample and the subsample. Comparisons between men and women are shown. As shown in Table 5, in the entire sample, women reported becoming abstinent to reduce their risk of STDs such as AIDS while men, who reported higher numbers of sexual partners (Table 3), reduced their number of partners.

In the larger sample both men and women report now asking potential partners about past sexual partners and wait to have sex until they know the potential partner better. Only about a quarter of all men and women report avoiding high risk behaviors such as oral and anal intercourse. Both groups of men report using condoms and spermacides more often than women.

In the subsample (Table 5), women more often reported becoming abstinent to reduce their risk of STDs while men more often reported reducing the number of sexual partners. Younger women were more likely to question potential partners about their past sexual partners. Two thirds of both younger men and women wait to have sex until they get
to know the potential partner better and about 40 percent reported using condoms or spermacides to protect themselves of STD risk.

**Attitudes and Beliefs**

Although studies show that knowledge of AIDS risks and preventive behaviors are insufficient to influence behavior changes of adolescents and young adults, little research has focused on beliefs and attitudes by applying behavioral theory. In a cross-sectional survey of adolescents in Massachusetts, no difference in knowledge was found between those who used condoms and those who did not. Perceived risk or worry (Susceptibility) about getting AIDS was associated with behavior change of women in two studies, but not associated with behavior changes in men and female adolescents (Engquist & Parcel, 1992).

Attitudes concerning the effects of actions, the perceptions of other people's attitudes and opinions toward preventive measures, and one's motivation to comply with those attitudes and opinions, are predictors of young adults behavioral intentions. At this developmental stage, major influencing factors include: a) Sensation Seeking attitudes, b) Perception of Friends, and c) Perception of Peers. Some researchers have found Homophobia to be an influential factor in sexual matters (Cochran & Peplau, 1992). The factors: Sensation Seeking, Perception of
Table 5

**Sexual Behavior Reductions**

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Practice abstinence.</td>
<td>35</td>
<td>18.5</td>
<td>126</td>
</tr>
<tr>
<td>Reduced the number of sexual partners.</td>
<td>89</td>
<td>47.1</td>
<td>182</td>
</tr>
<tr>
<td>Ask potential sexual partners about previous sexual partners.</td>
<td>80</td>
<td>42.3</td>
<td>227</td>
</tr>
<tr>
<td>Wait to have sex with a partner until I know partner better.</td>
<td>104</td>
<td>55.0</td>
<td>260</td>
</tr>
<tr>
<td>Always use condoms or spermicides.</td>
<td>77</td>
<td>40.7</td>
<td>150</td>
</tr>
<tr>
<td>Avoid high risk behaviors such as unprotected oral or anal intercourse.</td>
<td>50</td>
<td>26.5</td>
<td>132</td>
</tr>
</tbody>
</table>

Entire Sample (\(N = 662\))

\((n = 189)\) \((n = 473)\)

(table continues)
<table>
<thead>
<tr>
<th>Practice</th>
<th>Subsample (N=437)</th>
<th>(n=116)</th>
<th>(n=321)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practice abstinence.</td>
<td>18</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>Reduced the number of sexual partners.</td>
<td>54</td>
<td>46.6</td>
</tr>
<tr>
<td></td>
<td>Ask potential sexual partners about Previous sexual partners.</td>
<td>52</td>
<td>44.8</td>
</tr>
<tr>
<td></td>
<td>Wait to have sex with a partner until I know partner better.</td>
<td>71</td>
<td>61.2</td>
</tr>
<tr>
<td></td>
<td>Always use condoms or spermacides.</td>
<td>50</td>
<td>43.1</td>
</tr>
<tr>
<td></td>
<td>Avoid high risk behaviors such as unprotected oral or anal intercourse.</td>
<td>29</td>
<td>25.0</td>
</tr>
</tbody>
</table>
Friends, Perception of Peers, and Homophobia were addressed in this study (see Table 6).

**Confirmatory Factor Analysis: Measurement Models**

Confirmatory factor analysis is an extension of traditional exploratory factor analysis. Within the confirmatory factor model, the researcher can make an a priori prediction of the factor structure according to a theory of the measurement scale. In this way a direct comparison can be made between theory and scale data.

Confirmatory factor analysis like other structural equation models outputs a variety of fit statistics. Confirmatory factor analyses were performed on: a) AIDS-HBM, b) MDHLOC, c) Perception of Self, and d) Social Norms Scales. The data was obtained from the subsample of sexually active, never married, heterosexual, 18 to 24 year old, undergraduate students, who had fewer than 16 partners and who provided complete data (n = 419).

The confirmatory factor structure of Hoffman's (1992) AIDS-HBM scale incorporating Cues as a separate factor was performed. The factor analysis of the HBM scale was problematic because the original factors: Susceptibility; Severity; Benefits; Barriers; Self Efficacy; and the additional factor, Cues, were not well defined. While some items loaded on individual constructs, many items loaded strongly on more than one scale. Items with loadings on
Table 6
Attitudes and Beliefs—Continuous Variables

Entire Sample (N = 634)

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>SD</td>
<td>mean</td>
</tr>
<tr>
<td>Homophobia</td>
<td>3.42</td>
<td>1.74</td>
<td>2.4</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>1.67</td>
<td>.19</td>
<td>1.6</td>
</tr>
<tr>
<td>Perception of Friends</td>
<td>1.08</td>
<td>.85</td>
<td>1.4</td>
</tr>
<tr>
<td>Perception of Peers</td>
<td>2.50</td>
<td>.67</td>
<td>2.5</td>
</tr>
<tr>
<td>Perception of Self</td>
<td>4.81</td>
<td>1.20</td>
<td>5.5</td>
</tr>
</tbody>
</table>

(table continues)
Subsample (N = 387)

<table>
<thead>
<tr>
<th></th>
<th>Men (n = 88)</th>
<th>Women (n = 299)</th>
<th>Sex Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>SD</td>
<td>mean</td>
</tr>
<tr>
<td>Homophobia</td>
<td>3.68</td>
<td>1.76</td>
<td>2.3</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>1.68</td>
<td>.19</td>
<td>1.6</td>
</tr>
<tr>
<td>Perception of Friends</td>
<td>1.07</td>
<td>.82</td>
<td>1.3</td>
</tr>
<tr>
<td>Perception of Peers</td>
<td>2.48</td>
<td>.64</td>
<td>2.6</td>
</tr>
<tr>
<td>Perception of Self</td>
<td>4.81</td>
<td>1.08</td>
<td>5.5</td>
</tr>
</tbody>
</table>
more than one factor, that did not contribute much to an individual factor, were eventually dropped. Of the original factors: Susceptibility, Severity, and Benefits remained. Items intended to load on the factor Barriers, more appropriately defined Knowledge of AIDS risks. Therefore the factor name Barriers was renamed Knowledge of AIDS Risks. The newly added Cues scale, which was expected to contribute to AIDS Preventive Behaviors did not account for much variance and was ultimately dropped. Results of the confirmatory factor analysis demonstrated five factors for the AIDS-HBM model consisting of 26 items: a) Susceptibility, b) Severity, c) Benefits, d) Knowledge of AIDS Risks, and e) Self-efficacy ($\chi^2 (df = 285) = 465.9$, $p = .000$, GFI = .92, AGFI = .90, RMS = .044). As can be seen, the fit of this modified AIDS-HBM measurement model is not good, suggesting only a tentative relationship between HBM theory and this data. In an attempt to improve the fit of the AIDS-HBM, a confirmatory factor analysis was run doing a variety of log transformations on the items in order to improve their distributional characteristics. These transformations did not improve the resultant model and thus were not utilized. The results of this factor analysis was similar to Hoffman's (1992) results in that many items cross loaded on several factors and the items appeared to represent different factors than the originally named
variables. Each factor, of the final resultant measurement model with: alpha internal consistency, number of items in each scale of the AIDS-HBM, and the Pearson intercorrelations; can be found in Table 6.

The confirmatory factor analysis on the Multidimensional Health Locus of Control Scale (Wallston & Wallston, 1982) showed that four items, two on the Powerful Others factor and two on the Chance factor, contributed little to the variance and were subsequently dropped. The final MDHLOC consisted of six items on Internality, four on Powerful Others, and four on Chance. The results of the confirmatory factor analysis on this version of the MDHLOC ($\chi^2 (df = 74) = 50.88, p = .982, GFI = .936, AGFI = .91, RMS = .057$) yielded similar results to other research (Peterson & Stunkard, 1992; Wallston, Wallston, & DeVellis, 1978) which found this to be a good model. Where the AIDS-HBM scale measurement model provided a poor fit to the data, the MDHLOC scale measurement model provided a very good fit with only minor modification.

The confirmatory factor analysis was performed on the one factor Perception of Self scale (Walter et al., 1992), comprised of 13 items. This analysis indicated this was an acceptable scale but not a good model ($\chi^2 (df = 65) = .91, p = .000, GFI = .71, AGFI = .60, RMS = .09$). A Social Norms scale comprised of two factors from Walter et al, (1992): a)
Perception of Friends and b) Perception of Peers was established because alone, the two scales were too small and had poor reliabilities. A confirmatory factor analysis was performed on the Social Norms scale and the analysis indicated a well fitting model \( \chi^2 (df = 12) = 16.57, \ p = .166, \ GFI = .99, \ AGFI = .97, \ RMS = .03 \).

**Causal Model**

The purpose of this phase of the analysis was to find the best fitting, most parsimonious causal model to fit the data obtained from the subsample of 419 undergraduate students. A causal model (Bollen, 1989; Hayduk, 1987; Joreskog & Sorbom, 1988) incorporating the constructs shown in Figure 2, was utilized to assist in determining the importance of the exogenous constructs predicting AIDS Preventive Behaviors. When the entire causal model was attempted, numerous problems resulted. The full model would not run as originally proposed. A modified model utilized one less original exogenous variable while the original six endogenous variables were retained: a) Perception of Self, b) Sex Reduction Behaviors, c) Sex Behaviors, d) Risk History, e) Age sex initiated and f) Number of Sex Partners. Additional modified models were attempted. Each model dropped one exogenous variable while maintaining the other exogenous variables and replacing the exogenous variable that was dropped in the previous run. The six endogenous
Table 7

Scale Intercorrelations and Alpha Internal Consistency Reliabilities

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Knowledge</th>
<th>S1fEff</th>
<th>Susc</th>
<th>Benefit</th>
<th>Seve</th>
<th>MDHLOCI</th>
<th>MDHLOCP</th>
<th>MDHLOCC</th>
<th>PerFrn</th>
<th>PerPers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.67)</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>.32**</td>
<td>(.60)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susceptibility</td>
<td>-.17**</td>
<td>-.39**</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>.23**</td>
<td>.01</td>
<td>-.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.72)</td>
</tr>
<tr>
<td>Severity</td>
<td>.22**</td>
<td>.07</td>
<td>-.02</td>
<td>.11*</td>
<td>(.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDHLOCI</td>
<td>.20**</td>
<td>.12*</td>
<td>-.04</td>
<td>.06</td>
<td>.01</td>
<td>(.68)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDHLOCP</td>
<td>-.00</td>
<td>.02</td>
<td>-.05</td>
<td>.14*</td>
<td>.10</td>
<td>-.05</td>
<td>(.59)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDHLOCC</td>
<td>-.10</td>
<td>-.04</td>
<td>.09</td>
<td>-.02</td>
<td>.04</td>
<td>-.16**</td>
<td>.19**</td>
<td>(.51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percep. Friends</td>
<td>.02</td>
<td>.20**</td>
<td>-.21**</td>
<td>-.12*</td>
<td>-.03</td>
<td>-.02</td>
<td>-.05</td>
<td>.07</td>
<td>(.64)</td>
<td></td>
</tr>
<tr>
<td>Percep. Peers</td>
<td>-.08</td>
<td>.12*</td>
<td>-.02</td>
<td>.09</td>
<td>.07</td>
<td>.03</td>
<td>-.01</td>
<td>.02</td>
<td>.03</td>
<td>(.54)</td>
</tr>
</tbody>
</table>

(table continues)
(Table 7 continued)

Note. N = 419; Alpha internal consistencies are shown on the main diagonal. Pearson intercorrelations are shown off diagonal. Knowledge = Knowledge of AIDS Preventive Behaviors; Self-Efficacy = Perception of Self-Efficacy; Perception of Susceptibility = Susceptibility; MDHLOCI = Multidimensional Health Locus of Control, Internal factor; MDHLOCOP = Multidimensional Health Locus of Control, Powerful Others factor; Multidimensional Health Locus of Control, Chance factor; Perfrn = Perception of Friends; Ppers= Perception of peers.

* p < .05; ** significant p < .01; 2-tailed
variables were maintained throughout these modifications. This was an attempt to improve the model and to find the exogenous variables that better predicted AIDS Preventive Behavior. Although each exogenous variable was excluded from the model for one run, none of the modified models ran.

Results of these modifications utilizing eight to five exogenous variables, did not produce a model that would run. At this point, the factor scales of the AIDS-HBM and the MDHLOC were used as separate exogenous variables. The next trial involved removal of all but one exogenous factor. This predicted four endogenous variables: a) Perception of Self, b) Sexual Behaviors, c) Age Sex Initiated, and d) Number of Sex Partners. Beginning with one exogenous factor, Sensation Seeking, one additional exogenous variable was added to the model, in order to ensure that it ran. The final running model contained four exogenous variables: a) Sensation Seeking, b) Self-Efficacy, c) Susceptibility, and d) Perception of Friends. This model has four endogenous variables: a) Perception of Self, b) Sexual Behaviors, c) Age Sex Initiated, and d) Number of Sex Partners. The final fit of this highly modified model was only marginally adequate \( \chi^2(\text{df} = 16) = 61.20, p = .000, \text{GOF} = .96, \text{AGFI} = .92, \text{RMS} = .09 \), (see Figure 3).
Figure 3. Final Structural Equation Causal Model

Note: Error terms are not shown.
Overview

This study examined several factors hypothesized to influence AIDS Preventive Behaviors of sexually active, heterosexual, never married, undergraduate young adults. Descriptive findings reported include demographic information, Sexual Behavior History, Sexual Behavior Risks, and Sexual Behavior Reductions. Confirmatory factor analyses were performed on the three multi-factor scales: a) AIDS-HBM, b) MDHLOC, and c) Social Norms. These scales were used as exogenous variables in a causal model (Table 7).

Descriptive Findings

One methodological issue in this study involved sexually explicit questions on self report instruments. This raised the issue of truthfulness of the participating undergraduates in their responses. The survey questionnaires were completed anonymously and participants were not asked to fill out consent forms, in an effort to improve the candor of their answers. Before they took part, they were aware that their answers to the questionnaires, could not be linked to them. This was done to increase the accuracy of their reporting.
The entire sample consisted of students between the ages of 16 and 69, primarily Caucasian. Sixty-six percent of the sample were women. Only 7.9% of this group were men who report having had sex with men. Two high risk categories, IV drug use and sex for money or for drugs was engaged in by more males, 2.6%, than females, .8%. Almost 20% of the men and women in this sample have been treated for STDs and over 25% of the men and women consider themselves at risk for AIDS.

The subsample for this study was a group of young undergraduate students mainly from the middle and upper middle class, who were sexually active, primarily Caucasian, and approximately 66% women. These students are knowledgeable about AIDS risk and preventive behaviors. They responded to questions concerning STD Risk Factors, Table 2. Both men and women were at low risk for STDs from prior blood transfusions, IV drug use, and having had sex for money or for drugs. However, almost 19% of the women and approximately 14% of the men had been treated for STDs which is a well known high risk factor for AIDS. Again, almost 22% of women and almost 14% of men are at risk because of engaging in sexual activity with a sexual partner who has been exposed to risk factors. More women than men engage in sexual activities with partners who are at risk, thereby increasing women's personal risk. Almost thirty
percent of the women consider themselves at risk and almost 20% of the men acknowledge they are susceptible because of any one or more of these risk factors.

**Sexual Behavior History**

Use of a condom has been associated with a reduction in risk compared to similar activities without a condom. As reported in Table 4, approximately 80% of men and women reported vaginal intercourse without a condom. Although knowledgeable about STD risks, the entire sample did not use protection consistently. In the subsample of unmarried, younger participants, approximately 90% do not use condoms consistently placing this younger group at even higher risk. These results are consistent with those of Petosa and Jackson (1991) who found only 30% of the students in their study were willing to use condoms, with only 50% acknowledging they intended to be monogamous.

**Sexual Behavior Risks**

The greater the number of sex partners, the younger the age at which sex was initiated, and the greater number of years participants are sexually active the greater the risk. In the entire sample, men reported twice as many sexual partners as women. Men report being sexually active one year more than women and they report becoming sexually active a year earlier than women. Other studies also indicate men engage in sexual activities with multiple sex

In the subsample restricted to 18 to 24 year olds with fewer than 16 partners, men reported twice as many sexual partners as women. The number of sexual partners for men in this subsample is more than one a year. Frequent changes of partners is considered highly indiscriminate behavior as well as a high risk for STDs. Petosa and Jackson (1991) found differences in safer sex intention between genders in their study and suggested that women may be more conservative than men in sexual behaviors because of social role origin. Results of this study indicate gender differences in sexual behavior risks as well.

**Sexual Behavior Reductions**

In the entire sample, almost 50% of the men have reduced the number of sexual partners while less than 40% of the women have done so. This may be a reflection of the fact that women in the entire sample generally did not report large numbers of sexual partners compared to men (5 vs. 10). This reduction in partners may represent a possible trend toward more conscientious behaviors especially among those reporting past sexual activity with numerous partners. Forty-two percent of men and 48% of women question potential sexual partners about previous sexual partners. Other educators indicate that questioning
partners about past sexual behaviors may not be an effective protection since people, especially men, equivocate in order to have sex. Whether or not this is an effective preventive measure remains to be seen, however other researchers have also advocated this practice (Kasen, Vaugan, & Walter 1992).

Eighteen percent of the men and 27% of the women practice abstinence which means that the large majority of this sample engages in sexual activity. Fifty-five percent of both men and women reported that they wait to have sex with a partner until they know them better. However, more than 59% of men and 68% of women generally do not use condom protection. About 60% of both men and women do not avoid high risk behaviors such as unprotected oral or anal intercourse. This sample of sexually active undergraduates is considered knowledgeable about AIDS risks, and yet, if they do engage in AIDS Preventive Behaviors, they do so inconsistently. The prevalence of high risk AIDS related behaviors, evident in the present sample was consistent with findings of Hingson, Strunin, Berlin, and Heeren (1990) who also found substantial proportions of teenagers and young adults who engage in risky behaviors. Taken together, these behaviors are a formula for disaster.

About 16% of men and 20% of women have become abstinent which is a smaller percentage than in the entire sample which included both married and unmarried students, 16 to 69
years of age. Sixty one percent of the men and 67% of the women reported waiting to have sex until they know the partner better. However, 57% of men do not use condoms or spermacides and 62% of the women do not use protection. About 75% of men and 67% of women do not avoid high risk behaviors such as unprotected oral or anal intercourse. Walter et al. (1992) found that students residing in an AIDS epicenter, were involved in numerous behaviors which increase their risk for acquiring AIDS. The most frequently endorsed sexual behavior was unprotected sexual intercourse with partners believed to be at low risk. Walter et al. (1992) stressed that without HIV antibody testing, no one can be secure in the thought that one’s partner is not infected. Additional risky behaviors included unprotected sexual activity with high risk partners and histories of STDs. Kasen, Vaughan, and Walter (1992) found that young students had difficulty refusing sexual intercourse, questioning potential partners about past sexual encounters, and using condoms consistently. DiClemente, Forrest, and Mickler (1990) found inconsistent condom use in college students who used condoms and also a large number of students who never used condoms. In their study, a large proportion of students did not feel comfortable asking a potential sexual partner about previous sexual relationships. In general, findings from this study are
consistent with other studies which focused on adolescent and young adult samples (DiClemente, Forrest, & Mickler, 1990; Hingson, Strunin, Berlin, & Heeren, 1990; Kasen, Vaughan, & Walter, 1992).

**Confirmatory Factor Analysis**

Extensive confirmatory factor analyses were conducted on the AIDS-HBM (Hoffman, 1992). Additionally, MDHLOC (Wallston & Wallston, 1982) and Social Norms (Walter et al., 1992) confirmatory factor analyses were completed.

The full AIDS-HBM measurement model contributed little to the resultant full model as only two factors, Self-Efficacy and Susceptibility predicted AIDS Preventive Behaviors for participants in the present study. The AIDS-HBM is a relatively new scale and few studies have been done on this instrument (Bloodgood & Guarnaccia, 1993; Hoffman, 1991; 1992). Additionally, most HBM studies have utilized only a few of the original factors of the Health Belief Model to predict health behaviors. No Health Belief Model questionnaire, designed for generalized use, has been successful so far because of the need to focus on specific diseases, behaviors, and/or populations. Therefore, it was necessary to determine if all five factors contributed to AIDS Preventive Behaviors before they were all included in the final causal model. The final full model of the proposed AIDS-HBM model contained the following factors: a)
Susceptibility, (b) Severity, (c) Benefits, (d) Knowledge of AIDS, and (e) Self Efficacy. The AIDS-HBM was problematic throughout the analysis. Initially, when the confirmatory factor analysis was attempted, it was difficult getting it to fit to the data. In the final measurement model, there were scale measurement issues. Only two factors of the AIDS-HBM, Susceptibility and Self Efficacy, were used in the final causal model. These results were similar to results obtained by Hoffman's (1992) study in that Benefits did not correlate with health behaviors and Susceptibility correlated with use of alcohol and drugs and low health behaviors. Petosa and Jackson (1991) noted strengths and weaknesses of the HBM in their study to predict safer sex intentions among adolescents. In a seventh grade sample, they found support for the effectiveness of the HBM in understanding risk behavior. However, HBM was not beneficial in understanding sexual intentions of eleventh grade students. Petosa and Jackson (1991) identified other forces rather than health concerns influencing the older adolescents. These factors were: a) need for acceptance, b) esteem, c) affection, and d) desire to feel more like an adult. The HBM which focuses on specific health related motivations, does not take into consideration, these additional motivational forces.
Although the hypothesized measurement model for the MDHLOC was confirmed, the MDHLOC did not contribute to the final causal model. The MDHLOC (Wallston & Wallston, 1981), has been used repeatedly over the course of thirty years and results of numerous research studies established it as a reliable instrument (Kasl & Cobb, 1966; Peterson & Stunkard, 1992; Wallston, Wallston, & DeVellis, 1978). The MDHLOC also held up well in this measurement model. The MDHLOC Internality factor, which was hypothesized to predict AIDS Preventive Behaviors, did so. The two other MDHLOC factors, Powerful Others and Chance, were predicted to negatively contribute to AIDS Preventive Behaviors and indeed, had a negative correlation. These results are analogous to results of other research (Darrow, 1973; Olbrisch, 1975; Peterson & Stunkard, 1992; Phares, 1978; Wallston & Wallston, 1978; Wallston, Wallston, & DeVellis, 1978). Phares (1978) noted that a survey of the Locus of Control literature revealed that internality was associated with people "who actively come to grips with the world." Compared to externality, "the internal is resistant to social pressure" (p. 295). Darrow (1973) found that internal females with STDs were more likely to seek treatment than external females with STDs. Olbrisch (1975) found that external patients were more unsuspecting concerning STDs and were less concerned about how they became infected.
Wallston, Wallston, Kaplan, and Maides (1976) found no significant differences between internals and externals in weight loss programs. However, internals lost more weight in an internally oriented program and externals lost more weight in an externally oriented program.

A confirmatory factor analysis of Social Norms was also performed in order to combine two small factors, Perception of Friends and Perception of Peers. Although this appeared to be a good scale, the Perception of Peers variable contributed little to AIDS Preventive Behavior. Only the Perception of Friends factor was retained in the final causal model.

**Hypothesized Model**

The original hypothesized causal model included the following exogenous variables: a) AIDS-HBM, b) MDHLOC c) Sensation Seeking, d) Perception of Friends, e) Perception of Peers, and f) Health Motivation and Health Behavior. The endogenous variables included: a) Perception of Self, b) Sexual Reductions, c) Sexual Behaviors, d) Risk History, e) Age Sex Initiated, and f) Number of Sexual Partners.

The following exogenous variables predicted AIDS Preventive Behavior in the final causal model: a) Sensation Seeking; b) Self Efficacy, a factor of the AIDS-HBM; c) Susceptibility, also a factor of the AIDS-HBM; and d) Perception of Friends. In the subsample of young adult
undergraduates, it appears that in order to reduce risk behaviors, they must: a) first have an awareness of susceptibility to AIDS, b) be aware that they take risks which create a vulnerability for STDs (Sensation Seeking), c) have a feeling of self efficacy concerning preventive measures such as condom use and interactions with sexual partners, and d) perceive that their friends are also engaging in AIDS preventive Behaviors.

AIDS Preventive Behaviors were measured by four endogenous variables: a) Perception of Self in sexual behaviors and interactions with partners, b) Sexual Behaviors which are preventive in nature or which are risky behaviors, c) Age Sex was Initiated, and (d) Number of Sexual Partners (Figure 3). In this study of young undergraduates, they: a) engage in preventive behavior if they had a perception of self confidence in initiating preventive sexual behaviors and in questioning partners about past sexual activity and risks for STDs, b) engage in preventive behaviors such as condom use, c) defer initiation of sexual activity, and d) refrain from careless sexual activity by limiting the number of sexual partners.

Variables Deleted from Final Model

Support for numerous exogenous variables included in the original model was not found in this study: a) four AIDS-HBM factors; b) MDHLOC; c) Homophobia; d) Perception of
Peers, one variable of Social Norms; e) Knowledge; and f) Health Motivations and Health Behaviors.

The AIDS-HBM factors included: a) Severity, b) Benefits, the factor which was changed to Knowledge since the items more appropriately described knowledge of AIDS risks and preventive barriers, c) Barriers, and d) Cues. Previous research on prevention indicated that HBM variables discerned participants from nonparticipants in preventive programs and that these relationships were statistically significant for Susceptibility, Self-Efficacy, and Safety (Janz & Becker, 1984). Petosa and Jackson (1991) found that HBM variables were useful in predicting AIDS preventive behaviors in young adolescents but not effective in predicting behaviors of older adolescents as more salient issues become important to this population. Possible explanations for the lack of association of these variables with health related behaviors in the present study may be related to the attitude of college students toward AIDS risk. Since early publicity associated AIDS with the homosexual community, students may assume they are somehow safeguarded by their heterosexuality and lack of involvement in homosexual activities. There is also a tendency for adolescents and young adults to assume that they are immune to life-threatening events and/or diseases (Petosa & Jackson, 1991). There may also be a belief that a cure for
AIDS is imminent, thereby eliminating their perception of severity. Despite their conceptual knowledge of risks associated with their behavior, college students may not have personalized this risk. Petosa and Jackson (1991) recommended that future research take into consideration a broader theoretical model that expands the HBM.

At this developmental stage, perception of friends and peers is recognized for being strongly influential in behaviors, attitudes, and decision making. However, during sexual activities in which friends and peers are generally not present, the sexual partner may become a third reference group. Therefore, the sexual partner becomes more influential in decisions including: a) questioning the partner about past sexual encounters, b) inquiring about history of STDs, and c) intentions to abstain or to use condoms.

The MDHLOC (Wallston & Wallston, 1981) with three factors: a) Internality which generally predicts involvement in preventive behaviors and/or healthy activities; b) Powerful Others which is associated with belief in physicians, health workers and other people engaged in health care to heal and maintain health; and c) Chance, generally found to negatively correlate with health behaviors because it represents a perception that the
individual has no control over his own welfare. These associations were not confirmed in the present study.

In a study by Cochran and Peplau (1992) homophobia predicted worry over risk of AIDS infection in men and was therefore included as a predictor to AIDS Preventive Behaviors for men, in this study. Failure of this variable to be supported in the final model may be related to the fact that differences between the attitudes of men and women toward Homophobia were found. The results indicated that men indeed, are more homophobic than women ($t(150) = 7.72, p = .000$).

Perception of Peers was combined with Perception of Friends to form one Social Norms scale (Walter et al., 1992). However, this combined scale did not contribute to AIDS Preventive Behaviors. Perception of Peers contributed little although it was considered important to the behavior of the subsample which included 18 to 24 year old students who are known to be heavily influenced by peers. Perception of Friends, however, was predictive and therefore retained in the final causal model. It appears that friends who are closely allied with persons in this subsample are more likely to influence sexual behavior than peers who are more remote.

The Health Motivations and Health Behaviors variable focused on generalized health behaviors such as: a) diet,
b) exercise, c) preventive health checkups, d) acquisition of new information to improve health, and e) seeking medical diagnosis and treatment when necessary. Generalized health behaviors do not appear to be synonymous with AIDS Preventive Behaviors. This fact may be influenced by the developmental stage of the subsample and the strong desire for sexual activity at this time.

Suggestions for Future Research

Several theories incorporating concepts of health behaviors and health risks were utilized in this study because they led to better predictability in past investigations. Confirmatory factor analyses revealed that the AIDS-HBM, the primary model in this study, did not predict AIDS Preventive Behaviors in this sample. These results were consistent with results obtained by Walter et al. (1992) who found that the HBM was not significantly associated with higher risk behaviors. Future studies should also test the models to assure the reliability of scales used in studies. Development of a better predictive model of AIDS Preventive Behavior is urgently needed in order to provide information for the development of effective interventions.

Results of this study indicate that while young adults are familiar with AIDS risks and preventive measures, they still engage in high risk sexual behaviors. The results of
this study suggest some considerations for future inquiries concerning motivations for AIDS Preventive Behaviors. Unlike many other medical disorders previously studied, AIDS is firmly enmeshed in several attitudes and prejudices including: a) sexual attitudes and beliefs, b) developmental stage issues, c) Homophobia, d) generalized health attitudes, e) Sensation Seeking and Risk Taking behavior, f) influence from the Perception of Friends and the Perception of Peers, g) influence of family, h) influence of religious beliefs, i) socio-economic status, j) opportunity for sexual encounters, k) history of sexual activity l) History of STDs and m) biological and physical make up of the individual, to name a few. It is difficult to isolate tightly linked issues in order to focus on a few selected variables. In doing so, important components to prediction are missed. Future studies should include previously mentioned variables especially those that affect adolescents and young adults because they are engaging in high risk behaviors. Adolescents are known to be engaging in sexual activities at earlier ages and college students, especially men, have demonstrated reckless behaviors by engaging in sexual activities with numerous partners. These are consistent with other findings which indicate more risk taking among males (Petosa & Jackson, 1991).
Interpretation of these results from a developmental perspective helps to identify areas of consideration for future research. One aspect affecting young adults is that they consider themselves to be invulnerable to high risk behaviors and disorders such as AIDS. This belief is further propagated by the knowledge of past personal, sexual encounters without negative effects (Elkind, 1981). As a result sexual behavior is reinforced by the lack of negative consequences.

Problem behavior theory (Jessor & Jessor, 1977) suggests that engagement in sexual behavior, which is associated with adulthood, has special appeal to young persons. Their participation in sexual activity indicates a transition into the world of adults. However, they are unprepared for responsible sexual behavior. Society should offer young people opportunities for fulfillment of socially desirable roles without perceiving the need for participation in risky sexual practices.

Social learning theory (Bandura, 1986) suggests that young people learn many behaviors through observation of models. These are provided by television, movies, peers, family and other people in their social environment. Modeled behavior and the effects of it shape one’s expectations and the social meaning associated with those behaviors. Sexual activity is associated with positive
characteristics such as: a) maturity, b) acceptance, and c) accomplishment. As young adults mature and become socialized into adulthood, they become more concerned about maintaining the positive qualities associated with their emerging role and less concerned about the potential negative consequences of sexual activity.

Researchers should study ways to influence adolescents and young adults to alter behaviors that increase participation in risky sexual behaviors such as, alcohol and drug use and indiscriminate selection of sexual partners. Efforts to decrease the spread of AIDS should also encompass ways of influencing social attitudes to ameliorate support for abstinence and/or protective sexual behaviors. Consistent with other studies of preventive measures for adolescents and young adults, this study also suggests a need to address social influences and reference groups when striving to improve their AIDS preventive behaviors.

Conclusions

This study focused on never married, heterosexual, young adults, 18 to 24 year old undergraduates with at least one life-time sexual partner who reported fewer than 16 sexual partners. The students were primarily Caucasian, from middle to upper middle class families. The results show that knowledgeable young students engage in high risk behaviors although they are aware of the potential for AIDS
infection. Factors which predict and thus influence sexual behavior in young adults must be studied further if effective interventions are to be devised.

The results of this study have implications for future research. Studies should be done using younger age students since the undergraduates in the subsample reported initiating sexual activity at earlier ages than had been previously understood. Additionally, males reported twice as many sexual partners than females which may be tied to social role origins. Males also reported initiating sexual activity a year earlier than females. These two high risk behaviors increase the risk of AIDS for young men.

Educational programs should be aimed at younger groups before they become highly influenced by peer pressure and developmental factors. In addition, educational programs for parents should be conducted to assist them with sexual education of their children.
APPENDIX

QUESTIONNAIRE
Study of Health Beliefs and Behaviors

This study tries to understand the beliefs and behaviors of college men and women about sex and AIDS and the beliefs of college women about breast cancer. You are free to not participate in this study; this will not affect your class standing. If you do decide to participate you will fill out this questionnaire packet. It is very important that you answer all items honestly. There are no "right" or "wrong" answers for many questions here, your actual beliefs and behaviors are the correct answers. YOUR ANSWERS WILL NOT BE LINKED TO YOU.

Men will receive credit for 1 hour (2 experimental credits) and will answer questions which take up to 45 minutes to complete. The questionnaire for men asks about sexual beliefs and behaviors. Women will receive credit for 1 1/2 hours (3 experimental credits) and will answer these same sexual beliefs and behaviors questions along with additional questions about breast cancer beliefs and behaviors. The questions for women take a total of up to 1 hour to complete. YOUR ANSWERS TO ALL ITEMS IN THIS STUDY ARE COMPLETELY CONFIDENTIAL. YOUR ANSWERS WILL NEVER BE MATCHED TO YOU. DO NOT PUT NAME OR I.D. ANYWHERE ON THIS.

If you have any questions or problems that arise in connection with your participation in this study, you should discuss it with the individuals giving these questionnaires. The researchers for this study are: the project director, Dr. Charles Guarnaccia; Marty Bloodgood; and Marsha Hammond. They can be contacted in the Department of Psychology of the University of North Texas, at 817-565-2671.

Section 1 - Your Personal Data

The questions on this page ask about who you are. Please fill in the blank or circle the ONE answer which best describes you. Please do not skip any items.

(6-7). What is your age? _____ (years)

(8). What is your gender? (Please circle) Male=1 Female=2

(9). What is your current marital status? (Please circle)

Single (never married)=1 Married=2 Divorced=3 Separated=4 Widowed=5

(10). What is your class standing? (Please circle)

Freshman=1 Sophomore=2 Junior=3 Senior=4 Other=5

(11). Do you currently have a bachelors degree? (Please circle) Yes=1 No=2

(12). What is your racial/ethnic background? (Please circle)

Caucasian=1 African-American=2 Hispanic=3 Asian=4 Native=5 Other=6

(While set Hispanic) (Black) American American

(13). What is your yearly personal income? That is the money that you earn yourself or college loans that you yourself take out, not money from your family (Circle)

$0 to $9,999=1 $10,000-$19,999=2 $20,000-$29,999=3

$30,000-$39,999=4 $40,000 or more=5

(14). What is your yearly family income? That is the combined income of you and your spouse if you are married, or the income of your parents if they support you. If you are unsure please estimate. (Please circle)

$0-$9,999=1 $10,000-$19,999=2 $20,000-$29,999=3

$30,000-$39,999=4 $40,000-$59,999=5 $60,000 or more=6
Section 2.1 - What I'm Like #1

For each set of items 15-25, circle the one number, 1 or 2, which best describes you.

(15). 1 - I can't wait to get indoors on a cold day.
2 - I am invigorated by a brisk, cold day.

(16). 1 - I would like to hitchhike across the country.
2 - Hitchhiking is too dangerous a way to travel.

(17). 1 - I would like to go water-skiing.
2 - I would not like to go water-skiing.

(18). 1 - I can't stand watching a movie that I've seen before.
2 - There are some movies I enjoy seeing a second or even a third time.

(19). 1 - I would not like to learn to fly an airplane.
2 - I would like to learn to fly an airplane.

(20). 1 - A person should have some sexual experience before marriage.
2 - It's better if two married persons begin their sexual experience with each other.

(21). 1 - There is altogether too much portrayal of sex in movies.
2 - I enjoy watching many of the "sexy" scenes in movies.

(22). 1 - People who ride motorcycles must have some kind of an unconscious need to hurt themselves.
2 - I would like to drive or ride on a motorcycle.

(24). 1 - I would like to go scuba diving.
2 - I prefer the surface of the water to the depths.

(25). 1 - I enjoy spending time in the familiar surroundings of home.
2 - I get very restless if I have to stay around home for any length of time.

Section 2.2 - What I'm Like #2

For each item 26-40, circle "T" for "True" if you feel the statement does describe you; or circle "F" for "False" if you feel the statement does not describe you.

(26). T=1 F=2 I never hesitate to go out of my way to help someone in trouble.

(27). T=1 F=2 I am sometimes irritated by people who ask favors of me.

(28). T=1 F=2 I have never intensely disliked anyone.

(29). T=1 F=2 I sometimes try to get even rather than forgive and forget.

(30). T=1 F=2 There have been times when I was quite jealous of the good fortune of others.

(31). T=1 F=2 I am always willing to admit it when I make a mistake.

(32). T=1 F=2 I always try to practice what I preach.

(33). T=1 F=2 There have been occasions when I took advantage of someone.

(34). T=1 F=2 I would never think of letting someone else be punished for my wrongdoing.

(35). T=1 F=2 I never resent being asked to return a favor.

(36). T=1 F=2 I sometimes think that when people have a misfortune they only get what they deserve.

(37). T=1 F=2 I like to gossip at times.

(38). T=1 F=2 I have never been annoyed when people expressed ideas very different from my own.

(39). T=1 F=2 I have never deliberately said something that hurt someone's feelings.

(40). T=1 F=2 I sometimes feel resentful when I do not get my way.
Section 3 - Your Own Health

Please answer each item by circling the one letter group that corresponds to your level of agreement depending on whether you "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), or "Strongly Disagree" (SD) with each statement. Items 41-58 concern your beliefs about your own health. Please do not skip any items even if they do not directly apply to you.

SA=Strongly Agree
A=Agree
D=Disagree
SD=Strongly Disagree

(41). SA=1 A=2 D=3 SD=4 If I become sick, I have the power to make myself well again.

(42). SA=1 A=2 D=3 SD=4 Often I feel that no matter what I do, if I am going to get sick, I will get sick.

(43). SA=1 A=2 D=3 SD=4 If I see an excellent doctor regularly, I am less likely to have health problems.

(44). SA=1 A=2 D=3 SD=4 It seems that my health is greatly influenced by accidental happenings.

(45). SA=1 A=2 D=3 SD=4 I can only maintain my health by consulting health professionals.

(46). SA=1 A=2 D=3 SD=4 I am directly responsible for my health.

(47). SA=1 A=2 D=3 SD=4 Other people play a big part in whether I stay healthy or become sick.

(48). SA=1 A=2 D=3 SD=4 Whatever goes wrong with my health is my own fault.

(49). SA=1 A=2 D=3 SD=4 When I am sick, I just have to let nature run its course.

(50). SA=1 A=2 D=3 SD=4 Health professionals keep me healthy.

(51). SA=1 A=2 D=3 SD=4 When I stay healthy, I'm just plain lucky.

(52). SA=1 A=2 D=3 SD=4 My physical well-being depends on how well I take care of myself.

(53). SA=1 A=2 D=3 SD=4 When I feel ill, I know it is because I have not been taking care of myself properly.

(54). SA=1 A=2 D=3 SD=4 The type of care I receive from other people is what is responsible for how well I recover from an illness.

(55). SA=1 A=2 D=3 SD=4 Even when I take care of myself, it's easy to get sick.

(56). SA=1 A=2 D=3 SD=4 When I become ill, it's a matter of fate.

(57). SA=1 A=2 D=3 SD=4 I can pretty much stay healthy by taking good care of myself.

(58). SA=1 A=2 D=3 SD=4 Following doctor's orders to the letter is the best way for me to stay healthy.

Items 59-65, relate directly to your health motivations and behaviors.

(59). SA=1 A=2 D=3 SD=4 I want to discover health problems early.

(60). SA=1 A=2 D=3 SD=4 Maintaining good health is extremely important to me.

(61). SA=1 A=2 D=3 SD=4 I search for new information to improve my health.

(62). SA=1 A=2 D=3 SD=4 I feel it is important to carry out activities which will improve my health.

(63). SA=1 A=2 D=3 SD=4 I eat well balanced meals.

(64). SA=1 A=2 D=3 SD=4 I exercise at least three times a week.

(65). SA=1 A=2 D=3 SD=4 I have a regular health check-up even when I am not sick.
Section A1 - Your Experiences, Lifestyle, and Sexual Behaviors

These items ask about your life experiences, and current and past sexual behavior. Like all parts of this study, your answers will never be associated with you and will be kept strictly confidential. Even though these are personal, please answer them completely and honestly. Your answers are important. Please circle the answer which is true for you.

(6). You have received blood clotting factor concentrates since 1977. Yes=1 No=2
(7). You are a man who has had sex with another man since 1977, even 1 time. Yes=1 No=2
(8). You have taken illegal drugs by needle at any time since 1977. Yes=1 No=2
(9). You have had sex for money or drugs at any time since 1977. Yes=1 No=2
(10). You have been treated for a sexually transmitted disease since 1977. Yes=1 No=2
(11). Since 1977, you are or have been the sex partner of any person who would answer "Yes" to any of the items above items 6-10. Yes=1 No=2
(12). Are any of the above items 6-11 true for you? Yes=1 No=2
(13). Have you ever (at any time during your life) had sexual intercourse? Yes=1 No=2
(14-15). Years you have been sexual active (years since first sexual experience) ___
(16-17). Number of people with whom you have had sexual relations (different partners) ___

Which of these sexual behaviors 18-27, have you experienced? ("X" all that apply):

(18). Vaginal intercourse with a condom. (marked=1 for 18-27)
(19). Vaginal intercourse without a condom.
(20). Active oral sex with a condom.
(21). Active oral sex without a condom.
(22). Receptive oral sex with a condom.
(23). Receptive oral sex without a condom.
(24). Active anal intercourse with a condom.
(25). Active anal intercourse without a condom.
(26). Receptive anal intercourse with a condom.
(27). Receptive anal intercourse without a condom.

(28). Which one of the three below fits your lifestyle during the past 1 year? (Circle)
   Sexual intercourse Sexual intercourse not always, Sexual abstinence=1 always using a condom=2 or never, using a condom=3

For 29-34 mark all of the risk reduction behaviors you have used. These are changes you have made in your sexual behavior to reduce your risk of acquiring a sexually transmitted disease (STD). Please "X" all that apply to you.

(29). I practiced celibacy. (marked=1 for 29-34)
(30). I reduced the number of sexual partners.
(31). I asked potential sexual partners about previous sexual partners.
(32). I wait to have sex with a partner until I know the partner better.
(33). I always use condoms or spermicides.
(34). I avoid high risk behaviors such as unprotected oral or anal intercourse.

(35). How would you describe your expressed sexual orientation, that is the sexual behavior in which you have engaged. Your sexual behavior has been? (Circle)
   exclusively heterosexual=1 mostly heterosexual=2 bisexual=3 homosexual=4 homosexual=5

(36). How would you describe your sexual preference, that is the sexual behavior in which you feel most comfortable. Your sexual preference is? (Please circle)
   exclusively heterosexual=1 mostly heterosexual=2 bisexual=3 homosexual=4 homosexual=5
Section A2 - How You See Yourself, Your Friends, and Your Peers

A2.1 - How You See Yourself

Please answer the following items about yourself. Circle the one letter group that corresponds to your level of certainty of whether you are "Not at all Sure" (NS), "A Little Sure" (LS), "Somewhat Sure" (SS), or "Very Sure" (VS) that you would act in the way described. Please do not skip any items even if they do not directly apply to you.

1. I would refuse intercourse with a longtime date. NS=1 LS=2 SS=3 VS=4
2. I would refuse to have intercourse with partner you want to fall in love with you. NS=1 LS=2 SS=3 VS=4
3. I would refuse to have intercourse if "high" or "drunk." NS=1 LS=2 SS=3 VS=4
4. I would refuse to have intercourse if partner's sex and drug histories are unknown. NS=1 LS=2 SS=3 VS=4
5. I would refuse to have intercourse if a condom was not used. NS=1 LS=2 SS=3 VS=4
6. I would purchase condoms. NS=1 LS=2 SS=3 VS=4
7. I know how to use condoms correctly and would be sure to do so. NS=1 LS=2 SS=3 VS=4
8. I would use condoms consistently. NS=1 LS=2 SS=3 VS=4
9. I would remain sexually monogamous. NS=1 LS=2 SS=3 VS=4
10. I would ask a sex partner about drug use history. NS=1 LS=2 SS=3 VS=4
11. I would ask that a condom be used during intercourse. NS=1 LS=2 SS=3 VS=4
12. I would ask sex partner about sex history. NS=1 LS=2 SS=3 VS=4

A2.2 - How You See Your Friends

Please answer the following questions about your four closest friends. Circle the one most appropriate answer. Please do not skip any items even if they do not directly apply.

13. Of your four closest friends, how many have had intercourse in the past year? Four=4 Three=3 Two=2 One=1 None=0
14. Of your four closest friends, how many never or inconsistently used condoms in the past year? Four=4 Three=3 Two=2 One=1 None=0
15. Do your four closest friends think that people your age should have intercourse? Yes, definitely=4 Typically=3 Perhaps=2 Only with certain partners=1 Never=0
16. Asking your four closest friends, what percentage of peers have had intercourse in the past year, what would they say? 100%=4 75%=3 50%=2 25%=1 0%(None)=0
17. Would your four closest friends be able to ask their partners to use a condom during sexual intercourse? Yes, always=4 Most times=3 Sometimes=2 Seldom=1 Never=0
18. Would your four closest friends be able to talk openly to their partners about his/her past sexual history including number of partners and history of sexually transmitted diseases? Yes, always=4 Most times=3 Sometimes=2 Seldom=1 Never=0
A2.3 - How You See Your Peers

Answer the following questions about your peers (that is people who are your age). Circle the one most appropriate answer. Do not skip any items even if they do not directly apply.

(56). Of your peers, what percentage do you think had intercourse in the past year?

- 100%-4
- 75%-3
- 50%-2
- 25%-1
- 0%(None)-0

(57). Do you think that your peers use condoms?

- Always-4
- Most times-3
- Sometimes-2
- Seldom-1
- Never-0

(58). Do you think that your peers believe that people your age should have intercourse?

- Yes, definitely-4
- Typically-3
- Perhaps-2
- Only with certain partners-1
- Never-0

(59). Would be able to ask their partners to use a condom during sexual intercourse?

- Yes, always-4
- Most times-3
- Sometimes-2
- Seldom-1
- Never-0

(60). Would your peers be able to talk openly to their partners about his/her past sexual history including number of partners and history of sexually transmitted diseases?

- Yes, always-4
- Most times-3
- Sometimes-2
- Seldom-1
- Never-0

Col.(don't write here)

(1-4,5). 1

Section A3 - People who are Homosexual

These questions concern your beliefs about people who are homosexual. Circle the one letter group that corresponds to your level of agreement whether you "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), or "Strongly Disagree" (SD). Please do not skip any items.

<table>
<thead>
<tr>
<th>SA = Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = Agree</td>
</tr>
<tr>
<td>D = Disagree</td>
</tr>
<tr>
<td>SD = Strongly Disagree</td>
</tr>
</tbody>
</table>

(6). SA = 1  A = 2  D = 3  SD = 4  Sexual preference should not be a factor in employment opportunity.

(7). SA = 1  A = 2  D = 3  SD = 4  Homosexuals are just like everyone else, they simply chose an alternative lifestyle.

(8). SA = 1  A = 2  D = 3  SD = 4  Homosexuals should be isolated from heterosexuals.

(9). SA = 1  A = 2  D = 3  SD = 4  Homosexuals should not be discriminated against because of their sexual preferences.

(10). SA = 1  A = 2  D = 3  SD = 4  Homosexual acts should be illegal.

(11). SA = 1  A = 2  D = 3  SD = 4  Homosexuals are a danger to our young people.

(12). SA = 1  A = 2  D = 3  SD = 4  I would not like to work with a homosexual.

(13). SA = 1  A = 2  D = 3  SD = 4  Homosexuals should not hold high government offices.

(14). SA = 1  A = 2  D = 3  SD = 4  Job discrimination against homosexuals is wrong.

(15). SA = 1  A = 2  D = 3  SD = 4  Homosexuals should not hold leadership positions.

(16). SA = 1  A = 2  D = 3  SD = 4  Homosexuals do not corrupt the youth of America.

(17). SA = 1  A = 2  D = 3  SD = 4  I would not want a homosexual to live in the house (apartment) next to mine.

(18). SA = 1  A = 2  D = 3  SD = 4  If I found out one of my friends was a homosexual, our friendship would be severely damaged.

(19). SA = 1  A = 2  D = 3  SD = 4  I would never have anything to do with a person if I knew he/she was a homosexual.

(20). SA = 1  A = 2  D = 3  SD = 4  Apartment complexes should not accept homosexuals as renters.
Section A4 - Knowledge About AIDS

The questions in this section concern your knowledge about AIDS. Please circle the one letter group that corresponds to your level of agreement whether you "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), or "Strongly Disagree" (SD). Please do not skip any items.

SA = Strongly Agree
A = Agree
D = Disagree
SD = Strongly Disagree

(21). SA  A  D  SD Most people who transmit the AIDS virus look unhealthy.
(22). SA  A  D  SD Anal intercourse is high risk for transmitting the AIDS virus.
(23). SA  A  D  SD Oral intercourse carries risk for AIDS virus transmission.
(24). SA  A  D  SD A person can be exposed to the AIDS virus in one sexual contact.
(25). SA  A  D  SD It is unwise to touch a person with AIDS.
(26). SA  A  D  SD Condoms make intercourse completely safe.
(27). SA  A  D  SD When people become sexually exclusive with one another, they no longer need to follow "safer sex" guidelines.
(28). SA  A  D  SD Most people who have been exposed to the AIDS virus quickly show symptoms of serious illness.
(29). SA  A  D  SD By reducing the number of different sexual partners, you are effectively protected from AIDS.
(30). SA  A  D  SD The AIDS virus does not penetrate unbroken skin.
(31). SA  A  D  SD Pre-ejaculatory fluids can carry the AIDS virus.
(32). SA  A  D  SD A person must have many sexual partners to be at risk for AIDS.
(33). SA  A  D  SD People carrying the AIDS virus generally feel quite ill.
(34). SA  A  D  SD Vaginal intercourse carries high risk for AIDS transmission.
(35). SA  A  D  SD Exclusively heterosexual people are not at risk for AIDS.
(36). SA  A  D  SD Healthy persons in AIDS risk groups should not donate blood.
(37). SA  A  D  SD A negative result on the AIDS virus antibody test can occur even for people who carry the virus.
(38). SA  A  D  SD Most persons exposed to the AIDS virus know they are exposed.
(39). SA  A  D  SD Mutual masturbation and body rubbing are low in risk unless the partners have cuts or scratches.
(40). SA  A  D  SD People who become exposed to the AIDS virus through needle-sharing can transmit the virus to others during sex.
(41). SA  A  D  SD Impaired memory and concentration, and motor deficits may occur in some AIDS patients.
(42). SA  A  D  SD AIDS virus may live in the human body for years before symptoms appear.
(43). SA  A  D  SD One can get AIDS from blood or sperm from a donor who has AIDS.
(44). SA  A  D  SD By using a condom during sex, one is always safe from AIDS.
(45). SA  A  D  SD AIDS is spread by sneezing, coughing, or touching.
(46). SA  A  D  SD An infected mother can give the AIDS virus to the baby during pregnancy and/or through breast feeding.
(47). SA  A  D  SD More women than men have been infected by AIDS virus.
Section A5 - Your Beliefs about AIDS and HIV

These questions concern your beliefs about AIDS and HIV. Safer sex refers to behaviors (such as condom use) that prevent exchange of semen and blood. Please answer each item by circling the letter group that corresponds to your level of agreement depending on whether you "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), or "Strongly Disagree" (SD). Please do not skip any items even if they do not apply to you.

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
</table>

48. SA=1 A=2 D=3 SD=4 I don't think I will ever be exposed to the virus that causes AIDS.

49. SA=1 A=2 D=3 SD=4 AIDS can be cured if treated early.

50. SA=1 A=2 D=3 SD=4 Prevention of AIDS is important because effective treatment is not available.

51. SA=1 A=2 D=3 SD=4 I find it overwhelming to think about the things I would have to do to protect myself from HIV infection and AIDS.

52. SA=1 A=2 D=3 SD=4 I find it easy to talk to my partner(s) about sex and sexual matters.

53. SA=1 A=2 D=3 SD=4 My friends use condoms when they have sex.

54. SA=1 A=2 D=3 SD=4 I think I will live longer if I follow safer sex guidelines.

55. SA=1 A=2 D=3 SD=4 Changing my sexual behavior can protect me from becoming HIV infected.

56. SA=1 A=2 D=3 SD=4 AIDS appears to be a fatal disease.

57. SA=1 A=2 D=3 SD=4 People my age who are having sex use condoms.

58. SA=1 A=2 D=3 SD=4 Only gay men, IV drug users, and people with blood transfusions need to worry about being infected with the virus that causes AIDS.

59. SA=1 A=2 D=3 SD=4 AIDS and HIV infection shorten life expectancy.

60. SA=1 A=2 D=3 SD=4 Practicing safer sex protects people from becoming infected with HIV and AIDS.

61. SA=1 A=2 D=3 SD=4 My partner might be offended if I asked him or her to use a condom.

62. SA=1 A=2 D=3 SD=4 Sex should be spontaneous and unplanned.

63. SA=1 A=2 D=3 SD=4 I feel that my partner has more control over our sexual relationship than I do.

64. SA=1 A=2 D=3 SD=4 I know how to use a condom correctly.

65. SA=1 A=2 D=3 SD=4 I know someone who is infected with the AIDS virus or who has AIDS or who has died of AIDS.

66. SA=1 A=2 D=3 SD=4 When I consider all of the factors that can lead to HIV infection and AIDS, (including my past and present behavior), I think it is unlikely I will become infected.

67. SA=1 A=2 D=3 SD=4 AIDS affects most aspects of a person's life.

68. SA=1 A=2 D=3 SD=4 There are many things people can do to keep from becoming HIV infected.
Section A5 (continued) - Your Beliefs about AIDS and HIV

SA = Strongly Agree
A = Agree
D = Disagree
SD = Strongly Disagree

(6). SA = 1  A = 2  D = 3  SD = 4  I believe that I am similar in some ways (for example, sexual or drug behaviors) to people who are infected with the virus that causes AIDS or who have AIDS.

(7). SA = 1  A = 2  D = 3  SD = 4  If a new partner refused to use a condom, I would not have sex with him or her.

(8). SA = 1  A = 2  D = 3  SD = 4  Using condoms seems unnatural.

(9). SA = 1  A = 2  D = 3  SD = 4  Risk reduction or safer sex guidelines are effective in protecting persons from AIDS.

(10). SA = 1  A = 2  D = 3  SD = 4  I believe that I am more likely than other people to become infected with HIV or to get AIDS.

(11). SA = 1  A = 2  D = 3  SD = 4  Death from AIDS is painful.

(12). SA = 1  A = 2  D = 3  SD = 4  People with HIV infection and AIDS are discriminated against.

(13). SA = 1  A = 2  D = 3  SD = 4  Practicing safer sex is something I can see myself doing.

(14). SA = 1  A = 2  D = 3  SD = 4  I often drink alcohol before or during sex.

(15). SA = 1  A = 2  D = 3  SD = 4  I can convince my partner to practice safer sex.

(16). SA = 1  A = 2  D = 3  SD = 4  I am worried about getting AIDS.

(17). SA = 1  A = 2  D = 3  SD = 4  There are worse things to die from than AIDS.

(18). SA = 1  A = 2  D = 3  SD = 4  Benefits of practicing safer sex outweigh any drawbacks.

(19). SA = 1  A = 2  D = 3  SD = 4  I often use recreational drugs (marijuana, crack, cocaine, inhalants) before or during sex.

(20). SA = 1  A = 2  D = 3  SD = 4  It would be difficult for me to ask my partner to use a condom.

(21). SA = 1  A = 2  D = 3  SD = 4  People get sick and die so slowly from AIDS that it seems too far away to worry about.

(22). SA = 1  A = 2  D = 3  SD = 4  I can do the things necessary to prevent my getting the AIDS virus.

(23). SA = 1  A = 2  D = 3  SD = 4  As a result of my sexual activity, I worry about the possibility of getting AIDS.

(24). SA = 1  A = 2  D = 3  SD = 4  Condoms are effective and reliable in preventing HIV infection and AIDS.

(25). SA = 1  A = 2  D = 3  SD = 4  It would be difficult for me to change my sexual behaviors or practices because of AIDS.

(26). SA = 1  A = 2  D = 3  SD = 4  Nobody really knows what to do to keep from becoming HIV infected.

(27). SA = 1  A = 2  D = 3  SD = 4  Practicing safer sex is inconvenient or a hassle.

(28). SA = 1  A = 2  D = 3  SD = 4  I see no need to change my sexual behavior because of HIV/AIDS.

(29). SA = 1  A = 2  D = 3  SD = 4  Following guidelines on safer sex can prevent the spread of HIV infection and AIDS.
Section AS (continued) - Your Beliefs about AIDS and HIV

<table>
<thead>
<tr>
<th>SA = Strongly Agree</th>
<th>A = Agree</th>
<th>D = Disagree</th>
<th>SD = Strongly Disagree</th>
</tr>
</thead>
</table>

(30). SA = 1  A = 2  D = 3  SD = 4  Becoming HIV infected is the worst thing that could happen to me.

(31). SA = 1  A = 2  D = 3  SD = 4  I sometimes do things that I don't want to do when I'm in a sexual situation.

(32). SA = 1  A = 2  D = 3  SD = 4  Use of a condom during sex will prevent the spread of the AIDS virus.

(33). SA = 1  A = 2  D = 3  SD = 4  I am worried that I am or will someday be infected with the virus that causes AIDS.

(34). SA = 1  A = 2  D = 3  SD = 4  Using condoms is less pleasurable than not using condoms when having intercourse.

(35). SA = 1  A = 2  D = 3  SD = 4  I believe that if I were exposed to the AIDS virus I would not become infected.

(36). SA = 1  A = 2  D = 3  SD = 4  There are worse diseases to have than AIDS.

(37). SA = 1  A = 2  D = 3  SD = 4  There is really no such thing as "safer" sex.

(38). SA = 1  A = 2  D = 3  SD = 4  I would find it difficult to do the things I would need to do to protect myself from AIDS.

(39). SA = 1  A = 2  D = 3  SD = 4  AIDS will never directly affect my life.

(40). SA = 1  A = 2  D = 3  SD = 4  Condoms can provide effective protection against AIDS and HIV infection.

(41). SA = 1  A = 2  D = 3  SD = 4  I consider the likelihood that I will become HIV-infected to be very low.

(42). SA = 1  A = 2  D = 3  SD = 4  There will be a cure for AIDS in a few years.

(43). SA = 1  A = 2  D = 3  SD = 4  Most of my friends have made changes in their sexual behavior because of AIDS.

(44). SA = 1  A = 2  D = 3  SD = 4  There is little I can do to keep from becoming HIV-infected.

(45). SA = 1  A = 2  D = 3  SD = 4  AIDS is not a real enough threat to get most people to change their sexual behaviors.

(46). SA = 1  A = 2  D = 3  SD = 4  I think it is due to bad luck that people become HIV-infected.

(47). SA = 1  A = 2  D = 3  SD = 4  Someone I know (friend, family member, teacher) reminds me to practice safer sex.

(48). SA = 1  A = 2  D = 3  SD = 4  Something (Radio announcement, TV announcements, advertisements in newspapers and magazines) reminds me to practice safer sex.

(49). SA = 1  A = 2  D = 3  SD = 4  Someone I know is HIV positive.

(50). SA = 1  A = 2  D = 3  SD = 4  Someone I know has active AIDS and symptoms of the illness.

(51). SA = 1  A = 2  D = 3  SD = 4  Someone I know has died of AIDS.

Thank you for your help in understanding how college men and women think about their health, their sexual behavior and AIDS. Your answers will help us understand these important health issues. This completes the questionnaire for men. Women should have additional sections on breast cancer, breast self-examination and mammography.

Thank you again for your help!
REFERENCES


knowledge: Scale development, validation, and norms.


