Predictive Behaviors and Attitudes of Consistent Condom use Among Heterosexual Undergraduates.

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PREDICTIVE BEHAVIORS AN ATTITUDES OF CONSISTENT CONDOM USE
AMONG HETEROSEXUAL UNDERGRADUATES

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PREDICTIVE BEHAVIORS AND ATTITUDES OF CONSISTENT CONDOM USE AMONG HETEROSEXUAL UNDERGRADUATES

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Dedication

The completion of this thesis is dedicated to me, for all my hard work and perseverance.
I also dedicate this project to Ian Wong, my mentor, colleague and friend.
Acknowledgment

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I. Introduction

Overview of Public Health Problem

The majority of traditional aged (18-24) heterosexual college students are sexually active and most do not consistently use prophylactic condoms. This risky sexual behavior puts them at particularly high risk for acquiring sexually transmitted diseases (STDs) including HIV. High risk behavior, the practice of inconsistent or no condom use with one or more partners, is quite prevalent and is the leading risk factor for sexual disease transmission among college students. While the prevalence of HIV on college campuses was estimated to be 1 in 500 in 1988, these numbers are expected to increase due to steady high rates of sexual activity and low rates of protective condom use.

Prevention campaigns must promote the concept that high risk behavior contributes to the transmission of HIV and other sexually transmitted diseases and counter the predominant belief that only those in high risk groups are susceptible. Most heterosexual college students believe they are immune from HIV since they are young, and neither gay nor IV drug users. Consequently, they do not take the necessary precautions, namely consistent condom use, to prevent infection.

Clearly, the stigma and denial generated from this erroneous belief creates a false sense of security among students, perpetuating the high risk behavior of inconsistent condom use. In turn, their risk of exposure for infection is increased. Universal precautions, the consistent and correct usage of condoms with every partner during each act of intercourse, must be advocated for all students, not only for those students traditionally classified as being in a high risk group. Since the majority of college
students practice high risk behavior, promotion of consistent condom use to all is imperative in order to curb the spread of HIV and other STDs within the college population.

High prevalence rates of sexually transmitted diseases on college campuses and increasing HIV incidence rates among heterosexual adolescents are indicators that undergraduates practice high risk behavior. For those who choose to be sexually active, correct and consistent latex condom use has been shown to be the most effective method of protection from sexually transmitted diseases, including HIV. Consistent condom use must become habitual among all college students. Yet, while college students are well informed about the transmission and prevention of STDs, and have begun taking some precautions, their knowledge and efforts, to date, have been ineffective in preventing the spread of these diseases. Thus, the behavioral and attitudinal factors which motivate the consistent use of condoms must be more clearly understood in order to increase condom use rates among heterosexual, sexually active college students.

**Prevalence of Sexual Activity Among Adolescents**

Adolescents (15-19 year olds) are becoming sexually active sooner and having more sexual partners. Thus, their lifetime risk potential for disease infection is expanding. Stunin (1987) found that about 75% of adolescents in the United States are sexually active. The average age of first intercourse is 16 years of age. In 1988, the CDC reported that among nine million adolescent woman, almost 4.9 million had had sexual intercourse, and the percentages of those who were sexually active had increased. This increase was demonstrated in a study reported by the CDC in *Morbidity and*
Mortality Weekly Reports in 1991. Trends of premarital intercourse from a nationally representative sample of 8,450 woman aged 15-19 were revealed. It was found that the proportion of women who engaged in premarital intercourse increased steadily from 28.6 percent in 1970 to 51.5 percent in 1988. The data also showed that adolescents who engaged in sexual intercourse earlier in life reported a greater number of sexual partners. This is a significant finding because, according to Zelnick and Shah (1983), 19 percent of sexually active, 15-19 year old females reported more than four sexual partners.  

As sexual activity among adolescent college students increased over the years, other risk-related behaviors increased as well. Fisher and Misovich (1990) discovered an increase in the number of sexual partners among college students and a greater likelihood of engaging in sexual intercourse from 1986 to 1988. These proportional increases of sexually active adolescents, the resulting increase in number of partners, and increases in other risky behaviors demonstrate that the risk of HIV/STD infection for adolescent and young adult college students is increasing.

**Condom Effectiveness**

Correct and consistent use of latex condoms has been shown to be 98% effective in preventing HIV and other sexually transmitted diseases. This is the most effective method of protection for those individuals who choose to be sexually active. Studies of condom use with heterosexual couples where one partner was HIV infected and the other was negative have shown the protective value of condoms. A study of 256 sexually active serodiscordant heterosexual couples who were followed for 22 months found no (0%) seroconversions in the 123 couples who always used condoms and 12 (10%)
seroconversions in the 122 couples who used condoms intermittently.\textsuperscript{8} A 1993 study, where the HIV infected partner was always male, showed that three women (2\%) of 171 consistent condom users became infected, while eight woman (15\%) of 55 inconsistent users seroconverted.\textsuperscript{9} Correct and consistent condom use has been shown to reduce the risk of infection with gonorrhea, herpes simplex virus, pelvic inflammatory disease, HIV, hepatitis B virus, and chlamydia trachomatis as well.\textsuperscript{10}

**Risk Reduction Behavior - Consistent Condom Use Rates**

Despite the high rates of sexual activity and risky behaviors, condom use rates remain quite low among college students. Unprotected sexual intercourse is reported by roughly half of all American teenagers by the age of 19 years.\textsuperscript{11} In 1990, DiClemente, Forrest, and Mickler conducted a study with 1,127 college students and found that while 76\% of students had engaged in sexual intercourse, only 8\% used condoms regularly, over a third had never used condoms and over 60\% used condoms less than half the time. In addition, nearly 50\% of the heterosexual respondents reported multiple sexual partners.\textsuperscript{12} In national surveys and other large-scale studies, consistent condom use rates range from only 5\% to 25\%\textsuperscript{13-19} while in smaller, less representative studies, rates range from 29\% to 41\%.\textsuperscript{20-23} All these rates fall well below the goal of 50\% condom use prevalence rate for adolescents established by the national strategic health plan, *Healthy People 2000*.\textsuperscript{24}
STD Prevalence
Indicator of Inconsistent Condom Use Among Young Adults

Data on sexually transmitted disease prevalence also demonstrates college students are practicing high risk behavior (inconsistent condom use) directly associated with STD/HIV transmission.

In the United States, an estimated 12 million cases of gonorrhea, syphilis, chlamydia, and other sexually transmitted diseases occur each year, resulting in very serious illness and even death for hundreds of thousands of adults and children. In addition, “millions of Americans are chronically infected with herpes simplex virus, human papillomavirus or hepatitis B viruses and may pass these infections onto sex partners”.25

Remarkably, two thirds of all STDs occur among persons under 25 years of age.26 Binson’s study (1993) confirmed that young adults account for nearly 70% of all sexually transmitted diseases in the United States and these young adults report the highest levels of sexual risk factors for HIV and other STDs.27 In fact, two studies conducted in college health centers found prevalence rates of chlamydia among asymptomatic women to be as high as 6.9%28 and 8.2%.29 Clearly, sexually transmitted diseases are prevalent in the young adult population and on college campuses.

HIV/AIDS Prevalence
Indicator of Inconsistent Condom Use Among Young Adults

High rates of risky unprotected sex among college students are reflected in the increasing number of AIDS cases, in HIV prevalence, and on mortality statistics among the adolescent and heterosexual populations. Adolescent AIDS cases have increased 77% in the two years from 1990 to 1992.30 The Centers for Disease Control and Prevention and the American College Health Association conducted a blind HIV-seroprevalence
study in 1988 with 19 colleges and universities throughout the United States finding that 1 in 500 college students were potentially infected with HIV. Of the 13 million college students in the United States, this calculates to potentially 25,000-35,000 students infected. Unfortunately, the majority of these students do not know they are infected and, as they continue to use condoms inconsistently, they chance transmitting the virus, or other STDs, to fellow classmates.

The national patterns of HIV infection are changing in the United States. Increasing AIDS mortality rates in the adolescent and heterosexual populations provide insight into the shift of infection among heterosexual students. From 1985-1991, a six year time span, the proportion of AIDS cases, acquired heterosexually rose from 1.9% to 9.0%. From 1990-1991 alone, the percentage of people with AIDS who were infected through heterosexual contact increased by 21%.

In addition, heterosexual contact is the most rapidly increasing transmission category for women. In 1994, over half (52%) of the new cases of AIDS in women between the ages of 20-24 years old were traced to heterosexual contact. In fact, in 1993, AIDS was the fourth leading cause of death among women between the ages of 25-44. In 1989 it was the number one leading cause of death for men between the ages of 25-44 in San Francisco, Los Angeles and New York and the sixth leading cause of death in youth between the ages of 15-24.

Due to a long, possibly 10 year latency period from time of infection until development with AIDS, college students diagnosed and dying from AIDS today practiced high risk behaviors in their teens. The AIDS statistics provide insight into the
prevalence of inconsistent condom use. In 1994, the largest proportion of diagnosed cases of AIDS was among 30-34 year olds. Any alumni diagnosed with AIDS in their early thirties became infected while practicing risky behaviors, most likely unprotected sex, in college. Thirty eight percent of the 441,528 cases of AIDS reported to date have been among young adults aged 25-34 moreover, as of December 31, 1994, there have been 16,575 cumulative cases of AIDS in 20-24 year olds, with 1,216 new cases reported in 1994 alone. Among 13-19 year olds there have been 1,965 cumulative cases and 214 new cases in 1994. These AIDS statistics suggest that the risky sexual behavior of inconsistent condom use among heterosexual adolescents is continuing, is occurring at very early ages, and is widespread.

Certainly, high STD infection rates on college campuses, as well as increases in AIDS/HIV cases among adolescents and heterosexuals, indicate that college students continue to be sexually active and unprotected intercourse continues to be quite prevalent. Since there is little evidence that these trends are changing, college students are at high risk for infection. The AIDS epidemic will permeate this population unless public health practitioners more fully understand factors which motivate college students to practice the preventive behavior of consistent condom use and develop effective programs to address this serious public health problem.

**Theories of Behavior Change**

Although information about AIDS and sexually transmitted diseases is widely available, and many colleges throughout the United States have implemented AIDS education programs on campus, college students continue to practice high risk behaviors.
The Health Belief Model, Social Learning Theory, and the Protection-Motivation Theory provide frameworks for understanding predictors of preventive health behaviors. These models can be applied to sexual risk-reduction behaviors, such as condom use, as well.

A key component of the Health Belief Model, perceived susceptibility, is a factor that has been found to predict whether or not a preventive behavior will be adopted and implemented. In order for preventive HIV behavior to occur among college students, (consistent condom use), undergraduates must feel personally at risk for acquiring HIV or an STD. The Protection-Motivation Theory also states that preventive behavior is motivated by perceptions of vulnerability. This suggests that if people do not believe they are susceptible to a health threat, they are not likely to adopt self-protective behaviors. Although the quote “it’s not who you are, it’s what you do” has become the mantra of AIDS educators over the past 15 years, these words have not convinced students that they are at high risk. Students’ low perception of risk is maintained over time based on their belief that they are not gay or IV drug users.

In 1986, supporting the basic premises of these behavioral theories, and as an attempt to provide further insight to Americans about why college students have not adapted their risky behaviors, former Surgeon General C. Everett Koop stated “feelings of being invincible are common among young adults and they tend to deny personal risk”. Richard Keeling, chair of the AIDS/HIV Task Force, as well as the past president of the American College Health Association, also reinforces this point by characterizing college students as being at a time in their life when they have a new-found sense of independence, experiment with sex and sometimes drugs, and have a feeling of
Developmentally, as young adults, college students do not believe they are at risk for STDs and hence, are less likely to adopt the protective health behavior of consistent condom use.

Keeling also addressed the fact that many students experience peer pressure to engage in risky sexual behaviors and many experience an uncertainty about their own self-esteem and self-identity which can further complicate the decision-making process. According to Trad (1994), adolescence is a developmental period when young adults are more prone to engage in risk-taking behavior. He summarizes, in his article, *A Developmental Model for Risk Avoidance in Adolescents Confronting AIDS*, that

Adolescence is a developmental period during which certain behaviors predominate. One behavior characteristically associated with this age group is risk-taking (Stiffman et al., 1992). The typical teenager scores higher than an adult on personality measures of risk-taking behavior (Gardner & Herman, 1990), as well as on measures of sensation-seeking (Zuckerman, 1979).

Therefore, a proportion of college students will tend to be risk-takers during the college years. Risk-taking or sensation seeking in terms of sexual health could be expressed by inconsistent condom use as a means of chancing death.

One’s self-confidence is as important a factor in determining preventive safer sex behavior as one’s perception of risk and risk-taking tendency. A person may feel at high risk from a specific health threat, but without specific behavioral skills and confidence in one’s ability to carry out these skills, the preventive action is less likely to be implemented. Bandura’s Social Learning Theory has a main component called self-efficacy, defined as “people’s judgments of their capabilities to organize and execute...
courses of action required to attain designated types of performances”.

The 1994 Basen-Engquist article, stated that:

Self-efficacy affects behavior through influencing coping efforts, choice of activities and settings for activities, the effort spent on a task, and persistence at the task (Bandura & Adams, 1977). Self-efficacy derives from four main sources: mastery experiences, or successful completion of the task; role modeling, or watching others similar to ourselves perform the task successfully; social persuasion, which refers to information from others that we can perform the task successfully; and physiological arousal states that help us infer our vulnerability to stress and anxiety.

The essential behavioral capabilities needed for HIV/STD prevention include correctly using condoms and effectively negotiating condom use with a partner. However, people who feel anxious, fearful, or not confident about using condoms will have difficulty using them. It is therefore important to understand one’s comfort level with condom use, in addition to the effect perceived susceptibility and risk taking tendency play, since together, all may be underlying predictors of consistent condom use.

**Research Overview and Rationale**

This study investigated behaviors, attitudes, and basic demographic information that influenced a college student’s decision to use condoms consistently. The behaviors and attitudes tested were related to one’s perception of risk, tendency for risk-taking and levels of self-confidence.

Two groups of condom users were examined. These included those who consistently used condoms and those who inconsistently used condoms. Those who consistently used condoms were considered at low risk for acquiring HIV or another STD since they regularly implemented the most effective method of protection (consistently
used condoms) during each act of intercourse. On the other hand, inconsistent users were considered at high risk for infection because they had had unprotected sex with partners who, more than likely, did not know their HIV or STD status. Since many STDs, including HIV, are asymptomatic, unprotected intercourse with a partner not screened for all the STDs, as well as HIV, is defined as high risk behavior.

Only students who reported having intercourse in the past year were included in the study. By determining the differences in predictive behaviors and attitudes of these two distinct condom user groups, educational interventions could be designed to increase condom use rates among heterosexual college students and therefore prevent the spread of this devastating STD epidemic within this population.

Sexually transmitted diseases, including HIV infection, are virtually 100% preventable. Since the development of an AIDS vaccine is nearly decades away, and there has never been a cure for any virus, including the viral STDs, designing effective behavioral interventions to increase consistent condom use is essential. Many interventions have focused on providing basic AIDS and STD information. All effective models of behavior change have shown that knowledge alone does not motivate behavior change. Knowledge, attitudes and behavioral skills must be taught together in order for an individual to make effective lifestyle changes which will provide risk-reduction value. To understand how behaviors and attitudes related to condom use factor into this equation, this study explored the specific behaviors and attitudes related to perception of risk, risk-taking and self-confidence in college students.
II. Hypothesis and Research Questions

Hypothesis

It was proposed that sexually active heterosexual college students who consistently used condoms differed significantly from those who inconsistently used condoms in specific demographic characteristics, behaviors, and attitudes.

Research Questions

1) Did college students who consistently used condoms differ in age or gender from students who inconsistently used condoms?

   It was proposed that younger students would be more likely to use condoms consistently than older students, and that males would be no more likely than females to use condoms consistently.

2) Did college students who consistently used condoms differ in specific behavioral characteristics related to perception of risk and risk-taking tendencies from students who inconsistently used condoms?

   It was predicted that those who were low-risk takers would be more likely to consistently use condoms than those who practiced high risk behaviors. It was predicted that consistent condom use would be more likely among those who practiced behaviors that would have increased one’s perceived risk for infection such as 1) having known someone with HIV, 2) having been previously tested for HIV, 3) having had an STD history, 4) having had unwanted or regretted sex. Conversely, it was proposed that
inconsistent condom users would be more likely among those who had had multiple partners since their perception of risk was lower.

3) Did college students who consistently used condoms differ in specific self confident attitudes and beliefs from college students who inconsistently used condoms?

It was predicted that consistent condom users would be associated with certain attitudes, such as higher levels of confidence in one’s ability to communicate or to use a condom correctly, and with being mentally healthy.
III. Literature Review

Knowledge

Many students do not use condoms consistently despite their high levels of knowledge about how HIV is transmitted or prevented. In 1988 Baldwin and Baldwin found that although college students in their sample possessed a high level of knowledge about AIDS, it was not a predictor of more frequent condom use.\textsuperscript{1} A national study of college students by DiClemente in 1990 found that AIDS knowledge was not predictive of or strongly related to AIDS-preventive behavior.\textsuperscript{12} In addition, in 1992 Stiffman found that knowledge about AIDS/HIV infection and its prevention was not associated with any change in risk behavior among 602 inner-city adolescents.\textsuperscript{2} Schneider, Greenberg, Devanan, et al. conducted a study in 1994 of 112 college students enrolled in a special 3-credit HIV course that focused primarily on transmission routes and effective prevention strategies. This group was compared to 263 students enrolled in three control classes to determine differences in general knowledge, scientific knowledge, attitudes and personal risk-taking behavior. The authors found that those enrolled in the AIDS/HIV course gained significant general and scientific learning, yet a significant change in opinions and risk behaviors could not be demonstrated. This finding was repeated in a group of 388 students enrolled in the class the next year.\textsuperscript{3}

While it has been demonstrated that knowledge alone does not change behavior, when combined with changes in attitudes and preventive behaviors, an impact on risky behaviors has been demonstrated. In 1989, Abramson, Sekler, Berk and Cloud examined the knowledge, attitude and behavioral educational components that were taught together
in an undergraduate university course with 404 students. Improvements in AIDS knowledge, attitudes and behaviors (carrying and using condoms) were found in students enrolled in the HIV course as compared to 309 students enrolled in a control astronomy class. Anderson and Christenson (1991) confirmed what was previously found when they commented on the National Adolescent Student Health Survey’s findings that

1) knowledge alone is not sufficient for adolescents to make healthy choices; 2) inconsistencies exist between what adolescents know about health and what they practice, and; 3) inconsistencies in knowledge, attitudes and practices are compounded when sex is factored in.

Demographics

Gender has not been consistently found to be predictive of condom use. Men and women do not use condoms at significantly different rates. Although not gender specific, age has been shown to be related to sexual risk-reduction behavior among college students. In 1991, Butcher found that younger, freshman students, up to 19 years old, tended to use condoms at more consistent rates than older, sophomore, junior and senior students. Conversely, Stiffman, found age was not a factor among a population of 602 inner city youth health clinic users. This discrepancy suggests age may be a factor related exclusively to the college experience.

Risk Taking Behavior

Adolescents tend to engage in risk-taking behaviors more frequently than the general population. This proclivity for high-risk situations is evident in specific behaviors. For example, in the Trad article, it was stated that adolescents and young adults are more likely to participate in and be the victims of violent crimes and are more
likely than adults to perform risky maneuvers with automobiles. From this it could be ascertained that a risk-taking personality trait exists among some college students. Certain people may be more likely to wear seatbelts and bicycle helmets than others. This trait may extend to risk-taking sexual behavior, such as not consistently using a condom. The decision to use condoms for risk reduction of disease is comparable to the decision to fasten a seat belt or wear a helmet to reduce risk of injury from an accident. No studies to date have examined the overall general health-protective personality trait relating to protective condom use behavior.

Perception of Risk

Many studies have shown that the majority of college students do not feel vulnerable to acquiring HIV. For instance, Manning, Barenberg Gallesse and Rice (1989), surveyed undergraduates to determine their beliefs about AIDS and safer sex practices. Undergraduates scored lowest on measures of perceived susceptibility to AIDS and in the likelihood of practicing safer sex. The theme that typical college students are invulnerable to HIV recurred in the Manning, Balson, Barenberg and Moore’s 1989 qualitative research study using the nominal group technique. They reported that in spite of “knowing better,” the students retain many stereotypes about who can and cannot become HIV-infected or develop AIDS. This belief was demonstrated in one student’s response “...you can only get AIDS from sex with gross people”.

As the Protection-Motivation Theory suggests that preventive behavior is motivated by perceptions of vulnerability, students who do not believe they are susceptible to HIV will not adopt the self-protective behavior of condom use. Therefore,
it is proposed that college students who have a low perception of risk to HIV will be less likely to consistently use condoms. Conversely, those with high levels of susceptibility will be consistent users of condoms. Yet, results from studies have been mixed.

Some early studies support the notion that perceived risks of acquiring an STD or HIV result in safer sex practices whereas others have found that perceived risks are not related to behavior. In 1993, Mickler studied 80 sexually active undergraduates recruited from an introductory psychology class to determine whether perceived invulnerability was related to failure to engage in AIDS-preventive behavior. AIDS-preventive behavior, measured by degree of one’s behavior changed as a result of AIDS, was not predicted and was not correlated to risk, worry or knowledge in any consistent way. The author acknowledges that frequency of behavior may have been a better outcome measure of condom use than degree of behavior change, and that this measurement inaccuracy could be responsible for the non-association. Perceived potential risk for HIV failed to predict safer sex practices among 923 students from four college campuses in New Jersey in a 1989 study by O’Leary, Goodhart et al., even though perceived vulnerability was measured as rather high (82%). However, the authors did acknowledge a less than optimal internal consistency of the measurement scale.

Influencing one’s perception of risk has been shown to impact other risk-reduction related outcome measures. This indicates that other factors may play an indirect role in condom use behavior change. While Joseph et al. (1987) found that individuals with a high perceived risk of AIDS were more likely to decrease their number of sexual partners, Basen-Engquist found in a 1992 study at a large university of two
undergraduate classes that *intention* to use a condom was associated with perceived susceptibility. Stiffman (1992), on the other hand, found an inverse relationship, where inner city adolescents who estimated their risk as highest were the most likely to increase their risky behaviors. Interestingly, Mahoney (1995) found that those who perceived themselves at highest risk used condoms sporadically, yet at a higher rate than those who never used, indicating that perception of risk may have had some effect on motivating usage.

Since some studies have found a direct relationship with perception of risk and condom use and others have found no effect or limited impact, this leads one to believe that certain factors that impact perception of risk may cause more of an effect on condom use than others. For instance, personally knowing someone with HIV may have more of an impact on one’s perception of risk and consequently condom use as compared to previously having an STD. Examining certain behaviors which may impact one’s sense of personal vulnerability provides a clearer understanding of motivational factors of condom use.

In 1995, Mahoney et al. conducted a study of 366 college students aged 18-24, comparing rates of condom use by a variety of potentially predictive variables, including previously diagnosed sexually transmitted disease, age and gender. Age, gender and the number of sexually transmitted diseases diagnosed were not correlated with using condoms more or less consistently. In the Canadian student national study, published in JAMA in 1990, MacDonald et al. also found that fear of acquiring an STD or AIDS, or having a history of an STD, did not change condom use behaviors. Personally knowing
someone infected with HIV, exposure to HIV testing, and other experiences expected to induce one’s feeling of vulnerability, surprisingly were not found to be predictive of condom use in the 1989 study by Stiffman with inner-city, primarily heterosexual, adolescents.\textsuperscript{42} It was proposed that the experience of having had unwanted or regretted sex may impact risk-perception and consequently condom use behavior. A significant proportion of students, 19% of men and 33% of women, have reported having had unwanted or regretted sex.\textsuperscript{60}

Canadian students reported using condoms for protection from pregnancy more frequently than they reported using them for prevention from disease; an attitude indicative of one’s perceived personal risk. The 1990 MacDonald study found that fear of pregnancy and not fear of AIDS was a major factor in motivating condom use among 5514 Canadian students enrolled in first-year community college and university classrooms.\textsuperscript{16} Since perception of risk of HIV and STDs is low among American college students, it is hypothesized that American students may also report using condoms for pregnancy protection more often than for protection from HIV and STDs.

While college students have not reported major changes in their condom use behavior, many reported changes in their dating patterns as a direct result of the AIDS epidemic. Caron, Davis, Wynn and Roberts found that a majority of students (75%) believed that there had been a change in the dating behavior of college students by 1988 as a result of the AIDS epidemic.\textsuperscript{61} This change came mostly in the form of greater selectivity in sexual partners and fewer partners. This could be perceived as an indication that perception of risk is changing. The problem is, the most popular methods of risk
reduction being adopted are ineffective in preventing infection. Butcher found that of the 15% of adolescents surveyed by telephone who indicated that they changed their behavior to avoid AIDS, only 20% mentioned truly effective precautions. In the 1993 Keller study, an extensive questionnaire assessed the reasons for not using condoms among 272 college students. Fifty seven percent of students reported not using condoms because they were in a long-term relationship. The second most popular reply was “knew partners sexual history” (53%). Forty-nine percent of students reported not using condoms because they “just knew it was safe/assumed partner didn’t have AIDS virus”.

Having unprotected intercourse with more than one partner in the past year (multiple partners) is risky sexual behavior. College students believe a monogamous relationship provides protection from HIV, and therefore they do not use condoms with a boyfriend or girlfriend. In a 1991 study, Butcher found that 50% of men and 60% of college women stated that they had changed their behaviors to avoid HIV infection by reducing the number of sexual partners. The majority of students claimed to have had only one sexual partner during the preceding month, but upon further investigation it was found that the average number of partners in the last year was nearly three. College students practice “serial monogamy”, a term coined by health educators, to describe this risky behavior of having multiple “monogamous” long-term partners without the use of condoms. The false sense of security students derive from the experience of serial monogamy perpetuates the feeling of being at low risk for HIV or other STDs. The belief in and practice of unprotected serial monogamy is risky behavior and it prevents students from consistently using condoms. From this, it is reasoned that students with a higher
number of sexual partners in the past year will be more likely to use condoms inconsistently than those with one sexual partner in the past year.

**Self-Confidence**

While it appears that factors that impact perception of risk and condom use need to be better understood, the lack of effective behavior change could be understood as a deficit in self-confidence and behavioral skills which allow correct and consistent condom use. If students have truly begun to alter their dating behavior as a result the AIDS epidemic, why have they not adopted condom use as a method? The fact that condoms are still not the number one method of choice for HIV/STD prevention leads one to believe that gaps in attitudes or behavioral skills related to actual condom use may be relevant predictors of consistent use.

Confidence in one’s ability to effectively communicate and negotiate condom use with a partner may predict consistent condom use. Data from the study conducted by Butcher shows that students do not feel confident in their ability to refuse sexual intercourse against their will. Nineteen percent of men and 33% of woman acknowledged consenting to sexual intercourse because they felt awkward refusing. If refusing intercourse is difficult, refusing unprotected intercourse will be equally or more difficult.

Being able to discuss safer sex with a potential partner has been erroneously promoted as an essential component of practicing safer sex. Most students apparently are engaging in this behavior since discussing a partner’s past sexual history was stated as the second most popular reason for not using condoms in the Keller study. Engaging in this
type of communication with a partner is an ineffective risk reduction method since it has been shown to be predictive of inconsistent condom use. In 1989, O'Leary, Goodhart and Jermont found many students felt confident in their ability to discuss past sexual histories with partners. Unfortunately, those who expressed greater confidence in their ability to interview prospective partners concerning their risk-related-histories were exposing themselves to more unprotected episodes of vaginal or anal intercourse.\(^6\)

This finding was true due to the fact that people lie. Of those students involved in a monogamous relationship, 36% of the men and 21% of women reported being sexually unfaithful to their current partner or to any of their previous partners. In addition, men admitted they had lied to their sexual partner or partners more often than did women.\(^6\)

Condom negotiation and refusal skills are the effective communications which must occur between partners in order for condoms to actually be used. It is proposed that students discuss sexual histories as a means of avoiding the more difficult condom negotiation discussion. Effective negotiation and refusal communication skills may be lacking. Hence, students who do not feel confident in their ability to refuse sex or insist on regular condom use with a partner may be more easily convinced or persuaded not to use a condom. Therefore, the self-doubting individuals will be more likely to use condoms inconsistently.

One’s mental state is an indicator of self confidence and may impact decisions about how one cares for self. A positive self attitude may influence the degree of self-care. Those who are more inclined to be mentally healthy and have a positive outlook on life may use condoms more frequently. In a 1994 article in the *American Journal of*
Public Health, high level of depressive symptoms among Puerto Rican sex workers was strongly associated with engaging in unprotected intercourse with clients.\textsuperscript{64} High levels of stress are common among college students. Depressive symptoms among college students may be as related to frequency of condom use as it was found to be among sex workers.
IV. Methods

Research Design

To examine the proposed behaviors and attitudes predictive of consistent condom use among undergraduates, a quantitative study was conducted of University of Connecticut (UConn) undergraduate students. A sample size of 375 was recommended by consultants from the UConn School of Education, Department of Survey and Educational Research Methods, to fairly represent the target population of 13,144 undergraduates at the University.

In February 1991, a random sample of 1200 UConn undergraduates was computer generated from the campus Registrar's Office data base of 13,144 undergraduates. The requested sample consisted of registered, degree-seeking students enrolled at the University of Connecticut, Storrs campus, full or part-time, living on or off campus. These provisions were provided to the Registrar along with the size of the sample to be drawn.

Originally two survey mailings were planned. Therefore, three sets of labels of the sample were generated. One set was used to create a code booklet to track respondents. This was to avoid duplicate mailings to those who had already responded. The other two sets were reserved for the mailings.

A health needs assessment questionnaire was used to collect data. The tool was developed by myself and another staff member of the Health Education Office. It consisted of 100 questions on general health and well-being, ranging from basic health habits to mental health issues. Imbedded within these general health questions were the
research questions related to behaviors and attitudes predictive of consistent condom use. This strategy served to increase the likelihood that respondents would complete sensitive personal health questions regarding sexual behavior that are the basis of this research.

**Questionnaire Content and Design**

The questionnaire was designed based on 14 instruments received from a mailed request to over 100 college and university student health services throughout the country. Staff from the Department of Survey and Educational Research Methodology assisted with survey design. Professional health-care staff members at the UConn Student Health Service were interviewed to elicit questions to generate the general needs assessment survey questions which were not part of this research. These individuals were notified of the results pertinent to their departments upon completion of analysis. The final questionnaire contained six topic areas: 1) demographics, 2) health protective behaviors, such as seat belt and helmet use, and self exams, 3) nutrition, body image and fitness, 4) sexual health questions on sexually transmitted diseases, safer sex practices, contraception, HIV and AIDS, 5) mental health issues such as wellness, stress management, depression and suicide, 6) and health education programming logistics, for instance, degree of interest in health topics, program times, location and facilitator preferences. Questions assessing health habits around alcohol and other drugs were not included in this questionnaire since an alcohol assessment survey was planned for the following semester.

Once completed, the survey was pilot tested on March 10, 1991 to a group of eight Student Health Advisory Council undergraduates for clarity and readability.
Appropriate revisions were made based on this feedback. The Communication Rating Scale was used to analyze the survey. Survey questions were subjected to a series of questions and were rated according to communication components on message, intended audience and outcome. Using this scale proved especially helpful in clarifying the wording of sensitive questions around sexual health.

The final version of the questionnaire took approximately 10-15 minutes to complete. Each survey was number coded and included a cover letter that assured confidentiality. The survey and implementation procedure was approved for distribution by the University of Connecticut Human Subjects Committee.

To maximize return rate, as an incentive, University of Connecticut biofeedback stress cards were included in the mailing. The 1,200 potential respondents received a preaddressed postage paid envelope to place completed surveys and were instructed to mail surveys in campus mailboxes within two weeks. The mailing occurred in April of 1991.

**Timeline**

Table 1 summarizes the design and implementation activities undertaken to conduct the needs assessment research.
Table 1 - Timeline

<table>
<thead>
<tr>
<th>MONTH</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>December</td>
<td>100 letters sent to Student Health Services throughout the United States</td>
</tr>
<tr>
<td>January</td>
<td>Follow-up Phone Calls to Respondent Student Health Services</td>
</tr>
<tr>
<td></td>
<td>Interviews with UConn Student Health Services Personnel</td>
</tr>
<tr>
<td></td>
<td>Review of Received Instruments</td>
</tr>
<tr>
<td>February</td>
<td>Begin Instrument Construction</td>
</tr>
<tr>
<td></td>
<td>Sample Size Calculation from School of Education</td>
</tr>
<tr>
<td></td>
<td>Random Sample Selected from Registrar's Office</td>
</tr>
<tr>
<td></td>
<td>Ordered Mailing Materials</td>
</tr>
<tr>
<td>March</td>
<td>Survey Analysis with Communication Rating Scale</td>
</tr>
<tr>
<td></td>
<td>SHAC (Student Health Advisory Council) Pilot and Comments</td>
</tr>
<tr>
<td>5</td>
<td>Executive Committee, UConn Student Health Service, Review Survey and Comments</td>
</tr>
<tr>
<td>10</td>
<td>Last Revision of Instrument</td>
</tr>
<tr>
<td>15</td>
<td>Survey Approved by UConn Human Subjects Committee</td>
</tr>
<tr>
<td>20</td>
<td>Survey to Printer for Reproduction</td>
</tr>
<tr>
<td>26</td>
<td>Instruments Coded</td>
</tr>
<tr>
<td>28-30</td>
<td>Stuffing of Envelopes for Mailing</td>
</tr>
<tr>
<td>April</td>
<td>Mailing of Needs Assessment Survey</td>
</tr>
<tr>
<td>1</td>
<td>Surveys Returned</td>
</tr>
<tr>
<td>May</td>
<td>Return Rate and Representation of Population Calculated</td>
</tr>
<tr>
<td>Summer</td>
<td>Data Input</td>
</tr>
<tr>
<td>August</td>
<td>Data Base to Health Education Service for Analysis</td>
</tr>
</tbody>
</table>

Sample

Four hundred forty four surveys were returned for a rate of 37% (444/1200). A second mailing was not undertaken since the number received from the first mailing was well over the 375 desired. Even though the return rate was below 50%, a rate of 37% is consistent, if not greater, than most research conducted with college students. Even though the return rate was below 50%, a rate of 37% is consistent, if not greater, than most research conducted with college students.\textsuperscript{56,66,67} Three selected random sample studies using college students as subjects had return rates ranging from 27% - 38%.
Sample Description

Since the study examined predictors of condom use among heterosexual, sexually active undergraduate college students between the ages of 18 to 24, respondents were not included in the data analyses if they were not sexually active in the past year (25%, 110/444), if their sexual preference was not for partners of the opposite sex (3%, 14/444), or if they indicated semester standing as graduate student (0.2%, 1/444). These criteria eliminated 125 respondents or 28% of the total sample.

It was not determined if the students who reported not being sexually active in the past year were disproportionately different from students who were sexually active in the past year. Results from previous research conducted with University of Connecticut undergraduates were consistent with the finding that approximately 75% of students were sexually active in the past year.68

The final sample consisted of 319 students. Females comprised 66% of the sample, and the group’s average age was 20.8 years. Nearly all students were Caucasian (95%), (Table 2). The mean grade point average was 2.81 (based on a 0.0-4.0 scale. Seventy two percent of students lived in residence halls on campus, 1.3% in fraternity or sorority housing on campus, and 27% off campus.

Data describing the demographic makeup of the general University of Connecticut population was obtained from the Registrar's Office. Comparisons between the target population, the collected sample, and the usable sample support a general representation of the samples to the target population. A few exceptions, however, should be noted.
In the collected, as well as the usable sample, woman were overrepresented, making up 64% and 66% of the samples, while the female proportion in the general population was 51% (Table 2).

### Table 2-Populations By Gender, Semester Standing and Race

<table>
<thead>
<tr>
<th></th>
<th>POPULATION (n=13,144)</th>
<th>COLLECTED SAMPLE (n=444)</th>
<th>USABLE SAMPLE (n=319)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENDER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49%</td>
<td>36%</td>
<td>34%</td>
</tr>
<tr>
<td>Female</td>
<td>51%</td>
<td>64%</td>
<td>66%</td>
</tr>
<tr>
<td><strong>SEMESTER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>21%</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>3-4</td>
<td>18%</td>
<td>16%</td>
<td>24%</td>
</tr>
<tr>
<td>5-6</td>
<td>37%</td>
<td>26%</td>
<td>28%</td>
</tr>
<tr>
<td>7-8</td>
<td>32%</td>
<td>31%</td>
<td>30%</td>
</tr>
<tr>
<td>9-10</td>
<td>----</td>
<td>7.5%</td>
<td>6.2%</td>
</tr>
<tr>
<td>10+</td>
<td>----</td>
<td>0.7%</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>RACE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/ Native Alaskan</td>
<td>0.22%</td>
<td>0.23%</td>
<td>0.30%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3.8%</td>
<td>2.3%</td>
<td>0.60%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>3.5%</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>89%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>Other</td>
<td>3.3%</td>
<td>1.4%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Sophomores were overrepresented in the usable sample (24%), yet slightly underrepresented in the collected sample (16%) as compared to the population demographic of 18% (Table 2). Since the majority of students (86%, 110/128) who were eliminated from the collected sample were not sexually active in the past year, it is
possible that more sophomores were sexually active than freshman. This could have had the effect of increasing the proportion of sophomores in the usable sample.

Also of note is that those who were sexually active in the past year were more likely to be male. While 58% of women were eliminated from the collected sample due to the fact they were not sexually active in the past year, only 41% of males were eliminated. People of Asian/Pacific Islander descent were only slightly underrepresented in the collected sample (2.3% vs. 3.8%), but in the usable sample, the numbers were quite low (0.6%), (Table 2). This lower number of sexually active Asian Americans could have been due to certain cultural beliefs or practices around sexuality which reflected their lower sexually active response rates.

Because the basic demographical information of the collected and usable sample proved generally representative of the larger population, the 63% of nonrespondents were not analyzed to determine distinctive differences from the samples. The implication for the low return rate and non-tracking of nonrespondents was that certain behaviors and attitudes may not have been represented in the usable sample. It is not known if specific behaviors or attitudes of the sample are representative of the population. For example, those inclined to risk-taking behaviors may be underrepresented. With this in mind, generalizing results to the larger student body must be done with caution.

**Measures**

While the survey instrument included sections on many general health issues, only those items relevant to the present analysis were described here. The dependent variable of this study was frequency of condom use. Thirty one behavior, attitude, and
demographic independent variables were examined as predictors to distinguish consistent condom users from inconsistent condom users. The behaviors and attitudes tested were related to one’s risk-taking tendency, perception of risk, and level of self confidence.

**Dependent Variable - Condom Use Frequency**

**Condom User Classification**

Respondents were assessed for frequency of condom use in the past year. Only those sexually active in the past year were instructed to answer this question. Responses were based on a four point scale and included the choices: "never", "less than half the time", "more than half the time" and "always". A new variable was created called "use" and consisted of two categories, consistent condom users and inconsistent condom users.

Consistent condom users were defined as those who indicated they "always" used a condom during each act of intercourse in the past year. Inconsistent condom users were defined as those who indicated that they used a condom less than always or never. Therefore, people who answered "never", "sometimes" and "often" were redefined as inconsistent condom users.

**Independent Variables - Demographics, Behaviors and Attitudes**

**Demographics**

Standard demographic measures included gender and age. Respondents indicated male or female by checking the appropriate box. Age was broken into two groups, where younger students replied by indicating “18 or younger”, “19”, or “20”, and older students were classified as “21-22”, or “23-24”. Each variable was compared against the use variable to determine if these demographics were predictive of consistent condom usage.
Behavioral Variables

Behaviors were defined as activities one had participated in or incidents one had experienced. The eighteen behavioral variables tested for predictability of consistent condom use are grouped under the headings Risk-Taking Behavioral Variables and Perception of Risk Behavioral Variables.

Risk-Taking Behavioral Variables

Respondents were questioned on seven behaviors previously proven to have had health risk reduction value and/or that had been shown to extend years of productive life. Students were classified as high-risk takers or low-risk takers according to a score calculated using the number and frequency of health protective behaviors practiced. Low-risk takers engaged in a higher rate of health protective behaviors, while high risk-takers engaged in a lower rate of health protective behaviors.

Seven health protective behaviors were used to distinguish between high-risk takers and low-risk takers. The behaviors included seat-belt use as a driver, seat belt use as a passenger, helmet use on a bicycle, helmet use on a motorcycle, helmet use when a passenger on a motorcycle, sunscreen use and cigarette smoking. The first six behaviors were measured using a four point scale. Responses included "never", "sometimes", "often", "always". Responses from each behavior were assigned a point as the behavior became increasingly more health protective, (never = 0, sometimes = 1, often = 2, always = 3). Higher scores were equated with consistently practicing healthier behaviors (e.g. more consistent seat belt use). Frequency of cigarette smoking was measured based on a six point scale. Students who “never used” were awarded “2” health protective points,
those who “used but quit”, received “1” point and current smokers, who checked one of
the 4 remaining responses which indicated smoking frequency, received “0” points.

A cumulative health protective score was computed for each respondent. This
total was divided by the total number of behaviors one participated in, since everyone did
not have the opportunity to engage in all behaviors (i.e., drive a motorcycle). The
highest possible health protective score was 2.86 (20/7). Ninety-nine percent (315/319)
of scores ranged from 0.29 to 2.83. Four students scored “0”. Since the median score
was 1.80, those who scored above 1.80 (48.6%) were defined as low risk-takers and those
who scored 1.80 or below (51.4%) were defined as high-risk takers. Low risk-takers, in
comparison to high risk takers, had higher cumulative rates of seat-belt use, seat belt use
as a passenger, helmet use on a bicycle, helmet use on a motorcycle, helmet use when a
passenger on a motorcycle, sunscreen use, and were non-smokers or had smoked but quit.
Consequently, these two groups were compared by condom use frequency to determine if
engaging in other low risk health behaviors was predictive of consistent condom usage.

In addition, each of the seven individual health protective behaviors were
compared with condom usage to determine if any one behavior was predictive or if any
trends emerged. The six questions measured on the four point scale were redefined.
High risk taking was classified by the replies “never”, “sometimes”, or “often”. Low risk
taking was defined as those who replied that they “always” engaged in the particular
behavior. Smoking was divided into two groups by those who “never” smoked and those
who smoked but quit or were current smokers. Each behavior was compared with
consistent condom use to determine if any individual behaviors may have been predictive of consistent condom use or if any trends emerged.

**Perception of Risk Behavioral Variables**

Perception of risk behaviors was based on individual self-reported level of perceived vulnerability to disease and on individual behaviors which were proposed to impact one's perception of risk and consequently condom use.

*Self-Reported Perceived Risk*

Three questions assessed perceived risk for acquiring HIV or other sexually transmitted diseases. All three were self-reported risk estimates based on a four-point scale, with "1" as "no risk", and "4" as "high risk". Replies of "1" or "2" were defined as low perceived risk. High perceived risk was defined by replies of "3" or "4".

The first question assessed personal vulnerability for acquiring a sexually transmitted disease. The question stated, "Do you feel your behavior puts you at risk for becoming infected with a sexually transmitted disease (STD)?" The second question which, assessed personal vulnerability of acquiring HIV, stated "Do you feel your behavior puts you at risk for becoming infected with HIV (the virus which causes AIDS)?". The third assessment was of a student's perceived risk for one's peers' risk of acquiring HIV. It was stated similarly as, "Do you feel the behavior of UConn students puts them at risk for becoming infected with HIV?". Each of these variables were compared against condom use consistency to determine if those with higher perceived risk were more likely to use condoms consistently.
Other behaviors and attitudes proposed to impact students’ perception of risk and, consequently, their condom use included: having had a history of a sexually transmitted disease, number of past partners, having had unwanted or regretted sex, having previously been tested for HIV, personally knowing someone with HIV or AIDS, using condoms primarily for pregnancy protection. These behaviors were measured as follows:

**Number of Sexual Partners**

Students were asked "how many partners have you had sexual intercourse with in the past year?" Those who replied “0” were considered not sexually active in the past year and not included in this study. Two categories were defined. Those who replied “1” were defined as having one partner in the past year. Those who replied, "2-5" to "6-10", "11-20", or "more than 20" partners in the past year were defined as having had multiple partners.

**STD History**

Students were asked to check off any infections they had had or currently had from a list of 11 possibilities. These included chlamydia, yeast, trichomanas, gonorrhea, herpes, genital warts, non-specific urethritis, syphilis, hepatitis B, abnormal pap smear, HIV/AIDS. Students who checked off any one of these infections were defined as having a history of a sexually transmitted disease. All others were defined as having no history of an STD.

**Primary Reason Condom Use**

Students were asked, “What is your primary reason for using condoms?” Students who replied "prevention from pregnancy" were defined as those who used a condom for
pregnancy protection. Those who replied "prevention from Sexually Transmitted Diseases (STDs)" or "prevention from HIV" were defined as those who used condoms primarily for disease protection. Those who replied "partner insistence" or "other" were few (4%, 9/248) and were not part of this research.

Unwanted Sex

Unwanted sex response options were yes or no to the statement, "Have you ever had sex when you didn't want to?"

Regretted Sex

Regretted sex response options were yes or no to the statement, “Have you ever had sex willingly but regretted it after?”

HIV Tested

Students were classified in two categories, those not HIV tested and those who had been HIV tested. Those who responded "no, and do not plan to", or "no, but plan to" were defined as those who had not been HIV tested. Those who had been HIV tested were classified according to the responses, "yes, tested negative", "yes, tested positive", or "yes, do not know results".

Known Someone With HIV

Having known someone with HIV was defined as responding yes to personally having known someone HIV positive, living with AIDS or who had died from AIDS. The “no” response was defined as not personally knowing someone with HIV.
**Self-Confidence Attitudinal Variables**

Attitudes are defined by level of confidence in one's ability to carry out a specific risk reduction behavior, and as one's state of mental well-being.

**Mental State of Well-Being**

Four questions assessed respondents' mental state of well-being. Attitudes included stress level, depression level, suicide tendency and well-being. Students were classified as having a healthy mental state or a poor mental state based on a mental health score calculated from self-reported levels of the four above-mentioned attitudes. The higher the score, the more mentally healthy the individual. Therefore, those with a healthy mental state had higher scores of mental health and those with lower scores were considered to have a poor mental state.

Students rated stress levels and depression levels based on a four point scale, with replies of "1" being low rates of stress or depression and "4" being high rates of stress or depression. Responses for each attitude were assigned a point as the attitudes became increasingly more mentally healthy ("1" = 1 pt., "2" = 2 pts., "3" = 3 pts., "4" = 4 pts.).

Rates of intention for attempted suicide were included in the mental health measure. The questions stated, "Have you ever contemplated or attempted suicide?". Responses were, "no", "no, I've thought about it, but not seriously", "I've thought about it seriously once or twice", "I've thought about it often", "I've made an attempt at suicide". These questions were scored from 0 to 5, with 5 being assigned to those who had actually attempted suicide.
The final mental health question pertained to lifestyle well-being. It stated, "Do you feel your life is consistent with your personal values?". Response options were "yes" or "no". Those answering yes received 2 points and those who responded no received 1 point.

The total possible cumulative score was 15. Scores ranged from 5 to 15. Since the median score was 12, those who scored 11 or less were defined as having a poor mental health state (49.4%) and those who scored 12 or greater (50.6%) were defined as healthy mental state. Healthy mental state individuals had higher cumulative mental health scores in comparison with individuals who had poor mental health states. Subsequently, these two groups were compared by condom use frequency to determine if a healthy state of mental health predicted consistent condom use.

Each of the four mental health attitude variables were individually compared to condom use frequency to determine if any one attitude was predictive of consistent use or if any trends emerged. The stress and depression questions were redefined with replies of “1” and “2” representing low rates of stress or depression and replies of “3” or “4” as high rates. Suicide tendency was redefined as low tendency by the responses “no”, “not seriously”, or “thought about it once or twice”. High suicide tendency was represented by the responses, “thought about it often” or “attempted suicide”.

*Self-Confidence: Communication*

Students were asked to rate their confidence in their sexual communication abilities. Topics were provided and confidence for each was rated by using a four-point scale with replies of “1”, “2” and “3” representing "self-doubt " and replies of “4”
representing "self-confident". Categories were grouped in this manner since any degree of reported self-doubt indicated that the student was not completely self-confident and therefore could have been persuaded not to use a condom. It was rationalized that a student must feel completely self-confident in communication and condom utilization skills in order to predict consistent condom usage.

The three relevant attitudes measured were, "I feel confident in my ability to..." 1) "..say no to unwanted sex", 2) "..discuss safer sex with partner", 3) "..say no to unprotected sex". The last question, “say no to unprotected sex”, was stratified by gender and analyzed for influence on consistent condom use.

**Self-Confidence: Correct Condom Usage**

Students’ reported self-confidence in their ability to use a condom correctly based on the same four-point scale, and categorized as above. Those who were self-confident and those who had self-doubt were compared against condom use to determine if self-confidence to use a condom correctly was a predictor of consistent condom use.

**Statistical Analysis**

The survey data were entered and analyzed using EPI Info 6.0, a statistical software program from the Centers for Disease Control and Prevention. The data were analyzed based on odds ratio calculations.

First, frequencies distributions were created to generate general descriptive characteristics of the sample. Next, tables were computed using chi square statistics to determine predictive association with the independent variables under study with frequency of condom use. As described, condom use frequency was regrouped into two
categories, consistent users and inconsistent users. Independent variables were regrouped as defined in the measures section so that odds ratio calculations could be computed against the two groups of condom users. Odds ratio statistics were then calculated with the demographic, behavior and attitude variables using a 95% confidence interval.

Since odds ratios were originally calculated with inconsistent condom users as the outcome (e.g. the reference category predicted “less likely to be consistent condom users”), all ratios and odds ratio ranges were inverted by recalculations of 1 divided by the original odds ratio. This allowed consistent condom users to be the basis of the outcome (e.g. the referenced category predicted more likely to be consistent condom users). For odds ratio scores greater than one, the predicted variable had a greater probability of being a consistent condom user. For odds ratio scores less than one, the predicted variable had an decreased likelihood of being a consistent condom users.
V. Results

Of the 319 sexually active heterosexual students between the ages of 18-24 in the research sample, only 31% consistently used condoms (Figure 1). The average number of sexual partners in the past year was 2.1. The majority of students (65%) in the sample reported having had one sexual partner in the past year and 35% reported multiple partners.

Demographics

The relationships of age and gender to consistent condom use is presented in Table 3. The study found that 36% (39/108) of the men always used a condom, while 28% (59/211) of the woman reported consistent use. No significant association among genders was found (Table 3).

Thirty-six percent of younger students consistently used condoms, while only 25% of older students were found to be consistent condom users (Figure 2). Age proved to be a predictive factor of consistent condom use (Table 3). Younger students, those less than 21 years old, were 72% more likely to consistently use condoms than older students (Figure 3).

<table>
<thead>
<tr>
<th>Variable (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td>1.45</td>
<td>(0.85, 2.50)</td>
</tr>
<tr>
<td>Age (&gt;=21)</td>
<td>1.72</td>
<td>(1.03, 2.94)</td>
</tr>
</tbody>
</table>
Figure 1
Percentage of Consistent and Inconsistent Condom Users
Figure 2

Association of Consistent Condom Use and Age
Behavioral Variables - Risk-Taking

Calculations were computed to divide the sample among high-risk-takers (49%) and low-risk takers (51%). Each group consistently used condoms at approximately the same rate of 30%. Neither those who practiced high risk behaviors nor low risk behaviors were more likely to use condoms consistently (Table 4). Behaviors were regrouped according to frequency and reclassified as high risk and low risk. None of the high risk behaviors examined was singularly more predictive of consistent condom use than any of the low-risk behaviors (Table 4).

Table 4
Association of Behavioral Variables: Risk-Taking and Consistent Condom Use

<table>
<thead>
<tr>
<th>Variable (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Protective Behavior (low risk-takers)</td>
<td>0.95</td>
<td>(0.57, 1.59)</td>
</tr>
<tr>
<td>Seat Belt Use (low risk)</td>
<td>0.66</td>
<td>(0.38, 1.16)</td>
</tr>
<tr>
<td>Seat Belt Use/Passenger (low risk)</td>
<td>0.76</td>
<td>(0.45, 1.25)</td>
</tr>
<tr>
<td>Helmet Use/Bicycle (low risk)</td>
<td>4.55</td>
<td>(0.59, 100.00)</td>
</tr>
<tr>
<td>Helmet Use/Motorcycle (low risk)</td>
<td>1.35</td>
<td>(0.44, 4.55)</td>
</tr>
<tr>
<td>Helmet Use/Motorcycle P (low risk)</td>
<td>2.13</td>
<td>(0.79, 5.88)</td>
</tr>
<tr>
<td>Sunscreen Use (low risk)</td>
<td>1.61</td>
<td>(0.58, 4.76)</td>
</tr>
<tr>
<td>Smoke (low risk)</td>
<td>1.69</td>
<td>(0.94, 3.03)</td>
</tr>
</tbody>
</table>
Behavioral Variables - Perception of Risk

Thirty-seven percent of students in the study had previously been diagnosed with a sexually transmitted disease. Yet the majority of students (92%) believed their personal risk of acquiring an STD was low. Remarkably, even more students (95%) rated their chance of acquiring HIV as low, even though both diseases are transmitted by the same high risk behavior. On the other hand, 73% of students ranked other students risk of acquiring HIV as high. This discrepancy clearly illustrated the high rate of denial among college students. However, high ratings of perceived risk were not related to more consistent condom use (Table 5).

While 12% of students had previously been tested for HIV, 17% had personally known someone with HIV, 28% had experienced unwanted sex and 56% had had regretted sex, none of these behavioral variables were predictive of consistent condom use (Table 5). Additionally, having had multiple partners did not increase one’s likelihood for consistent condom use.

Two behavioral variables related to perception of risk were found to be predictive of consistent condom use (Table 5). Those without a history of a sexually transmitted disease were two times as likely to use condoms consistently than were those students with a STD history (Figure 3).

In addition, students who reported using a condom primarily for pregnancy protection were two times more likely to use condoms consistently than were those who used condoms primarily for disease protection (Table 5, Figure 4).
Table 5 - Behavioral Variables:
Association of Perception of Risk And Consistent Condom Use

<table>
<thead>
<tr>
<th>VARIABLE (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Sexual Partners (&gt;1 partner)</td>
<td>1.08</td>
<td>(0.65, 1.85)</td>
</tr>
<tr>
<td>STD History (STD history)</td>
<td>2.22</td>
<td>(1.27, 4.00)</td>
</tr>
<tr>
<td>Primary Reason Use Condom (disease threat)</td>
<td>2.17</td>
<td>(1.03, 4.55)</td>
</tr>
<tr>
<td>Unwanted Sex (never had)</td>
<td>0.79</td>
<td>(0.44, 1.43)</td>
</tr>
<tr>
<td>HIV Tested (never tested)</td>
<td>2.22</td>
<td>(0.88, 5.88)</td>
</tr>
<tr>
<td>Know Someone with HIV (no)</td>
<td>0.73</td>
<td>(0.36, 1.49)</td>
</tr>
<tr>
<td>Regretted Sex (never had)</td>
<td>0.78</td>
<td>(0.47, 1.28)</td>
</tr>
<tr>
<td>Perceived Risk STD/Self (low)</td>
<td>1.35</td>
<td>(0.48, 4.00)</td>
</tr>
<tr>
<td>Perceived Risk HIV/Self (low)</td>
<td>2.13</td>
<td>(0.55, 10.00)</td>
</tr>
<tr>
<td>Perceived Risk HIV/Others (low)</td>
<td>1.27</td>
<td>(0.72, 2.22)</td>
</tr>
</tbody>
</table>
Figure 3
Association of Consistent Condom Use with STD History
Figure 4 - Association of Consistent Condom Use with Primary Reason For Using a Condom
Attitudes - Mental State of Well-Being

The relationship between one’s mental state of well-being and condom use is presented in Table 6. No predictive association was found between condom use and the two mental states of well-being. Thirty-five percent of those with a poor mental state were found to use condoms consistently; of those with a healthy mental state, 27% were consistent condom users.

Similarly, students who reported lower depression rates (86%), stress rates (35%) and suicide tendencies (93%) were no more likely to be consistent condom users than those with higher rates of depression, stress and tendencies toward suicide (Table 6). Those whose lifestyles were consistent with their personal values (84%) were no more likely to use condoms consistently that those whose lifestyles were inconsistent with their personal values (Table 6).

<table>
<thead>
<tr>
<th>ATTITUDE VARIABLES (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health (healthy)</td>
<td>1.47</td>
<td>(0.88, 2.44)</td>
</tr>
<tr>
<td>Suicide Attempts (high rates)</td>
<td>1.20</td>
<td>(0.42, 3.57)</td>
</tr>
<tr>
<td>Stress Level (high)</td>
<td>0.79</td>
<td>(0.46, 1.37)</td>
</tr>
<tr>
<td>Depression Level (high)</td>
<td>0.60</td>
<td>(0.29, 1.22)</td>
</tr>
<tr>
<td>Life Consistency (low level well-being)</td>
<td>1.18</td>
<td>(0.57, 2.44)</td>
</tr>
</tbody>
</table>
**Attitude Variables - Self-Confidence**

Four self-confident attitudes were measured. It was found that the majority of students felt quite self confident in their ability to communicate with potential sexual partners. Eighty one percent of students felt confident in their ability to say no to unwanted sex, and 74% felt confident in their ability to discuss safer sex with a partner. Students were most likely to express confidence (86%) in their ability to use a condom correctly. While the majority of students were found to have high levels of self confidence, self confidence in the above three situations was no more likely to influence consistent condom use (Table 7).

Only one measure of self-confidence, was predictive of consistent condom use (Table 7). Students who were self-confident in their ability to say no to unprotected sex were 2.02 times more likely to use condoms consistently than self-doubters (Table 7). In other words, those who doubted their ability to insist on condom use were two times more likely to use condoms inconsistently than those who felt self-confident.

Furthermore, when this variable was stratified by gender, it was found that females who were self-confident in their ability to say no to unprotected sex were 3.36 times more likely to consistently use condoms than women who self-doubted their ability to say no (Table 8, Table 9, Figure 5). No significant association was found for men in regard to this attitude variable (Table 8, Table 9), although a higher proportion of men (62%, 67/108) felt self-confident in their ability to say no to unprotected sex than women (35%, 54/156).
### Table 7 Attitude Variable
**Association of Self-Confidence and Consistent Condom Use**

<table>
<thead>
<tr>
<th>Variable (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss safer sex w/partner (not confident)</td>
<td>0.81</td>
<td>(0.46, 1.45)</td>
</tr>
<tr>
<td>Say No Unwanted Sex (not confident)</td>
<td>0.80</td>
<td>(0.43, 1.54)</td>
</tr>
<tr>
<td>Say No To Unprotected Sex (not confident)</td>
<td>2.02</td>
<td>(1.11, 3.70)</td>
</tr>
<tr>
<td>Confidence Correct Condom Usage (not confident)</td>
<td>1.11</td>
<td>(0.53, 2.38)</td>
</tr>
</tbody>
</table>

### Table 8 Attitude Variable
**Confidence to Say No To Unprotected Sex and Consistent Condom Use By Gender**

<table>
<thead>
<tr>
<th>Variable (ref. category)</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (not confident)</td>
<td>1.37</td>
<td>(0.55, 3.40)</td>
</tr>
<tr>
<td>Females (not confident)</td>
<td>3.36</td>
<td>(1.37, 9.37)</td>
</tr>
</tbody>
</table>

### Table 9 Attitude Variable
**Association By Gender: Confidence To Say No To Unprotected Sex and Consistent Condom Use**
**Odds Ratio Calculations**

<table>
<thead>
<tr>
<th>DEGREE OF CONFIDENCE</th>
<th>CONSISTENT USER</th>
<th>INCONSISTENT USER</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIDENT-Female</td>
<td>52</td>
<td>104</td>
<td>156</td>
</tr>
<tr>
<td>SELF-DOUBT-Female</td>
<td>7</td>
<td>47</td>
<td>54</td>
</tr>
<tr>
<td>TOTAL-Female</td>
<td>59</td>
<td>151</td>
<td>210</td>
</tr>
<tr>
<td>CONFIDENT -Males</td>
<td>26</td>
<td>41</td>
<td>67</td>
</tr>
<tr>
<td>SELF-DOUBT- Males</td>
<td>13</td>
<td>28</td>
<td>41</td>
</tr>
<tr>
<td>TOTAL -Males</td>
<td>39</td>
<td>69</td>
<td>108</td>
</tr>
</tbody>
</table>
Figure 5- Association of Females Who Felt Confident In Their Ability To Say No To Unprotected Sex and Consistent Condom Use


**Condom User Profiles**

**Consistent condom users** were more likely to be younger students and those who had no previous history of a sexually transmitted disease. Their reason for using condoms was primarily for pregnancy protection rather than for disease protection. Consistent condom users were more self-confident in their ability to say no to unprotected sex. Women, who were more confident in their ability to say no to unprotected sex were more likely to use condoms consistently than were women who did not feel confident in their ability to insist on condom use with a partner.

**Inconsistent condom users** were more likely to be older students and those who had a history of an infection with a sexually transmitted disease. They were more likely to report using condoms for the primary reason of disease protection over pregnancy protection. Inconsistent condom users were not confident in their ability to say no to unprotected sex. Women who did not feel confident in their ability to say no to unprotected sex were more likely to be inconsistent condom users than women who did feel confident in their ability to insist on condom use.
VI. Discussion

The majority (74%) of college students in the collected sample (N=444) were sexually active in the past year. Of the heterosexual, sexually active undergraduates in the usable sample (n=319), 69% reported inconsistent condom use in the past year. Only 31% were consistent condom users. This finding confirmed that the majority of undergraduate students were sexually active and practiced the high risk behavior of inconsistent condom use, which increased their risk of potential exposure to STDs including HIV.

This study found four predictive variables of consistent condom use. These included one variable related to demographics (age), two behaviors related to perception of risk (primary reason for using a condom and STD diagnosis), and one attitude variable associated with self-confidence (confidence to say no to unprotected sex). Understanding these factors can assist public health practitioners with the development of effective preventive programs to increase consistent condom use rates among sexually active heterosexual college students.

While proportionally more men reported consistent condom use than woman (36% vs. 28%), one’s gender was not found to be predictive of consistent use. Men and women did not differ in how often they consistently used condoms. Although women were over represented in this study, and proportionally more men were sexually active, this finding confirmed previous research which showed no gender differences in frequency of condom use.46,47
As hypothesized, the age variable was predictive of consistent condom use. Younger students were 72% more likely to use condoms consistently than older students. However, when Stiffman examined differences in condom use patterns between older and younger inner city youth, he found no association with age. This leads one to believe that consistent condom use rates among younger adolescents in the college population must be related to factors uniquely relevant to the college experience.

Certainly, a first-year, 18-year old student brings to college specific health beliefs, knowledge and behavioral norms around sexuality which were established in high school and within one's family. In contrast, the older, 22-year old senior has lived away from home and has been exposed to the campus social norms around condom use and sexuality for four years. As students progress through four years of college, it may be that they adopt the established social norms of their new environment. It is possible that these new norms do not support consistent condom use and exposure to these standards over time negatively influences the students’ personal decision on condom use. Nonetheless, it appears that the college experience has a unique impact on consistent condom use habits of younger college students as compared to older undergraduates in a way not demonstrated between younger and older adolescents in other populations.

Pregnancy protection was the primary reason students chose for consistently using condoms. Those that reported using condoms for pregnancy protection were twice as likely to be consistent condom users as those who reported using condoms for disease protection. In addition, we know that younger students were more likely to be consistent users. Simply stated, students used condoms most consistently if they were younger and
if they wanted birth control protection. A possible explanation, then, is that younger students, just entering college, had limited prescription birth control sources when living home with parents. Condoms, being available without a prescription, may have been used more frequently as the birth control method of choice in high school. In addition to the increased autonomy gained by living away from home and parents, it appears that younger students acquired greater access to a wider range of birth control options in college. Birth control pills or other prescription methods are easily accessible through the college student health service. It is speculated that college students abandon their high school condom use habit once they become acculturated to the social norms and freedoms of their new college life.

As with most studies of undergraduate students, this research found that the majority of University of Connecticut students felt invulnerable to HIV and other sexually transmitted diseases. Realistically, 69% of students were found to be at high risk for potential infection, but only 5%-7% of students accurately rated their risk as high. Contrary to what was hypothesized, but supportive of what some other studies have found, those who rated their risk as high were no more likely to be consistent users than those students who rated their risk as low. Therefore, even though some students felt at high risk for STD/HIV, their accurate risk perception was no more likely to influence their condom use behavior than those who were in denial.

Clearly, increasing one’s accurate perception of personal risk for acquiring sexual diseases does not presently appear to motivate consistent condom use. Certain behaviors thought to impact perception of risk were tested for their influence on consistent condom
use. For example, being previously diagnosed with an STD was thought to increase one’s perception of risk. This was thought to be especially so since those students had personally experienced the consequences of unprotected intercourse. Contrary to this belief, the experience of previously being diagnosed with an STD was not found predictive of consistent condom use. As a matter of fact, despite being previously diagnosed with an STD, these students were half as likely to use condoms consistently as those who had never had an STD. Surprisingly, being infected previously with an STD had the opposite effect on perception of risk; these students were less likely to use condoms consistently.

This finding could be related to the fact that the consistent condom users in the study were more likely to be younger students. It is possible that younger students had fewer partners thus decreasing their chances for exposure to STDs. On the other hand, those who previously had had an STD were apparently not affected by the experience to a degree which motivated them to reduce their risk for future infection. They were less likely to use condoms consistently. As a result, the implications for disease transmission are great. All viral STDs are incurable, and the most effective method to prevent transmission is consistent condom use.

Other behaviors hypothesized to impact one’s perception of risk were not found to be predictive of condom use. Even those who personally knew someone with HIV were no more likely to use condoms consistently than those who had never met a person with HIV. Certainly, denial about acquiring sexually transmitted diseases is deeply ingrained within the college population. Becoming pregnant is apparently a more realistic health
threat in this population than the perceived risk of acquiring sexually transmitted diseases.

The decision to use condoms consistently must be motivated by factors other than simply increasing one’s sense of vulnerability to sexually transmitted diseases. It was hypothesized that those with a proclivity for practicing low-risk health behaviors would incorporate the low risk behavior of consistent condom use into their lifestyle as well. Yet, none of the behavioral variables related to low risk-taking predicted consistent condom use. Low risk-takers were no more likely to use condoms consistently than high risk-takers. Similarly, frequent seat belt users were no more likely to practice consistent condom use than those who did not regularly use seat belts. Likewise, none of the other individually tested health protective behaviors were predictive of consistent condom use.

Evidently, the forces that encourage students to practice other low-risk activities regularly do not have the same motivational impact on condom use behavior. The difference may lie in the effect. Decisions about regular seat belt use provide a health protective effect to the individual. Condom use, on the other hand, provides a health protective effect to two individuals. The decision to use a condom is a shared decision, and must be mutually agreed upon by two individuals. If one partner does not agree, then condom use may not occur. Therefore, unlike other health protective behaviors, even if the individual decides to implement the behavior, the resulting degree of protection may not be claimed unless both individuals agree to use the condom.

Thus, being able to effectively insist on and negotiate condom use with a partner are essential behavioral skills in which all college students must be proficient. This study
found that possessing self confidence in these communication skills did predict consistent condom use. To convince a partner to use a condom, and therefore avoid unprotected sex, students must feel completely confident in their position and with their ability to negotiate. Without complete confidence, students may be easily persuaded to abandon their request for condom use and hence be more likely to have unprotected sex.

Most students reported feeling confident in their ability to say no to unprotected sex, but those who did not were six times more likely to use condoms inconsistently. Upon closer examination, it was found that women who did not feel confident in their ability to insist on condom use with their male sexual partners were three times more likely to use condoms inconsistently, whereas men's confidence was not predictive of consistent condom use. Since this lack of confidence is solely specific to women, it is speculated that this phenomena may be related to existing stereotypical gender roles in our society. For women, the fear of losing a relationship may override the need to engage in a condom use negotiation with a recalcitrant partner. Women may feel they do not have the power to convince an unwilling partner and therefore succumb to the preference of their male partner to having unprotected sex more frequently. This power imbalance in relationships reflects the antiquated gender roles of our culture where women are expected to act passively, and men are expected to behave assertively and be the decision-makers. Today, we witness the devastating effects of this power dynamic in relationships, manifest by the ever-present domestic violence crisis. Future research must examine the role of power and gender roles in the decision making process of condom use in relationships.
Most students, 82%, felt confident in their ability to discuss safer sex with a partner. Yet, while the majority felt confident, this feeling was not transformed into more consistent condom use. This finding was disturbing since it indicated that possessing confidence with safer sex discussions did not increase the likelihood of consistent condom use like confidence to say no to unprotected sex did. Apparently, the recommendation to discuss safer sex with a partner was not clear and therefore misinterpreted. Since condom use rates were not altered by those who felt confident discussing safer sex, it appears that the safer sex discussions were not focused on negotiations for condom use but instead on other topics. These talks may have included discussions of past number of sexual partners and other sexual history information. Essentially, students conducted a character analysis of their potential partner as a means to determine potential risk of infection.

On the other hand, even if the discussions were centered on condom negotiation, they were not successful negotiations. There were no differences in consistent condom use between those who had safer sex discussions and those who did not. This assumption was supported by O’Leary, who found that students who stated they discussed past sexual histories with a partner were more likely to have unprotected sex than those who did not have these conversations. In essence, discussing past sexual histories is a risk factor for unprotected sex. Discussing past histories provides risk reduction benefit only when the discussion involves a condom negotiation and the resulting actions include correct condom use or abstention from intercourse. In conclusion, although most students felt confident discussing safer sex, and many students discussed past sexual histories with
potential partners (in the O’Leary study), students essentially gained a false sense of security from these practices. Actually risk for infection increased, since consistent condom use was not adopted. In the end, the practice of discussing past sexual histories and feeling confident to discuss safer sex puts students at greater risk for inconsistent condom use and subsequent infection with STDs. Public health practitioners must be clear and must issue accurate guidelines regarding safer sex practices to the public.

Conclusion

In summary, four factors were found predictive of consistent condom use. Consistent condom users were younger students, those who used condoms primarily for pregnancy protection, students who had never been diagnosed with an STD, and women who felt confident in their ability to say no to unprotected sex. The other noteworthy finding, although not predictive of consistent condom use, was that those who felt confident discussing safer sex with a partner where no more likely to use a condom consistently than those who did not feel confident. Clearly, these findings contribute to understanding ways to increase consistent condom use habits among heterosexual sexually active college students. Yet, as we can see, continued research is much needed.

The infection rate of HIV and other sexually transmitted diseases is expected to increase in the college population due to the high rates of sexual activity and continued low rates of consistent condom use. Sexually transmitted diseases can cause physical, emotional, and financial burdens. In some cases they can lead to infertility, cancers and even death. Efforts to increase the rate of consistent condom use within this population
are imperative in order to prevent devastating losses in this vital, productive segment of our society.

In order to increase the rate of consistent condom use among heterosexual undergraduate college students, these findings must be implemented within prevention programs. Further research must continue in order for public health practitioners to understand more clearly the role of attitudes, behaviors and social norms which predict consistent condom use. Consistent condom use by all undergraduates is the most effective method to prevent the transmission of these diseases. Suggestions for future research and implementation of these findings into educational interventions follows.

**Implications for Education and Future Research**

From this research, four basic educational components emerged which are essential to promote consistent condom use among heterosexual undergraduates who choose to be sexually active. These components include increasing levels of knowledge, shaping attitudes related to perception of risk, promoting behavioral skills, and creating a culture supportive of consistent condom use.

While the basic HIV/STD knowledge level of students is high, educators must dispel myths about ineffective risk reduction techniques. Discussing safer sex and past sexual histories with potential partners must be clearly acknowledged as ineffective methods of protection from STDs. These methods of risk reduction provide students with a false sense of security, perpetuate denial about true risk and, in turn, actually increase chances of infection. Communication guidelines must be clear. Simply instructing students to “discuss safer sex” or “discuss past sexual histories” is not just a disservice; it
is detrimental to their health. Concrete guidelines for safer sex discussions must be issued. Condom negotiation or refusal of intercourse must be promoted as the only effective conversation of health risk reduction value.

In terms of influencing students’ perception of risk, the Health Belief Model and the Protection-Motivation Theory propose that changes in condom use behavior will not occur until students feel personally threatened. Students obviously feel more threatened by a potential pregnancy than by the possibility of acquiring a sexually transmitted disease. Since this is the case, students may reject condoms and instead elect other methods of pregnancy protection, such as the birth control pill. Therefore, condoms must be promoted as a highly effective birth control option.

Encouraging the use of condoms for disease prevention is a much more difficult task. Suggesting the use of a condom for disease protection could be perceived by a partner as insulting or accusatory. Therefore, this reasoning is less likely to be used by students as a persuasive communication tool towards consistent condom use.

When promoting condoms for birth control, educators must be sensitive to the fact that audiences are not exclusively heterosexual. Solely relying on the threat of pregnancy to increase perception of risk among college students may not be effective with all students and will be especially ineffective with gay students. Research specific to the needs of gay, bisexual and transgender students must be conducted to identify the unique predictors of consistent condom use with these populations. Clearly, future research must continue to investigate factors which will shatter the deep-seated denial students possess related to vulnerability to disease.
One possible explanation for the failed attempts to increase perception of disease risk in order to impact students’ condom use habits may be based in the outcome measurement of choice. The outcome measure in this study was consistent condom use. The magnitude of change in one’s intention to use a condom was not measured. While behaviors and attitudes related to perception of risk did not increase the likelihood of consistent condom use, these behaviors may have had some impact on one’s intention to use a condom. Establishing outcome measures which assess changes in one’s stage of readiness to incorporate new lifestyle health habits may be a more realistic goal. These measures may yield the expected changes on perception or risk indicative of these moving experiences. Perhaps the attitudes and behaviors which are thought to impact perception of risk, such as personally knowing someone with HIV, had the effect of moving a person to the next stage of readiness for behavior change. Examining and measuring lifestyle change in smaller stages may elicit the evidence which shows that perception or risk does, in fact, impact behavior change as the health belief model proposes. Establishing different outcome measures of success in future research may provide insight into better understanding how consistent condom use can be more effectively promoted.

With HIV infection rates growing most rapidly among heterosexual women, it is essential for women to learn and feel confident about using refusal and negotiation skills. They must be given the opportunity to practice and perfect these communications within a wide variety of situations. Role-play is an effective teaching strategy to meet this need. Through role-play, women experiment with different persuasive communication
techniques and learn tactful dialog to effectively substitute other low risk sexual activities for risky unprotected intercourse. A forum to process and examine feelings, beliefs and attitudes which emerge from the role-plays must be created. This will allow women an opportunity to share and better understand underlying attitudes related to establishing personal boundaries and asserting one’s personal needs.

On a more global front, the concept of healthy relationships and mutual respect must be promoted on college campuses, as well as in our society-at-large, to both women and men. Gender role stereotypes must be better understood and acknowledged for the role they play in influencing condom use decisions. Women must be empowered to assert their sexual rights in relationships. Therefore, skills to negotiate a healthy relationship or refuse an unhealthy relationship are fundamental underlying components to agreeing on safer sex. In addition, future research must examine more closely males’ needs in terms of healthy relationships, communication and other behavioral skills, and attitudes regarding negotiating with a partner for consistent condom use.

Lastly, prevention efforts must address the effects of established social norms around condom use. Social norms must be shifted to create a positive, supportive culture around the decision to use condoms consistently. Younger students must feel supported by their new college environment in order to maintain their healthy condom use habits from high school.

Social marketing is an effective technique to shift social norms to support healthy attitudes and behaviors. A prime example is the antismoking campaign being launched in many American cities, but especially in the state of Massachusetts. The main premise is
to form a critical mass of people in the community with an intolerance to the risky health behavior and support for the healthy behavior. In terms of this research, the intolerance created would be towards inconsistent condom use and the support would be for consistent condom use. Strategies include use of the media, including billboards, radio, television and other mass media vehicles. Peer leaders and endorsements from key figures in the community serve to reinforce the support for consistent condom use. A new norm is created and as the community begins to accept this as a standard code of behavior, individuals begin to reassess and adapt their decisions based on the new social norm.

Social norm change is a crucial component of prevention efforts. Even if a students possesses effective skills, high levels of knowledge and positive attitudes to use condoms consistently, if the environment one makes decisions within is not supportive, consistent condom use will not occur. This is a frequently underrated component of prevention efforts. Public health officials must make attempts to address all four areas of prevention, knowledge, behavioral skills, attitudes and supportive social norms, when designing health promotion campaigns and programs. This will enable both individuals and communities to feel supported in their healthy lifestyle choices to the greatest degree.

STD and HIV infection are virtually 100% preventable through behavior modification. This research is a small step toward understanding the behaviors and attitudes which influence consistent condom use. Health behavior change for risk-reduction is a complex issue. Implementation of these findings into health promotion programming can bring us closer to accomplishing the goal of increasing consistent
condom use rates among sexually active heterosexual, undergraduates. Hopefully future research will continue to provide educators with an even clearer understanding of how to target prevention interventions so the devastating losses of the HIV/STD epidemic can be halted.
VII. Appendix
April 1, 1991

Dear Student,

The Health Education Office of Health Services (the Infirmary) wants to know how you feel!! As part of a small group of randomly selected UConn students (1300), your responses to the enclosed questionnaire will be used to help us assess health interests and needs. This will allow us to design informative and appealing programs on health related topics.

Since the number of people selected to participate is so small, it is especially important for you to complete and return this questionnaire. It is essential to get a high return rate in order to accurately represent the true needs of UConn students. All responses are important for developing new programs and so here is an opportunity to tell us what you think.

YOUR RESPONSES TO THE ENCLOSED QUESTIONNAIRE ARE STRICTLY CONFIDENTIAL!! The number on the survey is for our recordkeeping purposes. Also, it is important that you take the time to complete and mail the Health Needs Assessment survey as soon as possible. The survey will take approximately 10-15 minutes to complete. While we realize your time is both scarce and valuable, the information obtained from this survey will bring benefits to you and all UConn students.

When you have completed the survey, fold and insert it in the enclosed envelope. Campus residents may return it in the nearest campus mail box while off campus residents can drop it in a US mail box; postage is paid. If you have any questions or comments about this survey, feel free to call us at 486-0791. We are interested in your feedback!

Please return by Wednesday April 17th.

THANKS FOR YOUR HELP!!!

Sincerely,

Tracy A. Desovich
Health Education Staff

Laura Pointek
Health Education Staff
UNIVERSITY OF CONNECTICUT HEALTH NEEDS ASSESSMENT

01. What is your gender?
   □ Male
   □ Female

02. What is your age?
   □ 18 or younger
   □ 19
   □ 20
   □ 21-22
   □ 23-24
   □ Over 25

03. Which best describes your race?
   □ American Indian/Native Alaskan
   □ Asian/Pacific Islander
   □ Black or African-American
   □ White or Caucasian
   □ Other

04. What is your semester standing?
   □ 1-2
   □ 3-4
   □ 5-6
   □ 7-8
   □ 9-10
   □ 10+
   □ Graduate

05. While attending classes, where do you live?
   □ At home with family
   □ In a residence hall
   □ In a fraternity/sorority house
   □ In an apartment or rented room alone
   □ In an apartment or rented house with others
   □ Other

06. Where do you live on campus?
   □ South campus
   □ Northwest Quad (Frats)
   □ North campus (Jungle)
   □ West campus
   □ Alumni Quad
   □ East campus
   □ Buckley/Shippee
   □ Hilltop
   □ McMahon
   □ Towers
   □ Fraternity/sorority house on campus

07. Do you work during the school year?
   □ No
   □ Yes, less than 10 hrs/week
   □ Yes, 11-20 hrs/week
   □ Yes, 21-30 hrs/week
   □ Yes, 31 or more hrs/week

08. Which of the following best describes your health insurance?
   □ None
   □ Student Health Insurance
   □ Blue Cross/Blue Shield
   □ Private insurance company (eg. Aetna, Allstate)
   □ Health Maintenance Organization (HMO: eg. Kaiser, Cigna)
   □ Other

09. To what type of club(s) or organization(s) did you belong during the past 12 months? (check all that apply)
   □ None
   □ Academic
   □ Fraternity or Sorority
   □ Religious
   □ Athletic club or team
   □ Social
   □ Service

10. Which best describes your grade point average in the last year?
   □ 3.5 and above
   □ 2.8 - 3.4
   □ 2.1 - 2.7
   □ 1.8 - 2.0
   □ 0.0 - 1.5

During the last year:

11. How often did you wear a seat belt:
   □ Never
   □ Sometimes
   □ Often
   □ Always
   □ N/A

   When driving a vehicle?
   When a passenger in a vehicle?

12. How often did you wear a helmet:
   □ Never
   □ Sometimes
   □ Often
   □ Always
   □ N/A

   When riding a bicycle?
   When operating a motorcycle?
   When a passenger on a motorcycle?
16. How often did you use sunscreen?

- Never
- Sometimes
- Often
- Whenever exposed to the sun

17. MALES: How often do you examine your testicles for lumps or abnormalities?

- Never
- Sometimes (couple times per year)
- Monthly

18. MALES: How often do you have a complete physical exam?

- Never
- Once every 1 1/2 - 2 years
- Once a year
- More than once a year

19. FEMALES: How often do you examine your breasts for lumps?

- Never
- Sometimes (couple times per year)
- Monthly

20. FEMALES: How often do you have a pap smear?

- Never
- Once every 1 1/2 - 2 years
- Once a year
- More than once a year

21. In a typical week, how many days do you eat breakfast?

- Never
- 1 - 2 days
- 3 - 4 days
- 5 - 6 days
- Everyday

22. How would you describe your body weight? Do you consider yourself:

- Ideal weight
- Slightly underweight
- Very underweight
- Very overweight

23. How often do you exercise vigorously (brisk walking, running, etc.) for at least 30 minutes?

- Rarely or never
- 1 or 2 times/week
- 3 to 5 times/week
- 6 to 7 times/week

24. What is the main reason that you exercise? (check one)

- Weight control
- To relieve stress
- To build muscle/strength/endurance
- To prepare for athletic competition

25. During the past year how often did you go on a weight reduction diet?

- Rarely or never
- Several times
- Once or twice
- I feel like I am always dieting

26. What method do you use most often to lose weight? (check one)

- Liquid diets
- Diet pills
- Fasting or skipping meals
- Reduce calories
- Diuretics or laxatives
- Self-induced vomiting

27. During the last 12 months, have you used anabolic steroids for the main purpose of building muscles, improving strength, and/or enhancing performance?

- No, never
- One to two cycles or series
- More than two cycles or series

On average, do you limit:

28. Salt
29. Fried foods
30. Fat
31. Caffeine
32. On an average day, how many servings of caffeine containing beverage (eg. coffee, tea, cola) do you consume?

- None
- 1-2
- 3-4
- 5 or more

33. Do you smoke cigarettes?

- I never have
- I did smoke, but quit
- I smoke less than half pack a month
- I smoke less than half pack a day
- 1 to 2 packs a day
- More than 2 packs a day

34. Do you use forms of tobacco other than cigarettes?

- Yes
- No

35. If you smoke or use tobacco products, are you interested in quitting?

- Yes
- No

36. The people with whom you choose to have sexual experiences are:

- Exclusively the opposite sex of myself
- Exclusively the same sex as myself
- Same and opposite sex as myself

37. Have you or do you have any of the following infections?

- Yes
- No

- Chlamydia
- Yeast
- Trichomonas
- Gonorrhea
- Herpes
- Genital Warts
- Non-specific urethritis
- Syphilis
- Hepatitis B
- Abnormal pap
- HIV/AIDS

38. How many partners have you had sexual intercourse with in the past year?

- 0
- 1
- 2-5
- 6-10
- 11-20
- More than 20

If not sexually active in the past year, please skip to question 46.

39. If you have had intercourse with a member of the opposite sex in the past year, how often do you or your partner(s) use contraception?

- Never
- Less than half the time
- More than half the time
- All the time

40. If you have had intercourse with a member of the opposite sex, what type of birth control method(s) did you use?

- Oral contraceptives (the "pill")
- IUD
- Condoms
- Natural/rhythm method
- Condoms and spermicide (eg. foam)
- Sponge
- Other

41. In the past year, if you had sexual intercourse, what measure(s) did you take to protect against sexually transmitted diseases (STD's) including AIDS? (check all that apply)

- None
- Oral contraceptives
- Monogamous relationship
- Condoms and spermicide (eg. foam)
- Condoms
- Condoms and foam or other internally inserted spermicide
- Other

42. In the past year, about how often did you or your partner wear a condom when you engaged in sexual intercourse?

- Never
- Less than half the time
- More than half the time
- Always
43. What is your primary reason for using condoms? (check one)
- Prevention from pregnancy
- Prevention from STD's
- Partner insistence
- Other __________________________

44. In the last year, if you did not **ALWAYS** use condoms during intercourse which of the following best describes your reasoning? (check one)
- Interrupts spontaneity
- Allergic
- Partner was on other birth control
- Decreases pleasure
- Partner was menstruating
- Do not know how to use correctly
- Other __________________________

45. When you have sex, in general how often are you under the influence of alcohol or drugs?
- Never, no drugs or alcohol
- Often
- Sometimes
- Always

<table>
<thead>
<tr>
<th>I feel confident in my ability to:</th>
<th>Not confident</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>46. Say no to unwanted sex</td>
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<tr>
<td>47. Say no to unprotected sex</td>
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<tr>
<td>48. Discuss safer sex with my partner</td>
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<tr>
<td>49. Correctly use a condom</td>
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<tr>
<td>50. Correctly use a spermicide</td>
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<tr>
<td>51. Avoid using alcohol and drugs if I thought I would be having sex later</td>
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</tbody>
</table>

42. What would make it easier for you to discuss safer sex with your partner(s)?
- More information about safer sex/STD's/AIDS
- Being more assertive
- Learning better communication skills
- Other __________________________

53. Some people find it difficult to talk about sex because of bad experiences they have had. Have you ever had sex when you didn't want to?
- Yes
- No

54. Have you ever had sex willingly but regretted it after?
- Yes
- No

55. Do you feel your behavior puts you at risk for becoming infected with a sexually transmitted disease (STD)?
- No risk
- High risk

<table>
<thead>
<tr>
<th>Risk level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk</td>
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<tr>
<td>High risk</td>
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</tbody>
</table>

56. Do you feel your behavior puts you at risk for becoming infected with HIV (the virus which causes AIDS)?
- No risk
- High risk

<table>
<thead>
<tr>
<th>Risk level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
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<tbody>
<tr>
<td>No risk</td>
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<tr>
<td>High risk</td>
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</tbody>
</table>

57. Do you feel the behavior of UConn Students puts them at risk for becoming infected with HIV?
- No risk
- High risk

<table>
<thead>
<tr>
<th>Risk level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>No risk</td>
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<tr>
<td>High risk</td>
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</tbody>
</table>

58. Have you ever been tested for HIV, the AIDS virus?
- No, and do not plan to
- Yes, tested negative
- Yes, tested positive
- Yes, do not know results

59. How comfortable would you feel living or rooming with a person infected with HIV/AIDS?
- Not comfortable
- Very comfortable

<table>
<thead>
<tr>
<th>Comfort level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Not comfortable</td>
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<tr>
<td>Very comfortable</td>
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</tbody>
</table>

60. Do you personally know someone who is HIV positive, living with AIDS or has died from AIDS?
- Yes
- No
61. In the last five years have you ever shared a needle with someone (to inject a substance into your body)?
   - No, never
   - Yes, once
   - Yes, more than once
   - Yes, frequently

62. What do you consider the 3 most significant health related problems for students at UConn?

63. What are 3 health concerns important to you personally?

64. Overall, how would you describe your health at this time?
   - Excellent
   - Good
   - Fair
   - Poor

65. While a UConn student which of the following has caused you most distress:
   - Relationships
   - Finances or economic matters
   - Family matters
   - Pregnancy/abortion/miscarriage
   - Personal appearance
   - Work (non-school work)
   - Roomate conflict
   - Sexual assault
   - Academics
   - Other

66. Generally, how would you rate your level of stress?
   - Low stress
   - High stress

67. When you feel stressed which do you do most often? (check one)
   - Drink alcohol
   - Finances or economic matters
   - Exercise/physical activity
   - Family matters
   - Talk to a friend
   - Pregnancy/abortion/miscarriage
   - Take recreational drugs
   - Personal appearance
   - Eat food
   - Roomate conflict
   - Sexual assault
   - Other

68. Have you ever contemplated or attempted suicide?
   - No
   - I've thought about it, but not seriously
   - I've thought about it seriously once or twice
   - I've made an attempt at suicide
   - I've thought about it often

69. How often do you feel depressed?
   - Never
   - Often
   - Sometimes
   - Always

70. What do you do when you feel depressed?
   - Seek professional help
   - Take drugs/alcohol
   - Talk to a friend
   - Stay in bed
   - Other

71. Do you feel your life is consistent with your personal values?
   - Yes
   - No
The following is a list of health topics. Please indicate how you feel about each one by checking the most appropriate box.

<table>
<thead>
<tr>
<th>Topic</th>
<th>I would read a pamphlet</th>
<th>I would attend a program</th>
<th>I'm not interested</th>
</tr>
</thead>
<tbody>
<tr>
<td>72. AIDS/HIV</td>
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<tr>
<td>73. Alcohol: college age children of alcoholics</td>
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<tr>
<td>74. Alcohol</td>
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<tr>
<td>75. Assertiveness training</td>
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<td>76. Birth control</td>
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<tr>
<td>77. Communicating in relationships</td>
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<tr>
<td>78. CPR/First Aid</td>
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<tr>
<td>79. Eating disorders</td>
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<tr>
<td>80. Emotional health (eg. anxiety, depression)</td>
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<td>81. Exercise</td>
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<td>82. Family relations/divorce</td>
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<td>83. Gay, lesbian, bisexual health issues</td>
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<td>84. Men's health</td>
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<td>85. Nutrition and fitness</td>
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<td>86. Personal loss/grief</td>
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<td>87. Rape/sexual assault</td>
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<td>88. Safer sex/sexually transmitted diseases</td>
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<td>89. Smoking cessation</td>
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<td>90. Spirituality and health</td>
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<tr>
<td>91. Stress management</td>
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<tr>
<td>92. Suicide</td>
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<td>93. Time management</td>
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<td>94. Women's health</td>
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<td>95. Weight control</td>
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<tr>
<td>Other</td>
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</table>

96. When would it be convenient for you to attend programs indicated above? (check all that apply)
   - Before evening meal
   - Noon
   - Other
   - After evening meal
   - Weekend

97. Where would it be most convenient for you to attend programs indicated above?
   - Residence hall
   - Library
   - Other
   - Student Union
   - Health Service

98. What would be the best way for you to find out about these health related programs?
   - RA
   - Posters on campus
   - Mailed invitation
   - Flyer in Resident Hall
   - Ad in Daily Campus
   - Monthly calendar of events
   - Radio announcement (WHUS)
   - Information tables
   - Other

99. How would you like these programs to be presented?
   - Health professional
   - Resident Assistant
   - Trained student educator
   - Other

100. What type of format/style would you like these programs to be presented in?
     - Discussion
     - Support group
     - Video tape
     - Lecture
     - Workshop
     - Other

Thank you.
VIII. Bibliography


26. Hatcher R. *Contraceptive Technology*. P. 583


