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THE RELATIONSHIP BETWEEN HEALTH BELIEFS AND PROTECTIVE SEXUAL PRACTICES

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ABSTRACT

THE RELATIONSHIP BETWEEN HEALTH BELIEFS AND PROTECTIVE SEXUAL PRACTICES

By

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The research question was: "What is the relationship between beliefs about STDs, and the incidence of protective sexual practices?" This study filled gaps in the existing literature by: 1) using the Health Belief Model (HBM) in a comprehensive assessment of health beliefs related to STDs; 2) doing a comprehensive assessment of protective sexual practices beyond mere condom use; 3) using a sample of college students; and, 4) using male subjects.

This descriptive correlational study was conducted in the form of a survey, utilizing a 43-item questionnaire. A non-probability convenience sampling method was utilized. The population sampled was the fraternity system at one large Midwestern university. The sample included 96 males subjects between 18 and 22 years of age. Based on the HBM, the findings included barriers to protective sexual practices and perceived severity of STDs as the significant predictors of protective sexual practices.

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INTRODUCTION

AIDS, chlamydia, genital herpes, genital warts (HPV), gonorrhea, hepatitis, and syphilis are a few of the many sexually transmitted diseases (STDs) afflicting the people of this country every year. The incidence of these STDs among adolescents has increased tremendously in recent years, due in part to the wide-spread use of oral contraceptives instead of condoms, which decrease STD communicability, and the earlier onset of sexual intercourse. (Robinson, Allen, Dickey, & Tudor, 1987). In 1971, only one in seven 15-year-old girls in the United States had sexual intercourse (Kantner & Zelnik, 1972). By 1986, more than one in four had sexual intercourse by the age of 15 (Planned Parenthood, 1987). In 1990, 54.2 percent of all students in grades 9-12 reported having had sexual intercourse (Kolbe, 1990). Strader and Beaman (1991) studied female college students and found that 87 percent were sexually active.

Rates of STD infection have followed this trend. One in every seven sexually active teenagers currently has a sexually transmitted disease (CDC, 1991). The Centers for Disease Control (1991) reported that 86 percent of all STDs occur among persons aged 15-29. One-fifth of reported AIDS (acquired immunodeficiency syndrome) cases in the United States have been in the 20-29 year age group, which means exposure probably occurred in adolescence or shortly thereafter. Both failure to employ barrier birth control methods (which may prevent the transmission of many STDs) and the use of oral contraceptives or intrauterine devices (which appear to render the female more susceptible to certain infections) contribute to the high prevalence of

STDs in the adolescent and young adult populations (Johnson, 1987). Less than one in three sexually active adolescents uses condoms as a regular form of birth control (CDC, 1991).

The sequelae of STDs include social and psychological stigma, infertility, cancer, and even death for both males and females (Varnhagen, Svenson, Godin, Johnson, & Salmon, 1991). STDs most frequently affect 20- to 24-year-olds, while 15- to 19-year-olds have the second highest incidence (Stone, Grimes, & Magder, 1986). Based on the significant rates of STDs in the 15- to 24-year-old age group, it seems obvious that college students must be affected, yet few studies have specifically addressed health beliefs and protective sexual practices in this population (Ewald & Roberts, 1985; Jemmott & Jemmott, 1991; Strader & Beaman, 1991). In two of these three studies, only females were assessed (Jemmott & Jemmott, 1991; Strader & Beaman, 1991), although protective sexual practices were measured solely by male condom use. Given the fact that men must engage in condom use and other protective sexual practices for preventing STDs, it seems essential to study their perceptions and beliefs related to this topic. College students, especially males, are an understudied population warranting further investigation regarding beliefs about STDs and protective sexual practices. The Family Clinical Nurse Specialist (FCNS) in primary care is a clinician, consultant, educator, and researcher (Sparacino, Cooper, & Minarik, 1990). By studying college males' beliefs and sexual practices, the FCNS can direct knowledge toward preventing STD transmission in this population. The university's student health service at one large Midwestern university reported 6792 STD visits in a one year period. These students are obviously not engaging in protective sexual practices.

Study Purpose and Research Questions

The purpose of this study is to examine beliefs related to STDs and protective sexual practices among college age males. The general **research question** is: "What is the relationship between beliefs about sexually transmitted diseases, and the incidence of protective sexual practices among college fraternity males?" More specifically, the following five research questions will be addressed:

1) Is there a relationship between perceived barriers to protective sexual practices and the incidence of protective sexual practices?;

2) Is there a relationship between perceived susceptibility to STDs and the incidence of protective sexual practices?;

3) Is there a relationship between perceived benefits to protective sexual practices and the incidence of protective sexual practices?;

4) Is there a relationship between perceived severity of STDs and the incidence of protective sexual practices?;

5) Is there a relationship between cues to preventive action and the incidence of protective sexual practices?

REVIEW OF THE LITERATURE

The advent of the AIDS epidemic in the 1980s raised the level of public awareness about STDs. Many studies have looked into the relationship between knowledge, attitudes, and behaviors of individuals with regard to sexual practices and the prevention of AIDS/STDs (Ewald & Roberts, 1985; Hingson, Strunin, Berlin, & Heeren, 1990; Jemmott & Jemmott, 1991; Kegeles, Adler, & Irwin, 1989; Lavoie & Godin, 1991; Strader & Beaman, 1991; Varnhagen, Svenson, Godin, Johnson, & Salmon, 1991; Weisman, Nathanson, Ensminger, Teitelbaum, Robinson, & Plichta, 1989). Much of the research on AIDS in adolescents and young adults has measured knowledge levels. A common theme throughout the literature review is that increased knowledge about

AIDS/STD transmission and prevention is not a good indicator of intention to change risky behavior (Hingson et al., 1990; Kegeles, Adler, & Irwin, 1988; Soskolne, Aral, Magder, Reed, & Bowen, 1991; Strader & Beaman, 1991; Varnhagen et al., 1991; Weisman et al., 1989).

Research investigations regarding actual change in sexual practices among teenagers and young adults due to the AIDS epidemic are somewhat sparse in the published literature. The majority of studies on protective sexual practices among adolescents and college students have focused only on condom use. In general, the findings indicate that only a small percentage of adolescents and young adults use condoms consistently (Catania, Coates, Stall, Turner, Peterson, Hearst, Dolcini, Hudes, Gagnon, Wiley & Groves, 1992; DiClemente, Forrest, & Mickler, 1990; Hingson et al., 1990; Jemmott & Jemmott, 1991; Kegeles et al., 1988 & 1989; Lavoie & Godin, 1991; Soskolne et al., 1991; Strader & Beaman, 1991; Varnhagen et al., 1991). Yet, dangerous sexual practices have been reported in almost every study including multiple and casual sexual partners (Weisman, Plichta, Nathanson, Ensminger, & Robinson, 1991), a high rate of oral contraceptive use without concurrent condom use (Weisman et al., 1991), and non-disclosure of HIV infection to sexual partners in conjunction with unprotected intercourse (Marks, Richardson, & Maldonado, 1991). Ross, Caudle, and Taylor (1989) suggest the avoidance of alcohol and drugs before or during sex, the avoidance of contact with body fluids, and the avoidance of sexual contact with those persons at greatest risk, in addition to condom use, as factors which should be incorporated into any assessment of protective sexual practices.

Most of the studies investigating sexual behavior have used the Theory of Reasoned Action (Fishbein & Ajzen, 1975) as a theoretical framework (Ewald & Roberts, 1985; Jemmott & Jemmott, 1991; Kegeles et al., 1989; Lavoie & Godin,

1991; Strader & Beaman, 1991; Varnhagen et al., 1991). This model links beliefs, attitudes, intentions, and behavior (Fishbein & Ajzen, 1975). The weakness in the literature utilizing this model is that beliefs are not consistently defined. While several studies, using the Theory of Reasoned Action (Fishbein & Ajzen, 1975), addressed barriers to condom use (Ewald & Roberts, 1985; Kegeles et al., 1989; Lavoie & Godin, 1991; Strader & Beaman, 1991), few actually addressed perceived risk of AIDS/STDs (Strader & Beaman, 1991; Varnhagen et al., 1991).

Jack (1989) addressed the role of Personal Fable in explaining risk-taking behavior in adolescents. The Personal Fable is a "belief held by many adolescents telling them that they are special and unique, so much so that none of life's difficulties or problems will affect them regardless of their behavior" (Jack, 1989, p. 334). Adolescents notoriously think and act as if "it won't happen to me." Drinking, smoking, and sexual practices are just a few of the behaviors in which adolescents use this mentality. It is suggested that implications for nursing intervention with this population should involve assessing the perception of vulnerability or susceptibility, and severity of one's actions, in addition to the perception of barriers to preventive action. These health beliefs were not consistently assessed in the literature utilizing the Theory of Reasoned Action (Fishbein & Ajzen, 1975).

While research exists regarding knowledge, attitudes, and behaviors related to STDs (Ewald & Roberts, 1985; Hingson et al., 1990; Jemmott & Jemmott, 1991; Kegeles et al., 1989; Lavoie & Godin, 1991; Strader & Beaman, 1991; Varnhagen et al., 1991; Weisman et al., 1989), most of these studies only addressed adolescents (Hingson et al., 1990; Kegeles et al., 1989; Lavoie & Godin, 1991; Varnhagen et al., 1991; Weisman et al., 1989), few addressed males specifically (Ewald & Roberts, 1985; Lavoie & Godin, 1991), and only one addressed health beliefs in a comprehensive manner, utilizing the Health

Belief Model (HBM) related to HIV (Hingson et al., 1990). In addition, protective sexual practices were solely measured by condom use in all of the pre-existing studies except for one (Dilorio, Parsons, Lehr, Adame, & Carlone, 1992). The proposed study filled gaps in the existing literature by : 1) using the HBM in a comprehensive assessment of health beliefs related to STDs; 2) doing a comprehensive assessment of protective sexual practices beyond mere condom use; 3) using a sample of college students; and, 4) using male subjects.

THEORETICAL MODEL

Since health beliefs were not consistently defined and assessed in studies of the Theory of Reasoned Action (Fishbein & Ajzen, 1975), this study utilized the Health Belief Model (Janz & Becker, 1984) as the guiding theoretical model. The HBM maintains the assumption that health behavior is dependent upon the simultaneous occurrence of the following three factors: 1) the existence of sufficient motivation, or health concern, to render health issues important to an individual; 2) a perceived threat based on the belief that one is susceptible to an illness and that the illness has serious consequences; and, 3) the belief that certain recommended health behaviors can be beneficial in reducing the perceived threat, at an acceptable cost to the individual (Rosenstock, Strecher, & Becker, 1988).

Health Belief Model

The HBM describes a specific set of beliefs found to predict behaviors which are adopted to avoid health risks (Janz & Becker, 1984). The HBM addresses four main concepts: 1) **Perceived Susceptibility:** one's subjective perception of the risk or likelihood of contracting a specific illness; 2) **Perceived Severity:** one's feelings concerning the seriousness of contracting a specific illness; 3) **Perceived Benefits:** one's view of how

effective a specific behavior would be in reducing a perceived threat of an illness; and, 4) **Perceived Barriers:** the potential negative effects-financial, psychological, or physical costs-of adopting recommended health behaviors (Janz & Becker, 1984). Janz and Becker (1984) also identify **cues to action** (i.e., mass media, norms, symptoms, advice from others, illness in family or friend) as modifying factors which influence an individual's perceived threat of a disease, based on the perception of susceptibility to and severity of that disease. According to this model (see Figure 1), people make a rational cost-benefit analysis when trying to decide whether to adopt preventive health behaviors. Actual changes in behavior may then be stimulated by cues to action such as educational messages or learning that a friend has a particular disease (increasing the sense of vulnerability or susceptibility) (Hingson et al., 1990).

Summary results of 46 studies utilizing the HBM for both preventive health and sick role behaviors showed substantial support for the HBM as a predictor of health-related decision making (Janz & Becker, 1984). While all of the HBM variables, either directly or indirectly influence behavior, research has shown that perceived barriers have consistently been the strongest construct in predicting preventive health and sick role behaviors (Janz & Becker, 1984). The results of 24 studies utilizing the HBM for assessment of preventive health behavior demonstrated a rank ordering of health beliefs in predicting preventive health behavior as follows: "barriers", "susceptibility", "benefits", and "severity" (Janz & Becker, 1984). Barriers were found to be the number one predictor of behavior in 93 percent of the studies (Janz & Becker, 1984). The present study utilized the HBM, with these rankings in mind, for the assessment of health beliefs about STDs, as they relate to protective sexual practices.

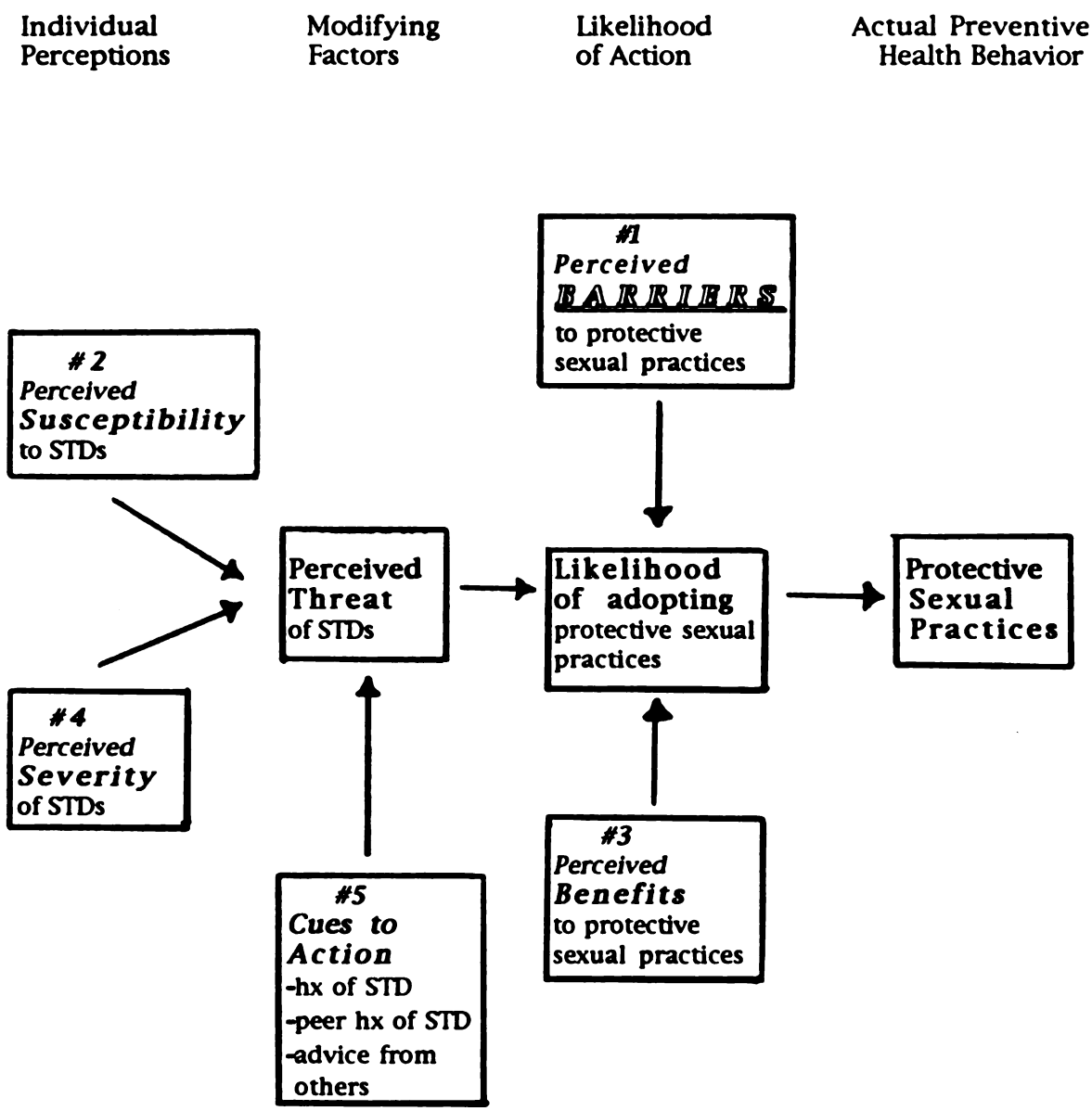

Figure 1. HEALTH BELIEFS OF COLLEGE FRATERNITY MALES REGARDING STDs AND PROTECTIVE SEXUAL PRACTICES*

*Adapted from the original formulation of the Health Belief Model (Becker, 1974).

Conceptual Definition of Study Variables

As illustrated by the model in Figure 1, three categories of health belief variables influence college fraternity males' *Protective Sexual Practices. Protective Sexual Practices* are defined as behaviors which decrease one's risk of contracting STDs, such as, abstinence, condom use, avoidance of homosexual practices, assertiveness skills, avoidance of contact with body fluids, and avoidance of other risky behaviors, such as the use of alcohol and/or other drugs before or during sex (Ross et al., 1989).

The three categories of health belief variables depicted in Figure 1 are based on the original HBM formulation (Becker, 1974) and are labeled: **Individual Perceptions; Modifying Factors; and Likelihood of Action.** Within these categories exist variables which are defined based on existing HBM literature (Janz & Becker, 1984). The variables are numbered based on their expected independent value in explaining variance in the dependent variable (with 1 corresponding to the strongest expected predictor of behavior and 5 corresponding to the weakest expected predictor of behavior).

Individual Perceptions of college fraternity males are represented by the second and fourth variables in the model: *Perceived Susceptibility* to STDs; and *Perceived Severity* of STDs, respectively. *Perceived Susceptibility* to STDs reflect a college fraternity male's perceptions or feelings about the likelihood that he will contract a STD in his lifetime. *Perceived Severity* of STDs reflect a college fraternity male's perceptions or feelings about the seriousness or potential sequelae of contracting a STD. These two variables, combined, lead to a college fraternity male's perceived threat of STDs.

Modifying Factors are represented by the fifth variable in the model: *Cues to Action.* These factors can influence an individual's perceived threat of a disease (Janz & Becker, 1984). *Cues to Action* reflect external factors (such

as advice from others, history of STD, or friend with history of STD) that may contribute to a college fraternity male's beliefs about STDs and directly influence his perceived threat of STDs, thus, indirectly influencing his likelihood of adopting preventive health behavior or protective sexual practices.

Likelihood of Action is the third category of variables represented by the first and third variables in the model: *Perceived Barriers* to protective sexual practices; and *Perceived Benefits* to protective sexual practices, respectively. *Perceived Barriers* to protective sexual practices are defined as physical, psychological, or financial costs of adopting protective sexual practices that may prevent a college fraternity male from participating in this preventive health behavior. *Perceived Benefits* to protective sexual practices are defined as a college fraternity male's belief that protective sexual practices will indeed reduce the perceived threat of STDs.

Summary of the Relationship of Study Variables

If individual perceptions of susceptibility to and severity of STDs, combined with the modifying factors of cues to action, are sufficient to produce a perceived threat of STDs in college fraternity males, the likelihood of adopting protective sexual practices will be significantly influenced by perceived barriers to protective sexual practices, and to a lesser extent, influenced by perceived benefits to protective sexual practices. If the perceived benefits outweigh the perceived barriers, college fraternity males will report having adopted protective sexual practices.

(See Figure 1 showing the relationship between these variables)

METHODS

Design and Operational Definitions

This descriptive correlational study was conducted in the form of a survey, utilizing a 43-item questionnaire (see "Health Beliefs and Sexual Practices Questionnaire" in appendix C). The independent variables consist of *health beliefs about STDs and behaviors necessary for preventing them*, as measured by: 1) perceived susceptibility to STDs (items 6-9); 2) perceived severity of STDs once acquired (items 13-16); 3) perceived barriers to adopting protective sexual practices for preventing STDs (items 17-25); and 4) perceived benefits to incorporating protective sexual practices into one's lifestyle (items 10-12). The modifying factors/intervening variables consist of *cues to action*, such as discussion with peers, health care providers, partners, past history of STDs, or peer with history of STDs, and were measured by items 26-30. The dependent variable consists of the *reported incidence of protective sexual practices*, as measured by 13 items (31-43), including: 1) use of condoms (items 31, 32, and 33); 2) homosexual practices (items 35, 39, and 42); 3) assertiveness skills (items 36 and 38); 4) contact with body fluids (items 37 and 40); 5) items on risky behaviors, including drinking before or during sex and intercourse on the first date (items 41 and 43); and, 6) abstinence (item 34).

Sampling Procedures

This investigation utilized a non-probability convenience sampling method. The population sampled was the fraternity system at one large Midwestern university. Participation was restricted to males who were at least 18 years of age and who had been previously or who were currently sexually active. The rationale for choosing this group included: 1) access to the

fraternity system at this large Midwestern university; 2) pre-existing studies have involved primarily females (Jemmott & Jemmott, 1991; Kegeles et al., 1988 &1989; Soskolne et al., 1991; Strader & Beaman, 1991; Weisman et al., 1989 &1991); and, 3) few studies have addressed college students (Ewald & Roberts, 1985; Jemmott & Jemmott, 1991; Strader & Beaman, 1991).

Five fraternities were sampled, with 106 questionnaires distributed and 100 questionnaires returned. As indicated in Table 1, this represents an overall response rate of 94 percent.

Table 1

Response Rate

	#	%
Questionnaires Distributed	106	100
Questionnaires Returned	100	94

Only subjects who reported ever having been sexually active (intercourse, anal sex, oral sex) were included in the study. As indicated in Table 2, of the 100 questionnaires returned, 97 subjects, or 97 percent reported ever having been sexually active. One questionnaire returned was only partially completed. The sample included in this study therefore consisted of 96 subjects (N=96).

Table 2

Sample

	#
Questionnaires Returned but subjects ineligible	3
Questionnaires Returned but not completed	1
Valid Questionnaires	96

Data Collection

After securing approval of UCRIHS at Michigan State University, sampling and data collection were conducted between February 3 and February 22, 1993. The method of data collection involved a 43-item questionnaire, as previously mentioned. A pilot study was first conducted on a convenience sample of five fraternity males to evaluate wording and readability of items. It is important to know whether respondents understand the questions and directions, or if they find certain questions objectionable in some way (Polit & Hungler, 1991). The pilot study revealed no overt problems with the questionnaire and the subjects reported a mean completion time of seven minutes.

The study was then begun by approaching the presidents of several fraternities to mutually agree upon a convenient time to meet with a group of members. This researcher presented the purpose of the study and requested volunteers during house meetings, when a substantial number of members were available at one time. The researcher reviewed the instructions, expected time frame, and restrictions to participation, while distributing the cover letter (see appendix B). Then, those who chose to participate were requested to complete a questionnaire while the researcher was present. The participants were asked to place the completed copy in the envelope provided, and return the sealed envelope to a box provided by the researcher. This procedure helped to maximize response rates, which are normally low with mailed questionnaires (Polit & Hungler, 1991), while promoting anonymity.

Protection of Human Subjects

To ensure protection of human subjects, the researcher emphasized that participation was entirely voluntary and individuals held the right not to participate at all, or not to answer certain questions. The participants were

also advised that there were no identifying marks on their papers or envelopes, so anonymity would be ensured. Due to the serious and highly personal nature of the information being gathered, it was likely that questions or concerns might be raised by participating in the study. Thus, instructions on whom to contact regarding further STD or HIV information were provided, as well as information regarding where to obtain condoms.

Instrumentation

The instrument used for this study was a 43-item survey based on two pre-existing tools (Hingson et al., 1990; DiIorio et al., 1992). After an extensive literature review, it became apparent that no one instrument adequately measured all the HBM variables. Only one tool (Hingson et al., 1990) utilized the HBM for the study of sexual beliefs and practices. However, this tool was specifically developed for the study of health beliefs and behavior regarding prevention of AIDS. Thus, it was necessary to adapt this tool for the assessment of health beliefs related to STDs in general. The Health Beliefs and Sexual Practices Questionnaire (see Appendix C) combines nominal scale demographic items (1-5), with ordinal (Likert) scale HBM (6-30) and protective sexual practice (31-43) items, for a total of 43 questions based on two pre-existing tools (Hingson et al., 1990; DiIorio et al., 1992). No validity or reliability data existed for the Hingson et al. (1990) tool prior to this study. However, two professors, known to be experts regarding the HBM, have evaluated the revised tool for content validity. It has been established that the revised tool does adequately represent the universe of content included in the HBM.

The Hingson et al. (1990) tool does not adequately address the measurement of protective sexual practices. In the Hingson et al. (1990) tool, as in many others, protective sexual practices were viewed exclusively as the use of condoms during sexual intercourse. This narrow definition of

protective sexual practices excludes other behaviors that may reduce one's likelihood of contracting STDs during sexual encounters (Dilorio et al., 1992).

Dilorio et al. (1992) developed a tool to measure safe sex behavior including other practices, in addition to condom use. This tool included 27 items. In a study of 89 sexually active freshman college students, Cronbach's alpha computed for the sums of items was .82 (Dilorio et al., 1992). Inter-item correlations showed no redundancy among items defined by an inter-item correlation greater than .85 (Dilorio et al., 1992). Construct validity of the Dilorio et al. (1992) tool was tested by factor analysis on a second sample of 330 male college students. It revealed a five-factor solution including items related to condom use, homosexual practices, assertiveness skills, body fluid precautions, and risky behaviors. Twelve items with the highest factor loadings were chosen from these subcategories and incorporated into the Health Beliefs and Sexual Practices Questionnaire to measure protective sexual practices in this study (condom use, questions 31, 32, 33; homosexual practices, question 35, 39, 42; assertiveness skills, questions 36 & 38; body fluid precautions, questions 37 & 40; risky behaviors, questions 41 & 43). In addition, one item regarding abstinence was developed by this author which was thought to be necessary but missing from the Dilorio et al. (1992) tool for assessing periodic abstinence as a protective sexual practice in usually sexually active individuals (see question 34).

Reliability Analyses

The reliability of the six scales on the adapted instrument "Health Beliefs and Sexual Practices", used in the present study, was tested for internal consistency using Cronbach's alpha. The alpha coefficients are reported in Table 3.

Table 3

Reliability of "Health Beliefs and Sexual Practices"

Variable	Cronbach's Alpha	Adjusted Alpha*
Susceptibility	.56	.67
Benefits	.22	.35
Severity	.57	.65
Barriers	.54	.66
Cues to Action	.73	.73
Protective Sexual practices	.62	.62

*Cronbach's alpha after deletion of items that decreased the alpha correlation coefficient

As can be seen in Table 3, only one of the six scales, *cues to action*, had a correlation of .70 or higher, which is considered acceptable (Polit & Hungler, 1987). However, also as illustrated in Table 3 under Adjusted Alpha, *susceptibility, severity,* and *barriers* scales approach the correlation level of .70 after the deletion of items 6, 13, and 25, respectively. These items were found to significantly decrease the alpha correlation coefficient in these scales. While the deletion of item 12 in the *benefits* scale did increase the alpha correlation coefficient by .16, the overall correlation remained very low, at .35. The alpha correlation coefficient for the *cues to action* and *protective sexual practices* scales were not significantly influenced by deletion of any items.

Data Processing and Analysis

The data obtained from the Health Beliefs and Sexual Practices Questionnaire was coded and scored in such a way that high scores revealed desirable findings (i.e., high perception of susceptibility, low perception of barriers, high incidence of protective sexual practices, etc.). Then the data were analyzed using the computer software package SPSS/PC+.

Summed scores from the Likert items of the scales were used for correlational analysis. The Likert items ranged from 1 (not at all/never) to 4 (very/a lot/always). Scatterplots of independent variables against the dependent variable were used to check for linear associations. A correlation matrix was run to provide a measure of the strength of the associations between variables. Regression analysis was then conducted to identify the proportion of variability in the dependent variable that was explained by the independent variables.

A regression model was first built using the ENTER method based on the predicted arrangement of variables in the conceptual model (see Figure 1). Supported by the existing research in preventive health behavior (Janz & Becker, 1984), it was expected that perceived barriers of protective sexual practices would explain the most variability in the dependent variable (protective sexual practices). Thus, barriers was entered first into the regression equation. The existing HBM literature suggests that perceived susceptibility explains the second highest variability in predicting preventive health behavior (Janz & Becker, 1984). This was the next variable entered into the regression equation. Perceived benefits to preventive action closely follows perceived susceptibility in explaining variability in preventive health behavior (Janz & Becker, 1984), and was the third factor entered into the regression equation. Perceived severity explains the least variability in preventive health behaviors (Janz & Becker, 1984). Thus, perceived severity was the last independent variable to be entered. The intervening variable, cues to action, was added to the regression equation after all independent variables had been entered, in the order mentioned, to see its effects in the regression analysis.

Another regression model was also constructed using the STEPWISE method. In this method only barriers and severity were entered, in that order. This is because these two variables were the only two which correlated with the dependent variable (protective sexual practices).

The two basic assumptions for regression analysis, interval or ratio scaled variables, and linearity between variables were assured. The summed scores of Likert (ordinal data) items revealed interval scale data. Linearity was checked by plotting the dependent variable against the independent variables.

Study Assumptions

1. The participants will respond honestly.
2. The participants have a general knowledge of STDs and the health behaviors necessary for preventing their transmission.
3. The HBM is based on the assumption that individuals perceive health as a highly valued state.

Study Limitations

1. Lack of manipulation of variables due to the descriptive correlational design.
2. A convenience sample leads to selection bias. Studying a homogeneous sample means that data can not be interpreted beyond this study sample. It is preferable to use a random sampling method in correlational studies.
3. The sample size of 100 males limits data analyses.

FINDINGS

Sample

The results are compiled from the self-report questionnaires returned by 96 subjects who were eligible for this study (N=96). While the exact demographic characteristics of this sample of fraternity males were not assessed, certain crucial statistics were found (see Table 4). The mean age of

subjects was 20 years, with a range of 18-22 years. Almost all of the subjects reported a previous knowledge of STDs (97.9%). Two-thirds of the subjects reported worrying about contracting a particular STD (66.7%), with AIDS being the most frequently reported. The majority reported that they were sexually active (81.3%) at the time they completed the Health Beliefs and Sexual Practices Questionnaire, with the rest reporting sexual activity in the past year. Almost three-quarters of the subjects reported knowing at least one person with a STD (70.8%), and 34.4 percent report knowing three or more individuals with a history of STD. Twenty-two percent reported personal history of at least one STD. Although this is a significant incidence of STDs, three-quarters of the subjects reported either never (45.8%) or rarely (29.2%) having discussed STDs with a health care provider. They also, in general, reported a fairly low incidence of protective sexual practices (mean of 2.1 = rarely), and concurrent high perception of barriers to protective sexual practices (mean 3.37 = between somewhat and very).

Table 5 lists the variability of the Likert items on the Health Beliefs and Sexual Practices Questionnaire. Note that several barrier items (18, 19, 22, & 24) have high means and low variability which will be discussed further in Implications for Advanced Nursing Practice.

Table 4

Demographic Characteristics

Age	#	%
18	18	18.8
19	18	18.8
20	21	21.9
21	21	21.9
22	18	18.8
Knowledge of STDs	#	%
yes	94	97.9
no	2	2.1
Worry About Getting A certain STD	#	%
yes	64	66.7
no	32	33.3
Sexual Activity	#	%
currently	78	81.3
previously	18	18.8
Incidence of STDs	#	%
friend	68	70.8
self	21	21.9
Discussed with HCP	#	%
never	44	45.8
rarely	28	29.2

Table 5

Variability of Likert Items

Scale Category/#	Mean	Std Dev.	Minimum	Maximum
Suscept/6	2.781	.873	1.000	4.000
Suscept/7	3.698	.526	2.000	4.000
Suscept/8	3.396	.732	1.000	4.000
Suscept/9	3.781	.440	2.000	4.000
Benef/10	3.365	.618	1.000	4.000
Benef/11	2.313	.910	1.000	4.000
Benef/12	3.625	.653	2.000	4.000
Sever/13	3.844	.393	2.000	4.000
Sever/14	2.719	.891	1.000	4.000
Sever/15	2.979	.917	1.000	4.000
Sever/16	2.427	.707	1.000	4.000
Barr/17	2.729	.978	1.000	4.000
Barr/18	3.417	.816	1.000	4.000
Barr/19	3.865	.473	1.000	4.000
Barr/20	2.510	.929	1.000	4.000
Barr/21	3.042	.870	1.000	4.000
Barr/22	3.792	.479	2.000	4.000
Barr/23	2.781	.986	1.000	4.000
Barr/24	3.781	.619	1.000	4.000
Barr/25	2.635	.930	1.000	4.000
Cue/26	2.219	1.048	1.000	4.000
Cue/27	1.250	.503	1.000	3.000
Cue/28	1.854	.940	1.000	4.000
Cue/29	2.125	.954	1.000	4.000
Cue/30	2.781	.931	1.000	4.000
Pract/31	2.750	1.036	1.000	4.000
Pract/32	3.188	.862	1.000	4.000
Pract/33	3.021	.870	1.000	4.000
Pract/34	1.427	.594	1.000	4.000
Pract/35	1.083	.278	1.000	4.000
Pract/36	1.458	.820	1.000	4.000
Pract/37	3.104	1.110	1.000	4.000
Pract/38	1.313	.701	1.000	4.000
Pract/39	1.063	.243	1.000	4.000
Pract/40	1.719	.842	1.000	4.000
Pract/41	2.365	.727	1.000	4.000
Pract/42	1.101	.102	1.000	2.000
Pract/43	1.604	.589	1.000	3.000

Research Questions and Results

The research question "What is the relationship between beliefs about sexually transmitted diseases, and the incidence of protective sexual practices among college fraternity males?" stemmed into five specific questions as follows:

1) Is there a relationship between perceived barriers to protective sexual practices and the incidence of protective sexual practices?;

2) Is there a relationship between perceived susceptibility to STDs and the incidence of protective sexual practices?;

3) Is there a relationship between perceived benefits to protective sexual practices and the incidence of protective sexual practices?;

4) Is there a relationship between perceived severity of STDs and the incidence of protective sexual practices?;

5) Is there a relationship between cues to preventive action and the incidence of protective sexual practices?

These five separate research questions were initially analyzed using Pearson's Correlation Coefficient. As shown in Table 6, two out of the five correlations were moderate and significant at the .001 significance level: 1) *perceived barriers to protective sexual practices* and the incidence of *protective sexual practices*; and, 2) *perceived severity of STDs* and the incidence of *protective sexual practices.*

Table 6

Correlations Between Protective Sexual Practices and Health Beliefs

Variable	Correlation
Barriers	-.4641*
Susceptibility	.1913
Benefits	.1112
Severity	.3269*
Cues to Action	.1683

*Significant at the .001 level

While there were only two independent variables correlated with the dependent variable, several of the independent variables were correlated with one another (see Table 7). Susceptibility was correlated with Severity (r=.27; P=.008) and Cues to Action (r=.30; P=.003). In addition to being correlated with Susceptibility, Severity was correlated with Cues to Action (r=.25; P=.014). The Barriers scale was also correlated with Cues to Action (r=.36; P=.000).

Table 7

Interscale Correlations

	Suscept	Benef	Sever	Barr	Cues
Pract	.1913 P=.062	.1112 P=.281	.3269 P=.001	.4641 P=.000	.1683 P=.101
Suscept		.0396 P=.702	.2710 P=.008	.1416 P=.169	.3030 P=.003
Benef			.1544 P=.133	.0042 P=.967	.1037 P=.315
Sever				.1488 P=.148	.2512 P=.014
Barr					.3605 P=.000

Regression analysis reveals the degree to which variability in the dependent variable can be explained by the independent variables. As previously mentioned, two regression models were built. The ENTER method was initially used. The variables were entered based on the expected orderings provided in previous HBM literature with barriers first, followed by susceptibility, benefits, severity, and cues to action. The results of this first regression model revealed that only barriers and severity contributed to variability in protective sexual practices. The second regression model was

constructed using the Stepwise method. In this model only barriers and severity were entered into the equation because they were the only independent variables correlated with the dependent variable. This multiple regression model (see Table 8) revealed that barriers contributed to 21.5 percent of the variance evident in the reported incidence of protective sexual practices, while perceived severity to STDs only accounted for 6.8 percent of the variance after barriers had been accounted for. In order to compare these percentages, it is necessary to standardize the scores. Based on a 95% confidence interval, Beta scores (see Table 9) were .4248 for Barriers and .2637 for Severity. This means that Barriers account for more than one and one half times the variance that Severity contributes to the incidence of protective sexual practices and that 95 times out of 100 these results would hold true for the population.

Table 8

Multiple Regression (Stepwise Method)

Variable Entered on Step Number 1.....Barriers			
Multiple R	.46405		
R Square	.215534	R Square Change	.21534
Adjusted R Square	.20700	F Change	25.79762
Standard Error	.27900	Signif F Change	.0000
Variable Entered on Step Number 2.....Severity			
Multiple R	.53230		
R Square	.28335	R Square Change	.06800
Adjusted R Square	.26793	F Change	8.82479
Standard Error	.26807	Signif F Change	.0038

Table 9

Beta Weights

Variable	B	SE B	95% Confdnce Intrvl B		Beta
Barriers	.307553	.064269	.179926	.435179	.424806
Severity	.127870	.043045	.042393	.213348	.263711
(Constant)	1.339416	.221362	.899835	1.778998	

DISCUSSION

The five research questions posed in this research investigation were formulated based on the Health Belief Model (Becker, 1974). Two out of the five independent study variables, *barriers to protective sexual practices* and *severity of STDs*, yielded significant correlations with the dependent variable incidence of *protective sexual practices.* The remaining independent variables, *susceptibility to STDs, benefits to protective sexual practices,* and *cues to action*, did not yield significant correlations with the dependent variable. Interpretation of these findings will now be discussed in terms of the HBM, existing literature, and methodological issues.

The HBM in Sexual Behavior Research

Question #1. Is there a relationship between *perceived barriers to protective sexual practices* and the incidence of *protective sexual practices?*

The Cronbach's alpha reliability correlation coefficient was marginal (alpha = .66) for the barriers scale, but Pearson's correlation coefficient revealed a significant negative correlation between barriers and behavior ($r = -.464$) at the .0005 significance level. It is believed that the barriers scale is multidimensional, and thus internal consistency is marginal. Identifying significant correlations in the face of multidimensional scales leads one to believe that barriers to protective sexual practices in general influenced

behavior, but that these barriers are of a personal nature and may vary greatly.

Question #2. Is there a relationship between *perceived susceptibility to STDs* and the incidence of *protective sexual practices*?

The Cronbach's alpha reliability score for the susceptibility scale was marginal (alpha = .67). In reviewing the scale, it appears that the questions are multidimensional. Most of the questions are factually based (worded in the third person) and one is personally/emotionally based. Reliability scores will always be low in multidimensional scales. Pearson's correlation was not significant (r = .191; P = .06) between susceptibility and protective sexual practices. One explanation is that factually based questions may not adequately measure personal susceptibility. It is difficult to know (1) if the relationship exists or not; or, (2) if the problem was that the construct "susceptibility" was not adequately measured.

Question #3. Is there a relationship between *perceived benefits to protective sexual practices* and the incidence of *protective sexual practices*?

The benefits scale was neither internally consistent (alpha = .35) nor significantly correlated (r = .111; P = .28) with protective sexual practices. The scale was probably too small (originally 3 items, decreased to 2 in order to improve the reliability score). Self-efficacy may also play a role in assessing perceived benefits to protective sexual practices (for further discussion of self-efficacy see research implications).

Question #4. Is there a relationship between *perceived severity of STDs* and the incidence of protective sexual practices?

The severity scale was also small (originally 4 items, decreased to 3 in order to improve the reliability score) and presented a marginal reliability score (alpha = .65). However, the Pearson's correlation showed a significant

correlation (r = .327; P = .001) between perceived severity of STDs and protective sexual practices. Severity has routinely been the least likely independent predictor of preventive health behavior (Janz & Becker, 1984). However, susceptibility is usually significantly correlated with preventive health behaviors (Janz & Becker, 1984). It is possible that the subjects in this study are knowledgeable regarding the serious consequences of STDs (97.9% reported previous knowledge). This combined with the fact that 66.7 percent reported worrying about contracting a particular disease (AIDS being the most frequently reported), leads one to believe that the perception of susceptibility and severity may be linked in this sample, and measured through the severity scale.

Question #5. Is there a relationship between *cues to preventive action* and the incidence of *protective sexual practices*?

Cues to action was the only internally consistent scale in the Health Beliefs and Sexual Practices Questionnaire (alpha = .73). This scale was significantly correlated to barriers (r = .361; P = .0005), susceptibility (r = .303; P = .003), and severity (r = .251; P = .014), but not to protective sexual practices (r = .168; P = .101). Based on the HBM, cues to action were actually expected to indirectly influence behavior, which the significant correlation with susceptibility, severity, and barriers indicate.

Methodological Assumptions

Correlational analysis assumes (a) that the data are randomly sampled from the population; and, (b) that the distribution of the two variables together is normal. The normal distribution was tested and verified by histograms.

There are two other basic assumptions when calculating a regression line used only to describe an observed relationship between variables: (a) the

variables must be measured on an interval or ratio scale; and, (b) the relationship between variables must appear to be linear. Summing ordinal scale data achieved interval scale data. Linearity was established by plotting independent variables against the dependent variable.

Methodological Limitations

Two major methodological limitations, (1) sampling procedures and (2) reliability of the scales on the Health Beliefs and Sexual Practices Questionnaire, were identified after data analysis was completed. This study utilized a convenience, or non-probability sample. With correlational analysis, it is preferable to utilize a random, or probability, sampling technique. The convenience sampling method utilized in this study, influenced the homogeneity of the sample. Some of the lack of significant correlations between variables may be due, in part, to a lack of variability in the sample. Decreased variability in responses constrains correlation coefficients. No specific conclusions can be drawn from the sample to explain a larger population. Another limitation identified was multi-collinearity as evidenced by significant correlations between scales of independent variables.

Implications for Advanced Nursing Practice (see Figure 2)

While the results of this descriptive study have the aforementioned limitations, some general implications for advanced nursing practice can be extrapolated from this research. The original theoretical model (Figure 1) was changed based on study findings (see Figure 2). Based on the results of this study, the FCNS should focus directly on barriers and severity to maximize protective sexual practices. The FCNS may also work towards indirectly improving the likelihood of action by increasing the perceived threat of STDs. Based on barriers and severity, the two HBM constructs most associated with

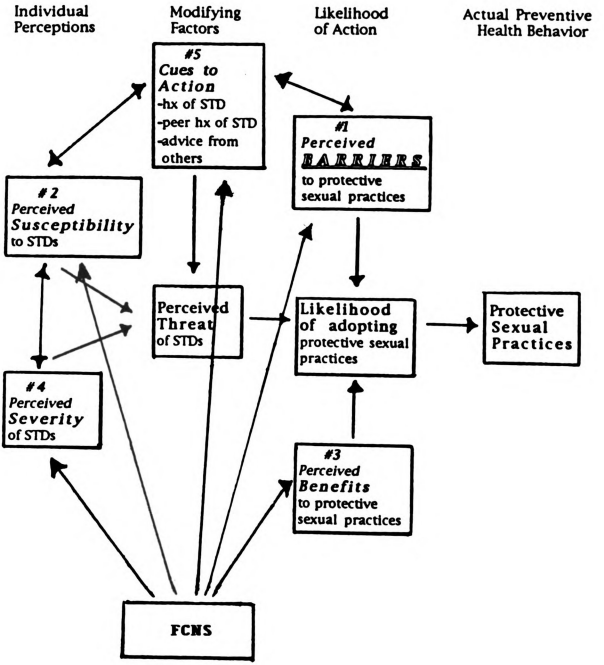

Figure 2. THE FCNS AND HEALTH BELIEFS OF COLLEGE FRATERNITY MALES REGARDING STDs AND PROTECTIVE SEXUAL PRACTICES*

*Adapted from the original formulation of the Health Belief Model (Becker, 1974).

protective sexual practices, specific intervention strategies will now be discussed.

Likelihood of Action: Barriers

Based on the reliability analysis, the barriers scale items were not strongly internally consistent (Cronbach's alpha = .66). This probably means that this scale was not unidimensional. With multidimensional scales, it is also unlikely to find significant correlations between variables. However, barriers were significantly negatively correlated with protective sexual practices. The implications for the FCNS based on these results are that she/he must consider the universal content of barriers when addressing behavior change. Barriers to protective sexual practices may be multifaceted within groups and vary between groups. While financial cost may greatly influence one group, emotional/psychological barriers to discussing sexual practices may influence another. For instance, it is unlikely that college fraternity males would routinely consider cost to be a significant barrier to condom use (as was true for this sample), but homeless individuals most likely would. Thus, being able to inform or supply this latter group with resources may be very beneficial to enhancing protective sexual practices. Likewise, role-playing may be a very important intervention for sexually active adolescents when emotional/psychological barriers are an issue; e.g., they may be embarrassed to ask potential sexual partners to use condoms or to discuss their sexual/drug history.

In this study sample certain barriers stood out as meaningful because of their high means and low variability (see Table 5 for items 18, 19, 22, & 24). Embarrassment regarding purchasing condoms, and embarrassment/ difficulty related to asking or being asked about past sexual history were items with high means and low variability. Role-playing as an FCNS intervention

could be very effective in lessening or alleviating these barriers. The FCNS could provide sample situations to the client and have the client offer suggestions for solutions to the problems presented. Other barriers with high mean scores and low variability were related to condoms decreasing pleasure and the lack of available condoms when they are needed. The FCNS should discuss the importance of planning for sexual encounters and the necessity of carrying condoms when encounters are expected. Also strategically placing condoms in potential sexual activity sites may help enhance availability as well as spontaneity during future encounters (i.e., "condom placement in your car, under your couch, at your girlfriend's house, in your wallet, under your pillow, etc.") Regarding the pleasure barrier, the FCNS must evaluate whether this is related to actual decreased sensation, or to lack of spontaneity, or to embarrassment of application, or some other reason. Some FCNS implications for these barriers include suggesting applying water soluble lubricant to increase sensation, discussing partner involvement in condom placement and practicing application for lessening embarrassment. Some researchers have suggested reframing "lessened sensation" in a more positive way: "condoms will prolong your pleasure and help if premature ejaculation is a problem" (Jemmott & Jemmott, 1992). Until we have thoroughly studied each subset of a population, and identified the group-specific barriers to behavior, it is advisable to address all possible barriers to protective sexual practices with all clients.

Perceived Threat: Susceptibility, Severity, & Cues to Action

Although severity of STDs was positively correlated with protective sexual practices and susceptibility to STDs was not, previous literature has identified that these two constructs are "inextricably linked" (Tiedje, Kingry, Stommel, 1992). It is suspected that factor analysis would reveal these

constructs conceptually indistinguishable in this study sample, as well. It does seem unlikely that the perception of severity to a disease would lead to behavior change, unless the individual also perceived himself to be susceptible to the severe consequences of that disease. FCNS implications regarding this susceptibility/severity link would address the fact that it is important to talk about long term effects and educate clients of the seriousness of STDs in routine examinations. It is also important to keep in mind the fact that discussing the severity or serious consequences of a particular disease, in hopes of influencing behavior change in a client, would be futile unless the individual perceived himself to be at risk of contracting that disease. Therefore, it is necessary to identify the most pertinent cues (i.e., advice from others, peer with history of STD, or possibly explicit pictures and statistics of STDs in this age group) which influence the perceived threat of STDs and address these issues during routine exams.

The cues to action scale was the only reliable scale within the Health Beliefs and Sexual Practices Questionnaire. However, it was not significantly correlated with protective sexual practices. Interscale correlations revealed that the cues to action scale was significantly correlated with perceived severity of STDs, perceived susceptibility to STDs, and perceived barriers to protective sexual practices at the .01 significance level (see Table 7). Clearly, cues to action indirectly influence protective sexual practices by directly influencing the perception of threat and likelihood of action. This, combined with the fact that the modal response to "How often have you discussed STDs with a health care provider?" (cue to action) was "Never" (46%), leads to enormous implications for the FCNS. It is suggested that path analysis would need to be conducted to identify the direct and indirect effects of cues to action.

As clinician and educator, the FCNS must address STDs and protective sexual practices with all sexually active clients, keeping in mind the high-risk age group of 15-29 years (CDC, 1991). Emphasis must be placed on discussing barriers and severity/susceptibility issues. As consultant, the FCNS must inform colleagues of the statistics regarding sexual activity, STDs, and health beliefs related to protective sexual practices. This information will hopefully influence other health care providers' perceptions of the seriousness of this health problem, and also increase their rate of discussing these serious issues with clients. Until the FCNS, as researcher, can identify the group-specific barriers to behavior, it will be necessary to educate clients, as well as colleagues, regarding all possible health barriers to protective sexual practices.

Implications for Existing Literature and Future Recommendations

This study, like so many previous HBM studies, has methodological limitations. The HBM lends itself to a broad base of questions in order to cover the entire content of a construct all in one scale. We cannot expect high reliability scores on scales that are multidimensional. Until a tool is developed with unidimensional scales, results of correlational and multiple regression analysis are always going to be difficult to interpret. After reviewing the "Health Beliefs and Sexual Practices Questionnaire," it has become apparent that there may be intrinsic differences between the questions within the scales. For example, the susceptibility scale combines both personal/emotional based questions with factual/physical questions. Had a sizable sample been collected, factor analysis could have flushed out these subscales within the scales. Once unidimensionality is ensured, significant correlations may be more readily identified. It appears necessary to develop solely personally/emotionally based questions on topics of susceptibility and

severity. After all, we are not only interested in "anyone's likelihood of contracting a STD", we are interested in the subject's perceived threat of STDs.

More recent HBM literature has addressed the issue of self-efficacy. Self-efficacy is the belief that one has control over certain behaviors and that one can effectively institute these behaviors for the prevention of a disease. The perceived self-efficacy of utilizing protective sexual practices for preventing STDs is an area for future research. This will bring more meaning to the results on benefits and barriers to protective sexual practices. It will not be effective to address barrier issues, such as embarrassment, if the individual does not believe that he has control over his behaviors, that he will ever overcome his embarrassment and use a condom, or that condom use can make a difference in preventing STDs.

To summarize, it is suggested that future research should be directed in the area of HBM tool development for beliefs and sexual practices. This should include studies of sufficient size for conducting confirmatory factor analysis to aid in identifying unidimensionality of scales. Additionally, self-efficacy issues should be included in a thorough study of health beliefs related to sexual behavior.

APPENDICES

APPENDIX A: UCHRIS approval

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MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

February 2, 1993

TO: Julie Marie Ehrnstrom
2861 Golfside Apt. #55
Ypsilanti, MI 48197

RE: IRB #: 92-616
TITLE: THE RELATIONSHIP BETWEEN HEALTH BELIEFS AND PROTECTIVE SEXUAL PRACTICES
CATEGORY: Full Review
REVISION REQUESTED: N/A
APPROVAL DATE: February 1, 1993

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.

1. The human subjects protocol is the same as in previous studies.
2. There have been no ill effects suffered by the subjects due to their participation in the study.
3. There have been no complaints by the subjects or their representatives related to their participation in the study.
4. There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Dr. Linda Beth Tiedje

APPENDIX B: Cover Letter

APPENDIX B: Cover Letter

This is a questionnaire about how knowledge and beliefs related to sexually transmitted diseases are associated with sexual practices of fraternity members. It will take approximately 10 minutes to complete. The information attained will be used by me for my Master's Thesis. Participation is entirely voluntary. You must be at least 18 years old to participate. You may choose not to participate at all, or may refuse to answer certain questions. All results will be anonymous because there are no identifying marks on the questionnaires. If questions or concerns arise after completing this questionnaire, regarding symptoms or treatment of sexually transmitted diseases or information regarding preventive measures, please contact one of the following:

WHERE TO GET HELP:

—University Health Service.....763-4511

—Washtenaw County Public Health Department.....484-6760
(They provide AIDS and sexually transmitted disease counseling and free/anonymous testing)

—your private physician.

WHERE TO GET CONDOMS:

For FREE—University Health Service 207 Fletcher, Ann Arbor, MI. (763-4511)
For reduced price—
-Arbor Drugs 2196 W. Stadium, Ann Arbor, MI. (747-7554)
-Condom Sense 1209 S. University, Ann Arbor, MI. (741-7771)
-F & M (Arboriand Shopping Mall) Washtenaw near US 23, Ann Arbor, MI. (971-6200)

****Retain this face sheet for your own reference.**

****YOU MUST BE 18 YEARS OR OLDER TO PARTICIPATE!!!**

YOU INDICATE YOUR VOLUNTARY AGREEMENT TO PARTICIPATE BY COMPLETING AND RETURNING THIS QUESTIONNAIRE!

APPENDIX C: HEALTH BELIEFS AND SEXUAL PRACTICES QUESTIONNAIRE

APPENDIX C: HEALTH BELIEFS AND SEXUAL PRACTICES QUESTIONNAIRE

Directions: Below is a list of questions/statements. Please choose the response that most reflects how you **feel** about the topic. It is very important that you answer all the questions honestly.

**STD-sexually transmitted disease [including AIDS, chlamydia, genital herpes, genital warts (HPV), gonorrhea, and syphilis].

1. How old were you on your last birthday?	_____	
2. Have you ever had intercourse?	yes	no
3. Are you currently sexually active? (including intercourse, oral sex, or anal sex)	yes	no
4. Have you heard of sexually transmitted diseases (STDs) before?	yes	no
5. Is there a particular STD that you worry about contracting? If yes, what is it? _____	yes	no

	Not at all	A little	Some-what	Very
6. How much do you worry that in your lifetime you could get a STD?	1	2	3	4
7. How likely is it that if a man and woman have unprotected sex, and the man is infected with a STD, that the woman will become infected?	1	2	3	4
8. How likely is it, if the woman is infected, that the man will become infected?	1	2	3	4
9. If two men have sex and one is infected, how likely is it the other will become infected?	1	2	3	4
10. How effective are condoms or rubber dams in preventing transmission of STDs?	1	2	3	4
11. How effective are spermicidal creams, gels, foams in preventing transmission of STDs?	1	2	3	4
12. How important is it that you ask potential sexual partners about their history? (IV drug use, diseases, bisexual or gay practices)	1	2	3	4
13. How likely is it that someone will die if they contract AIDS?	1	2	3	4
14. How likely is it that infertility (inability to have children) is related to a history of STDs?	1	2	3	4
15. How likely is it that certain types of genital cancer are caused by STDs?	1	2	3	4
16. In general, how easy is it to cure STDs?	1	2	3	4
17. How true do you think it is that condoms are difficult to obtain?	1	2	3	4
18. How true do you think it is that condoms are embarrassing to obtain?	1	2	3	4
19. How true do you think it is that condoms decrease sensation/pleasure?	1	2	3	4
20. How true do you think it is that the cost of condoms keeps you from using them some or all of the time?	1	2	3	4
21. If your partner asked you about your past sexual history, how likely is it that you would be embarrassed?	1	2	3	4
22. How difficult do you find it is for you to ask a potential sexual partner about his/her past sexual history?	1	2	3	4

	Not at all	A little	Some-what	Very
23. If your partner requested that you wear a condom during intercourse, how likely is it that you would be upset with your partner?	1	2	3	4
24. How often do you find that during a sexual encounter neither your partner nor you have a condom when you want one?	1	2	3	4
25. When you drink alcohol prior to a sexual encounter, how likely is it that you will take precautions to prevent you from contracting STDs (i.e., talk to your partner about past history, use a condom)?	1	2	3	4
26. How many people do you know who have had a STD?	0	1-2	3-4	>4
27. How many times have you been treated for a STD?	0	1-2	3-4	>4

	Never	Rarely	Occasion-ally	A lot
28. How often have you discussed STDs with a health care provider? (i.e., doctor, nurse)	1	2	3	4
29. How often have you discussed STDs with a parent or other adult member of your family?	1	2	3	4
30. How often have you discussed STDs with a partner or friend?	1	2	3	4

Go to the next page for questions 31-43.

The rest of this questionnaire will contain a list of sexual practices. Please read each statemen indicating your degree of use of these practices. Once again, it is extremely important that you read each statement carefully, and respond to each statement as honestly as possible.

	Never	Some-times	Most of the time	Always
31. I insist on condom use when I have sexual intercourse.	1	2	3	4
32. If I know an encounter may lead to sexual intercourse, I carry a condom with me.	1	2	3	4
33. I stop foreplay long enough to put on a condom (or for my partner to put on a condom).	1	2	3	4
34. I abstain from intercourse.	1	2	3	4
35. I engage in anal intercourse without using a condom.	1	2	3	4
36. I ask potential sexual partners about a history of bisexual/ homosexual practices.	1	2	3	4
37. I engage in oral sex without using protective barriers such as condom or rubber dam.	1	2	3	4
38. I ask my potential sexual partners about a history of IV drug use.	1	2	3	4
39. I engage in anal intercourse.	1	2	3	4
40. I avoid direct contact with my sexual partner's semen or vaginal secretions.	1	2	3	4
41. I drink alcoholic beverages prior to or during sexual intercourse.	1	2	3	4
42. I have sexual intercourse with someone who I know is a bisexual or gay person.	1	2	3	4
43. I engage in sexual intercourse on a first date.	1	2	3	4

Thank you for participating in this study. I appreciate your time and honesty. Please place the completed form in the envelope provided, seal it, and return it to me. Once again, I would like to stress the anonymous nature of this questionnaire. There are no identifying marks on your questionnaire or envelope.

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