COGNITIVE ASPECTS OF RISKY SEXUAL BEHAVIOR

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Abstract

Title of Dissertation: Cognitive aspects of risky sexual behavior

Debra Ann Popiel, Doctor of Philosophy, 1992

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Risky sexual behavior is associated with the continuing spread of AIDS and other sexually transmitted diseases. Research in the area of sexuality has only recently begun to consider variables other than general knowledge and attitudes about sex to explain a range of complex sexual behaviors. This study examined the relationship between safer sex thoughts, gender, sexual arousal, and sexual outcome variables.

Using a 2 X 2 factorial design, female and male subjects were randomly assigned to view either an erotic videotape or a tape about sexual relationships which contained no explicit erotic material. After watching the tape, subjects completed a thought-listing procedure in which they responded to a scenario which suggested the opportunity for a sexual encounter with someone they had been dating for a while. The thoughts generated were content analyzed to determine the frequency of thoughts related to protection-related intentions or concerns. Subjects also completed a battery of questionnaires to assess sexual knowledge and attitudes, personality characteristics related to sexuality, and previous

sexual behavior.

Results indicated no gender differences in the occurrence of safer sex thoughts. Sexual arousal also had no effect on the number of safer sex thoughts generated. Safer sex thoughts were significantly and negatively associated with how likely subjects thought it would be that the sexual scenario would lead to a sexual encounter. Safer sex thoughts were not correlated with intentions to discuss or use sexual protection, nor with reports of actual condom use in the past two months. Safer sex thoughts were positively associated with openness to sexual stimuli and assertiveness in initiating sexual activity for women, but not for men.

Results indicated that the importance of safer sex thoughts was in their absence - those who were thinking about having sex, were not thinking about <u>safer</u> sex. Safer sex thoughts revealed different patterns of association for women and men, suggesting different avenues for intervention in promoting safer sex behavior. The relative importance of sexual knowledge, attitudes, and personality characteristics is discussed.

COGNITIVE ASPECTS OF RISKY SEXUAL BEHAVIOR

by

Debra Ann Popiel

Dissertation submitted to the
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DEDICATION

In memory of my mother, Helen T. Popiel, for all of the love, support, and encouragement she gave me. And for my boys - Al, Gregory, and Andy - the best part of my life.

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Introduction

In 1990, the New England Journal of Medicine published a study of the sexual behavior of college women carried out at Brown University in 1975, 1986, and 1989 (DeBuono, Zinner, Daamen, & McCormack, 1990). Results indicated that there has been little significant change in the sexual practices of well-educated young women despite the advent of acquired immune deficiency syndrome (AIDS), and ongoing epidemics of other sexually transmitted diseases (STDs) such as herpes and chlamydia. These results suggested the need for research exploring factors related to risky sexual behavior. Consequently, the primary goal of this study was to examine cognitions associated with sexual experiences in young adults. A secondary goal was to explore the relationship between sexual knowledge, sexual attitudes, previous sexual behavior, personality factors, and cognitions which may be related to sexual experiences. This chapter begins with a brief overview of the sexual behavior of young people, and the risks of AIDS and STDs. I then discuss cognitions and their relationship to behavior, and consider how thoughts might be related to risky or "safer" sexual practices. Finally, I review research on sexual knowledge, attitudes, behavior, and personality factors to determine what is currently known about the relationships between these variables and various sexual outcomes (e.g., intention to discuss safer sex, condom use).

Sexual Behavior and Sexual Risks of Young People

Statistics indicate that a majority of young people report having sexual intercourse by age 17 (Zelnik & Shah, 1983). The potential negative consequences of sexual activity by young people are many. In the United States, nearly 1.2 million teenage women become pregnant each year, and at current rates, 40% of women will conceive during their teenage years (Quackenbush & Sargent, 1988). This means that on each day of the year, approximately 3000 girls become pregnant (Kirby, 1984). Even among college women, the pregnancy rate is 6 to 10% (Dorman, 1981), indicating that 80,000 to 130,000 pregnancies occur annually in the female undergraduate population of 1.3 million (U.S. Department of Education, 1987).

There is also an epidemic of STDs affecting young people in the United States. It is estimated that more than half of the 20 million STD victims reported yearly will be under the age of 25 and one-fourth will be affected before graduating from high school (Kroger & Wiesner, 1981; National Institute of Allergies and Infectious Disease Study Group, 1980). In 1980, estimates of the magnitude of the STD problem in the United States were: 7 million new or recurrent cases of genital herpes annually; 3 million newly diagnosed infections due to chlamydia annually; 3 million new trichomoniasis cases annually; 2 million new gonorrhea cases annually; 250,000 new cases of venereal warts annually; and 100,000 new cases of

syphilis annually (NIAID, 1980). Using the percentage of sexually active individuals as the denominator of each age group, the highest rates of gonorrhea, syphilis, cytomegalovirus (CMV), chlamydial cervicitus, and rates of hospitalization for pelvic inflammatory disease (PID) are found among 15-19 years olds (Bell & Hein, 1984). Chlamydia, (which can lead to pelvic inflammatory disease, and sometimes to infertility) is increasing on college campuses, with rates as high as 17% of undergraduate women being infected in some places (Goldsmith, 1986).

There is evidence that the use of condoms during intercourse can provide protection against the transmission of gonorrhea (Barlow, 1977), trichomoniasis (Hart, 1975), herpes genitalis (Conant, Spicer, & Smith, 1984; Kish, McMahon, Bergfeld, & Pelachyk, 1983), chlamydial infection (McCormack, Rosner, McComb, Evrard, & Zinner, 1985), and HIV (Conant, Hardy, Sernatinger, Spicer, & Levy, 1986). Despite the fact that the condom is highly effective against most STDs (and is an effective contraceptive), many sexually active young people have never used them. For example, in the Brown University study mentioned above, although condom use increased from 6% in 1975 to 25% in 1989, more than 50% of the sexually active women reported never using condoms (DeBuono et. al., 1990).

Anyone who has multiple sex partners is at greater risk for disease than if only one partner is involved and the more partners one has, the greater the risk becomes (Goldsmith,

1986). Young people typically have multiple partners. Zelnik & Kantner (1980) reported that 16% of the teenage women they studied reported sexual contact with four or more sexual partners in a period of two to three years. Other studies have found similar results (Baldwin & Baldwin, 1988; Cochran, Keidan, & Kalechstein, 1990; DeBuono et. al, 1990). Other risk factors for STDs include early age of intercourse and no or irregular contraceptive use (Brooks-Gunn, Boyer, & Hein, 1988), which seem to be common occurrences for many young people.

Since AIDS was first identified in 1981, much has been learned about the disease. It is believed that the human immunodeficiency virus (HIV) causes the condition and that the virus is transmitted through sexual activity and blood-to-blood contact with IV needles. Although the prevalence of AIDS infection among heterosexually active persons in the absence of known risk factors in either partner appears to be low, AIDS is a threat to all sexually active people (USPHS, 1987).

The Centers for Disease Control (CDC) has concluded that individuals with a history of sexually transmitted infection are at increased risk for infection with the AIDS virus (USPHS, 1987). Although the incidence of AIDS in teenagers is low, 21% of all AIDS cases fall in the 21-29 year age range. Given an incubation period ranging from five to seven years, many of these people were infected in their teenage years

(Quackenbush & Sargent, 1988).

Young, heterosexual people are at-risk by virtue of the fact that AIDS is a sexually transmitted disease that has a long incubation period, with no apparent symptoms at the initial stages of infection. At the Coolfont Conference in June, 1986, the Public Health Service predicted that new AIDS cases in men and women acquired through heterosexual contact will increase from 1100 in 1986 to almost 7000 in 1991; or from 4% to 9% of the total reported cases of AIDS.

Recent research indicates that although young people are aware of the risks associated with unprotected sexual activity (i.e., sexually transmitted diseases, AIDS, and pregnancy), many continue to engage in risky sexual behavior. For instance, in the Brown University study previously mentioned, approximately 24% of the sexually active women reported having six or more lifetime sexual partners; 49% had two or more sexual partners in the previous year (DeBuono et. al., 1990). Thus, many young people are sexually active in ways that increase their risks for STDs and AIDS.

Studies which measure knowledge of sexual risks and concern about unwanted pregnancy and sexually transmitted diseases indicate that while young people may be fairly knowledgeable about sexuality, contraception, STD/AIDS and report that they are concerned about pregnancy and disease, these variables are not sufficient to assure safer sex practices. With the advent of the AIDS epidemic, research

into sexual behavior has become more specifically focused. Since attitudes and knowledge about sexual risks do not predict actual behavior well, researchers have begun to explore other variables which may relate more directly to sexual experiences. One of the goals of this project was to explore the importance of inner-thoughts to sexual behavior, since cognitions and behavior have been shown to be related in many ways.

Cognitions and Behavior

What effect do the things we say to ourselves have on our behavior? The primary goal of this study was to examine thoughts related to sexual experiences, including sexual behavior. Before beginning, it was necessary to briefly consider what is known about the relationship between thought and behavior. This section briefly considers how cognitions have been linked with behavior and then moves to a discussion of specific techniques of cognitive assessment and results from research in this area.

During the past 30 years, the importance of thought processes in mediating behaviors has been examined in a variety of ways. There is much clinical and empirical evidence to support the notion that thoughts are important in determining maladaptive behavior and that thoughts can be modified to bring about improvements in targeted behaviors (Beck, 1976; Ellis, 1962; Meichenbaum, 1977).

Beck's (1976) work on depression emphasizes the central

role of cognitions. Whereas depression has traditionally been viewed as an affective disturbance, his therapeutic approach has focused on the thought processes of depressed people. By changing depressive thought processes, Beck's patients have found relief from their depressive symptoms. Ellis' Rational Emotive Therapy (RET; 1962) focuses on maladaptive self-statements clients make which are based on irrational beliefs about what other people think and about how the clients feel they should behave. RET focuses on making clients aware of their irrational beliefs and self-statements and changing them to more realistic ones that allow for mistakes and flexibility in the clients' behavior.

Meichenbaum's (1977) research has used behavioral techniques (e.g., reinforcement, modeling, aversive consequences, imagery procedures) to modify what people say to themselves in order to effect behavioral changes. More specifically, he has investigated the therapeutic effects of self-instructional training with schizophrenics, impulsive children, test-anxious, speech-anxious, and phobic subjects. These treatments using self-instructional procedures have been shown to be effective in altering targeted behaviors. While these studies suggest that there may be a relationship between self-statements and behavior, the methods employed are not sufficient to demonstrate that the self-instructions were the mechanism by which the behavior change was effected, since the self-statements (self-instructions) were not assessed before

and after the intervention.

Goldfried & Sobocinski (1975) examined the effects of cognitions on emotion. Subjects in this study completed the Irrational Beliefs Test (Jones, 1968) and several other measures of anxiety and depression and then imagined themselves in situations which suggested the possibility of rejection or disapproval from others. Results indicated that there were significant relationships between irrational beliefs and paper-and-pencil measures of anxiety and depression and that subjects holding the irrational belief of an overriding need for social approval reported more anxiety when imagining themselves being rejected by others. Although the actual inner-thoughts of these subjects were not assessed, the results suggested that there may be a relationship between their beliefs and their emotional reactions.

Turning from therapeutic interventions and thoughts related to maladaptive behaviors to a consideration of thoughts which are related to more ordinary behaviors, Glass, Gottman & Shmurak (1976) investigated ways to enhance dating behavior. In this study, a cognitive self-statement intervention was compared to a skills acquisition training program to improve dating skills in girl-shy males. The cognitive self-statement intervention was developed by having undergraduates write their thoughts and feelings in response to eleven problem social situations. Their coping responses were used to develop instructional materials for the training

group. The training group was assessed with the Dating Behavior Assessment Test (DBAT) and a behavioral measure of skill on a phone call made to a female volunteer. Results from this study indicated that subjects in the cognitive self-statement group were rated more effective in laboratory, role-playing situations and in ratings made by females whom the subjects called for dates than were subjects in a skills training group. For these subjects, problems with dating were more related to negative self-statements than a lack of skill - they knew what to do, they just needed to get themselves to do it. This study provides evidence that cognitions can be directly modified by subjects and that these modifications can result in significant changes in behavior.

Meyers & Nelson (1986) also examined social interactions in a study designed to clarify the components of social competence. Subjects in this study were adolescent males, ages 15 to 18, who participated in a ten-minute interaction with a 16 year old female confederate. The interaction was videotaped and afterward the participants were instructed to watch the tape and stop it whenever they could recall what they were thinking. The goal of this study was to determine if there were different interactional strategies employed by high- and low-socially competent subjects. Competence was determined by judges ratings of the videotaped interaction on a social competence continuum scale. The mean of three judges' ratings was the subject's Social Competence Quotient

(SCQ). The ten subjects with the highest and lowest SCQ's were compared on the outcome measures.

The results indicated that there were no differences in the number of times the high and low group stopped the tape to comment on their thoughts during the interaction. Each group was aware of what they were thinking during the interaction and was able to verbalize their thoughts. There were differences, however, in the types of strategies mentioned, with high competent subjects reporting more positive strategies, and more original strategies than the low competent group. In addition, the low competent group made more negative statements than the high competent subjects. These results suggested that during social interactions people are aware of their inner thoughts, and that the nature of those thoughts are important in determining the course and outcome of their interactions.

One other area in which cognitions have been investigated is in attitude change and persuasion research. Some of this work will be discussed later in the section on the thought-listing technique (i.e., Brock, 1967; Greenwald, 1968) but as a brief introductory example we can consider the work of Cacioppo and Petty (1979). In this study, undergraduates listened to proattitudinal or counterattitudinal arguments regarding the need to increase expenditures at their school and how the additional monies would be raised. Subjects were asked to indicate the extent to which they agreed with

increases in expenditures at their university and they completed a thought-listing procedure indicating any thoughts that occurred to them while they were listening to the message. Results indicated that subjects generated more counterarguments for the counterattitudinal than the proattitudinal message, and that the counterattitudinal message evoked fewer irrelevant or neutral thoughts compared to the proattitudinal message.

Results from this line of research indicate that the persuasion situation can be considered a complex stimulus that requires a complex cognitive response from the subject. Traditionally, the important components in a persuasion situation have been considered to be the setting, source, and message. Empirical results indicated, however, that how people respond to a persuasive communication - what they say to themselves as they are listening - was more important in determining attitude change than the traditional considerations of setting, source, and communication content or how well they understood or were able to recall the content of the message (Brock, 1967; Cacioppo & Petty, 1980; Greenwald, 1968; Petty, Ostrom, & Brock, 1981).

Cognitive Assessment

The challenge of cognitive assessment is to determine what is going through people's minds, or more specifically, to assess what people are saying to themselves in response to a particular stimulus. Therapeutic interventions (Beck, 1977;

Meichenbaum, 1977) have traditionally assessed inner thoughts and self-statements via a clinical interview. Cacioppo & Petty (1981) have discussed several mechanical procedures, psychophysiological techniques, and reaction time tests to assess responses to various stimuli. Kendall & Korgeski (1979) discussed seven approaches to cognitive assessment: 1) in vivo thought sampling, 2) assessment of imagery, 3) assessment of cognitive style, 4) assessment of beliefs, 5) assessment of attributions, 6) assessment of self-efficacy expectations, and 7) assessment of self-statements.

For the purposes of this study, we focused on the assessment of self-statements which is most commonly accomplished by self-statement inventories, or the thought-listing technique. Self-statements are those thoughts that pass through a person's mind as they anticipate, receive, or reflect upon a stimulus. Researchers have looked at self-statements as they are related to assertiveness (Schwartz & Gottman, 1976), interpersonal social competence (Cacioppo Glass, & Merluzzi, 1979; Glass, Merluzzi, Biever, & Larsen, 1982; Haynes-Clements & Avery, 1984; Meyers & Nelson, 1986; Zweig & Brown, 1985), adolescent adjustment (Hains & Szyjakowski, 1990; Lamke, Lujan, & Showalter, 1988), and test anxiety (Heimberg, Nyman, & O'Brien, 1987). Results of these investigations and the therapeutic approaches mentioned above have demonstrated that cognitive processes can be modified and that these modifications result in affective and behavioral

changes. Studies which employed self-statement inventories are considered first and followed by a detailed examination of the thought-listing procedure and research in which it has been used.

Self-Statement Inventories. Schwartz & Gottman (1976) studied the role of self-statements in the ability of individuals to perform assertive behaviors. These researchers developed the Assertiveness Self-Statement Test (ASST), which they had subjects complete after taking part in an assertiveness situation. The ASST consists of 34 items, 17 positive and 17 negative self-statements that would make it either easier or harder to refuse an unreasonable request. Subjects indicated how frequently each self-statement characterized their thoughts as they responded to 18 situations calling for assertive responses.

Results from this study indicated that subjects did not differ with respect to knowledge of assertive responses, or in the behavioral expression of assertion in a safe hypothetical situation, but they did differ in their responses to imagined situations which called for an assertive response. Specifically, low assertive subjects had significantly more negative and fewer positive self-statements than moderate- and high-assertive subjects. High assertive subjects as a group reported very few negative self-statements and many positive self-statements. Low assertive subjects, on the other hand, had moderate amounts of both negative and positive self-

statements. The authors referred to this phenomena as "an internal dialogue of conflict" (p. 919) in which positive and negative self-statements compete against each other. There was a greater difference between the groups on the negative than on the positive self-statements.

Kendall and colleagues (Kendall, Williams, Pechacek, Graham, Shisslak, & Herzof, 1979) developed the Self-Statement Inventory (SSI) to assess the degree to which subjects engaged in thoughts that would be expected to help or hinder coping during a cardiac catherization procedure. The SSI included 10 positive and 10 negative statements. Results indicated that higher negative self-statement scores were related to poorer ratings of adjustment by physicians and technicians who were involved in the catherization procedures. Positive self-statements were not related to ratings of adjustment during the procedure. These results suggested that while the occurrence of positive cognitions may not help the person cope, the occurrence of negative statements appeared to impair positive adjustment. Telling a person to think positively is perhaps not as helpful as finding out what negative thoughts are occurring and addressing the concerns giving rise to them.

Glass, Merluzzi, Biever, & Larsen (1982) developed the Social Interaction Self-Statement Test (SISST) to assess self-statements about social interactions. The 15 positive and 15 negative statements were derived from a larger pool of statements that subjects generated after imagining themselves

in 10 frequently occurring heterosocial situations. Similar to Schwartz & Gottman's (1976) ASST, subjects rated the self-statements on a 5-point scale, ranging from hardly ever (1) to very often (5), to indicate the frequency of the thoughts after experiencing the social interaction situations. The SISST was scored for positive and negative thoughts. Two groups of subjects participated in the validation of this inventory. The first group consisted of 40 high and 40 low socially anxious undergraduate women, determined by use of the Social Avoidance and Distress Scale (SAD; Watson & Friend, 1969) and the Survey of Heterosocial Interactions for Females (SHI-F; Williams & Ciminero, 1978). Subjects in this group completed the SISST after they had engaged in a 3-minute verbal interaction with a male confederate in which they were instructed to talk casually and get to know each other.

Results indicated that high socially anxious women made significantly more negative self-statements and significantly fewer positive self-statements than low socially anxious women. The second group consisted of male and female undergraduates selected on the basis of their scores on the Bem Sex-Role Inventory (BSRI, Bem, 1974). There were eight men and eight women in each of the sex-role categories (i.e, masculine, feminine, androgynous, and undifferentiated). These subjects completed the SISST after listening and responding to 16 difficult social situations presented on audiotape. Men and women categorized as "undifferentiated" on the BSRI had

significantly lower positive self-statements scores compared to androgynous subjects. Gender differences were also found, with female undergraduates, as compared to males, reporting significantly more positive self-statements and significantly fewer negative self-statements in response to difficult social situations.

Zweig & Brown (1985) replicated and extended the results of Glass et. al. (1982) by using the SISST with written scenarios, rather than in vivo interactions or audiotaped stimuli. Subjects in this study were normal undergraduate women and men who completed a battery of five questionnaires, three times over the course of one academic quarter. Subjects completed the SISST after reading a description of a heterosocial situation in which they were to imagine themselves being introduced to an attractive member of the opposite sex and having to initiate a conversation with them. Results from this study indicated that there were no gender differences in the number of positive self-statements, but the men reported significantly more negative self-statements than the women. This study suggested that a written version of the SISST was valid, and that using imaginal stimuli is a valid way to assess thoughts.

Taken together, these studies using self-statement inventories suggest that thoughts can be reliably and validly assessed with paper-and-pencil instruments, and that these measures are related to subsequent behavior. One limitation

of this procedure, however, is that the thoughts included on the inventory might not accurately describe what is actually going through the person's mind as they experience the given stimuli. An alternate approach is a production method, whereby subjects are asked to indicate, in writing or verbally, their thoughts about a topic or situation - this is the thought-listing technique.

Thought-Listing Technique. The thought-listing technique is an open-ended cognitive assessment procedure in which subjects report cognitions (self-statements) following a specific task, stimulus, or time period. It was first used by Brock (1967) and Greenwald (1968) in research on attitude change and persuasive messages. Cacioppo & Petty (1981), who have done considerable work in this area, state that the written procedure is relatively private and nonthreatening to subjects. They found that a thought-monitoring or diary technique (e.g., beeping subjects and having them record their thoughts) has been useful in identifying the important dimensions of a person's reportable subjective reactions, and that the thought-listing technique has been most useful in testing hypotheses regarding those subjective reactions.

Early studies (Brock, 1967; Greenwald, 1968) were designed to assess cognitive responses of subjects being exposed to persuasive communications. Brock (1967) was interested in assessing counterarguments to persuasive communications. Traditionally, attitude theory did not take

into account the subject's active response to the message, but assumed that they were passively taking in the information being presented. Subjects in this study were told that they would read a communication in support of a tuition increase at their university. The amount of the increase, the source of the communication, and the inclusion or omission of an example counterargument were the independent variables. The number of counterarguments was the dependent variable. Before actually reading the communication itself, but after reading the introductory statement with the amount of the increase and the source of the message, subjects were asked to list their thoughts and ideas concerning the message of tuition increase. Results indicated that counterarguments increased as the amount of the proposed tuition increased. There were more counterarguments for the more powerful source of the communication, and there were more counterarguments when an example was provided on the thought-listing form. Interestingly, most of the thoughts listed were not counterarguments; subjects wrote alternate suggestions, feelings, supportive statements, as well. The results clearly indicated that people respond cognitively to a potentially influential stimulus, and that their responses can be reported by a thought-listing technique.

Greenwald (1968) reported a series of studies designed to explore the thoughts of subjects in response to persuasive communications. Subjects were introduced to the issue of

generalized versus specific education with a definition of both of those goals. Following this general introduction, half of the subjects read a communication in favor of specialized education, while the other half read about instructional television (i.e., an unrelated topic). The thought-listing procedure followed with instructions to list thoughts relevant to the question of general versus specific education. Thoughts were scored as externally originated, recipient-modified, or recipient-generated, which referred to how much the statement was related to the communication the subjects read. Externally originated thoughts were traced directly to the communication they read. Recipient-modified statements were related to the communication, but the subjects added their own thoughts, ideas, or perspectives. Recipient-generated statements were ideas not traceable to the communications. The results of these studies indicated that the cognitive responses to the persuasive communications were essential mediators of attitude change. Interestingly, most of the thoughts listed by the subjects were in the recipient-generated category. It seems that it is not the facts of the message that have the greatest impact on people's response to it; rather, it is their own thoughts and reactions to that content that determines any change in their attitude.

These two studies demonstrated that the thought-listing technique was a useful way to assess thoughts in studies of persuasive communications. They also suggested that cognitive

responses to stimuli are complex and not specifically related to the form and content of the message and the presenter. People bring to any situation their own beliefs, attitudes, and opinions, and these variables are crucial in predicting how people will respond to the experimental stimuli. These studies paved the way for further work on the effects of recipients' thoughts on attitude change which will be discussed later in this introduction. We will consider social psychological studies using the thought-listing technique.

Cacioppo, Glass, & Merluzzi (1979) investigated how self-statements were related to heterosocial anxiety. Subjects in this study were high and low socially anxious undergraduate males who volunteered to participate in a study of interpersonal dynamics. They were told that they would have a 5-minute discussion with a female student, and that she would be responsible for the topic of the discussion. The experimenter left the room for 3 minutes on the pretext of retrieving a questionnaire from his office, and on his return subjects were asked to complete a prediscussion questionnaire which was a thought-listing form. High socially anxious men generated more negative self-statements while anticipating an interaction with an unfamiliar woman than did low socially anxious men. In addition, although both groups of men rated their self-statements equally favorable, judges' ratings of the self-statements clearly differentiated the two groups. This study extended the application of the thought-listing

technique from research on attitudes and persuasion to the area of interpersonal interactions. Subjects were willing and able to understand and follow the thought-listing instructions; the thought-listing procedure appears to be a workable means of assessing self-statements in a variety of experimental situations.

Haynes-Clements & Avery (1984) investigated the effects of a cognitive-behavioral intervention for shy undergraduates. Shyness was assessed by interview and responses to the Social Situation Inventory (Trower, Bryant, & Argyle, 1978). Subjects were randomly assigned to the treatment or wait-list control group. The treatment consisted of two 90-minute sessions per week for three weeks. The treatment incorporated cognitive processes and behavioral skills to train people to be more socially effective. Intervention effectiveness was determined by comparing the treatment and control group on the Social Avoidance and Distress Scale (SAD; Watson & Friend, 1969) and the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969). Subjects' thoughts were assessed with the Assessment of Self-Statements Test (ASST) designed for this study. The ASST consists of 15 vignettes describing social situations in which the subject is instructed to imagine themselves, and then write what their thoughts and feelings would be in the situation.

Results from this study indicated that treatment group subjects made significantly more positive self-statements than

the wait-list control group. Self-statements were rated on a 7-point rating scale that was developed to determine the impact of a self-statement on the individual's behavior in the situation. Positive self-statements were scored higher in impact than negative self-statements. In this study, self-statements were not assessed prior to the intervention and positive and negative statements were not analyzed separately. Further, mean self-statement ratings were not included in the results. Therefore it is not clear whether differences between the groups were due to differences in positive or negative statements. There were significant differences between the treatment and control groups on the ASST, but the nature of those differences and how much self-statements changed as a result of the intervention cannot be determined from the information provided.

Heimberg, Nyman, & O'Brien (1987) examined the effects of varying procedures for administering the thought-listing technique. In this study, test-anxious subjects were asked to list their thoughts after three audiotaped descriptions of test-taking situations and three 7-minute test-taking tasks. Both the imaginal and the behavioral stimuli included low, moderate, and high stress levels of stimulus intensity. Subjects rated their subjective anxiety and completed the thought-listing procedure after each test-taking stimulus. Subjects were given either general instructions for the thought-listing procedure (i.e., to list any and all thoughts

that occurred to them during the presentation of the imaginal or behavioral stimuli) or focused instructions (i.e., to avoid reporting scene details and focus in detail on what they were thinking and feeling in the situation). Thoughts listed were scored as positive, negative, or neutral/irrelevant by two independent raters.

Findings revealed that the behavioral stimuli were ineffective in producing differential levels of anxiety, whereas the imaginal stimuli were highly successful in eliciting differential levels of subjective anxiety. Significantly more negative thoughts and fewer positive thoughts were reported for high-stress imaginal stimuli. There was also a higher frequency of total thoughts for imaginal stimuli compared to behavioral stimuli. Significantly fewer thoughts were reported after high or moderate stress than after low stress. In sum, this study supported the validity and usefulness of the thought-listing technique in assessing anxiety. Imaginal stimuli were more effective than behavioral test-taking tasks in approximating how people react in actual test-taking situations. The type of instruction - general vs. focused - affected the total number of thoughts reported, but the number of positive and negative thoughts did not differ. This suggests that the neutral or irrelevant thoughts were suppressed by more focused instructions. These findings suggested that the combination of highly-stressful stimuli and focused instructions reduced

the frequency of thoughts reported, but without altering the frequency of positive and negative cognitions which may be of most interest in predicting behavioral consequences.

Lamke, Lujan, & Showalter (1988) implemented a cognitive-behavior modification program aimed at changing adolescents' self-statements and increasing their levels of self-esteem. Subjects in this study were 18 ninth grade students in a teen counseling class and 12 students who were registered to take the class the following semester. The treatment group participated in a cognitive modification program designed to increase positive self-statements. The treatment group met for three 55-minute sessions over a five week period. Self-statements were assessed with the ASST (Haynes-Clements & Avery, 1984) and scored on the 7-point scale previously described. Results indicated that the experimental group reported significantly more positive self-statements than the wait-list control group and that this increase was maintained at a three-month follow-up assessment. In this study, mean ASST scores were reported for the groups and indicated that subjects' self-statements were neutral to positive in responding to the ASST scenarios, and that the treatment group increased their positive self-statements from pretest to posttest. This study provided evidence that self-statements can modified with an intervention administered in a regular school setting, and that the ASST was useful for assessing the effectiveness of the intervention.

Hains & Szyjakowski (1990) examined the effectiveness of a cognitive intervention to help adolescents cope with stress and negative emotional arousal. Twenty-one high school junior and senior males participated in a stress management project; nine subjects comprised the treatment group while the other 12 were assigned to a wait-list control group. The intervention was based on a three-phase, cognitive-behavioral stress-inoculation training model developed by Meichenbaum (1985). Each phase included a one-hour group session and two individual sessions with one of the therapists. Dependent measures assessed anxiety, anger, depression, and self-esteem in addition to self-reports of cognitions. Questionnaires were completed before and after the intervention and at a ten-week follow-up assessment. Participants responded to two hypothetical stressful situations by completing a thought-listing procedure. The situations involved waiting for a difficult final exam to be distributed and telephoning a girl for a date. Results indicated that the treatment group reported significantly more positive thoughts for the test scenario than the control group. There were no significant differences between the groups for negative thoughts related to the exam, or for either positive or negative thoughts related to calling for a date. Lack of differences between the treatment and control group for the dating scenario might possibly be attributable to the subjects' confidence with this particular behaviqr. The frequency of positive thoughts

generated for this situation was relatively high for both groups. Test-taking elicited fewer positive self-statements prior to the intervention and the intervention was effective in increasing positive statements. This study demonstrated the effectiveness of a cognitive, stress reduction intervention in changing male adolescents' self-statements related to an anticipated stressful event.

Application of Empirical Findings Regarding Self-Statements to a Study of Thoughts Related to Risky Sexual Behavior. The present study was designed to examine self-statements of young people that might be related to risky sexual behavior and other aspects of sexuality. A thought-listing procedure was used to assess inner-thoughts when the person imagined him/herself in a situation which suggested the opportunity for a sexual encounter. The thought-listing technique was used in this study because it has been shown to be a reliable and valid method to assess cognitions that could be adapted to a wide range of situations including interpersonal heterosexual relationships. Fishbein and Ajzen (1975; Ajzen & Fishbein, 1980) have discussed ways to assess beliefs in the operationalization of their theory of reasoned action. They strongly advocated the use of an open-ended format, with respondents indicating their beliefs rather than responding to a formatted questionnaire, stating that closed-ended questionnaires do not accurately elicit salient beliefs. This approach has been used in research on contraceptive

behavior (Davidson & Jaccard, 1975; 1979). The thought-listing technique was selected over a self-statement inventory because the existing self-statement inventories do not address specific thoughts relevant to the questions of interest in this study. Further, since there is relatively little empirical work addressing what people are thinking when they are presented with a situation that might lead to a sexual encounter, an open-ended assessment tool seemed the most appropriate way to begin.

Hypotheses. There were several hypotheses suggested from the results of earlier work on self-statements and the thought-listing technique:

Hypothesis #1 - There will be different patterns of self-statements for women and men. Specifically, women will report more total inner-thoughts and will report more negative thoughts concerning sexual activity. Although many studies have used only male subjects (Cacioppo, Glass, & Merluzzi, 1979; Glass, Gottman, & Shmurak, 1976; Hains & Szyjakowski, 1990; Meyers & Nelson, 1986), or have not analyzed results separately for women and men (Heimberg, Nyman, & O'Brien, 1987; Lamke, Lujan, Showalter, 1988; Schwartz & Gottman, 1976), research on heterosocial anxiety (Glass et. al., 1982; Zweig & Brown, 1985) indicated significant differences in the self-statements of women and men. Glass et. al. (1982) found that female undergraduates, compared to males, indicated a significantly more positive and less negative internal

dialogue in social situations. Women were also more skilled and less anxious on the Survey of Heterosocial Interactions and the Social Avoidance and Distress Scale than men. Zweig & Brown (1985) found that men reported significantly more negative thoughts and higher levels of social anxiety than women, but no significant differences in positive thoughts on the SISST. Related research employing subjects who date infrequently also found sex differences.

Results revealed that men who date infrequently, but not women have problems in same sex interactions (Himadi, Arkowitz, Hinton, & Perl, 1980) and that men, relative to women, expected more negative outcomes of social events and were more likely to attribute social failures to themselves (Sutton-Simon & Goldfried, 1980). These results suggested that heterosocial interactions might elicit differential cognitive responses from women and men that might be reflected in their inner-thoughts. In this study, the social interaction suggested by the thought-listing scenario might elicit more thoughts from women since they may be more comfortable in social situations than men. The fact that the proposed study will focus specifically on possible sexual involvement is further likely to bring to mind differential concerns for women and men, given current sex role demands for what is considered appropriate behavior in those situations. Women are more likely to report thoughts indicating mixed feelings in anticipation of a sexual encounter, while men may

focus primarily on the positive aspects of the situation.

Hypothesis #2 - There will be differences in positive and negative inner-thoughts as they are related to risky sexual behaviors. It was hypothesized that subjects who make positive references to condoms will be more likely to report intentions to use them, and will report greater actual condom use in the past two months. Subjects who fail to list any thoughts concerning sexual protection will be less likely to report intentions to use condoms or other contraceptives and will report less actual condom use in the past two months.

Clinical and empirical data suggest that negative or maladaptive cognitions, rather than a lack or absence of positive inner-thoughts, are important contributors to behavioral problems Glass et. al., 1982; Kendall et. al., 1979; Meichenbaum, 1977; Schwartz & Gottman, 1976). Extrapolation from these findings suggests that negative self-statements pertaining to sexual experiences (e.g., I can't ask him to use a condom; condoms are a hassle) should be related to risky sex practices. In contrast to the aforementioned expectation, one hypothesis for this study is that a lack of inner-thoughts about the risks of unprotected intercourse would be expected to be associated with risky sexual behavior. Inner-thoughts which specifically relate to safer sex concerns would be associated with intentions to discuss safer sex with a partner, intentions to use condoms, and reports of condom use in the past two months.

Hypothesis #3 - Sexual arousal will lead to a decrease in the total number of inner-thoughts reported and to fewer thoughts related to safer sex practices. Heimberg et. al. (1987) found that subjects in the high and moderate stress groups reported significantly more negative thoughts and significantly fewer positive thoughts than the low stress group. They also found that test-anxious subjects achieved similar positive and negative self-statement scores, suggesting that they were experiencing what Schwartz & Gottman (1976) described "an internal dialogue of conflict" (p. 919) where positive thoughts which would lead to adaptive behaviors are countered by negative thoughts leading to maladaptive responses.

Returning to the earlier work in the area of attitude change and persuasion, Festinger and Maccoby (1964) proposed that in a persuasion situation people listen to the message and at the same time argue against it subvocally. According to their hypothesis, distraction would have an effect on attitude change by suppressing the subvocal counterargumentation. In the present study, if we think of the situation as one in which the person believes that he or she is being persuaded, and sexual arousal is conceptualized as a distracting variable, we would expect to find results consistent with the distraction literature. This literature, which uses thought-listing procedures, indicates that distraction does indeed lead to decreased counterargumentation

and to changes in attitude that are greater than those obtained when subjects attend to a message without being distracted (Brock, 1967; Janis & Terwilliger, 1962; Keating & Brock, 1974; Osterhouse & Brock, 1970; Petty, Wells, & Brock, 1976).

Based on the persuasion/distraction literature and the results from Heimberg et. al. (1987), it was hypothesized that sexual arousal would lead to a decrease in reported total cognitions, as well as a decrease in inner-thoughts specifically related to safer sex practices.

In summary, this study experimentally manipulated sexual arousal and assessed inner-thoughts in response to a situation which suggested the opportunity for a sexual encounter. A thought-listing procedure was scored for total number of thoughts and for thoughts specifically related to safer sex practices. It was hypothesized that there would be differences between the women and the men in the pattern of their self-statements, that self-statements would be related to sexual outcomes (i.e., intention to engage in sexual intercourse, intention to discuss safe sex, reports of condom use in the past two months), and that sexual arousal would lead to fewer overall thoughts and fewer inner-thoughts related specifically to safer sex intentions and behaviors.

Knowledge, Attitudes, Personality Characteristics, and Behavior Related to Risky Sexual Behavior

Although the primary focus of this study was to examine how self-statements are related to sexual experiences, there are other variables that are important to consider in the larger context of sexuality. Specifically, knowledge and attitudes about a variety of sexually-related topics, previous sexual behavior, and certain personality characteristics that may be related to current sexual experiences. We need to know more about the processes by which risky behaviors are generated and risky decisions are made and about the ways all of the above mentioned factors affect behavior (Baum & Nesselhof, 1988). A secondary goal of this study was to explore the relationship between sexual knowledge and attitudes, previous sexual behavior, certain personality characteristics, and cognitions and to determine how these variables are related to intentions to discuss and practice safer sex and actual sexual behavior. In light of the secondary research goal, research on sexual behavior and the use of contraceptives, knowledge and beliefs about AIDS and other STDs, and personality characteristics that seem relevant to the area of sexual behavior will be reviewed. The relationship of inner-thoughts to these variables will be explored with the goal of determining how these variables might best be combined in a theoretical model.

General Sexual Knowledge and Attitudes and Sexual Behavior

Research on adolescent sexual behavior indicates that most teenagers are sexually active. Many young people begin engaging in intercourse before age 15, have multiple sexual partners, and do not use contraception regularly. Several studies have found that men scored lower on tests of general sexual knowledge than women, but that there were no gender differences in sexual activity or contraceptive use (Mueller & Powers, 1990; Whitley, 1990). Women tend to hold more conservative sexual attitudes than men (Helmreich, Spence, & Gibson, 1982; Hendrick, Hendrick, Slapion-Foote, & Foote, 1985; Hendrick & Hendrick, 1987), but these studies have not compared attitudes with actual sexual behavior. Although some studies find a relationship between sexual knowledge and effective contraceptive use (Kastner, 1984; Zelnik & Kim, 1982), most research indicates that extensive knowledge of contraception, beyond a necessary minimum, is not strongly related to actual contraceptive use (Cvetkovich & Grote, 1983; Fisher, Byrne, Edmunds, Miller, Kelley, & White, 1979; Kane & Lachenbruch, 1973).

Sexuality courses in the schools have been successful in increasing knowledge about sexuality and sexual risks, and in moderating attitude changes such that participants' attitudes are more conservative than non-participants, but they have not been effective in changing actual sexual behavior (Kirby, 1984). Results indicated that courses did not have an impact

on whether students ever had sex, had sex in the past month, the number of times they had sex in the past month, had sex without birth control, or had sex with birth control.

Whitley (1990) investigated the relationship of 22 variables to contraceptive use by 231 sexually active college women and men. Results indicated that 41% (n=95) used oral contraceptives, 32% (n=74) used condoms and 28% (n=65) used ineffective or no contraception. Of the 22 variables included in the discriminant analysis, five variables were significant for the women and two for the men. The best predictor of contraceptive use for both women and men was perceived partner support for contraception. A second important predictor for both men and women was attitude toward contraception, and for women the predictability of intercourse. The data suggested that contraceptive use increased with the intimacy of the relationship. For both women and men, less frequent intercourse was associated with condom use and more frequent intercourse was associated with using oral contraceptives. Women who scored lower in sexual knowledge, and lower in perceived responsibility for contraception were more likely to use condoms, while men who reported less frequent intercourse were more likely to use condoms. These data suggest that attitudes toward contraceptives and relationship variables are important in determining types of sexual protection used by a couple.

In the present study, we were particularly interested in

the use of condoms, which are effective for birth control and as protection against STDs and AIDS. Kegeles, Adler, & Irwin (1988) examined knowledge and attitudes toward condom use over a one year period in 529 female and male adolescent patients at an HMO. Participants believed that condoms were effective in preventing STDs and that it was important to avoid STDs; yet, only 2.1% (n=8) of the females and 8.2% (n=12) of the males reported using condoms every time they had intercourse during the year of the study. Results indicated that females showed little intention to have their partners use condoms and were uncertain if their partners wanted to use them. Males believed that their partners wanted them to use condoms and were likely to intend to use them, but this intention declined over the year of the study.

Strader & Beaman (1989) examined attitudes toward condom use in 185 sexually active female and male undergraduates. Only 40% (n=74) reported that they had ever used condoms. Decreased sensation during intercourse when using condoms was reported by 24% of the males and 9% of the females. Younger subjects believed that condoms were an important birth control method but inconvenient to use, while older subjects believed that condoms were uncomfortable. These results indicate that condoms are generally not viewed as an ideal method of sexual protection.

Data from research on contraceptive practices and attitudes towards condoms suggest that a variety of factors

mitigate against safer sex practices. In general, young people know about methods of contraception and STD/AIDS protection, but despite this knowledge many participate in unprotected sexual intercourse. Factors related to unprotected intercourse were young age, poor communication with parents, having friends who become parents, low educational achievements and aspirations, high levels of anxiety, low self-esteem, and feelings of fatalism, powerlessness, and alienation (Brooks-Gunn & Furstenberg, 1989; Hofferth & Hayes, 1987; Lancaster & Hamburg, 1986; Morrison, 1985). Alternatively, protected intercourse was related to the stability of the relationship, support from the male partner, good communication with parents, and a supportive home environment (Foreit & Foreit, 1978; Gispert, Brinich, Wheeler, & Krieger, 1984; Kastner, 1984; Maxwell, Slack, Frary, & Keller, 1977).

In this study knowledge about sexuality and contraception, sexual attitudes, and actual sexual behavior was assessed. The relationship between knowledge, attitudes, and behavior was examined in an effort to explore the relationship of sexually related inner-thoughts to these variables. Several hypotheses relevant to general sexual knowledge and attitudes were proposed: 1) based on previous research, it was hypothesized that general knowledge and attitudes would not be strongly related to actual sexual behavior; 2) women's attitudes would be more conservative than

men's, but there would be no gender differences in sexual demographic variables (i.e., age at first intercourse, number of lifetime sexual partners, extent of sexual activity); and 3) general knowledge and attitudes would not be strongly related to inner-thoughts relevant to sexual activity. Even though previous research suggests that there should not be a strong effect of general knowledge and attitudes on behavior, it is important to include these variables in a comprehensive model of sexual behavior. Since factors related to condom use have not been fully investigated, it would be premature to eliminate measures of general sexual knowledge and attitudes from our design. Also, there is research to suggest that the effects of these variables on condom use may be different for women and men (Kegeles et. al., 1988; Whitley, 1990). The importance of condoms as both a contraceptive and a prophylactic has not been previously examined in an empirical study.

AIDS Knowledge and Behavior

Sexually active adolescents and young adults are at-risk of HIV infection. They know what AIDS is, how it is spread, and that condoms are effective protection, yet for the most part, they are not practicing safer sex (i.e., using condoms, and limiting the number of sexual partners). Studies of high school and college students have indicated that while young people have become more informed about AIDS and how it is transmitted, and some have changed their sexual behavior, many

continue to engage in unprotected sexual intercourse (Carroll, 1988; Hingson, Strunin, Berlin, & Heeren, 1990; Hirschorn, 1986; Roscoe & Kruger, 1990; Strunin & Hingson, 1987). Several studies reported regular condom use by approximately 10% of the respondents (Hirschorn, 1986; Roscoe & Kruger, 1990).

In 1985, Price, Desmond, & Kukulka found that high school students did not have a high level of knowledge about AIDS. They did not know who was likely to develop AIDS, whether it was transmissible, how to detect it, and what would happen to people who developed the disease. As more attention was focused on AIDS in the media and in school, students became better informed. In 1989, Strader & Beaman investigated female and male college students' knowledge about AIDS and attitudes toward condom use. In this study, 228 undergraduates completed a knowledge questionnaire and provided information about their sexual activities. The mean AIDS knowledge score was 22.5 on the 28-item test; 96% of the respondents were aware that using a condom was an effective means of avoiding the disease. Yet, while 81% of the respondents reported being sexually active, only 40% stated that they ever used condoms.

Hingson et. al. (1990) surveyed 1773 16-19 year old female and male residents of Massachusetts to assess their knowledge and beliefs about AIDS transmission, drug and alcohol use, and how condom use was related to these

variables. Results indicated that several variables were related to condom use. Specifically, respondents who felt susceptible to AIDS, who believed that condoms were effective, who perceived few barriers to condom use, and who were exposed to cues to action were more likely to use condoms than people who did not feel susceptible to AIDS, and who felt that condoms were ineffective and/or inconvenient to use. Half of the respondents reported that they worried very little or not at all about getting AIDS. Barriers to condom use (e.g., condoms reduce pleasure; embarrassed if asked to use condom) were the strongest predictors of condom use. The perceived effectiveness of condoms and how much respondents worried about getting AIDS also independently predicted condom use. Drug and alcohol use were related to more infrequent condom use. Beliefs about AIDS accounted for about 10% of the variation in condom use, suggesting that there are other variables related to safer sex practices. More specific investigation regarding feelings and beliefs about the effectiveness and desirability of condoms for protection from AIDS and as a contraception method seem warranted.

Baldwin, Whiteley, & Baldwin (1990) investigated the effect of a ten-week course on human sexuality on AIDS- and fertility-related behavior. Subjects were 1056 female and male undergraduates; 629 participated in the human sexuality course and 427 were in the control group and responded to a mailed survey. The experimental group showed some significant

increases in knowledge about AIDS, but there were no differences in their use of condoms or other contraceptives, their number of sexual partners, or how long they knew partners before engaging in sexual activity, as compared to a control group. Even though students believed there to be a high likelihood of contracting AIDS from an infected partner (men estimated a 75% chance, women a 90% chance; actual risk is less that 1% according to Hearst & Hulley, 1988), most did not take precautions. Male freshman were more likely than male seniors to carry condoms along on a date (28% vs. 10%). Female freshman were less likely than their senior counterparts to carry condoms along with them on a date (2% vs. 7%). Men reported taking condoms along 21.4% of the time, females 4.5% of the time.

These studies indicate that knowledge about AIDS by itself does not lead to changes in risky sexual behavior. Perceived susceptibility to AIDS may be related to some behavioral changes, although few respondents reported condom use as the specific change they have employed. For the most part, it seems that young people see AIDS as a disease unrelated to them and not something about which they need to worry (Smiglis, 1987).

Fisher & Misovich (1990) found that heterosexual college students as a group are relatively unconcerned and uninvolved in the AIDS situation. They do not actively seek out information on their own and in some cases actively avoid it.

Students reported that they are very hesitant to initiate discussions about safer sex for fear of rejection by their partner, but they would not object to their partner bringing up the topic. Interviews with students suggested that they found it easier to have unprotected sex than to discuss STD prevention. Clearly, they must learn communication and assertiveness skills to enable them to negotiate safer sex practices with their partners. Adolescents' degree of motivation for change, their perception of risk and the value of taking action, and their actual reduction of risky behavior must be studied (Brooks-Gunn, Boyer, & Hein, 1988).

One recent intervention study with gay men (Kelly, Lawrence, Hood, & Brashfield, 1989) incorporated role-playing, assertiveness skills, and the use of self-statements to increase safer sex behaviors. Results indicated that the experimental group subjects showed substantial reductions in high-risk behavior and increases in the adoption of safer sex practices, compared to the control group. These changes in behavior were maintained at an eight month follow-up assessment. In the present study, knowledge, attitudes, and perceptions of susceptibility to AIDS were measured and related to inner-thoughts about sexual behavior, intentions to practice safer sex, and actual sexual behaviors. It was expected that participants would be fairly well informed about AIDS, but that knowledge and attitudes would not be strongly related to safer sex intentions and behaviors. Perceptions

about susceptibility to the disease would be expected to be more strongly related to sexually related inner-thoughts, intentions to use condoms, and actual condom use.

Sexually Transmitted Disease Knowledge and Behavior

Young people are at-risk for contracting a variety of sexually transmitted diseases which are occurring at epidemic levels in the U.S. (e.g., gonorrhea, chlamydia, herpes). Knowledge about the risks and complications of these STDs is variable and condom use to prevent the transmission of these diseases is infrequent. Research has documented several deficiencies in adolescents' knowledge and beliefs about STDs.

In a large national survey, 11,419 eighth- and tenth-grade students in 217 schools responded to questions regarding behavior, knowledge, and attitudes related to their health (Marwick, 1988). Forty percent of the teenagers did not know the basic early symptoms of an STD (e.g., discharge or pain in the sexual organs). Even though 90% knew that HIV is transmissible by sexual intercourse and sharing of drug needles, over half also erroneously believed that washing after sexual intercourse reduces the risk of HIV infection. Although teenagers may be aware of the major ways STDs are transmitted, their knowledge of how to prevent contracting these diseases appears to be markedly inadequate.

Clark, Zabin, & Hardy (1984) found that 52% of urban, black high school students thought they needed parental permission to purchase condoms and 43% of male high school

students said their embarrassment would prohibit purchases. Most of those who used condoms got them from more experienced friends, and 12% of males obtained their first condoms by stealing them.

Cochran, Keidan, & Kalechstein (1990) assessed two groups of female and male undergraduates to determine perceptions of STD risk and the prevalence of risk reduction behaviors in the winter of 1986 (n=318) and fall of 1987 (n=384). Demographic data indicated that the average age of the respondents was 19 years, age of first intercourse was approximately 16.5, and respondents were involved with approximately four different partners since becoming sexually active.

Results indicated that there was an increase in concern about STDs from the first to the second assessment. Respondents in the second sample estimated higher incidences of syphilis, gonorrhea, herpes, and AIDS for the general population and rated their own odds of contracting these STDs as greater than did the first sample. In addition, there was a significant increase in self-reports of condom use from the first to the second assessment. In the winter of 1986, 46% of the sample reported using condoms, at least on some occasions of sexual activity; by the fall of 1987, 62% reported using condoms. Insistence on condom use increased from 18% in 1986 to 33% in 1987; men were more likely to insist on condom use than women. While this increase is positive, it indicates

that two-thirds of the respondents had not incorporated condom use into their regular sexual encounters and that women, in particular were uncomfortable in this regard.

Other than this increase in condom use, there were no differences between the groups in the frequency or types of sexual activities in which they engaged. These data indicate that while these young adults may feel increased anxiety or concern about STDs and AIDS, they still have not implemented behavioral changes that would effectively protect themselves from acquiring these diseases.

These studies indicate that knowledge about the risks of STD vary from group to group, but that the use of condoms, to protect against these diseases, is low. The current study examined attitudes and beliefs about STDs and related them to intentions to discuss and practice safer sex and reports of condom use in the past month. In addition, the assessment of inner-thoughts enabled us to determine the extent to which STDs are a conscious concern when young people are anticipating a sexual encounter, and whether there is a relationship between knowledge about STDs, cognitive awareness of risks, and safer sex intentions and behaviors.

Personality Characteristics and Sexual Behavior

Efforts to change sexual behaviors have traditionally focused on providing information in the hopes of increasing knowledge and altering attitudes related to the behaviors in question. The rates of teenage pregnancy and epidemic levels

of STDs indicate that information is necessary, but not sufficient, to impact on behaviors. Sexuality is a complex, multidimensional aspect of life, and personality characteristics and interpersonal skills play an important role in determining sexual behavior. In the current study, several variables which might be related to sexual experiences were examined.

Erotophobia/Erotophilia. Byrne (1977) describes erotophobia/erotophilia (E/E) as the end-points of a continuum of emotional responses to sexual stimuli. The construct is operationalized by the Sexual Opinion Survey (SOS; White, Fisher, Byrne, & Kingma, 1977) which is a 21-item questionnaire assessing emotional responses to sexual stimuli. It has been theorized that emotional responses to sex may generalize and form a trait disposition to respond to sexuality with negative-to-positive affect. Erotophobic persons respond to sexual cues with negative affect and generalized avoidance since they find these cues to be aversive. Erotophilic persons, on the other hand, respond to sexual cues with positive affect and generalized approach responses. Theoretically, emotional responses to sexuality, or E/E, should generalize to contraceptive behaviors because these behaviors are essentially sexual in nature.

Research has shown that erotophobic, as compared to erotophilic people find it difficult to learn contraceptive information, are reluctant to anticipate intercourse in

advance (Fisher, Byrne, & White 1983), avoid the public acquisition of contraceptives (Fisher, Byrne, Edmunds, Miller, Kelley, & White, 1979), dislike talking about sex with others (Fisher, Miller, Byrne, & White, 1980), and are inconsistent users of contraception (Fisher et. al., 1979, 1983).

Fisher (1978) examined the relationship of E/E to intentions to have sex in the upcoming month in 145 male undergraduates. Approximately 52% of the erotophobic men, compared to 77% of the erotophilic men anticipated intercourse. Upon questioning at the end of the month, it was found that the erotophobic men had underestimated the likelihood of sexual involvement, leading to unanticipated and possibly unprotected intercourse. The erotophilic men overestimated the likelihood of sexual activity, and were less likely to have unprotected intercourse.

Fisher (1984) conducted a study examining the use of condoms in the context of Fishbein and Ajzen's (1975) theory of reasoned action model and the personality trait of E/E. Subjects were 34 unmarried male students in an introductory psychology course. Results indicated that erotophilic males were more likely to report that they had always used condoms during the month under study. E/E and behavioral intentions contributed uniquely to the prediction of condom use, although they were not correlated with each other.

Kyes (1990) examined the effects of a safer sex film, with gender and E/E as mediators, on attitudes toward condom

use. Subjects were 80 female and 80 male undergraduates. Attitudes toward condoms were more positive after viewing the safer sex film, although willingness to use condoms increased only for the women. Scores on the SOS predicted emotional reactions of subjects to the erotic films, but did not correlate with any of the attitudinal or behavioral measures regarding condom use. Other studies (Daugherty & Burger, 1984; Tanner & Pollack, 1988) also found a null relationship between the SOS and measures of contraceptive attitudes and use.

Women tend to be more erotophobic than men (Daugherty & Burger, 1984; Gerrard & Reis, 1989) which is consistent data showing that women report more conservative sexual attitudes than men (Helmreich, Spence, & Gibson, 1982; Hendrick, Hendrick, Slapion-Foote, & Foote, 1985; Robinson & Jedlicka, 1982). In this study E/E was assessed and related to sexually-related inner-thoughts, sexual experiences and behavior. It would be expected that E/E would be more strongly related with the sexually related outcome measures than the knowledge and attitude measures previously discussed. Specifically, it was predicted that relatively erotophobic participants (as compared to relatively erotophilic participants) would report fewer sexually related inner-thoughts, less intention to use condoms, and less actual condom use in the past two months.

Communication Skills and Assertiveness. Young people lack communication skills and have great difficulty expressing their feelings and beliefs about themselves and about sexuality with their partners (Kirby, 1984). Many of the behaviors necessary for effective contraception and protection from STDs and AIDS are not part of young people's behavioral repertoire. These behaviors include bringing up the topic of condom use, STD concerns, dealing with partner defensiveness, and negotiating acceptable sexual alternatives (Greico, 1987; Weisse, Nesselhof-Kendall, Fleck-Kandath, & Baum, 1990). Young people usually have no direct experience in discussing and resolving protection concerns with their sexual partners. There are very few appropriate role models for this behavior in film or literature, little or no discussion within the family or peer groups, and no rehearsal of such a discussion in fantasy (Fisher, 1990). Very little research has focused on the best ways to motivate behavior change or how to teach the communication and interpersonal skills necessary for the adoption safer sex behaviors (Solomon & DeJong, 1986).

Quina, Harlow, Gibson, & Morokoff (1990) developed a sexual assertiveness scale to assess the ability of women to be assertive in heterosexual interactions involving sexual activity. While women have made gains in assertiveness in areas such as career and financial management, sexual relationships are an area that still poses problems for many. The Sexual Assertiveness Scale (SAS) resulted in three factors

accounting for 73% of the variance: 1) initiation; 2) refusal; and 3) birth control. The concept of sexual assertiveness, in both women and men, is one that promises to be interesting to pursue empirically. In this study, all subjects completed the SAS. These variables were examined in relation to other personality, and attitudinal factors as well as inner-thoughts in a potentially sexual situation.

Results from a study of assertiveness and cognitions (Chiauzzi & Heimberg, 1983) are relevant to the thought-listing procedure in the proposed study. In this study, male and female undergraduates were assigned to assertive and nonassertive groups based on self-report and behavioral criteria. Subjects participated in videotaped, role-play situations in which they responded to requests of low-, medium-, and high-legitimacy. Subjects then watched the videotape and indicated what they were thinking as they were responding to the requests. Results indicated that assertive subjects reported more thoughts per situation than did nonassertive subjects. Also, more thoughts were reported in response to the moderate level request than for the high-, or low-legitimacy request. Females reported significantly fewer favorable thoughts than males, but only for medium-legitimacy requests. There were no other differences in positive vs. negative thoughts in this study.

These results differ from other studies of assertiveness which employed a standardized measure of self-statements

(e.g., the ASST discussed previously; Schwartz & Gottman, 1976; Heimberg, Chiauzzi, Becker, & Madrazo-Peterson, 1983) which indicated significant differences between assertive and nonassertive subjects in the number of positive and negative self-statements. The finding that moderate level legitimacy requests were more problematic for females may be relevant to our questions of assertiveness in sexual situations. It is suggested that the sexual situation is one that is equivalent to a medium-legitimate request; the person probably wants to engage in some level of intimacy, but has concerns about contraception and sexually transmitted diseases that make it difficult to proceed without some further discussion or protection-related behavior. It is anticipated that there would be both positive and negative thoughts occurring in this situation, and it would be likely that women might have more of these concerns than men, given the reality of greater risk for women of pregnancy and complications of STDs. In light of these findings, it was hypothesized that women would find it more difficult to be assertive in sexual situations than men (as shown by scores on the SAS), and that the patterns of inner-thoughts (i.e., numbers of statements, and positive vs. negative statements) of women and men will vary indicating differences in their concerns. More specifically, it was predicted that: 1) assertive subjects would report more inner-thoughts than nonassertive subjects; 2) women would report more inner-thoughts than men; and 3) women would report more

thoughts related to safer sex behaviors than will men.

Contraceptive Self-Efficacy. Self-efficacy theory has been used by Bandura and his associates to explain the likelihood of given behaviors when it seems as if there are obstacles to those behaviors (Bandura, Adams, Hardy, & Howells, 1980; Kazdin, 1974; McAlister, Perry, & Maccoby, 1979; Rosenthal & Bandura, 1978). According to the self-efficacy construct, a person, his/her behavior, and the environment are seen as interactive and reciprocal in determining behavior. A person's initiation and persistence in pursuing a given behavior will depend on his/her expectations about being successful in achieving his/her goal (Bandura, 1977).

A characteristic consistently found to relate to the effectiveness of contraceptive protection is a sense of self-competence, efficacy, and control (Adler, 1974; Chilman, 1979). Contraceptive self-efficacy assesses motivational barriers to contraceptive use. It is defined as the strength of a person's conviction that they should and can exercise control within sexual and contraceptive situations to achieve contraceptive protection; it is measured with the Contraceptive Self-Efficacy Scale (CSE; Levinson, 1986). The CSE contains 18 situational items which correspond to obtaining contraceptives, talking with a partner about contraception, using contraceptives despite disapproval from parents or partner, interrupting episodes of unplanned sex to

talk about, or use contraceptives, and other related contraceptive situations. Contraceptive self-efficacy is thought to be influenced by knowledge about sexuality and contraceptives, but it is primarily shaped by the attitudes that a person holds about him/herself as a sexually active person. The CSE consists of four factors: 1) conscious acceptance of sexual activity by planning for it; 2) assumption of responsibility for the direction of sexual activity and for using contraception; 3) assertiveness in preventing intercourse in an involved situation; and 4) strong feelings of sexual arousal.

In a study to examine the effects of contraceptive self-efficacy and other variables on contraceptive behavior, 258 young women completed the CSE and provided information about their sexual behavior. Of this group, 91% (n=235) did not desire a pregnancy within the next six months to a year, but 93% (n=240) had engaged in unprotected intercourse at some time. Incidents of unprotected intercourse occurred more than once in the last six months for 70% (n=181) of the sample. Oral contraceptives were used by 58% (n=150) of the group, but 57% (n=86) of these pill users reported not taking it everyday; 20% (n=52) of the group reported using no contraceptives. Results indicated that the reason for the clinic visit (i.e., to obtain contraceptives, pregnancy test, or routine gynecological exam), the length of time sexually active, and CSE factors 1 and 2 (i.e., acceptance of sexual

activity by planning for it, and assumption of responsibility for the direction of sexual activity and using contraceptives) accounted for 27% of the variance in contraceptive use.

A canonical correlation of the CSE factors and other study variables indicated that high contraceptive self-efficacy scores were related to sexual knowledge, and having made a conscious choice to have sexual intercourse. Low sexual assertiveness and strong feelings of sexual arousal were associated with being young, having experienced logistical obstacles to getting contraceptives, and not having made a conscious decision to have sexual intercourse. Assertiveness in preventing intercourse was negatively related to increased frequency of unprotected intercourse, and strong feelings of arousal were positively associated with risky sexual behavior. The results of this research indicate that role of communication skills with sexual partners, and competence in obtaining contraceptives, is not as important for effective contraceptive behavior as is assuming responsibility for the direction of sexual activity and for using contraceptives.

Although most of the work on contraceptive self-efficacy has been conceptualized with young women in mind, there is some evidence to suggest that the construct is valid for young men as well. In a small pilot study, Levinson (1984) worked with 7 boys and 8 girls to explore feelings related to contraceptive self-efficacy. She found that boys reported

concerns comparable to those of the girls. For instance, some of the boys reported buying condoms, but then being reluctant or embarrassed to use them, they felt they could not interrupt sex to use them, or they left them at home. The girls could not make up their minds about being sexually active and left things up to chance. This descriptive information suggests that it would be beneficial to examine contraceptive self-efficacy further in both young women and men. In the proposed study, the CSE scale was completed by both women and men.

In summary, the personality characteristics of erotophobia/erotophilia, sexual assertiveness, and contraceptive self-efficacy were measured in this study to allow examination of their association with each other, inner-thoughts related to sexual situations, sexual intentions, and reports of condom use in the past two months.

A Model of Safer Sex Behavior

There are several social psychological models which have been applied to the question of sexual behavior. The Health Belief Model (Rosenstock, 1966) argues that the costs and benefits of a particular health behavior, perceived severity of the health risk, and perceived susceptibility to that risk will determine the likelihood of performing a protective health behavior once a cue to action has been perceived. Cues to action are internal or external stimuli that direct a person to preventive action. The Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1980) focuses on an individual's

intentions as the keys to behavior. Behavioral intentions are determined by attitudes toward the action and by what other people think the person should do - subjective norms. The Theory of Planned Behavior (Ajzen & Madden, 1986) is a modified version of the TRA which includes perceived behavioral control in the model, as an influence on behavioral intentions and actual behavior. The Sexual Behavior Sequence (Byrne, 1977, 1983) assumes that during socialization, people acquire certain dispositions that govern their sexual behavior. According to the theory, a person's sexual behavior is determined by his or her affective, informational, and fantasy responses to relevant sexual stimuli. Each of these models provides a reasonable way to examine sexual behavior and research has indicated that the factors delineated in the models may be related to various sexual behaviors (Condelli, 1986; Davidson & Jaccard, 1979; Fisher, 1984).

The Risk Reduction Model (see Figure 1; O'Keeffe, Nesselhof-Kendall, & Baum, 1990) allows for the incorporation of the variables discussed above. It is a model that embodies cognitive-social learning theory in its recognition of the interrelatedness of cognitive, behavioral, environmental, physiological, and affective factors. Specifically, the model details a decision-making process and suggests how situational variables may interact with previously-made decisions to mitigate against behavioral outcomes that would be consistent with decisions based on logical thought processes. The model

begins with information or knowledge, attitudes, and beliefs. Informational variables interact with motivational factors to lead to a decision. The implementation of the decision is affected by mediating variables and other situational variables. The outcome of the situation is a result of the decision which has been made in conjunction with the situational and mediating variables operating at that point in time.

Adapting the proposed research design to the Risk Reduction Model, knowledge, attitudes, and beliefs about sexuality in general, contraception, STDs and AIDS are considered first. Motivational factors include previous sexual behavior, personality factors (i.e., erotophobia/erotophilia), and the acceptability of condom use.

In the current study, the safer sex behavioral outcome is reported condom use in the past two months. The acceptability of condom use, STDs, and AIDS attitudes, will determine the likelihood of using condoms as a prophylactic and a contraceptive. Although the benefits of using condoms are very high for protection from STD/AIDS, they may not be seen as effective for contraception. If young people do not feel at risk for STD/AIDS, they may opt to use oral contraceptives or some other form of birth control.

According to the model, information and motivational factors interact and lead to a decision. Relevant sexual decisions might be whether or not to engage in sexual

intercourse, what type of contraception or STD/AIDS protection to use, whether or not to discuss safer sex with potential sexual partners. Implementation of the decision is affected by mediating variables. In this case, the most potent mediator might be the state of sexual arousal, often accompanied by alcohol/drug use. Other important variables include relationship variables (e.g., how long has the couple known each other, partner support for the use of protection), variables related to perceived control (i.e., self-efficacy and sexual assertiveness), and cues to action. A major hypothesis of this study is that cognitive cues to action (i.e., inner thoughts) might influence sexual experiences.

The model predicts that what a person does in any given situation depends on the interactive effects of a variety of factors, with a primary focus on social cognitive factors (Flora & Thoresen, 1988). With regard to sexual outcome, the importance of the physiological, emotional, and cognitive impact of sexual arousal on behavior cannot be underestimated. The interactional aspects of the relationship between the two people involved are also key to determining behavioral outcomes. It is clear that many young people make the decision not to worry about contraception or protection from STD/AIDS, but there are many others who know that it is important to practice safer sex and still find themselves involved in risky situations. The main focus of this study was on cognitive aspects of a potentially sexual situation,

assessed by inner-thoughts. Knowledge, attitudes, previous sexual behavior, personality characteristics, and inner thoughts were all included in the context of the Risk Reduction Model to clarify the variables most important to predicting risky or safer sexual behavior.

Sexuality Research

Interest in sexual attitudes, behavior, and experiences has become an important research focus in the midst of the current AIDS crisis. Little is known about the sexual behavior of the general population. Research on sexuality is limited by societal constraints which work to keep sexuality an issue that is private and not easily studied. Despite the strong resistance against research on sexual issues, there is a history of research on a variety of sexually-related topics that is relevant to the proposed study.

The Relationship between Thoughts and Sexual Experiences

The major question to be answered in this study is whether thoughts are related to sexual experiences and behaviors. Do people think about potential sexual encounters, and if they do, are their thoughts related to subsequent behavior in those encounters? Although there are no studies which have used the thought-listing procedure to investigate thoughts related to sexual encounters, there are several studies which address the issue with other methods.

Jessor (1978) asked female and male undergraduates to indicate which of 20 strategies they would use to influence a

partner to have sex with them. McCormack (1979) asked female and male undergraduates to write essays describing strategies they would use to influence someone to have sex with them or to avoid having sex with someone. LaPlante, McCormack, & Brannigan (1980) asked female and male undergraduates to report how often they have used specific strategies to have or avoid sex with a partner. Perper & Weis (1987) asked undergraduate women to write essays describing how they would seduce or reject a man. Behavioral observations of women and men in singles bars (Perper, 1985; Perper & Fox, 1980) demonstrated that the behaviors observed were consistent with those reported in the essays. The results of these studies offer evidence that people do indeed think about sexual encounters in advance and that their thoughts often influence their behavior.

Byers and colleagues (Byers, 1988; Byers & Lewis, 1988; Byers & Wilson, 1985) have conducted a series of studies on dating relationships and sexual aggression. Using a modified role-playing technique, they had female and male undergraduates role-play their verbal behavior and describe their non-verbal behavior (i.e., thoughts and nonverbal contact or communication) in sexual dating situations. Byers (1988) found that sexual arousal, induced by having subjects watch an erotic videotape, had an effect on subsequent role-played behavior. Specifically, women who were aroused made less definite refusals to unwanted sexual advances, and men

who were aroused were less compliant with refusals of sexual advances.

Men rated their role-playing behavior to closely match their behavior in actual situations (Byers & Wilson, 1985), and in a study of actual dating behaviors, Byers & Lewis (1988) found similar rates of compliance and aggression in instances of refusals of sexual advances as reported in the role-played situations. Men and women both role-played and reported that men used coercive strategies in a small percentage of sexual disagreement situations. Approximately 10% of both the role-played and actual sexual disagreement situations led to a coercive encounter. This line of research indicates the possibility of studying dating and sexual interactions in the laboratory, and also the important role of sexual arousal as an influence on behavior in these interactions.

Methodological Issues in Sexuality Research

Efforts to study sexuality are hampered by the sociocultural climate which surrounds us with sexual imagery and innuendo but prohibits frank discussion of sexual feelings and behaviors. At this time there are no reliable data on the distribution of high-risk sexual behavior in the U.S. population. Since we obviously can't follow people into their bedrooms to observe and record their behavior, we are forced to rely on the information we can gather from interviews, questionnaires, and other assessment procedures.

Self-Report of Sexual Experiences. Catania, Gibson, Chitwood, & Coates (1990) provided a comprehensive overview of the methodological issues inherent in studying self-reported sexual behavior. There is no way to determine the absolute validity of self-reported sexual behavior. As such, researchers must make every effort to encourage research participants to provide the most accurate information possible. Most of the previous research on sexuality has been carried out with white, undergraduate populations. Although this is problematic for making predictions for those people most at risk for AIDS (i.e., Blacks, Hispanics, gay men, IV drug users, adolescents), within the context of the present study it offers some reassurance that the data will be reliable. Specifically, adolescents and young adults have been shown to be able to provide reliable estimates of the frequency of intercourse and condom use in the previous 2 months (Catania, Gibson, Marin, Coates, & Greenblatt, 1990; Rodgers, 1982).

Self-administered questionnaires which can be completed anonymously and privately may provide the best way to ensure reliable reporting of sexual behaviors and experiences (Catania, McDermott, & Pollack, 1986). Inclusion of a measure of the subject's willingness to disclose their sexual behavior is another way to address the self-presentation bias which is problematic in sexual research. In accordance with the recommendations in Catania's (1990) review, this study focused

on young adults who were asked to respond to self-administered questionnaires, in a private setting. They were asked to report on behaviors which have occurred over the past two months to minimize memory lapses. We also included a measure of sexual self-disclosure (Catania et. al., 1986) to ascertain how uneasy respondents might feel in providing the sexual information requested.

Measurement of Sexual Arousal. Sexual arousal can best be conceptualized as a complex interaction of somatic, cognitive, and affective processes (Bryne, 1983; Heiman, 1980; Mosher, 1980). Masters and Johnson (1966) provided the first detailed description of changes that occur when people are sexually aroused. These include elevations in heart rate and blood pressure, increased perspiration, changes in skin coloration in the upper torso, myotonia, and irregularities in respiration. Bancroft (1983) also reported that sexual arousal in both sexes is associated with cardiovascular changes including increases in heart rate and blood pressure. In his review of the measurement of sexual arousal in humans, Zuckerman (1971) reports that the correlation between extragenital and subjective measures of arousal and genital measures have typically been low and recommends that research on sexual arousal should employ genital measurements.

Recent conceptual work has focused on cognitive and affective aspects of arousal in addition to the physiological effects which have been delineated. The Sexual Behavior

Sequence (Byrne, 1977, 1983; Fisher, 1986) is presented as a psychological approach to sexuality. Within this framework arousal is considered along with cognitions and affect to predict sexual behavior. All three components are hypothesized as important motivating and guiding influences related to preparatory and overt sexual behavior. At this point, empirical work focusing on the interrelationship between arousal, cognition, and affect is limited.

Physiological arousal of all sorts, not just sexual arousal, is associated with efforts to reduce that arousal. The reduction of sexual arousal, a strong drive in young adults, must be tempered with protection-related behaviors if STD/AIDS are a concern. If safer sex practices are to be incorporated into the Sexual Behavior Sequence, physiological arousal has to be positively linked with cognition and affect associated with condom use. The present study examined arousal and cognition experimentally, and also assessed feelings about condom use.

The primary focus of the study was on safer sex thoughts and not on measuring sexual arousal. Given that previous research has successfully employed erotic videotapes as arousing stimuli, the present study also employed that methodology. Further, taking into consideration the relative invasiveness of genital measurements, extragenital measures of heart rate and blood pressure and subjective ratings of arousal have been chosen to provide a manipulation check for

level of arousal in the experimental and control group.

Summary of Hypotheses

The following hypotheses were tested in the present study:

1. Women will report a greater number of total inner-thoughts than men.

2. Women will report more thoughts related to safer sex concerns than men.

3. Sexual arousal will lead to fewer total thoughts.

4. Sexual arousal will lead to fewer safer sex thoughts.

5. There will be no interaction of gender and arousal in total number of thoughts or in safer sex thoughts.

6. Safer sex thoughts will be positively related to sexual outcome variables.

7. Positive ratings of condoms, intentions to discuss sexual protection, and prior condom use will be strongly related to intentions to use condoms in the future.

8. Condom use in the past two months will be positively correlated with condom acceptability ratings, safer sex thoughts, and the other sexual outcome variables.

9. Erotophobia/Erotophilia, contraceptive self-efficacy, and sexual assertiveness will be positively related to sexual outcome variables and reports of actual condom use in the past two months.

10. Knowledge and attitudes about sexuality,

contraception, STD/AIDS will not be strongly related to safer sex thoughts, recent condom use, and the other sexual outcome variables.

11. Personality characteristics, gender, and safer sex thoughts will account for a greater proportion of variance in the sexual outcome variables than knowledge and attitude variables.

The current study consisted of two phases. The first phase was a laboratory study designed to examine thoughts occurring to people when they are in situations that suggested the opportunity for a sexual encounter. The primary objectives of the first phase was to determine 1) if subjects reported cognitions related to safer sex practices or concerns, and 2) if sexual arousal had an effect on the reported cognitions. The second phase of the study consisted of a battery of questionnaires to assess previous sexual behavior, knowledge and attitudes about sexuality, contraception, STD/AIDS, and personality characteristics that may be related to sexual experiences. The primary objectives of the second phase of the study were to determine 1) if knowledge and attitudes about contraception and STD/AIDS, previous sexual behavior, and personality characteristics were related to intentions to engage in sex, to discuss safer sex, to use condoms, and reports of condom use in the past two months, and 2) if knowledge and attitudes about contraception

and STD/AIDS, previous sexual behavior, and personality characteristics were related to cognitions related to risky or safer sexual practices.

Method

Subjects

Subjects for this study were 68 sexually active, unmarried, males and females between the ages of 18 and 24. Subjects were in good physical health and had no serious psychological problems. Physical and psychological status were determined by a telephone screening interview (Appendix A). Perspective subjects were asked if they were being treated for any emotional or psychological problem and if they had experienced any particular stressful events in the past three months. Participants accepted into the study reported no high blood pressure; no current or recent involvement in therapy with a psychologist or psychiatrist; no use of medications for anxiety or depression; and no problems with alcohol.

Subjects were recruited to participate in "an investigation of methods to assess health-related experiences and behaviors" through advertisements in local newspapers and notices at nearby universities and community colleges. Confidentiality was ensured by labeling all questionnaires and data collection forms with a subject identification number. All data were kept in a locked file cabinet. The master list

of subjects' names and identification numbers were also kept in a locked space, away from the data, and was accessible only to the primary investigator. Subjects were assured that they were free to withdraw from the study at any time, and that their responses to the research materials were kept strictly confidential.

Subjects viewed the videotape on sexual relationships privately, in a sound-attenuated chamber. Heart rate and blood pressure measurements were obtained from an adjoining "control room" and the experimenter was available via intercom to respond to any questions or concerns. All sexually-related questionnaires were completed in private, labeled only with the identification number, and placed in a sealed envelope by the research participant. Subjects were told that "we are collecting data about important health issues including sexuality, smoking, substance use, stress, interpersonal relationships, exercise, and diet." The informed consent document stated that subjects might be asked about their personal experiences relating to any or all of the above mentioned health areas (Appendix B). All subjects were paid for their participation.

Design

There were two phases in this study. The first consisted of an experimental manipulation of sexual arousal to determine the effects of arousal on cognitive processes. The second phase consisted of a battery of questionnaires which was used

to assess sexual knowledge, attitudes, previous behavior, and personality characteristics possibly related to risky sexual behavior. For the experimental manipulation, equal numbers of male and female subjects were randomly assigned to either an "arousal" or "no arousal" condition for a 2 x 2 factorial design. The questionnaire data were analyzed by correlational and multiple regression analyses, and the sample size was determined based on the multiple regression procedure. Power analysis, as described by Cohen and Cohen (1983), suggested that power be conventionally set at .80, and that the effect size be set at d = .15 for a medium effect size and d = .35 for a large effect size. Thus power = .80 and d = .25 (medium-large) for 7 independent variables (gender, sexual knowledge, sexual attitudes, safer sex thoughts, sexual assertiveness, self-efficacy, and erotophobia/erotophilia scores) at alpha = .05 resulted in a necessary sample of 65.4, which was rounded up to a total n of 68 to allow for equal numbers of men and women in the experimental manipulation and adequate numbers of subjects to perform the multiple regression analysis.

Procedure

Subjects responding to the advertisement were enrolled in the study if they met screening criteria described previously. After completion of a telephone screening interview, interested and eligible subjects were brought into the laboratory and randomly assigned to either an "arousal" or "no

arousal" experimental condition. Experimental sessions were conducted in a comfortable, sound-attenuated room equipped with a television and VCR. Upon arrival at the laboratory, subjects were given a brief description of the study and informed consent was obtained. The description of the study was as follows:

> As you were told over the phone, our department conducts research on a wide range of health-related experiences and behaviors. Currently, we are looking at a variety of different ways to gather information from people. At this time we are interested in having people participate in these data collection procedures and provide feedback so that we can refine the procedures. As part of the testing session you will be asked to complete some questionnaires about your own behavior and experiences. The topics might include sexuality, substance use, interpersonal relationships, stress, exercise, and nutrition. We are testing different combinations of questionnaires and tasks, so you might be asked to respond to one or several topic areas. You might also be asked to participate in other types of procedures, for instance, you might be asked to watch a videotape and rate it on several dimensions, or participate in challenging tasks, such as video games, or puzzles, interact with other people to solve problems, or role-play how you might respond to specific situations. We

might want to measure your heart rate and blood pressure during some or all of these tasks. To do this, I will place a cuff around your arm that will inflate every few minutes-the procedure is like having your blood pressure taken in a doctor's office. It is important that you respond to the materials as honestly as you can and provide us with any feedback that you think might be useful in encouraging future participants to provide accurate information on their experiences and behaviors. Do you have any questions?

After signing the informed consent, subjects were introduced to the thought-listing technique and were given an opportunity to practice the procedure with four pre-test scenarios taken from the Assessment of Self-Statement and Behavior Test (Haynes-Clements & Avery, 1984; see Appendix C). The instructions were as follows:

> Your first task relates to interpersonal relationships. It involves reading about several situations and imagining yourself to be in the situation described. Your task is to list what you would be thinking in that situation. Try to be as detailed as you can be about all of the things that run through your mind. Don't worry about spelling or punctuation, and write one thought in each space on the sheet provided. You will have plenty of time to respond.
>
> EXAMPLE: You are with a group of friends who are

trying to decide what to do for the evening. There is a movie you would like to see. What would you be thinking or saying to yourself? You might be thinking - I think I'll just wait to see if someone else will suggest the movie; I would really be embarrassed if no one liked my suggestion; or we always like going to the movies - I'll make the suggestion. Do you have any questions?

After presenting the example scenario and answering questions, subjects responded to the first practice scenario. Subjects were given 1 minute to imagine themselves in the situation and then 3 minutes to list their thoughts and feelings. After the first practice scenario, subjects were given feedback about their responses to ensure that they were listing thoughts and not a description of the situation. No further feedback was given after the first practice trial, to ensure methodological consistency. Responses to the second through fourth scenarios were scored for total number of thoughts. These responses served as baseline measure of cognitions.

At this time, a blood pressure cuff was placed around the subjects' non-preferred arm. They were told that, "Your second task is to watch a videotape. We will measure your heart rate and blood pressure while you are watching it and then we would like you to complete a rating form." Blood pressure and heart rate were measured automatically every two minutes using a Spacelabs automatic blood pressure monitor.

Subjects were instructed to first relax for 15 minutes. The last three measurements in that 15-minute period were recorded and averaged as the baseline. Subjects then watched the videotape for the group to which they have been randomly assigned (i.e., arousal vs. control). The control videotape was from the Health Sciences Consortium "Human Sexuality Videotape Series," entitled "Criteria of Pleasurable Sex" in which the narrator, a psychiatrist, discusses interpersonal (e.g., respect, trust, and understanding) and environmental (e.g., time, atmosphere, absence of distraction) variables that are related to good sexual relationships. The arousal tape was a generic X-rated film (see Appendix D). Both tapes were approximately 10 minutes in length. After viewing the tape, subjects were asked to indicate their level of sexual arousal, disgust, entertainment, and boredom on a 7-point scale, ranging from <u>not at all</u> (1) to <u>completely</u> (7) (see Appendix E).

Subjects were then asked to complete a thought-listing scenario, which was the outcome measure. The scenario was as follows:

> You have been dating someone for a while. As of yet, you have not been sexually intimate beyond kissing, but you are ready for the relationship to progress further. He/She shares an apartment with a friend who will be out of town for the weekend. Tonight you are going to his/her place to have dinner. What would you be thinking

in this situation?

Blood pressure and heart rate monitoring were discontinued after completion of this thought-listing outcome task. Subjects were asked to provide feedback on the thought-listing task (see Appendix F), the videotape materials (see Appendix G) and to indicate the likelihood that the situation presented would lead to a sexual encounter, and whether that encounter would include some type of protection (see Appendix H).

The final stage of the laboratory session consisted of a series of questionnaires to assess subjects' sexual behavior, as well as their knowledge, beliefs, and attitudes about sex, contraception, and sexually transmitted diseases, including AIDS (see Appendix I). Additional questionnaires measured personality characteristics relevant to risky or safer sexual behaviors. After completion of the questionnaires, subjects were debriefed (i.e., informed of our interest in the relationship between cognitions and safe sex practices) and paid for their participation.

Measures

Cognitions were assessed using the thought-listing technique originally developed by Brock (1967) and Greenwald (1968). Questionnaires were administered to assess sexually-related knowledge, attitudes, personality characteristics, and behaviors.

Thought-listing. The thought-listing procedure is an open-ended cognitive assessment procedure in which subjects

report cognitions after a specified time period or task. The procedure was first used in studies of persuasion and attitude change (Brock, 1967; Greenwald, 1968), and has proven to be a reliable and sensitive dependent measure (Cacioppo & Petty, 1981). In this study, subjects were instructed to imagine themselves in several social situations and to indicate their thoughts regarding the situation in writing. Four practice scenarios, taken from the Assessment of Self-Statements Test (Haynes-Clements & Avery, 1984) were used to train subjects in the technique. One scenario, developed specifically for this study, served as the outcome measure.

Knowledge Questionnaires. The Mathtech Knowledge Test (Kirby, 1984) is a 34-item multiple choice test which covers a range of areas related to sexual concerns of adolescents including physical development, pregnancy, contraception, and sexually transmitted diseases. The test was developed to measure important knowledge areas that facilitate positive, fulfilling sexuality or reduce unintended pregnancy among young people. Test-retest reliability was .89 over a two-week period.

Knowledge about AIDS was assessed with a questionnaire developed by DiClemente, Zorn, and Temoshok (1986). The thirty-item true/false questionnaire assesses knowledge about the cause, transmission, and treatment of AIDS.

Knowledge about sexually transmitted diseases was assessed with items from the STD Health Behavior Knowledge

Test (Yarber, 1986) and the Venereal Disease (Gonorrhea and Syphilis) Knowledge and Attitudes questionnaire (Arafat & Allen, 1977).

Attitude and Belief Questionnaires. The Valois Sexual Attitude Scale (Valois & Ory, 1984) consists of 46 items rated on a 5-point scale, ranging from strongly agree (1) to strongly disagree (5), which yield attitudes toward nine aspects of sexual attitudes. Principal components analysis of this scale by the authors produced nine factors which accounted for 58.2% of the variance; each factor taps an independent facet of liberal sexual attitudes. Valois (1980) reported a 4-month stability coefficient of .85 and Cronbach's alpha for the subscales ranged from .66 to .92 (Valois & Ory, 1984).

Attitudes toward Contraceptive Methods (Gough, 1973) lists ten methods of contraception and asks respondents to rate each method on a 5-point scale, ranging from very acceptable (5) to very unacceptable (1). Test-retest coefficients ranged from .60 to .78 for the 10 items.

Attitudes and beliefs about sexually transmitted diseases were assessed with the STD Attitude Scale (Yarber, Torabi, & Veenker, 1988). Twenty-seven items, rated on a 5-point scale from strongly agree (1) to strongly disagree (5), tap feelings, beliefs, and behavioral intentions related to sexually transmitted diseases. Test-retest reliability over a 5 - 7 day period was .71 for the Total scale. Cronbach's

alpha for the Total scale was .73.

Attitudes and beliefs about AIDS were assessed with 11 items taken from a survey developed by DiClemente, Zorn, and Temoshok (1986). These questions assess feelings of personal susceptibility, disease severity, and the need for educational programs about AIDS.

Personality Measures. The Sexual Opinion Survey (SOS; Fisher, 1984) is a 21-item scale designed to measure the personality dimension of erotophobia/erotophilia, which is the disposition to respond to sexual cues with negative-to-positive affect and evaluations (Fisher, Byrne, White, & Kelley, 1988; White, Fisher, Byrne, & Kingma, 1977). Erotophobia/erotophilia has been linked with a variety of behaviors related to sexual functioning, including use of contraceptives and frequency of sexual behavior. Test-retest reliability over 2 months ranges from .80 to .85 for women and men, respectively. Cronbach's alpha of internal consistency is in the .85 - .90 range (Fisher et. al., 1988).

The Contraceptive Self-Efficacy Scale (CSE; Levinson, 1984) assesses motivational barriers to contraceptive use. The scale was originally designed for young women, but was administered to both women and men in this study, with appropriate changes in pronouns for the men. Respondents rate 18 items on a 5-point scale, ranging from not at all true of me (1) to completely true of me (5). Factor analysis of this scale by the author resulted in four factors which accounted

for 45.1% of the variance: 1) conscious acceptance of sexual activity by planning for it (i.e., thinking and talking about sex and seeking contraception; accounted for 12.3% of the variance); 2) assumption of responsibility for the direction of sexual activity and for using contraception (accounted for 11.8% of the variance); 3) assertiveness in preventing sexual intercourse in an involved situation (accounted for 11.6% of the variance); and 4) strong feelings of sexual arousal (accounted for 9.5% of the variance). Cronbach's alpha coefficient of internal consistency was .73. The CSE consists of four factors which are related to various aspects of sexual behavior and contraceptive use (Levinson, 1986).

Sexual assertiveness was assessed with 33 items from The Sexual Assertiveness Scale (SAS; Quina, Harlow, Gibson, & Morokoff, 1990) rated on a 5-point scale ranging from <u>never to almost never</u> (1) to <u>all or almost all of the time</u> (5). The SAS was validated with a sample of women; in this study it will be administered to both women and men (with appropriate changes in pronouns and some minor rewording of items to maintain consistency of items across groups). Factor analysis of this scale by the authors resulted in three factors related to 1) initiation and 2) refusal of sexual acts; and 3) use of contraception or STD protection. Cronbach's alpha coefficients ranged from .86 to .90 for the three factors.

<u>Behavior Questionnaires</u>. Sexual behavior was assessed with items from the Human Sexuality Questionnaire (Zuckerman,

1973). Frequency and variety of heterosexual, homosexual, and autosexual activities, as well as number of sexual partners are assessed in this questionnaire. The heterosexual experience scale is a Guttman scale consisting of 14-items ranging from kissing to coitus in various positions. Test-retest reliability after 15 weeks ranged from .80 to .95 (Zuckerman, Tushup, & Finner, 1976). Homosexual experiences are assessed with four items; masturbation and number of heterosexual and homosexual partners are each measured with one question. Test-retest reliabilities for homosexual experiences, over 15 weeks, ranged from .49 to .84; number of partners, .76 to .94; and frequency of masturbation, .63 to .90 (Zuckerman et. al., 1976).

Other questions about sexual behavior were taken from the Mathtech Behavior Inventory (Kirby, 1984). These questions focused on sexual behavior and contraception/protection behaviors over the past two months.

Sexual self-disclosure (SSD) was assessed with 19 items designed to tap ease or difficulty in disclosing sexual information in different situations (Catania et. al., 1986). Subjects were instructed to imagine themselves in various situations and then rate how easy or difficult it would be to reveal sexual information in that circumstance. Ratings ranged from <u>extremely easy</u> (1) to <u>extremely difficult</u> (6). Items cover whether the disclosure will be written, verbal; made to a group, another person, or in private; and to whom

the disclosure will be made - spouse, friend, parent, professional. Test-retest reliability for the SSD is .92 over 2 weeks. Cronbach's alpha of internal consistency is .93 (Catania et. al., 1986).

Measurement of Sexual Arousal. Sexual arousal was assessed by repeated measurements of heart rate and blood pressure while subjects view a videotape about sexual relationships. Since this study was not focused specifically on sexual arousal, and taking into consideration the relative invasiveness of genital measurements, extragenital measures of heart rate and blood pressure and subjective ratings of arousal were chosen as manipulation checks for level of arousal in the experimental and control groups.

Statistical Analysis

A number of different statistical analyses were performed on the data. First, 2 X 2 analyses of covariance (i.e., comparing men and women, arousal and no arousal) were performed on changes in heart rate and blood pressure to determine if the arousal manipulation was successful. Subjective ratings of sexual arousal were similarly analyzed with a 2 X 2 analysis of variance as a manipulation check.

Analyses of variance procedure using the 2 X 2 design described above (i.e., gender x arousal) were used to test group differences in thoughts-listed, intention to engage in sexual intercourse, intention to discuss safer sex, intention to use condoms, and reported condom use in the past two

months. The thought-listing procedure was scored for total number of thoughts, and total number of safer sex thoughts.

Correlational and multiple regression analyses were used to determine the influence of sexual knowledge, attitudes, previous behavior, personality characteristics, and safer sex thoughts on intention to engage in sexual intercourse, intention to discuss sexual protection, intention to initiate a discussion of safer sex, and reported actual condom use in the past two months.

The number of statistical tests that could hypothetically be performed on the variables included in this design were many. Given the restrictions of the sample size it was important to clarify which hypotheses were deemed most important and were the primary focus of the data analysis. With regard to the outcome measures, the primary focus of interest was the safer sex thoughts (e.g., don't forget to bring condoms; what about STDs). There were four major questions to be addressed in considering the impact of safer sex thoughts:

1. Are there gender differences in safer sex thoughts?

2. Does sexual arousal lead to differences in safer sex thoughts?

3. Are personality characteristics (i.e., sexual assertiveness, erotophobia/erotophilia, contraceptive self-efficacy) related to safer sex thoughts?

4. Are safer sex thoughts related to intentions to discuss safer sex, to engage in intercourse, to use condoms, or in reports of condom use in the past two months?

Limitations of the Study.

As with any study, there were constraints imposed by the design which should be acknowledged and kept in mind as the data were analyzed and conclusions drawn about the results obtained. As discussed in the previous section, the sample size was small given the number of variables included in the design. Delineation of the major hypotheses to be tested was desirable to avoid chance findings of significance in the course of running a large numbers of statistical tests.

While the ultimate focus of sexual intervention research is in predicting and influencing safer sex behaviors, this study was not designed to focus directly on behavior. There was no behavioral observation or follow-up included; that will remain for future studies. The main focus of this endeavor was to determine if participants could provide information about their thoughts that would tell us something about how behavior might be influenced.

Manipulation of sexual arousal by having participants view an erotic videotape is a common procedure in research on arousal or responses to pornography. It is important to keep in mind that the arousal elicited is quite mild when compared to arousal in an actual sexual encounter. Masters & Johnson (1966) reported increases of heart rate in the 80-100 bpm

range, and increases in blood pressure in the 20-30 mmHg range during sexual intercourse. In contrast, responses to videotapes usually result in significant increases in blood pressure ranging from 5-10 mmHg, and equivocal results for heart rate changes are common. Obviously, arousal in the laboratory is not the same as arousal in the bedroom with a receptive partner.

This study enabled us to examine what people reported thinking when considering a sexual scenario, to determine if women and men reported similar thoughts, and to examine how their reported thoughts varied in an arousal situation. Personality characteristics, specifically sexual assertiveness and contraceptive self-efficacy in both women and men, were assessed to determine how they are interrelated and how they influenced both thoughts and behavior in the recent past. In sum, this study was a first step toward a cognitive approach to understanding sexual experiences.

Results

Sample Characteristics.

The sample consisted of 68 males and females, who were physically and psychologically healthy and ranged in age from 18 to 24. The sample was homogeneous for age (M = 21.88, SD = 1.63), highest year of education completed (M = 14.88 years, SD = 1.82), and race (69% were white). The majority were students (62%), and employed (66%). Twenty-two percent (n =

15) were students only; 26.5% (n = 18) were employed only; 39.7% (n = 27) were both students and employed; and 11.8% (n = 8) were neither attending school or employed. A majority of the subjects were in a stable relationship (61% were in a steady dating relationship or cohabiting with their partner). The sample was heterogeneous for total family income (46% had a family income >$50,000, while 39% had an income <$30,000).

Analysis of variance comparing women and men on the demographic variables revealed a marginally significant difference for education, $F(1,66) = 3.63$, $p < .06$, with women having completed slightly more education than men (M = 14.47 years vs. 15.29 years). No other differences were found (see Table 1). There were no significant differences between the control and arousal groups (ie., control/female, arousal/female, control/male, and arousal/male) for any of the demographic variables.

Arousal Manipulation

Subjects were randomly assigned to view a sexually-explicit (ie., arousal) film or a non-explicit (ie., control) film which discussed sexual relationships. Heart rate (HR) and blood pressure (BP) were measured every two minutes during a fifteen minute baseline period and during the film, which lasted approximately ten minutes. During the baseline period subjects were seated comfortably in a reclining chair and instructed to relax. BP and HR were averaged for baseline and film segments. Change scores were computed to control for

differences in baseline levels of BP and HR. Analysis of variance (ANOVA) and analysis of covariance (ANCOVA) procedures were used to compare women and men on systolic blood pressure (SBP), diastolic blood pressure (DBP), HR, and subjective ratings of arousal.

Considering the raw scores for BP and HR, at baseline, SBP for women was significantly lower than for men (ie., 107 mmHg vs 120 mmHg), $F(1,67) = 31.99$, $p < .000$. There were no significant gender differences for DBP or HR (see Table 2). Considering change scores for BP and HR, there were no significant differences between women and men for SBP, DBP, or HR during the film.

Two (arousal vs. control film) x 2 (male vs. female) ANCOVAs, using baseline BP and HR as covariates, on the change scores revealed significant main effects for film condition with the arousal group showing significant increases in both SBP and DBP, $F(1,67) = 31.27$, $p < .000$ and $F(1,67) = 25.47$, $p < .000$, respectively, compared to the control group. There was a marginally significant main effect for film condition for HR, with the arousal group obtaining greater decreases than the control group, $F(1,67) = 3.14$, $p < .08$ (see Table 3).

In addition to the physiological measures, subjects responded to two questions about arousal. The first asked them to describe how they were feeling right after the film. "Sexually Aroused" was one of four adjectives, (the other adjectives were Disgusted, Bored, Entertained), which were

rated on a 7-point scale from "not at all" to "extremely" They also rated the tape as "Interesting" and "Sexually Arousing" and were given an opportunity to provide any other comments they wished to make about the tape.

Two (control vs. arousal film) X 2 (male vs. female) ANOVAs revealed significant main effects for film condition. The arousal group rated themselves significantly more aroused, $F(1,67) = 51.33$, $p < .000$, and the tape as significantly more arousing, $F(1,67) = 77.86$, $p < .000$, than the control group (see Table 4). There was a significant main effect for gender for the extent to which men and women rated the film as arousing, $F(1,67) = 7.05$, $p < .01$, and a marginally significant main effect for gender for subjective reports of sexual arousal, $F(1,67) = 3.76$, $p < .06$, with men rating the film as more arousing and indicating greater subjective arousal than women. There were no significant interaction effects for either variable. These physiological and self-report results indicated that the experimental manipulation was effective in increasing sexual arousal. Examination of subjective ratings of arousal suggests that men were somewhat more aroused than women or that they reported being more aroused.

Thought-Listing

Subjects completed the thought-listing procedure in response to four practice scenarios and one outcome scenario. The practice scenarios were administered before the subjects

viewed the control or arousal film; the outcome scenario was completed immediately after viewing the experimental film. Practice in thought-listing was intended to familiarize participants with the procedure and to provide a baseline of the average number of thoughts-listed. Responses to the first practice scenario were not included in the data analysis because subjects were given feedback about their performance after their first attempt at listing their thoughts. Feedback consisted of reiterating the instructions to try to focus on thoughts that were going through their mind or what they might be saying to themselves, rather than describing what they might do in the given situation. No feedback was given for the remaining practice scenarios to maintain consistency in the experimental procedures. Responses to practice scenarios two through four provided the baseline data for all subsequent analyses.

Safer Sex Thoughts. Approximately one-third of the subjects listed safer sex thoughts in response to the outcome scenario (see Table 5). Specifically, 32% (n = 22) of subjects listed safer sex thoughts, while 68% (n = 46) listed no protection-related thoughts. For those reporting safer sex thoughts, the number of thoughts listed ranged from one to three, with 72% (16/22) listing only one thought. More than one safer sex thought was listed by three women and three men. A qualitative review of the thoughts generated suggested that listing more than one safer sex thought did not necessarily

indicate stronger feelings or concerns about protection; usually it was an elaboration of a particular concern (e.g., Does he have any protection? He'd better plan to be safe.). Because of the low number of subjects who listed more than one safe sex thought, it was decided to code safer sex thoughts dichotomously as either present or absent.

Seventy-seven percent (17/22) of the subjects listed thoughts specifically about condoms or STD protection or concerns; 23% (5/22) listed thoughts about contraception with no specific mention of condoms or STD protection or concerns. It is possible that those not specifically mentioning condoms might still use them as their method for contraception, but their primary concern is to prevent pregnancy rather than avoid STD infection. Both groups have been included in the analyses of safer sex thoughts.

There were 11 hypotheses tested in this study. The major hypotheses related to the four central questions being addressed regarding the importance of safer sex thoughts in the context of risky sexual behavior (see pp. 27-31; 80-81). The overall focus was the occurrence of safer sex thoughts in women and men, as a function of sexual arousal, in relationship to personality characteristics and in relation to other variables relevant to sexual experiences and behavior. Several additional hypotheses related to questions about sexual knowledge, attitudes, experiences, and behaviors.

Results of the data analysis will address each major question and the hypotheses that follow from those questions.

Are There Gender Differences in Thoughts-Listed?

Hypothesis #1 - Women will report a greater number of total inner-thoughts than men. This hypothesis was tested with a 2 (women vs. men) x 4 (Scenario 2 through Scenario 5) repeated measures ANOVA comparing women and men on the number of thoughts listed for the four scenarios. Results indicated that there was no significant gender difference in the number of thoughts generated (see Table 6). There was a significant main effect for Scenario, $F(3,198) = 9.75$, $p < .000$, indicating that the number of thoughts listed increased with each new scenario, suggesting a practice effect (see Table 7). Paired t-tests, using the Bonferroni adjustment for significance level, indicated that the fewest number of thoughts were listed in response to Scenario 2, significantly fewer than to Scenarios 3 through 5, t's(67) -2.67 to -5.38, $p < .000$ to .009.

Hypothesis #2 - Women will report more thoughts related to safer sex concerns than men. This hypothesis was tested with a oneway ANOVA comparing women and men on the number of safer sex thoughts generated in response to the outcome scenario. Results revealed no significant gender difference in the number of safer sex thoughts listed (see Table 5). The mean number of safer sex thoughts was .29 for the women and .35 for the men.

Does Arousal Affect Thoughts Generated?

There were three hypotheses related to the sexual arousal and thoughts: Hypothesis #3 - Sexual arousal will lead to fewer total thoughts; Hypothesis #4 - Sexual arousal will lead to fewer safer sex thoughts; and Hypothesis #5 - There will be no interaction of gender and arousal in total number of thoughts or in safer sex thoughts.

Since the outcome scenario was the only one completed after the arousal manipulation, questions concerning arousal effects necessarily refer to data gathered from the outcome scenario only and not the practice thought-listing scenarios. These hypotheses were tested with 2 (control vs. arousal film) x 2 (women vs. men) ANOVAs for the total number of thoughts listed in response to the outcome scenario, and the number of safer sex thoughts listed for the outcome scenario.

For the total number of thoughts, results indicated no significant main effect for gender or arousal, but a significant Gender x Arousal interaction, $F(1,67) = 9.15$, $p < .004$, (see Table 8). Control males listed the fewest number of thoughts, while men in the arousal condition listed the greatest number of thoughts ($M = 5.18$ and 7.24, respectively). Post-hoc Tukey HSD tests indicated that these two groups were significantly different from each other, ($p < .05$), but not from the control or arousal women ($M = 6.82$ and 6.06, respectively).

For safer sex thoughts, results indicated no significant

main effect for gender or arousal and no significant interaction. Additional analyses examined the occurrence of safer sex thoughts in those subjects who experienced the most arousal to determine if greater arousal might lead to fewer safer sex thoughts. To test this possibility, 2 (control vs. arousal film) x 2 (women vs. men) ANOVAs were performed comparing subjects in the control condition to those in the arousal condition whose SBP, DBP, and both SBP and DBP was above the mean. The mean was chosen rather than the median because it was higher and provided a dividing point that differentiated a group that was <u>most</u> aroused. Results indicated that there were no significant differences in the occurrence of safer sex thoughts for the most aroused subjects compared tc the control condition.

In summary, results contradicted each of the three hypotheses related to sexual arousal and thoughts. The total number of thoughts generated in response to the scenarios and the number of safer sex thoughts generated in response to the outcome scenario was not decreased by arousal, even when considering the most aroused subjects. There was an interaction of gender and arousal for total number of thoughts in which sexual arousal was associated with the <u>greatest</u> number of thoughts. There was no interaction of gender and arousal for safer sex thoughts.

Are Safer Sex Thoughts Related to Sexual Outcome Variables?

Hypothesis #6 - Safer sex thoughts will be positively related to sexual outcome variables. The sexual outcome variables were taken from the questionnaire subjects completed after the sexual scenario thought-listing task. The questions were: 1) how likely would it be that this situation would lead to a sexual encounter; 2) how likely would it be that the topic of sexual protection would have come up; 3) how likely would it be that you would initiate a discussion about sexual protection; and 4) if this encounter were to lead to sexual intercourse, how likely would you be to use some sort of protection.

Intercorrelations for the outcome variables ranged from -.27 to .55 (see Table 9). Discussing sexual protection and initiating a discussion about protection were the most highly correlated of the dependent variables ($r = .55$, $p < .000$). Intention to use protection was positively correlated with intention to discuss protection and intention to initiate a discussion about protection ($r = .30$, $p < .007$ and $r = .39$, $p < .000$, respectively). Anticipation that the outcome scenario would lead to a sexual encounter was negatively correlated with reports of actual condom use in the past two months ($r = -.27$, $p < .02$).

It was hypothesized that those who listed safer sex thoughts would be more likely to discuss safer sex concerns with their partner, initiate safer sex discussions, and plan

to use protection if they have intercourse than those who did not list safer sex thoughts. Actual condom use over the past two months was included as an additional dependent variable. It was hypothesized that those who listed safer sex thoughts would have actually used condoms more frequently over the past two months than subjects who did not list safer sex thoughts.

To test this hypothesis, the occurrence of safer sex thoughts was correlated with the sexual outcome variables completed in reference to the outcome scenario, and with reports of actual condom use over the past two months. Correlations were calculated for the entire group and for women and men separately to determine if there were any relevant gender differences (see Table 10).

For the total sample, there was a significant negative correlation ($r = -.27$, $p < .01$) between the likelihood of having sex and the listing of safer sex thoughts. When considering women and men separately, this correlation was significant for men ($r = -.37$, $p < .02$), but not significant for women, although still in the negative direction ($r = -.14$, $p < .21$). None of the other variables, related to the outcome scenario, nor actual condom use was significantly correlated with safer sex thoughts for the entire group, or for women or men. Considering the relationship between safer sex thoughts and outcome variables for the total sample, one of the five correlations was significant.

What Variables Are Related to Condom Use?

Hypothesis #7 - Positive ratings of condoms, intentions to discuss sexual protection, and prior condom use will be strongly related to intentions to use condoms in the future. To test this hypothesis, ratings of the acceptability of condoms, intention to discuss protection, and reports of condom use over the past two months were correlated with intention to use condoms in the future. As before, correlations were calculated for the entire group and for women and men separately. Ratings of condom acceptability were obtained from the Contraceptive Acceptability Scale. Subjects included in these analyses were those who indicated that condoms would be their method of choice if they were to have sex with a new partner ($n = 60$ for total group; $n = 30$ women and $n = 30$ men).

Ratings of the acceptability of condoms were positively and significantly correlated with future intentions to use condoms for the total sample ($r = .45$, $p < .000$) and for men ($r = .64$, $p < .000$), but not for women ($r = .14$, $p < .23$; see Table 11). Similarly, the question regarding intention to discuss sexual protection, from the outcome scenario, was positively and significantly correlated with future intentions to use condoms for the entire group ($r = .41$, $p < .001$) and for men ($r = .47$, $p < .004$) and women ($r = .17$, $p < .19$). Reports of actual condom use in the past two months were marginally correlated with future intentions to use condom for

the entire sample ($r = .20$, $p < .09$), and for women and men ($r = .21$, $p < .15$ and $r = .17$, $p < .23$, respectively).

Hypothesis #8 - Condom use in the past two months will be positively correlated with condom acceptability ratings, safer sex thoughts, and the other sexual outcome variables.

To test this hypothesis, condom use over the past two months was correlated with ratings of condom acceptability, safer sex thoughts, and the sexual outcome variables for the total sample, and women and men separately. Results indicated that the question about the likelihood of having sex, from the outcome scenario, was significantly and negatively correlated with reports of condom use in the past two months for women ($r = -.40$, $p < .01$), but not for men ($r = -.08$, $p < .36$). This suggests that the less likely women were to report using condoms in the recent past two months, the more likely they were to anticipate a new sexual encounter (see Table 12).

Responses to the questions from the outcome scenario related to discussing sexual protection or using protection were not associated with recent condom use. Safer sex thoughts were not associated with recent condom use. Ratings of condom acceptability were correlated with condom use in the past two months for the entire sample ($r = .26$, $p < .03$), and for men ($r = .33$, $p < .05$), and somewhat less strongly for women ($r = .19$, $p < .15$).

Are Personality Variables Related to Safer Sex Thoughts and Sexual Outcome Variables?

Hypothesis #9 - Erotophobia/Erotophilia, contraceptive self-efficacy, and sexual assertiveness will be positively related to sexual outcome measures generated in response to the outcome scenario, and assessed from their actual behavior. Specifically, more erotophilic participants and those who feel efficacious and assertive in sexual relationships will report more sexually related inner-thoughts, indicate a greater intention to use condoms and to discuss safer sex concerns with their partner, in response to the outcome scenario questions, and will report greater actual condom use in the past month.

Erotophobia/Erotophilia is a measure of how people respond to sexual stimuli - whether they are generally open to sexual material or tend to avoid it. Sexual Assertiveness is a scale which is comprised of three subscales - assertiveness in the Initiation of sexual activity, assertiveness in the Refusal of sexual involvement, and assertiveness about using sexual Protection. Contraceptive Self-Efficacy consists of four subscales which assess a range of sexual feelings, attitudes and behaviors: 1) Conscious Acceptance of Sexual Activity; 2) Assumption of Sexual/Birth Control Responsibility; 3) Assertiveness in Preventing Intercourse; and 4) Strong Feelings of Sexual Arousal.

Intercorrelations of the personality variables ranged

from -.38 to .61 (see Table 13). Erotophobia/erotophilia was negatively associated with assertiveness in preventing or refusing intercourse and positively related to assertiveness in initiating sexual activity. Three of the CSE subscales were highly intercorrelated, while the fourth subscale - Assertiveness in Preventing Intercourse was significantly correlated with sexual assertiveness in refusing intercourse and using protection.

To test the above mentioned hypotheses, correlational analyses were performed to determine the relationship between each of the personality variables, the occurrence of safer sex thoughts, and the other sexual outcome variables, previously described. Correlations were calculated for the entire group and for men and women separately.

Personality Characteristics and Safer Sex Thoughts. Results indicated that for women there was a significant relationship between safer sex thoughts and the dimensions of Erotophobia/Erotophilia, and assertiveness in Initiating sexual activity. There were no significant relationships between these personality characteristics and safer sex thoughts for the men, or when considering both women and men together (see Table 14).

Women who were more erotophilic (i.e., open to sexual stimuli) and who scored higher on assertiveness related to Initiation of sexual activity were more likely to list safer sex thoughts than women who were less erotophilic ($r = .42$, p

<.006), and who reported less assertive behavior (r = .31, p < .04). There was no relationship between assertiveness related to Refusal of sexual involvement or Protection concerns and safer sex thoughts for women. With regard to Contraceptive Self-Efficacy, there was a marginally significant positive correlation between safer sex thoughts and Assertiveness in Preventing Intercourse in an involved situation (ie., "in the heat of the moment"; r = .26, p < .07) for women. There were no significant relationships between any of the Contraceptive Self-Efficacy subscales and safer sex thoughts for the entire group or for men. Considering the relationship between personality characteristics and safer sex thoughts for the entire sample and men, none of the eight correlations was significant. For women, two of the eight (25%) correlations were significant.

Personality Characteristics and Sexual Outcome Variables.

Erotophobia/Erotophilia. Results of the correlational analyses indicated that women who were more erotophilic were more likely to indicate that the outcome scenario would lead to a sexual encounter (r = .31, p < .04), and that they would be more likely to use protection during that sexual encounter (r = .37, p < .02) than women who were more erotophobic (see Table 15). Men who were more erotophilic indicated that they would be less likely to initiate a discussion about sexual protection (r = -.29, p < .05), and less likely to use protection (r = -.25, p < .08) than men who were more

erotophobic. Actual condom use over the past two months was not significantly correlated with erotophobia/erotophilia for either women or men.

Sexual Assertiveness Scale. Correlational analyses indicated no significant relationship between the outcome questions, posed in reference to the sexual scenario and the subscale measuring assertiveness in Initiating sexual activity (see Table 16). There was a modestly significant negative correlation between actual condom use in the past two months and the subscale measuring Initiation assertiveness for men and women combined ($r = -.21$, $p < .07$) and for women alone ($r = -.24$, $p < .10$), suggesting that those who are more assertive in initiating sexual activity are less likely to use condoms than those who are less assertive in initiating sexual activity.

The subscale measuring Assertiveness in the Refusal of sexual activity was positively correlated with both initiating a discussion about protection and anticipating using protection for the entire group ($r = .30$, $p < .007$ for both variables). Men who were more assertive in the Refusal of sexual activity were more likely to initiate a discussion about sexual protection ($r = .29$, $p < .05$) than men who were less assertive in this regard. Women who were more assertive in the Refusal of sexual activity were somewhat more likely to anticipate using protection ($r = .24$, $p < .09$) than women who were less assertive in the Refusal of sexual activity.

There was a negative correlation between the likelihood that the outcome scenario would lead to a sexual encounter and the subscale measuring assertiveness about using sexual Protection ($r = -.18$, $p < .07$ - total group; $r = -.29$, $p < .05$ - men; $r = -.18$, $p < .16$ - women). This suggests that men who were more likely to indicate that the outcome scenario would lead to a sexual encounter were relatively less assertive about using sexual Protection, or that men who were less likely to anticipate a sexual outcome, were likely to be more assertive about using sexual Protection. The relationship was the same for women and the entire group, but not as strong as for men. Discussing protection, initiating such a discussion, and anticipating using protection were each positively correlated with the subscale measuring assertiveness about using sexual Protection ($r = .28$, $p < .01$; $r = .45$, $\underline{p} < .000$; $r = .60$, $\underline{p} < .000$, respectively). This relationship was consistent for the group as a whole, and for women and men separately. Actual condom use in the past two months was positively correlated with Protection assertiveness for the entire group ($r = .24$, $\underline{p} < .04$), and for men ($r = .28$, $\underline{p} < .09$) and women ($r = .20$, $\underline{p} < .14$) considered separately.

Contraceptive Self-Efficacy Scale. The subscale measuring Conscious Acceptance of Sexual Activity was negatively correlated with anticipation that the sexual scenario would lead to a sexual encounter for women, but not for men ($r = -.33$, $\underline{p} < .03$ and $r = .10$, $\underline{p} < .29$, respectively;

see Table 17). Women who were most accepting of themselves as sexual beings were less likely to anticipate having sex in the given situation. Conscious Acceptance of Sexual Activity was modestly correlated with the likelihood of discussing protection for the entire group ($r = .20$, $p < .05$), and for women and men ($r = .16$, $p < .18$ and $r = .25$, $p < .08$, respectively). Actual condom use in the past two months was significantly negatively correlated with Conscious Acceptance of Sexual Activity for men ($r = -.41$, $p < .02$), but not for women ($r = -.01$, $p < .48$). Men who were the most consciously aware of their sexual activity were less likely to have used condoms in the recent past than men who reported being relatively less aware of their sexuality. For women, there was no relationship between Conscious Acceptance of Sexual Activity and recent condom use.

For the subscale measuring Assumption of Sexual/Birth Control Responsibility, there was a negative correlation with how likely subjects thought it would be that the outcome scenario would lead to a sexual encounter (see Table 17). This relationship was significant for the entire group ($r = -.26$, $p < .02$) and women ($r = -.32$, $p < .03$), but not for men ($r = -.18$, $p < .15$). Discussing protection and initiating such a discussion were positively associated with assumption of these responsibilities for the entire group ($r = .23$, $p < .03$ and $r = .20$, $p < .06$, respectively), and for women and men (see Table 15). Anticipating using protection was highly

correlated with the assumption of responsibility for men (r = .67, p < .000), but not at all related for women (r = .01, p < .48). Actual condom use over the past two months was positively correlated with the assumption of sexual responsibility for the entire group (r = .28, p < .02), and for the women (r = .34, p < .03), and less so for men (r = .21, p <.16).

With regard to the subscale measuring Assertiveness in Preventing Intercourse, there was no significant correlation with the likelihood of having sex or discussing protection, based on the sexual scenario for the entire group, women or men. There was a positive relationship between Assertiveness in Preventing Intercourse, anticipating the likelihood of initiating a discussion about sexual protection (r = .27, p < .01), and anticipating using protection (r = .32, p < .004) for the entire group, and for women and men (see Table 18). Actual condom use in the past two months was positively correlated with Assertiveness in Preventing Intercourse for the entire group (r = .28, p < .02), for women (r = .33, p < .04), and less so for men (r = .23, p < .13).

For the subscale measuring Strong Feelings of Sexual Arousal, there was no significant correlation with the likelihood of having sex, based on the sexual outcome scenario for the entire group, women or men. There were significant and positive correlations with intentions to discuss protection (r = .42, p <.000), to initiate such a discussion

($r = .34$, $p < .002$), and to use protection ($r = .31$, $p < .005$) for the entire group (see Table 18). Discussing protection and initiating a discussion were significantly and positively associated with Strong Feelings of Sexual Arousal for both women ($r = .36$, $p < .02$ and $r = .27$, $p < .06$, respectively) and men ($r = .48$, $p < .002$, and $r = .40$, $p < .009$ respectively). Anticipation of using protection was strongly correlated with Strong Feelings of Sexual Arousal for men ($r = .45$, $p < .004$), but unrelated for women ($r = .11$, $p < .27$). Finally, actual condom use over the past two months was not significantly correlated with reports of Strong Feelings of Sexual Arousal for the entire group, women or men. Considering the relationship between personality characteristics and sexual outcome variables for the entire sample, 17 of the 40 correlations (42.5%) were significant.

Are Knowledge and Attitudes About Sexuality, Contraception, and STD/AIDS Related to the Outcome Measures?

Hypothesis #10 - Knowledge and attitudes about sexuality, contraception, STD/AIDS will not be strongly related to safer sex thoughts, recent condom use, and the other sexual outcome measures generated in response to the outcome scenario (i.e., intention to engage in sex, intention to discuss safer sex, to initiate a safer sex discussion, and intention to use protection).

To test this hypothesis, knowledge and attitudinal variables were correlated with the sexual scenario outcome

variables, condom use over the past two months, and safer sex thoughts for the entire sample, and women and men separately. Three knowledge measures: 1) General Sexual Knowledge Test; 2) STD Health Behavior Knowledge Test, and 3) AIDS Knowledge Questionnaire; and three Attitude measures: 1) Valois Sexual Attitudes Scale; 2) STD Attitude Scale; and 3) AIDS Attitudes were included in the analyses.

Intercorrelations of the knowledge and attitude variables ranged from -.17 to .59 (see Table 19). There was a significant positive correlation between STD attitudes and AIDS attitudes ($r = .36$, $p < .001$). Knowledge variables were highly intercorrelated. The relationship between knowledge and general sexual attitude was positive and significant. The correlations between knowledge and STD and AIDS attitudes were generally low and not significant.

Knowledge Measures. Results from correlational analyses of the knowledge variables indicated that there was a marginally significant negative relationship between the likelihood of having sex and general sexual knowledge ($r = -.27$, $p < .06$; see Table 20) and AIDS knowledge ($r = -.24$, $p < .09$) for women. The correlations for general sexual knowledge were similarly negative for the entire group and men ($r = -.16$ for both, $p < .10$ and $p < .18$, respectively). These results suggest that, for women, increased general knowledge about sexuality and AIDS was associated with lower expectations that the outcome scenario would lead to a sexual

encounter. The finding is similar for men, although not as strong as for women.

The likelihood of discussing protection was positively correlated with general sexual knowledge for women ($r = .33$, $p < .03$), but weakly and negatively correlated for men ($r = -.16$, $p < .19$). Discussion about protection and the likelihood of initiating a discussion was negatively correlated with STD knowledge for men ($r = -.38$, $p < .01$ for discuss protection; $r = -.27$, $p < .06$ for initiating discussion). For women, STD Knowledge was weakly correlated with discussing protection ($r = .19$, $p < .14$), but not correlated with initiating a discussion ($r = -.12$, $p < .25$).

Ratings of the likelihood of using protection were positively correlated with increased general and STD Knowledge for women ($r = .31$, $p < .04$ for both scales), and for AIDS Knowledge for the entire sample, and women and men considered separately ($r = .21$, $p < .04$; $r = .27$, $p < .06$; and $r = .25$, $p < .08$ respectively). Reports of actual condom use in the past two months were positively correlated with AIDS Knowledge for men only ($r = .32$, $p < .06$). There was basically no relationship between AIDS Knowledge and actual condom use for the entire sample and women ($r = .08$, $p < .28$ and $r = -.04$, $p < .43$, respectively). Safer sex thoughts in response to the outcome scenario were positively correlated with general sexual knowledge and STD knowledge for women ($r = .27$, $p < .06$; $r = .34$, $p < .03$ respectively), and marginally

negatively associated with AIDS knowledge for men ($r = -.23$, $p < .09$). Considering the relationship between sexual knowledge, safer sex thoughts, and sexual outcome variables for the entire sample and men, only one of the 18 correlations was significant. For women, four of the 18 correlations (22.2%) were significant.

Attitude Measures. Results from correlational analyses of the attitude measures indicated that there was no relationship between general sexual attitudes, AIDS and STD attitudes, and the anticipation of having sex, in the context of the outcome scenario (see Table 21). Discussing protection was strongly and positively correlated with STD attitudes for the entire group ($r = .49$, $p < .000$), and for women and men separately ($r = .53$, $p < .001$ for women, $r = .46$, $p < .003$ for men). In addition, discussing protection was positively associated with general sexual attitudes for women ($r = .28$, $p < .05$), but not for men ($r = .09$, $p < .31$), while for AIDS attitudes the relationship was modestly correlated for men, but not women ($r = .26$, $p < .07$ and $r = .10$, $p < .29$, respectively). Initiating a discussion about sexual protection was also strongly and positively associated with STD attitudes for the total sample ($r = .50$, $p < .000$) and for women and men separately ($r = .47$, $p < .003$ and $r = .50$, $p < .001$, respectively). For AIDS attitudes, the positive relationship was stronger for the men ($r = .34$, $p < .03$) than for the women ($r = .17$, $p < .17$).

There was no relationship between general sexual attitudes and the likelihood of initiating a discussion about sexual protection. Anticipation of using protection was significantly and positively correlated with general sexual attitudes for women ($r = .44$, $p < .005$), but not for men ($r = -.04$, $p < .41$). For STD attitudes and anticipated protection use, there was a significant positive correlation for men ($r = .38$, $p < .01$), but not for women ($r = .03$, $p < .44$). For AIDS attitudes and ratings of future use of protection, the correlation was positive for men ($r = .28$, $p < .06$), but negative for women ($r = -.22$, $p < .10$).

Condom use in the past two months correlated positively with AIDS attitudes for men ($r = .37$, $p < .03$) but negatively for women ($r = -.34$, $p < .03$). There was no relationship between recent use of condoms and general sexual attitudes or STD attitudes. Safer sex thoughts were significantly and positively correlated with general sexual attitudes for women ($r = .43$, $p < .005$), but not for men ($r = -.15$, $p < .20$). There was no significant relationship between safer sex thoughts and specific attitudes about AIDS or STDs. Considering the relationship between sexual attitudes, safer sex thoughts, and sexual outcome variables for the entire sample and men, 5 of the 18 correlations (27.8%) was significant. For women, 6 of the 18 correlations (33.3%) were significant.

In summary, there were 14 correlations of safer sex

thoughts and personality characteristics, sexual knowledge, and sexual attitude variables. For the entire sample and for men, none of the correlations were significant; for women 4 of the 14 (28.6%) were significant. Of the five correlations between safer sex thoughts and sexual outcome variables, one was significant for the entire group and men; none of the correlations were significant for women. There were 70 correlations of personality, knowledge, attitudes variables, and sexual outcome variables. For the entire sample, 23 of the 70 correlations (32.9%) were significant; for women, 18 of the 70 (25.7%) were significant, and for men 16 of the 70 (22.9%) were significant.

Hypothesis #11 - Personality characteristics, gender, and safer sex thoughts will account for a greater proportion of variance in the sexual outcome variables than knowledge and attitude variables.

To test this hypothesis, stepwise multiple regression analyses were performed. Preliminarily, a principal-components factor analysis with varimax rotation was performed on the 15 knowledge, attitude, and personality characteristic variables to determine which variables were related and could be grouped together for the regression analyses. Using a minimum eigenvalue of 1.07, five components were extracted, accounting for 67.8% of the variance in the original ratings (see Table 22). Factor 1 (23.2% of variance) consisted of general sexual attitudes and AIDS Knowledge and was labeled

Sexual Attitudes. Three of the four Contraceptive Self-Efficacy subscales, STD Attitudes, and Sexual Assertiveness in Initiating sexual activity loaded on Factor 2 (15.9% of variance). This factor was labeled Contraceptive Self-Efficacy. Factor 3 (13.7% of variance) consisted of Sexual Assertiveness about Protection and Refusal of sexual activity, and the contraceptive self-efficacy subscale of Assertiveness in Preventing Intercourse in an involved situation. Factor 3 was labeled Protection Assertiveness. Factor 4 (7.8% of variance) consisted of safer sex thoughts and the extent to which people were open to sexual stimuli, or erotophobia/ erotophilia and was labeled Safer Sex Thoughts. Factor 5 (7.1% of variance) consisted of and was labeled AIDS Attitudes.

Intercorrelations of the five factors ranged from -.31 to .38 (see Table 23). Factor 1 and 4 were positively correlated ($r = .38$, $p < .000$), as were Factors 2 and 5 ($r = .38$, $p < .000$). Factors 3 and 4 were significantly and negatively correlated ($r = -.31$, $p < .006$). In general, being open to sexual stimuli was negatively associated with concerns about sexual protection, and positively associated with liberal sexual attitudes and knowledge about AIDS. Concern about AIDS was also positively associated with ratings of contraceptive self-efficacy.

To test the hypothesis regarding the relative importance of knowledge, attitudes, and personality characteristics to

the sexual outcome variables, multiple regression analyses were performed. For these analyses, gender and the five factor scores were entered as predictor variables for each of the four sexual outcome variables, posed in reference to the sexual scenario, and for actual condom use in the past two months (see Table 24).

Three of the five equations were highly significant accounting for 25% to 33% of the variance in sexual outcome. The likelihood of having sex was not predicted by these factors. Actual condom use in the past two months was also not well predicted by these factors, although the overall equation was significant at the .04 level.

For the likelihood of having sex, none of the factors entered as significant predictors. For the likelihood of discussing sexual protection, the Contraceptive Self-Efficacy factor accounted for 25% of the variance in responses, $F(1,66) = 22.40$, $p < .0000$.

For the likelihood of initiating a discussion about sexual protection, there were two significant predictors accounting for 33% of the variance in responses, $F(2,65) = 16.25$, $p < .0000$. Contraceptive Self-Efficacy accounted for 25% of the variance, $F(1,66) = 21.53$, $p < .0000$, and Protection Assertiveness accounted for an additional 8%, $F(1,66) = 8.52$, $p < .005$.

For the likelihood of using protection, there was only one significant predictor, the Protection Assertiveness factor

which accounted for 25% of the variance in responses, $F(1,66) = 21.50$, $p < .0000$. Finally, for actual condom use in the past two months, Protection Assertiveness was again the only significant predictor, and accounted for only 7% of the variance in recent condom use, $F(1,66) = 4.30$, $p < .04$.

Discussion

The main purpose of this study was to examine how thoughts are related to risky sexual behavior. Risky sexual behavior is a very complex phenomenon and one that is especially important in the midst of the current AIDS crisis. Research into the factors influencing sexual behavior has just begun to consider variables other than traditional knowledge and attitude measures. This study used a cognitive assessment procedure to explore what people are thinking at the beginning of a new sexual relationship and to examine how such thoughts might be affected by sexual arousal. Subjects imagined themselves in a situation that suggested the possibility of a sexual encounter and were instructed to write down what they would be thinking in anticipation of that situation. The thoughts generated were analyzed to determine the frequency of safer sex thoughts, how thoughts were affected by sexual arousal, and whether safer sex thoughts were related to other aspects of sexual experience and behavior.

Safer Sex Thoughts

There were four major questions addressed in considering

the impact of safer sex thoughts: 1) Are there gender differences in safer sex thoughts? 2) Does sexual arousal influence the frequency of safer sex thoughts? 3) Are personality characteristics (i.e., sexual assertiveness, erotophobia/erotophilia, contraceptive self-efficacy) related to safer sex thoughts? 4) Are safer sex thoughts related to intentions to discuss safer sex, to engage in intercourse, to use protection, or to reports of actual condom use in the past two months?

The first question addressed gender differences in safer sex thoughts generated in response to the sexual outcome scenario. Previous research focusing on cognitions has found that women generally report more positive thoughts than men in social interaction. It was predicted that the sexual focus of the outcome scenario might bring to mind both positive and negative concerns for women, and primarily positive thoughts for men, and that women would report more total inner thoughts and more safer sex concerns than men. Results revealed no significant differences between women and men in the total number of thoughts or in the number of safer sex thoughts generated in response to the sexual scenario.

Previous research has considered the number of thoughts generated by subjects, as well as whether the thoughts were positive or negative in tone. Since the total number of subjects listing safer sex thoughts was only a third of the total sample, and since the safer sex thoughts listed by women

and men were uniformly positive, an analysis comparing positive and negative safer sex thoughts was not practical. Future work in this area could elicit more elaborate thoughts on the topic of safer sex from women and men. It is possible that a mix of positive and negative thoughts might emerge with a different methodology. The question of whether subjects would list <u>any</u> safer sex thoughts given an obviously sexual situation without asking them specifically for their thoughts about protection was addressed here. A different question might be "what protection-related thoughts might you experience or have in a sexual situation".

The second issue addressed in this study was whether sexual arousal affected safer sex thoughts. Based on previous research, it was hypothesized that sexual arousal would act as a distracting variable, and lead to a decrease in the number of safer sex thoughts. The experimental manipulation was successful in producing mild physiological and psychological arousal. Systolic and diastolic blood pressure increased significantly for the group that watched the erotic film as compared with the group that viewed the control film. Subjects who viewed the erotic film rated the film as more "arousing" and themselves as more "aroused" than the control group subjects. Although the experimental manipulation was successful, arousal was <u>not</u> associated with any differences in safer sex thoughts.

Since the level of arousal induced by the film was only

mild (approximately 5-6 mmHg for both systolic and diastolic blood pressure), it is possible that it was not sufficient to result in changes in the thoughts generated by subjects. Analyses considering subjects who showed the most arousal also failed to uncover any differences in safer sex thoughts suggesting that the extent of arousal evoked was not the reason for the current findings.

Sexual arousal is experienced along a continuum. This study focused on the low end of that continuum in that the level of arousal was mild, and certainly unlike the magnitude experienced during sexual intercourse. The level of arousal induced by the erotic film was reasonably comparable to the arousal experienced while looking forward to a date with a new partner. This would be a time when thoughts about protection would be important as cues to action for safer sex practices. If no thought is given to protection at all, the likelihood of unprotected intercourse increases. These data indicated that mild sexual arousal did not influence the occurrence or the number of safer sex thoughts. It is possible that safer sex thoughts are not affected by mild levels of arousal. It may be that they are determined by knowledge, beliefs, and attitudes about sexuality, or are a function of sexual experience and success with negotiating protection-related issues with previous sexual partners. These thoughts might be held strongly enough that mild arousal does not affect their occurrence.

This does not rule out the possibility that greater levels of arousal, such as during an actual sexual encounter, might influence the occurrence of safer sex thoughts. A different methodological approach might demonstrate that people hold a variety of protection-related thoughts, and that the accessibility of those thoughts varies with level of arousal. Anecdotal data from subjects in this study and from other research describe the incidence of good intentions gone awry in the "heat of the moment" or under the influence of alcohol. It is possible that it is necessary to proceed further along the arousal continuum before safer sex thoughts would be likely to be inhibited or side-tracked. The relationship of thoughts, arousal, and risky sexual behavior cannot be fully addressed within the context of this design.

The third question addressed how safer sex thoughts related to personality characteristics. It was hypothesized that personality characteristics relevant to sexual interactions would be positively correlated with the occurrence of safer sex thoughts. Indeed, safer sex thoughts were positively correlated with some aspects of personality related to sexuality. Results indicated that for women, safer sex thoughts were positively associated with erotophilia or openness to sexual stimuli, assertiveness in initiating sexual activity, and assertiveness in preventing intercourse in the "heat of the moment". Correlations for men, on the other hand, were nonsignificant and, in the case of erotophilia and

assertiveness in initiating sexual activity, in the negative direction.

Whereas there were no gender differences in the number of safer sex thoughts generated in response to the sexual scenario, there did appear to be important and interesting differences in the meaning of safer sex thoughts for women and men. There was a relationship between the occurrence of safer sex thoughts and some other sexual experiences for women, but for men safer sex thoughts were unrelated, or negatively associated with sexual interactions.

For women, openness to sexual stimuli and sexual assertiveness were associated with safer sex thoughts. This suggests that interventions aimed at increasing comfort and familiarity with sexual issues, and which promote assertiveness for women, will be beneficial in promoting safer sex thoughts for women. Thinking about safer sex concerns and being assertive about sexual activity are important considerations in the promotion of safer sexual behavior.

The negative correlations for the men are particularly interesting. While we hypothesized a positive relationship between safer sex thoughts and these personality characteristics, it seems that, for men, thinking about sex does not go hand in hand with thinking about safer sex. Those who were more open to sexual stimuli and assertive about initiating sexual activity were not thinking about having <u>safer</u> sex - they were thinking about having <u>sex</u>. This

suggests that strategies that increase men's comfort with sexuality and assertiveness about sexual activity are unlikely to lead to increases in safer sex thoughts and safer sex behaviors. For men, approaches that promote a positive link between thoughts about having sex and thoughts about using protection are more likely to be effective. Because of current societal and role demands, men do not usually have trouble viewing themselves as sexual beings, or in initiating sexual activity. They do, however, find it difficult to view themselves as vulnerable to the risks of STD/AIDS, or to believe that it is necessary to take precautions to protection themselves. Perhaps an alternative approach with men would be to promote empathy or concern for their partner as a way to encourage the use of protection which will ultimately be to the benefit of both of them.

It is important to remember that half of the men in this sample were involved in long-term or cohabiting relationships. It is possible that the relationship between safer sex thoughts and the anticipation of a new sexual relationship was different for men with and without steady partners. On the one hand, men who have steady sexual partners may be more attuned to the importance of protection issues if they have successfully negotiated them with their current partner. Alternatively, men with steady partners may be complacent about the need for protection if they anticipate a new relationship if their current partner has been using oral

contraceptives or some other non-condom form of birth control. A more detailed assessment of subjects thoughts about condoms and risky sexual behavior will be necessary to clarify these findings.

The fourth major question was how safer sex thoughts related to the sexual outcome variables. It was hypothesized that safer sex thoughts would be correlated with the likelihood of having sex, discussing protection, and using protection, in the context of the sexual scenario. In addition, safer sex thoughts would be correlated with actual condom use in the past two months. Results indicated that safer sex thoughts were negatively associated with the likelihood of having sex for the entire group and for men. The correlation for women was also negative, but did not reach significance. This suggests that when people, particularly men, are thinking about having sex, they are not thinking about sexual protection, or alternatively, when they are thinking about protection issues, they are less likely to predict that they will engage in sexual intercourse. Safer sex thoughts were not associated with anticipated future use of protection or intentions to discuss protection. Actual condom use in the past two months was marginally correlated with safer sex thoughts for women, but not for men. Results indicated that 23% (13/56) of the subjects participated in unprotected sexual intercourse at least once during the past two months. Of that group, 69% (9/13) listed no safer sex

thoughts, while 31% (4/13) did list safer sex thoughts. Men were more likely than women to engage in unprotected intercourse (36% of the men vs. 13% of the women). These findings are consistent with the personality findings for men discussed above which suggested that thinking about having sex does not mean thinking about safer sex.

Despite the fact that there was a negative correlation between safer sex thoughts and the anticipation of a new sexual encounter for men, there were positive correlations between condom acceptability, intentions to discuss protection, and intentions to use condoms in the future. This suggests that, for men, positive experiences with condoms might lead to increased use.

Further, although overall ratings of condoms were positive for both women and men, condom acceptability, intentions to discuss protection, and intentions to use condoms in the were not significantly correlated for women. Recent condom use was negatively associated with the anticipation of a new sexual relationship. These negative relationships may be due to women using oral contraceptives to protect themselves from unwanted pregnancy. Contraception is separate from safer sex concerns, however and women do need to protect themselves from STD/AIDS as well as pregnancy.

Experience with condoms is probably more prevalent among men; it is likely that at some time during adolescence they have had exposure to them. Women, on the other hand might

have never used condoms, particularly if they began using oral contraceptives when they became sexually active. Furthermore, women do not necessarily have the ability to control the use of condoms in their sexual relationships. If a partner is unwilling to use condoms, there may be little that she can do to persuade him to change his mind. These results indicate that women's use of condom is an important area of risky sexual behavior that needs further investigation. Issues of empowerment and feelings of control in relationships would seem to be a key focus for interventions.

An additional question of interest addressed how safer sex thoughts related to sexual knowledge and attitudes. Based on previous research indicating that knowledge and attitudes are not good predictors of subsequent sexual behavior, it was anticipated that safer sex thoughts would not be strongly related to knowledge or attitudes; alternatively it was hypothesized that safer sex thoughts would be related to the sexual outcome variables. In contrast to this hypothesis, results indicated that safer sex thoughts were significantly and positively associated with general sexual knowledge and STD knowledge for women, and marginally negatively associated with AIDS knowledge for men. Safer sex thoughts were strongly and positively associated with liberal general sexual attitudes for women, but not for men. There was no significant association between safer sex thoughts and attitudes about STD or AIDS for the total sample or women or

men separately.

As with the personality characteristics previously discussed, knowledge and attitudes varied in relationship to safer sex thoughts based on gender. For women, the positive relationship between thoughts, knowledge and attitudes suggests that thoughts can be changed with methods that focus on increasing knowledge and influencing attitudes. While these interventions might be important for men as well, the data suggests that the effort would be particularly meaningful for women.

Negative relationships between safer sex thoughts and knowledge and attitudes for men suggest that what people know is not always translated into behavior consistent with that knowledge. For young men in particular, the desire for sex may override reason, and lead to behavior that they know is risky, but choose to pursue anyway. These data are consistent with much of what is reported in the sexual behavior literature.

Summary of Safer Sex Thoughts. In summary, approximately one-third of the sample listed safer sex thoughts in response to a sexual scenario. Two-thirds of the sample listed no safer sex thoughts, and 23% (13/56) of the sample participated in unprotected sexual intercourse. Eighteen percent (4/22) of those listing safer sex thoughts participated in unprotected sexual intercourse. There were no differences between women and men in the number of thoughts listed, and there were no

differences due to the sexual arousal manipulation. Knowledge and attitudes about sexual issues were positively associated with safer sex thoughts for women, and generally negatively related to safer sex thoughts for men. The personality characteristics of erotophilia, assertiveness about protection, and assertiveness in preventing intercourse in the "heat of the moment" were associated with safer sex thoughts for women. The likelihood of having sex was negatively associated with safer sex thoughts for the entire group, but this association was significant only for men. In general safer sex thoughts were not associated with safer sex behavior, as there was little relationship between thoughts and anticipated future use of protection and there was a negative association between thoughts and the likelihood of having sex. Condom use in the recent past was marginally correlated with safer sex thoughts for women only. Overall, safer sex thoughts were positively correlated with several variables, for women, whereas for men, correlations tended to be nonsignificant and often negative in direction.

Personality Characteristics, Sexual Knowledge and Attitudes

Moving away from the focus on safer sex thoughts, the next area of consideration pertained to the relationship between knowledge, attitudes, personality characteristics and sexual outcome variables. With regard to personality characteristics, we anticipated that openness to sexuality, and assertiveness and feelings of self-efficacy related to

sexuality would be associated with positive sexual outcomes. These expectations were supported by the data; there are interesting relationships between personality variables and sexual experiences and behaviors. Erotophilia - openness to sexual stimuli - was positively associated with the likelihood of having sex and using protection for women, and negatively associated with initiating a discussion about protection and using protection for men. These findings suggest that erotophilic women - those who are open to sexual stimuli anticipated having sex and planned to use sexual protection. Erotophilic men, on the other hand, tended to avoid discussions of sexual protection, and the use of protection. Several male participants stated that discussing protection is difficult because it risks being misinterpreted by their partner as pushing for sex before she might be ready. Consequently, they avoid discussing protection and even having condoms with them to maintain the illusion that they are not anticipating sexual involvement. Often, initial sexual encounters involve unprotected intercourse. For some, it is easier to discuss or use protection after having sex the first time. For others, unprotected intercourse, the first time they have sex, signals that their partner is willing to continue a sexual relationship without the use of condoms.

For sexual assertiveness, the strongest relationships were found for assertiveness in using protection. Both women and men who were assertive about insisting on the use of

protection were likely to discuss protection, initiate such a discussion, and to anticipate using protection. For men, assertiveness about using sexual protection was negatively associated with the likelihood of having sex, again suggesting that the notion that concerns about sexual protection might decrease the likelihood that sex will occur. Condom use in the past two months was positively associated with protection assertiveness for the entire group, although the correlations for women and men did not reach significance. Assertiveness in refusing a sexual involvement was also significantly and positively associated with initiating a discussion about protection and using protection for the entire group. Assertiveness in initiating a sexual involvement was not significantly associated with discussing or using protection. Condom use in the past two months was marginally, negatively associated with initiation assertiveness, suggesting that, in some cases, assertiveness may lead to the initiation of sexual activity, but not necessarily to the practice of safer sex. These results strongly suggest the value of interventions that focus on increasing assertiveness skills for both women and men.

For contraceptive self-efficacy, the likelihood of having sex was negatively associated with conscious acceptance of sexual activity, and assumption of responsibility for sex and using birth control for women. This provides support for the notion that conscious awareness of sexuality is important in

modulating risky or safer sexual behaviors. The more responsibility these young women assumed for their sexuality, the less likely they were to predict the occurrence of a sex with a new partner. It must be noted that these decreased intentions could very well be a two-edged sword, especially, if not accompanied by an assumption of responsibility for using protection. Decreased intentions do not by any means guarantee that a sexual encounter will not occur, and may lead to unprotected intercourse if the person is caught up in the "heat of the moment" and has not prepared herself with protection.

Discussing protection and initiating a discussion, and using protection were positively associated with all facets of contraceptive self-efficacy for the entire sample. Interestingly, the most highly significant correlations were for men who indicated strong feelings of sexual arousal. This suggests that promoting feelings of efficacy in negotiating and using protection are very important tools to incorporate in efforts to reduce risky sexual behavior. These efforts might prove to be particularly relevant for young men; contraceptive self-efficacy is the one characteristic that has shown consistent strong positive correlations with positive sexual outcomes for men in this study. One could hypothesize that efficacy is important for men because it relates to feelings of being in control of the sexual situation and is consistent with role expectations for men - they are supposed

to be the ones "calling the shots". Contraceptive self-efficacy incorporates the notion of having control with sexual responsibility, rather than having control of the situation, but focusing on sexual desire without a concomitant focus on sexual protection.

Condom use in the past two months was negatively associated with conscious acceptance of sexual activity for men. This finding may be due to the fact that many couples choose other forms of protection, particularly oral contraceptives, when they are in a long-term relationship, rather than use condoms. Condom use was also positively associated with assumption of birth control responsibility and assertiveness in preventing intercourse. These relationships were stronger for women than for men.

Summary of Personality Findings. In summary, the likelihood of having sex was negatively associated with assertiveness about using protection and contraceptive self-efficacy. Concerns about sexual protection and feeling efficacious in contraceptive use are associated with a lowered expectation that sex will occur. Accepting responsibility for sexual activity carries the possibility that sexual desires will have to be tempered with practical safer sex practices, or perhaps that sex will not occur until protection concerns can be negotiated. Discussing protection and initiating discussion were positively associated with sexual assertiveness and contraceptive self-efficacy, and negatively

associated with general openness to sexual stimuli. Anticipated use of protection was positively associated with sexual assertiveness, contraceptive self-efficacy primarily for men, and openness to sexual stimuli for women. Anticipated use of protection was negatively associated with erotophilia for men. Actual condom use in the past two months was positively associated with assertiveness about protection, assumption of birth control responsibility, and the ability to avoid unprotected intercourse in the "heat of the moment."

Reports of condom use were negatively associated with conscious acceptance of sexual activity and assertiveness in initiating sexual activity. These negative relationships might be attributable to the use of oral contraceptives rather than condoms, as a method of sexual protection. In fact, most of the participants in this study were involved in a steady and long-term relationship, and reported using oral contraceptives. Many subjects reported that they were monogamous and felt that they were not at risk for STD or AIDS - their primary concern was for contraception, not disease protection, and that they would use condoms if they were to begin a new sexual relationship.

In seemingly contradictory findings, erotophilic women - those who are open to sexual stimuli - anticipated having sex and planned to use sexual protection, while anticipation of having sex was negatively correlated with contraceptive self-

efficacy subscales assessing the conscious acceptance of sexual activity, and assumption of responsibility for sex and using birth control. Searching for an explanation for why erotophilic women might anticipate sex and use protection, while sexually efficacious women might be cautious about sex led to a closer consideration of what both scales actually assessed. The Sexual Opinion Survey, which provides a score on the erotophobia/erotophilia continuum, assesses respondents affect toward a variety of sexual stimuli including erotica, homosexuality, masturbation, and unusual sexual practices. It contains no items referring to experiences with sexual protection. The Contraceptive Self-Efficacy scale, on the other hand, directly assesses attitudes and experiences with the use of protection and barriers to safer sex practices. The two measures are tapping very distinct aspects of sexual experience. Correlational analyses indicated no correlation between erotophilia and the two contraceptive self-efficacy subscales of interest in these analyses, supporting the explanation that these two constructs are distinct from each other.

Sexual Knowledge and Attitudes. With regard to knowledge and attitudes and sexual outcome variables, it was anticipated that there would be weak interrelationships based on the fact that most research in the area of sexuality finds that knowledge and attitudes do not show strong relationships to sexual behavior. In contrast to our expectations, there were

several interesting and important associations. For instance, the likelihood of having sex was marginally negatively correlated with general sexual knowledge for women, suggesting that increased sexual knowledge makes women less likely to enter a new relationship without considering the risks involved. Discussing protection and initiating discussion were strongly and positively associated with STD attitudes and also positively associated with general sexual attitudes, AIDS attitudes, and general sexual knowledge for women. Discussing protection and initiating a discussion were negatively correlated with STD knowledge for men. Several men in the study offered the perspective that questions about STD carried the risk of offending their prospective partner by questioning her past sexual involvements, or alternatively making her concerned that he might have an STD from which she should be protected. Either way, such a discussion would tend to diminish the likelihood of a sexual encounter, and would therefore be avoided.

Anticipated use of protection was positively associated with general sexual knowledge and STD knowledge for women, and AIDS knowledge for the entire group. Liberal sexual attitudes were strongly associated with anticipated use of protection for women, but not for men. STD attitudes, on the other hand were correlated with use of protection for men, but not for women. Similarly, AIDS attitudes were positively correlated with use of protection for men, but negatively correlated for

women, although these correlations failed to reach significance.

It is unclear why greater concern about AIDS and STD would be unrelated to anticipated use of protection for women. One possibility is that women might reassure themselves that their prospective partner is free from disease by talking about STD/AIDS concerns, before beginning a sexual relationship. Several study participants mentioned making such an assessment, although their description of how they would determine that their partner was "clean" was based more on how nice he seemed, and how much they liked him, rather than on reliable questions about previous sexual encounters and prior condom use.

Actual condom use in the past two months was positively associated with AIDS knowledge and attitudes for men, and negatively associated with AIDS attitudes for women. Again, the negative correlation for the women parallels the results for discussing protection, and is puzzling. These findings highlight the pressing need for interventions that focus on knowledge and attitudes about the risks of STDs and AIDS, and that young women need to be encouraged to be assertive in making reality-based assessments of risks with new partners. They need to know that condoms use is the only way to protect themselves if they are going to be sexually active and they need the skills to successfully negotiate the use of condoms with their partners.

Summary of Sexual Knowledge and Attitudes. In summary, sexual knowledge and attitudes are somewhat related to sexual outcomes and behaviors. Consistent with our hypothesis, the likelihood of having sex was only marginally related to general sexual knowledge, and only for women. This is consistent with results from many studies of sexual behavior which find that knowledge and attitudes are not particularly good predictors of behavior. In contrast to our expectations, however, discussing protection and initiating a discussion were highly and significantly positive related to STD attitudes. General sexual attitudes, AIDS attitudes, and general sexual knowledge are also somewhat related to those behaviors. Conversely, knowledge about STD is negatively associated with discussions about protection for men. Intentions to use protection were positively associated general sexual knowledge, general sexual attitudes, STD knowledge for women; AIDS knowledge for the entire sample; and STD and AIDS attitudes for men. Reports of actual condom use was positively associated with AIDS knowledge and attitudes for men, and negatively with AIDS attitudes for women.

Clearly, the contention that knowledge and attitudes are not related to behavior is not supported by these results. Interventions focusing on increasing knowledge about sexual risks, STD/AIDS are important in efforts to promote safer sex practices. Interventions focusing on attitudes may be even more important than those aimed at increasing knowledge.

While these data suggest that knowledge and attitudes are particularly relevant for women's experience of sexuality, focusing on men's attitudes about what sexuality means for them and their partners is also key in linking the excitement and desire for sex with the need for safer sex practices.

Prediction of Sexual Outcome Variables. Finally, the question of how safer sex thoughts, personality, gender, knowledge, and attitudes combined to predict sexual experiences and behavior was addressed. The Risk Reduction Model provided the framework within which to consider how which variables were included in the study and the factor analysis resulted in five factors which characterized the dimensionality of those knowledge, attitude, and personality variables.

The outcome of anticipation of having sex was not predicted by any of these factors. The likelihood of discussing protection and initiating a discussion were both most strongly predicted by the Contraceptive Self-Efficacy factor. Intention to use protection and actual condom use were significantly predicted by sexual assertiveness about protection. Assertiveness, self-efficacy, and STD attitudes were each significant predictors of the various outcomes variables.

These results indicate that some components of the Risk Reduction Model - attitudes, personality characteristics - are important in predicting sexual behaviors. Sexual knowledge

was not strongly related to the outcome variables, as predicted. The role of the mediating variables of arousal and safer sex thoughts was not as strong as personality and attitudinal influences. Although reports of actual condom use was the only behavioral measure in the study and was not well predicted by the other variables, there were significant relationships between the other variables which temporally precede actual sexual behavior in real life. The Risk Reduction Model posits a decision-making process which includes knowledge, attitudes, personality characteristics, and mediating variables. This study demonstrates the importance of sexual assertiveness, self-efficacy, and STD attitudes for people as they make sexual decisions and participate in sexual relationships.

Limitations of the Study.

As noted earlier, the primary limitations of the study are due to the sample. First, the sample was older and involved in more stable relationships than was anticipated when the study was planned. Ideally, the sample would have consisted of 18 to 20 years olds who were not involved in steady relationships and who were actively dating and meeting new partners regularly. Instead, the sample actually consisted of subjects who averaged nearly 22 years of age and who were, for the most part, involved in long-term steady relationships. The composition of the sample has important implications for generalizations which can be made from this

study. It cannot be assumed that the experience of this group will necessarily apply to younger people who are more actively involved in dating.

Several subjects mentioned that it was difficult for them to imagine themselves dating a new person when they were asked about their reactions to the outcome scenario. The recruitment procedure may have been a major determinant of this situation. Subjects were run between July and October and many responded to an ad in the Washington Post. Response to ads at community colleges and universities was lower than anticipated since most people were off-campus for the summer. Many of the Post respondents were out of school and working full-time and at the older end of the age range.

A second limitation of this sample was that many subjects involved in long-term, monogamous relationships did not express concern about STD/AIDS, but rather were more concerned about pregnancy prevention. This concern often translated into the use of oral contraceptives for protection, rather than condoms, since the former is more reliable in preventing pregnancy. The question about risky sexual behavior focuses on condom use, since it is the best protection against STD/AIDS if one is going to have sex. As a result, data about condom use in the past two months was derived from a group in which there was substantial use of oral contraceptives instead of condoms.

It is important to note that some subjects reported using

both oral contraceptives and condoms, so this combination is being used by some careful few. On the other hand, predictions about what type of protection people anticipate they would use if they were to begin a new sexual relationship indicated that 88% (60/68) of the sample would use condoms. Clearly, demand characteristics come in to play here, since virtually everyone knows that they "should" use condoms with a new sexual partner. The fact that 12% of the sample reported that they would use protection other than condoms indicates the extent to which some people are truly unconcerned about the risk of STD/AIDS, or their belief that they would not be sexually involved with someone who might be infected with a disease.

A third factor related to the sample is the number of safer sex thoughts generated by the group. Since only one-third (22/68) of the subjects listed safer sex thoughts, the findings are based on a relatively small sample of data. The fact that 2/3 of the sample did not list safer sex concerns is not surprising, and is consistent with current rates of unprotected sexual intercourse. A review of such research indicates that given a group of sexually active young people, approximately one-third will be regular users of protection, one-third will be inconsistent users, and one-third will engage in unprotected intercourse most of the time. A larger sample may have provided more variation in safer sex thoughts, which may have had an effect on the results obtained. Pilot

data collected for this study provided comparable ratios of safer sex thoughts, suggesting that the current findings are valid.

In addition, because most subjects listed only one safer sex thought, it was decided to score thoughts dichotomously, as either present or absent. There were six subjects who listed more than one thought, however, and a larger sample might have enabled us to examine differences in the number of thoughts listed more systematically. Preliminary analyses which compared the dichotomous rating with the actual number of safer sex thoughts listed indicated that, although there were some differences, the general pattern of results were consistent. The dichotomous rating is more conservative in terms of the strength of the correlations obtained, and we are therefore confident that these findings are not capitalizing on chance variations which may not be meaningful.

Fourth, the occurrence of safer sex thoughts may have been influenced by the composition of the sample. People who are involved in long-term monogamous relationships may view the issue of risky and safer sex differently than people who are actively involved in dating multiple partners. Monogamous couples may be practicing safer sex, even if they are not using condoms. Informal discussion of safer sex concerns suggested that age or maturation might be important in moving views about risky sex practices to a more conservative and concerned perspective, although this was not true for all of

the older subjects in the sample.

It would be anticipated that people who are currently engaging in risky sexual behavior would not be thinking (or listing) many safer sex thoughts. Cognitive dissonance theory would predict avoidance of inner-conflict by a denial of feelings of susceptibility or concern about taking precautions. Alternatively, some people who reported being concerned about sexual risks and reported practicing safer sex failed to generate any safer sex thoughts in response to the outcome scenario. For some, it goes without saying that they would use condoms if they were going to have sex. Consequently, the lack of safer sex thoughts generated by the participants does not mean the same thing for all subjects.

A second limitation of the study was that the occurrence of risky sexual behavior was not fully assessed in this sample. Subjects reported the number of times they participated in unprotected sexual intercourse, the percentage of time they used condoms or other forms of contraception. They did not, however, report specific sexual practices such as unprotected anal intercourse, which is riskier than vaginal intercourse. They were also not asked specifically to report the number of sexual partners they have had in the recent past, only the number of lifetime partners they have had.

A third limitation of the study and another possible explanation for the low number of subjects reporting safer sex

thoughts may be related to the thought-listing procedure. The technique was originally developed in the context of attitude change research and subjects were required to write their thoughts about a variety of topics. Originally, the topics subjects were asked to list their thoughts about were not ego-involving (e.g., thoughts about tuition increase at their university). This study set up a situation in which sexual content was elicited in the thought-listing task, and the use of videotapes with sexual content served as an example that sexual content was not unacceptable in this context, but their may have been self-censorship of safer sex thoughts. It might have been preferable to have subjects tape record their thoughts, since this allows for quicker responses and less time for censorship.

Content analysis of the practice and outcome thought-listing scenarios indicated that most of the thoughts generated in response to the outcome scenario were sexual in nature, in contrast to the practice scenarios which elicited non-sexual responses. This suggests that subjects weren't screening out safer sex thoughts because they were embarrassed to write their true thoughts. Also, subjects did not generate fewer thoughts in response to the sexual scenario, which would have been consistent with a "censorship" hypothesis.

Finally, number of subjects included in this study was fewer than necessary to adequately assess the effects of all of the variables included in the design. The primary analyses

focused on the roles of safer sex thoughts; the results of those analyses indicated few significant effects. The large number of correlations examining safer sex thoughts, personality characteristics, knowledge, attitudes, and sexual outcome variables were exploratory in nature. The interesting findings discussed here are merely suggestions for future areas that could be explored empirically.

Implications for Future Research.

The primary goal of this study was to examine the relationship between safer sex thoughts and variables related to sexual experiences and behavior. While there was not a strong, direct relationship between the occurrence of safer sex thoughts and subsequent safer sex behavior, there were interesting relationships between safer sex thoughts and other variables related to the sexual outcomes. Most notably, the absence of safer sex thoughts was related to the likelihood of anticipating having sex. People, especially men, who were thinking about having sex were not thinking safer sex thoughts. It would be interesting to explore whether increasing the occurrence of safer sex thoughts would lead to an increase in safer sex behaviors. A fuller exploration of the scope of thoughts people have about protection-related issues would provide interesting and useful information if an intervention were to be developed to try to increase thoughts.

The thought-listing procedure used in this study was effective; subjects indicated that the procedure was

interesting and moderately enjoyable. They also indicated that the thoughts they listed were an accurate accounting of what they might actually be thinking if they were in the situation described, and that their thoughts would be related to their behavior in such a situation. Demand characteristics necessitated that we ask a very general question about thoughts in this study, but informal discussion with subjects after the laboratory session indicated that most people were willing and able to share their thoughts and ideas about their sexual experiences. A more formalized investigation of people's thoughts utilizing thought-listing and a less structured interview would be very enlightening and provide the basis for developing an intervention to change thoughts.

That personality characteristics, knowledge, and attitudes were related to safer sex thoughts and sexual outcome variables suggests that each of these areas offers possibilities for developing interventions and continued research aimed at ways to understand and promote safer sex behaviors. Assertiveness skills and self-efficacy are important for both women and men; self-efficacy seems particularly relevant for men. The positive relations of thoughts, knowledge, and attitudes for women suggest that knowledge and attitude based interventions may be particularly relevant to them.

This study has shown that there are complex and interesting relationships between thoughts and sexual

experiences and behaviors. It is the first study of which we are aware that has assessed thoughts related to risky sexual behavior in a systematic way. The thought-listing technique is an interesting and viable method for assessing cognitions related to sexual experiences. The Risk Reduction Model offers a theoretical framework within which to consider the interrelationship of a variety of variables related to sexual experiences and behavior including personality, knowledge, attitudes, safer sex thoughts, and arousal. This study was a first step in considering the role of cognitions in risky sexual behavior. Future work should continue to focus on the role of cognitions along with all of the other variables relevant to an understanding of the complexity of sexual behavior.

TABLE 1

Comparison of Male and Female Subjects on Demographic Variables

Variable		Male		Female		Significance
AGE		21.82 yrs.		21.94 yrs.		ns
EDUCATION		14.47 yrs.		15.29 yrs.		$p < .06$
		%	n	%	n	
RACE	White	30.9	(21)	38.2	(26)	
	Black	8.8	(6)	8.8	(6)	ns
	Other	10.3	(7)	2.9	(2)	
STUDENT -	YES	33.8	(23)	27.9	(19)	ns
-	NO	16.2	(11)	22.1	(15)	
EMPLOYED -	YES	27.9	(19)	38.2	(26)	ns
-	NO	22.1	(15)	11.8	(8)	
FAMILY INCOME	<$10,000	3.0	(2)	3.0	(2)	
	$10-30,000	16.7	(11)	16.7	(11)	ns
	$30-50,000	4.6	(3)	10.6	(7)	
	>$50,000	24.2	(16)	21.2	(14)	
DATING STATUS						
Not Dating		9.0	(6)	3.0	(2)	
Casual Dating		16.4	(11)	10.4	(7)	ns
Steady Partner		19.4	(13)	25.4	(17)	
Cohabiting		4.5	(3)	11.9	(8)	

TABLE 2

Baseline Blood Pressure and Heart Rate Values for Women and Men

	Mean Baseline Levels		
	SBP[a]	DBP	HR
Female	106.85	63.72	72.10
Male	120.07	64.26	70.37

[a]$F(1,67) = 31.99$, $p < .000$

TABLE 3

Blood Pressure and Heart Rate Change Scores for Women and Men

Mean Change from Baseline

	SBP[a]	DBP[b]	HR[c]
Control/ Females	-.92	.21	.83
Arousal/ Females	4.76	5.21	-1.03
Control/ Males	-.95	-.52	.63
Arousal/ Males	6.94	6.65	-.19

[a]SBP main effect for Film $F(1,67) = 31.27$, $p < .000$
[b]DBP main effect for Film $F(1,67) = 25.47$, $p < .000$
[c]HR main effect for Film $F(1,67) = 3.14$, $p < .08$

TABLE 4

Subjective Ratings of Sexual Arousal for Women and Men

Mean Ratings of Sexual Arousal[a]

	Control	Arousal
Female	1.77	3.82
Male	2.00	4.94

Mean Ratings of Videotape[b]

	Control	Arousal
Female	1.47	4.06
Male	1.94	5.41

[a]Main effect for Film $F(1,67) = 51.33$, $p < .000$
Main effect for Sex $F(1,67) = 3.76$ $p < .06$

[b]Main effect for Film $F(1,67) = 77.86$ $p < .000$
Main effect for Sex $F(1,67) = 7.05$ $p < .01$

TABLE 5

Number and Percentage of Subjects Listing Safer Sex Thoughts

	Females	Males[a]	Total
Thoughts	10 (29%)	12 (35%)	22 (32%)
No Thoughts	24 (71%)	22 (65%)	46 (68%)

[a]no significant effect for gender $F(1,67) = .26$, $p < .61$

TABLE 6

Thoughts-Listed by Women and Men in Response to Four Scenarios

	Mean Number of Thoughts Listed[a]	
	Women	Men
Scenario 2	5.18	5.21
Scenario 3	5.56	5.91
Scenario 4	6.06	5.85
Scenario 5	6.44	6.21

[a]Main effect for sex is nonsignificant $F(1,66) = .00$, $p < .97$

Main effect for Scenario $F(3,198) = 9.75$, $p < .000$

TABLE 7

Thoughts-Listed in Response to Practice and Outcome Scenarios for the Entire Sample

Scenario	Mean Number
2	5.19[a]
3	5.74
4	5.96
5	6.32

[a]Scenario 2 significantly less than Scenarios 3 through 5 at $p < .009$, Bonferroni adjusted significance level.

TABLE 8

General and Safer Sex Thoughts Generated in Response to the Outcome Scenario

Mean Number of Thoughts-Listed[a]

	Control	Arousal
Female	6.82	6.06
Male	5.18	7.24

Mean Number of Safer Sex Thoughts-Listed[b]

	Control	Arousal
Female	.35	.24
Male	.29	.41

[a]No significant Main effects for Sex or Film
Interaction of Sex x Film $F(1,67) = 9.15$, $p < .004$

[b]No significant Main or Interaction effects

TABLE 9

Intercorrelations of Sexual Outcome Variables for All Subjects[a]

	Outcome 1 Have Sex	Outcome 2 Discuss Protection	Outcome 3 Initiate Discussion	Outcome 4 Use Protection	Outcome 5 Condom Use
Outcome 1 Have Sex	1.00				
Outcome 2 Discuss Protection	.20*	1.00			
Outcome 3 Initiate Discussion	.15	.55**	1.00		
Outcome 4 Use Protection	-.19	.30**	.39**	1.00	
Outcome 5 Condom Use	-.27*	.02	.10	.20	1.00

[a]N = 68; 34 women, 34 men

* $p < .05$
** $p < .007$

TABLE 10

The Relationship Between Safer Sex Thoughts and Sexual Outcome Variables for the Total Sample, and Women and Men Separately

	Correlations with Safer Sex Thoughts		
	Total	Women	Men
Have Sex?	-.27	-.14	-.37
$p <$	.01	.21	.02
Discuss Protection?	.14	.07	.21
Initiate Discussion?	.09	.11	.10
Use Protection?	.06	.11	.08
Condom Use	.16	.23	.09

TABLE 11

Variables Related to Intention to Use Condoms in the Future

Correlations with Intention to Use Condoms

	Total	Women	Men
Condom Acceptability	.45	.14	.64
	$p < .000$	.23	.000
Discuss Protection?	.41	.17	.47
	$p < .001$	.19	.004
Condom Use Past 2 Months	.20	.21	.17
	$p < .09$	.15	.23

TABLE 12

The Relationship of Recent Condom Use and Outcome Questions

Correlations with Condom Use in the Past Two Months

	Total	Women	Men
Have Sex?	-.27	-.40	-.08
$p <$	.02	.01	.36
Discuss Protection?	.02	.02	.01
Initiate Discussion?	.10	.02	.18
Use Protection?	.20	.14	.26
Safer Sex Thoughts	.16	.23	.09
Condom Acceptability	.26	.19	.33
$p <$	.03	.15	.05

TABLE 13

Intercorrelations of Personality Characteristics for All Subjects[a]

	E/E	CSE 1	CSE 2	CSE 3	CSE 4	SAS-I	SAS-R	SAS-P[b]
E/E	1.00							
CSE 1	.14	1.00						
CSE 2	-.05	.36**	1.00					
CSE 3	-.24*	.14	.27*	1.00				
CSE 4	.11	.46**	.52**	.24*	1.00			
SAS-I	.37**	.34**	.30**	-.06	.32**	1.00		
SAS-R	-.38**	.02	.12	.61**	.17	-.17	1.00	
SAS-P	-.12	.12	.38**	.31**	.43**	-.04	.44**	1.00

[a]N=68; 34 women, 34 men

[b]CSE = Contraceptive Self-Efficacy Scale
Subscale 1: Conscious Acceptance of Sexual Activity;
Subscale 2: Assumption of Sexual/Birth Control Responsibility;
Subscale 3: Assertiveness in Preventing Intercourse
Subscale 4: Strong Feelings of Sexual Arousal

SAS = Sexual Assertiveness Scale
I = Initiation Assertiveness Subscale
R = Refusal Assertiveness Subscale
P = Protection Assertiveness Subscale

* $p < .03$
** $p < .007$

TABLE 14

The Relationship of Erotophobia/Erotophilia, Sexual Assertiveness and Contraceptive Self-Efficacy with Safer Sex Thoughts

	Correlations with Safer Sex Thoughts		
	Total	Women	Men
Erotophobia/ Erotophilia	.17	.42	-.16
p <	.08	.006	.18
Sexual Assertiveness			
Initiation	.10	.31	-.18
p <	.21	.04	.16
Refusal	.04	.14	.09
Protection	.11	.10	.20
Contraceptive Self-Efficacy			
Subscale 1[a]	.06	.17	-.07
Subscale 2	-.01	.06	-.10
Subscale 3	.17	.26	.15
p <	.08	.07	.20
Subscale 4	.08	.11	.07

[a]Subscale 1: Conscious Acceptance of Sexual Activity;
Subscale 2: Assumption of Sexual and Birth Control Responsibility;
Subscale 3: Assertiveness in Preventing Intercourse;
Subscale 4: Strong Feelings of Sexual Arousal

TABLE 15

The Relationship Between Erotophilia/Erotophobia and Sexual Outcome Variables

Correlations with Erotophobia/Erotophilia

	Total	Women	Men
Have Sex?	.18	.31	.16
$p <$	.07	.04	.18
Discuss Protection?	.00	.11	-.01
Initiate Discussion?	-.18	.05	-.29
$p <$	.07	.40	.05
Use Protection?	-.16	.37	-.25
$p <$	.10	.02	.08
Condom Use	-.11	-.17	.04

TABLE 16

The Relationship Between Sexual Assertiveness and the Sexual Outcome Variables

Correlations with Sexual Assertiveness

	Initiation			Refusal			Protection		
	T	W	M[a]	T	W	M	T	W	M
Have Sex?	.04	-.02	.16	-.01	-.22	-.02	-.18	-.18	-.29
p <							.07	.16	.05
Discuss Protection?	.13	.12	.21	.16	.19	.09	.28	.32	.23
p <							.01	.03	.09
Initiate Discussion?	.10	.20	.09	.30	.13	.29	.45	.31	.47
p <				.007	.23	.05	.000	.04	.002
Use Protection?	-.10	.02	-.08	.30	.24	.07	.60	.48	.56
p <				.007	.09	.35	.000	.002	.000
Condom Use	-.21	-.24	-.11	.12	.17	.03	.24	.20	.28
p <	.07	.10	.30				.04	.14	.09

[a]T = total sample W = women only M = men only

TABLE 17

The Relationship of Contraceptive Self-Efficacy and the Sexual Outcome Variables: Part 1

Correlations with CSE Subscales 1 and 2

	Subscale 1[a]			Subscale 2		
	T	W	M[b]	T	W	M
Have Sex?	-.11	-.33	.10	-.26	-.32	-.18
p <	.18	.03	.29	.02	.03	.15
Discuss Protection?	.20	.16	.25	.23	.25	.25
p <	.05	.18	.08	.03	.08	.08
Initiate Discussion?	.16	.07	.26	.20	.21	.23
p <				.06	.11	.11
Use Protection?	.13	.23	.14	.34	.01	.67
p <				.002	.48	.000
Condom Use	-.18	-.01	-.41	.28	.34	.21
p <	.10	.48	.02	.02	.03	.16

[a]Subscale 1: Conscious Acceptance of Sexual Activity; Subscale 2: Assumption of Sexual and Birth Control Responsibility

[b]T = total sample W = women only M = men only

TABLE 18

The Relationship of Contraceptive Self-Efficacy and the Sexual Outcome Variables: Part 2

Correlations with CSE Subscales 3 and 4

	Subscale 3[a]			Subscale 4		
	T	W	M[b]	T	W	M
Have Sex?	-.15	-.15	-.21	.09	-.03	.19
Discuss Protection?	.07	.03	.05	.42	.36	.48
p <				.000	.02	.002
Initiate Discussion?	.27	.20	.24	.34	.27	.40
p <	.01	.12	.09	.002	.06	.009
Use Protection?	.32	.19	.28	.31	.11	.45
p <	.004	.14	.06	.005	.27	.004
Condom Use	.28	.33	.23	.07	.05	.12
p <	.02	.04	.13			

[a]Subscale 3: Assertiveness in Preventing Intercourse
Subscale 4: Strong Feelings of Sexual Arousal

[b]T = total sample W = women only M = men only

TABLE 19

Intercorrelations of Knowledge and Attitude Variables for All Subjects[a]

	Knowledge			Attitudes		
	General	STD	AIDS	General	STD	AIDS
General[b] Knowledge	1.00					
STD Knowledge	.58*	1.00				
AIDS Knowledge	.41*	.50*	1.00			
General Attitudes	.59*	.42*	.40*	1.00		
STD Attitudes	.12	-.07	.02	.03	1.00	
AIDS Attitudes	-.16	-.17	.13	.06	.36*	1.00

[a]N = 68; 34 women, 34 men

* $p < .001$

TABLE 20

The Relationship Between Knowledge Measures and Sexual Outcome Variables

Correlations with General Sexual Knowledge, STD Knowledge, and AIDS Knowledge Tests

	Sexual			STD			AIDS		
	T	W	M	T	W	M	T	W	M
Have Sex?	-.16	-.27	-.16	-.15	-.17	-.15	-.07	-.24	.14
p <	.10	.06	.18				.29	.09	.22
Discuss Protection?	.02	.33	-.16	-.15	.19	-.38	.03	.17	-.11
p <	.44	.03	.19	.11	.14	.01			
Initiate Discussion?	-.10	-.11	-.19	-.18	-.12	-.27	.07	.09	.05
p <				.07	.25	.06			
Use Protection?	.10	.31	-.07	.15	.31	.07	.21	.27	.25
p <	.20	.04	.35	.11	.04	.35	.04	.06	.08
Condom Use	-.05	-.03	-.14	.02	-.08	.10	.08	-.04	.32
p <							.28	.43	.06
Safer Sex Thoughts	.10	.27	.04	.09	.34	-.09	.00	.18	-.23
p <	.22	.06	.40	.25	.03	.31	.49	.15	.09

TABLE 21

The Relationship Between Sexual Attitudes and the Sexual Outcome Variables

Correlations with Valois, STD and AIDS Attitudes

	VALOIS			STD			AIDS		
	T	W	M	T	W	M	T	W	M
Have Sex?	.14	.06	.18	-.09	-.18	-.04	.09	.19	.00
p <									
Discuss Protection?	.19	.28	.09	.49	.53	.46	.20	.10	.26
p <	.06	.05	.31	.000	.001	.003	.05	.29	.07
Initiate Discussion?	.07	.04	.02	.50	.47	.50	.28	.17	.34
p <				.000	.003	.001	.01	.17	.03
Use Protection?	.17	.44	-.04	.29	.03	.38	.16	-.22	.28
p <	.08	.005	.41	.008	.44	.01	.10	.10	.06
Condom Use	.02	-.03	.06	-.10	-.11	-.09	-.03	-.34	.37
p <							.40	.03	.03
Safer Sex Thoughts	.12	.43	-.15	.04	.06	.05	-.04	.16	-.20
p <	.16	.005	.20						

TABLE 22

Principal-Component Loadings for Knowledge, Attitudes, and Personality Characteristics for All Subjects

	Factor 1		Factor 2		Factor 3	
	Sexual Attitudes		Contraceptive Self-Efficacy		Protection Assertiveness	
Eigenvalue	3.47		2.39		2.06	
Variance	23.2%		15.9%		13.7%	
AIDS Knowledge	.74	CSE Subscale 2[a]	.81	SAS Refusal		.84
Valois Sexual Attitudes	.71	CSE Subscale 4	.75	CSE Subscale 3		.79
		CSE Subscale 1	.72	SAS Protection		.60
		STD Attitudes	.56			
		SAS Initiation[b]	.50			

	Factor 4		Factor 5	
	Safer Sex Thoughts		AIDS Attitudes	
Eigenvalue	1.18		1.07	
Variance	7.8%		7.1%	
Safer Sex Thoughts	.71	AIDS Attitudes		.92
Erotophobia/ Erotophilia	.69			

[a]CSE = Contraceptive Self-Efficacy Scale
Subscale 1: Conscious Acceptance of Sexual Activity;
Subscale 2: Assumption of Sexual/Birth Control Responsibility;
Subscale 3: Assertiveness in Preventing Intercourse
Subscale 4: Strong Feelings of Sexual Arousal

[b]SAS = Sexual Assertiveness Scale

TABLE 23

Correlations of Knowledge, Attitude, and Personality Characteristics Factors for Women and Men[a]

	Factor 1 Sexual Attitudes	Factor 2 Contraceptive Self-Efficacy	Factor 3 Protection Assertiveness	Factor 4 Safer Sex Thoughts	Factor 5 AIDS Attitudes
Factor 1 Sexual Attitudes	1.00				
Factor 2 Contraceptive Self-Efficacy	.08	1.00			
Factor 3 Protection Assertiveness	.19	.25*	1.00		
Factor 4 Safer Sex Thoughts	.38**	-.15	-.31**	1.00	
Factor 5 AIDS Attitudes	.10	.36**	.12	.01	1.00

[a]N = 68; 34 women, 34 men

* $p < .02$
** $p < .006$

TABLE 24

Regression Analyses for Sexual Outcome Variables

Outcome[a]	Predictor (Factor)	R	R^2	F	p
Discuss Protection	Contraceptive Self-Efficacy	.50	.25	22.40	.0000
Initiate Discussion	Contraceptive Self-Efficacy	.50	.25	21.53	.0000
	Protection Assertiveness	.41	.17	8.52	.005
Use Protection	Protection Assertiveness	.50	.25	21.50	.0000
Recent Condom Use	Protection Assertiveness	.27	.07	4.30	.04

[a]No significant predictors for outcome How Likely to Have Sex?

Figure 1

RISK REDUCTION MODEL

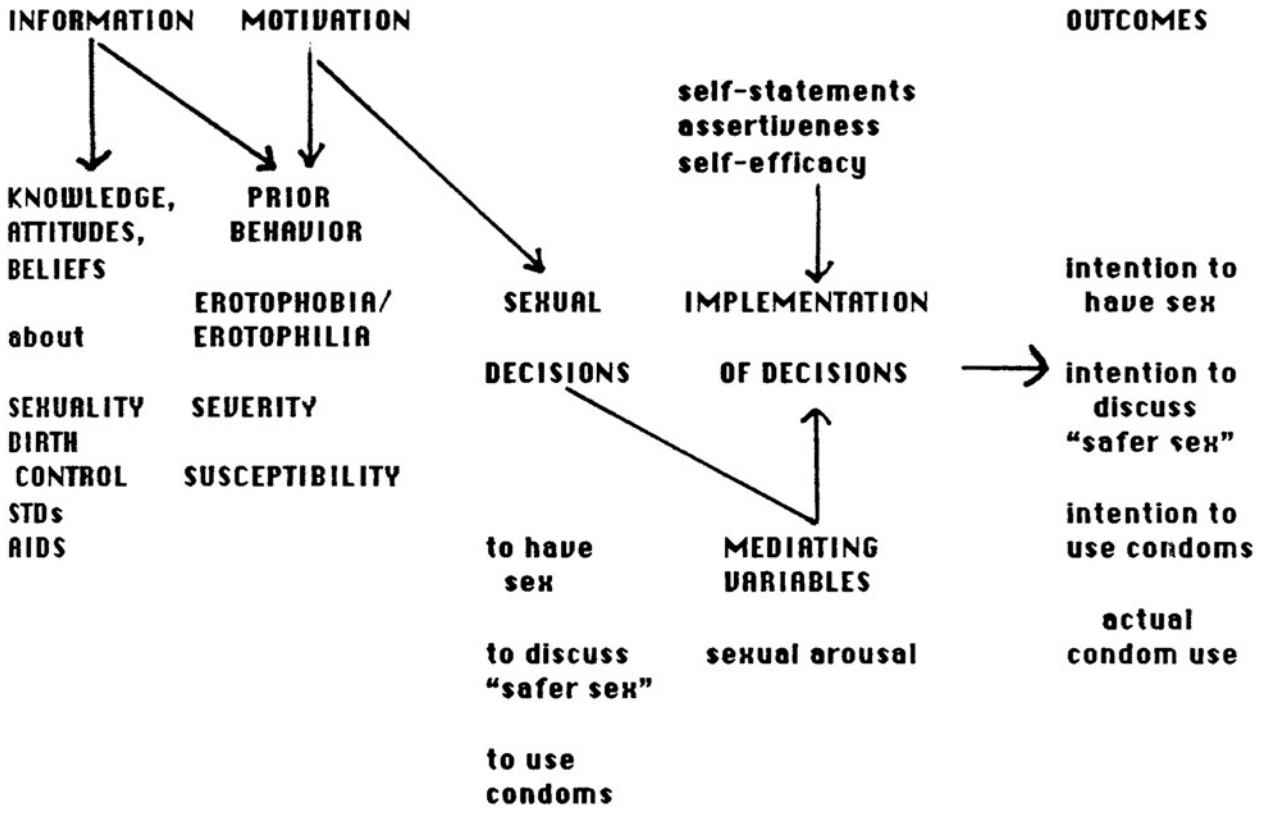


Figure 1: Adaptation of the Risk Reduction Model to the issue of risky sexual behavior. From O'Keeffe, Nesselhof-Kendall, and Baum, 1990

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Appendix A

Name:_____ Age: _____

Address: _____ Sex: _____

_____

_____ MS: _____

Phone: home _____
work _____

1. Do you have high blood pressure? Y N
   a. Do you have any problems having you blood pressure taken? Y N

2. Do you smoke? Y N How much? _____

3. On average, how much caffeine do you have each day? (e.g., coffee, tea, caffeinated soda, chocolate)
   _____

4. On average how much alcohol do you drink each week?
   _____

5. Are you sexually active? Y N
   a. How old were you the first time you had sexual intercourse? _____
   b. Have you had sex in the past 2 months? Y N

6. On average, how much exercise do you get each week?
   _____

7. Are you currently dieting? Y N
   a. Do you use OTC diet pills? Y N

8. In the past three months have you experienced any particularly stressful experiences?

   _____
   a. What has been most stressful to you in that time?
   _____

9. Do you take any prescription medications? Y N
   a. Are you currently taking any medication for anxiety or depression? Y N
   b. Are you currently in therapy? Y N
   c. Have you previously been in therapy? Y N

APPOINTMENT TIME & DATE _____

Appendix B

CONSENT FOR RESEARCH PARTICIPATION

Please Read Carefully

In the Medical Psychology department we study issues related to health and behavior. We are continually updating our data collection procedures. The study in which you are being asked to participate is designed to help us decide which methods are most effective for gathering information from people about a range of health-related issues.

The issues that we are currently focusing on include sexuality, smoking, substance use, stress, interpersonal relationships, exercise, and diet. You will be asked about your personal experiences related to some or all of these issues. You might be asked to provide feedback on different types of experimental procedures. For instance, you might be asked to watch an erotic videotape and rate it on several dimensions, or participate in challenging tasks, such as video games or puzzles, interact with other people to solve problems, or role-play how you might respond to specific situations.

We are asking people to visit our laboratory for one session which will take approximately 2 1/2 hours. We will pay you $20 for participating in this session. The session will involve completing a battery of questionnaires and participating in several tasks. The questionnaires will ask about your personal experiences, attitudes, and behaviors in some or all of the previously mentioned research areas. The questions have all been used in previous research, but some may be considered quite personal. These questionnaires will be completed in complete privacy and your name will not be associated with them. The tasks will be engaging, but not stressful. The purpose will be to have you provide feedback regarding how easy or difficult you think they are and how useful they will be in getting people to provide information. You will be asked for suggestions for ways to improve the materials or procedures to make it easier for participants to provide accurate information.

During the time you are in the laboratory we will be measuring your heart rate and blood pressure. In order to do this we will attach a cuff like the one used in your doctor's office around your non-preferred arm. This cuff is attached to a machine that will cause the cuff to inflate approximately every 90 seconds at certain times throughout the session. The measurement feels like having your blood pressure taken in a doctor's office.

Possible inconvenience or discomfort from this study may occur from completing questionnaires about personal attitudes and behavior that may be considered sensitive or private, in the areas of sexuality, substance use, and interpersonal relationships. You may experience some discomfort from the repeated inflation of the blood pressure cuff, but the primary investigator will be monitoring your progress throughout the session and will be available to address any concerns and make adjustments to maximize your comfort.

It is important that we get complete and accurate data on every subject. If at any time during the study you should choose not to participate in some part of the study, you may do so without penalty. If you decide to participate, you may withdraw or discontinue participation at any time, without prejudice. If you have any questions, we expect you to ask us.

Research records of your participation in this study will be maintained by the principal investigator. Confidentiality is protected to the best extent possible under the law. Your identity will not be traceable by anyone other than the principal investigator. When you have completed the session and we have coded your data or you have withdrawn from the study, your name will be deleted from all records and no one will be able to trace your data. The data will be published in scientific journals, but will not be published in any manner that can identify you.

This study does not entail any physical or mental risk beyond those described above. If, however, you should become uncomfortable during the study, sufficiently uncomfortable that you would like to end the session, tell us. We do not expect this to occur, but if, for any reason, you feel that continuing would constitute a hardship, please tell us and we will end the session.

If you believe that you have suffered any injury or illness as a result of participating in this research, please contact Research Administration, (301) 295-3303, at the University. This office can review the matter with you and may be able to identify resources available to you. Information about possible judicial avenues of compensation is available from the University's Legal Counsel, (301) 295-3028.

If you desire additional information about this experiment, either about the rationale for it or its findings, or about your rights as a participant, you may call the Department of Medical Psychology, (301) 295-3270, to obtain information about it. In this way, you can make

your participation in our research a more informative, educational experience. We welcome your comments and suggestions, and appreciate your willingness to help us.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT, HAVING READ THE ABOVE INFORMATION, YOU HAVE DECIDED TO PARTICIPATE.

I certify that I have received a copy of this form.

_____
Subject's Initials

_____ _____
Date Signed Subject Signature

_____
Subject Printed Name

_____ _____
Witness Signature Investigator or Designee Signature

_____ _____
Printed Name Printed Name

Appendix C

1. You are in a group of people you don't know very well. You are having a friendly discussion, and you have some ideas you would like to contribute. What would you be thinking in this situation?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

2. You and a friend (opposite sex) begin discussing a rather controversial issue that you seem to have differing views on. He/she has expressed his/her views, and asks for your opinion. What would you be thinking in this situation?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

3. You see a friend (opposite sex) across the room at a party who you haven't seen in quite a while. He/she is talking with a group of people you don't know, and he/she hasn't seen you yet. What would you be thinking in this situation?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

4. You meet someone at a party and begin talking. You both seem to be enjoying the conversation and you would like it to continue. After about 10 minutes, there is a silence when both of you seem at a loss for what to say. What would you be thinking in this situation?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Appendix D

SYNOPSIS OF AROUSAL VIDEOTAPE

The videotape shown to the arousal group wàs entitled "Night Trips". The setting is a Sleep Research Center. The male researcher has called in a female researcher, who is the top sexual psychologist in the nation. She has developed the Mind Scan Imager which enables them to monitor patients' dreams. The patient is a woman who has been having highly sexual dreams of which she has no memory, but she is experiencing sleep disturbances.

They attach electrodes to her thighs, she is reclining on a couch wearing black lace bra and panties. The male researcher puts her to sleep with a hypnosis-like technique and she begins to dream. The "dream" can be seen on a wide TV screen. A woman who looks like the patient (a spectator) is standing on a balcony over living room. A woman is lounging on a couch. A man comes in with a drink. He rubs an ice cube over her face and breasts. The spectator is massaging her own breasts, as she watches them. The "patient" is masturbating. The film switches back and forth from the couple, to the spectator, to the patient.

The man removes the woman's panties and masturbates her with the ice cube. He then performs cunnilingus, she fellates him, they have intercourse lying on the couch and then with him standing up and her kneeling on the couch, entering her from behind. Afterwards, they awaken the "patient".

Appendix E

FEELINGS SCALE

Instructions: For each item, place a circle around one number that best describes how you are feeling right now.

1. SEXUALLY AROUSED — SEXUALLY AROUSED

1	2	3	4	5	6	7
not at all						extremely

2. DISGUSTED — DISGUSTED

1	2	3	4	5	6	7
not at all						extremely

3. ENTERTAINED — ENTERTAINED

1	2	3	4	5	6	7
not at all						extremely

4. BORED — BORED

1	2	3	4	5	6	7
not at all						extremely

Appendix F

THOUGHT-LISTING RATING FORM

Please use the following scale to rate the thought-listing task used in this study:

1. DIFFICULT — DIFFICULT

1	2	3	4	5	6	7
not at all						extremely

2. CHALLENGING — CHALLENGING

1	2	3	4	5	6	7
not at all						extremely

3. BORING — BORING

1	2	3	4	5	6	7
not at all						extremely

4. ENJOYABLE — ENJOYABLE

1	2	3	4	5	6	7
not at all						extremely

5. FRUSTRATING — FRUSTRATING

1	2	3	4	5	6	7
not at all						extremely

6. INTERESTING — INTERESTING

1	2	3	4	5	6	7
not at all						extremely

2. Was the time limit sufficient to allow you to express your thoughts and feelings adequately?

TOO SHORT ___ TOO LONG ___ JUST RIGHT ___

3. Do you think this activity would be a good way to initiate a discussion about how thoughts and feelings influence behavior?

Not At All Effective Completely Effective

1 2 3 4 5 6 7

4. Comments: Please indicate anything that you would like us to consider if we were to include this activity in our studies.

Appendix G

FILM RATING

1. To what extent do you think this videotape would be useful in initiating a discussion about sexual relationships and behavior?

Not At All Useful					Completely Useful
1	2	3	4	5	6	7

2. To what extent did you find this tape to be interesting?

Not At All Interesting					Totally Interesting
1	2	3	4	5	6	7

3. To what extent did you find this videotape to be sexually arousing?

Not At All Arousing					Extremely Arousing
1	2	3	4	5	6	7

4. Comments: Please indicate anything that you would like us to consider if we were to include this videotape in our studies.

Appendix H

POTENTIAL OUTCOMES QUESTIONNAIRE

Please respond to the following questions with regard to the last scenario for which you completed the thought-listing technique.

Dinner Scenario - you have been dating someone for a while and now you are going to have dinner at her/his place.

1. How likely is it that this situation will lead to a sexual encounter?

Not At All Likely						Extremely Likely
1	2	3	4	5	6	7

2. In this situation, how likely is it that the topic of sexual protection would have come up - either tonight or on a previous date?

Not At All Likely						Extremely Likely
1	2	3	4	5	6	7

3. How likely is it that you would have initiated a discussion about sexual protection?

Not At All Likely						Extremely Likely
1	2	3	4	5	6	7

4. If this encounter were to lead to sexual intercourse, how likely would you be to use some sort of "protection."

Not At All Likely						Extremely Likely
1	2	3	4	5	6	7

5. What sort of "protection" would you be most likely to use in this situation?

Please indicate _____.

Appendix I

List of Questionnaires

Demographics/Background Information

Sexual Self-Disclosure[a]

Mathtech General Sexual Knowledge Test

STD Health Behavior Knowledge Test

Valois General Sexual Attitude Scale

AIDS Knowledge Questionnaire

AIDS Attitude Questionnaire

STD Attitude Scale

Attitudes Toward Contraceptive Methods

Sexual Self-Esteem Scale[a]

Sexual Opinion Survey (Erotophobia/Erotophilia)

Human Sexuality Questionnaire

Mathtech Sexual Behavior Inventory

Contraceptive Self-Efficacy Scale

Sexual Assertiveness Scale

[a]These questionnaires were not included in the data analyses.