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CONTRACEPTIVE AND CONDOM USE FOR THE PREVENTION OF
PREGNANCY, STDs, AND AIDS:

A TRANSTHEORETICAL APPROACH

BY

DIANE MARIE GRIMLEY

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

1994

32693973

ABSTRACT

This research involved three independent samples with over 600 heterosexually active individuals and examines the applicability of the Transtheoretical Model of Behavior Change to contraceptive and condom use behavior. The pilot study involved 123 college men and women. Measures representing two of the major constructs from the model, stages of change and decisional balance, were developed for general contraceptive and condom use. The second investigation was a measurement study conducted in collaboration with the Centers for Disease Control and Prevention (CDC), and consisted of 238 impoverished women at high risk for HIV infection or transmission. Measures and models for specific methods of contraception were developed for the stages of change, decisional balance, self-efficacy, and the processes of change for condom use. Lastly, the third sample involved college-age men and women ($N = 248$) which cross-validated the measures developed with high risk women. A measure for the processes of change for birth control use was included, as well as several additional measures - sexual assertiveness, perceived risk, sexual abuse. Overall, the findings support the applicability of the Transtheoretical Model to contraceptive and condom use behavior across alternative samples. The major findings include: a general measure could be employed when examining hormonal methods of birth control, whereas condom use needs to be model separately with main and other partners; both populations were further along in the stages for pregnancy prevention, as compared with disease prevention; individuals were further along for using condoms with casual partners, as compared with main partners;

individuals in the precontemplation stage had significantly lower pros scores for both pregnancy and disease prevention - the opposite was true for those in the maintenance stage; the pros and cons cross-over occurred in either contemplation or preparation; self-efficacy is the lowest in the precontemplation stage and continues to climb with further movement through the stages; the construct of sexual assertiveness provided unique information regarding condom use; two measures assessing the processes of change (general birth control/condom use) demonstrated that experiential processes peaked in the preparation stage and the use of the behavioral processes (e.g. stimulus control) continued to climb into the maintenance stage; and, although men and women did not differ on current use or intention to use contraceptives/condoms, distinct sex differences were found for the other model constructs and sexual assertiveness.

ACKNOWLEDGEMENTS

I would like to acknowledge several individuals for their support. I thank the people who served on my dissertation committee: Dr.'s Wayne Velicer, Richard Gelles, and Cynthia Willey. Special thanks are sent to my long time friend and confidant, Dr. Joel Cohen, who served on both my Master's and Dissertation committees. Joel believed in me long before I believed in myself.

A special thanks goes to Dr. Lisa L. Harlow who has, frankly, taught me just about everything I know about statistics - from setting up data files to interpreting large multivariate solutions. I am strongly indebted to her patience and guidance.

I would also like to thank my collaborator and dear friend, Gabrielle E. Riley. I marvel at her maturity and insight into human behavior. I will treasure the hours we spent together "brain-storming" items, running analyses, going to professional meetings, as well as laughing and crying together. Never again shall I have such a fulfilling experience...

How do I express the appreciation and love that I hold for my major professor, James O. Prochaska? Dr. Prochaska has given me both the challenges and the freedom to explore areas most individuals at my level could not comprehend. His vision of the future, as well as his strong belief in me and my abilities, have given me the courage to become the kind of person I was always meant to be.

Finally, I would like to express my love and appreciation to my family: my son, Jim; my daughter, Heather; my grand-daughter, Natasha; and, especially my husband, Jim. Without your support I could never have "realized" my dream.

PREFACE

This dissertation is organized using the manuscript format. Part 1, Assessing the Stages of Change and Decision-Making for Contraceptive Use for the Prevention of Pregnancy, STDs, and AIDS, was published in 1993 in Health Education Quarterly. Part 2 consists of the Technical Report to CDC, and has resulted in a published abstract (#PO-D38-4416 IX International AIDS Conference in Germany, June, 1993), and two papers presented at the 101st annual meeting of the American Psychological Association, Toronto, Canada (August, 1993), and a third paper presented at the 15th annual meeting of the Society of Behavioral Medicine, Boston, MA (April, 1994). Part 3 is comprised of the manuscript, "Contraceptive and Condom Use Adoption and Maintenance: A Stage Paradigm Approach," which has been submitted for publication. Part 4 consists of the paper entitled: "The Processes of Change for Contraceptive and Contraceptive Use" currently under review. Part 5 consists of another manuscript entitled "Condom Use Assertion and the Stages of Change with Main and Other Partners" and is currently "in press" at the Journal of Applied Biobehavioral Research. Two conference papers have also resulted from the data in Part 4 and 5 that were presented at the 15th annual meeting of the Society of Behavioral Medicine, Boston, MA (April, 1994). Part 6 consists of a paper entitled: "Conceptual Modeling Testing for Self-Efficacy and Sexual Assertiveness for Condom Use with Main and Other Partners which examines the structural relationship between the two constructs. Part 7 is a short paper that investigates two constructs, perceived risk and sexual abuse, to determine their effectiveness for predicting contraceptive and

condom use. This paper is simply called, "Perceived Risk and Sexual Abuse History Applied to the Stages of Change for Contraceptive and Condom Use." In Part 8, similarities and/or differences in contraceptive and condom use behavior using the second two samples were examined in the paper called, Contraceptive and Condom Use Behavior: "Comparison of a High Risk and College Sample." Lastly, Part 9 provides an overview of the major findings.

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PART I

**Assessing the Stages of Change and Decision-Making
for Contraceptive Use for the Prevention of
Pregnancy, STDs, and AIDS**

Abstract

A synergistic approach was taken to examine contraceptive use adoption for two related behaviors: pregnancy prevention and the prevention of sexually transmitted diseases (STDs), including HIV/AIDS. One hundred and twenty-three young adults responded to questionnaire items based on two constructs from the Transtheoretical Model of Change, the Stages of Change and Decisional Balance, as well as other pertinent variables. In Phase 1, two Decisional Balance measures were developed: one for the prevention of pregnancy and one for disease prevention. Final versions of both measures consisted of two 10-item scales: one representing the positive aspects (PROS) and one representing the negative aspects (CONS) of contraceptive and condom use. In Phase 2, the same individuals were staged for both pregnancy and disease prevention according to their readiness to change for contraceptive and condom use. MANOVAs and ANOVAs indicated that the Pros and Cons for both measures were related to stage of change for both contraceptive and condom use. Results from this pilot study were consistent with prior applications of the Transtheoretical Model to the cessation of such problem behaviors as smoking and to the adoption of positive health behaviors such as exercise acquisition.

**Assessing the Stages of Change and Decision-Making for Contraceptive Use
for the
Prevention of Pregnancy, STDs, and AIDS**

Unintended pregnancies and the transmission of sexually transmitted diseases (STDs) are overlapping problems with similar behavioral causes and, potentially, similar behavioral preventions (Fisher, 1990). The use of contraceptives appears to follow a developmental pattern beginning with no method of contraception being used, to the use of condoms, to the use of a more effective method of pregnancy prevention, such as oral contraceptives (Zelnik & Kantner, 1977). Therefore, the more sophisticated young adults become with respect to preventing pregnancy, the less protected they may remain from STDs (Fisher, 1990). Given the current rate of unplanned pregnancies and the epidemic proportions of STDs, clinicians must regard these two health problems as linked phenomena with reciprocal effects that demand simultaneous understanding and reduction (Fisher, 1990).

Rates of Unintended Pregnancies and STDs in the United States

Since the 1970's, the incidence of unplanned pregnancies and STDs, including human immunodeficiency virus infection (HIV) and AIDS among young adults in the United States has dramatically increased (Public Health Service, 1991). For example, nearly 1 million adolescent females become pregnant each year (Hayes, 1987). American young adults have a higher rate of pregnancy as compared to their counterparts in most other developed countries (Alan Guttmacher Institute, 1981; Jones et al., 1985), although the rates of sexual activity are not notably higher (Jones

et al., 1985; Westoff, Calot, & Foster, 1983). This is at least partly due to poor contraceptive use in the U.S. (Brooks-Gunn & Furstenberg, 1989).

STD infections such as gonorrhea, chlamydia, vaginal warts, pelvic inflammatory diseases (PIDs), and herpes are also occurring at an alarming rate in the United States among young adults (Hyde, 1986; Masters, Johnson, & Kolodyny, 1985). Specifically, 86% of all STDs occur among individuals between the ages of 15 and 29 (Centers for Disease Control (CDC), 1991). Furthermore, today's young people have to deal with the real threat of HIV/AIDS. There have been over 196,000 cases of AIDS diagnosed in the United States (CDC, 1991), and a cumulative 390,000-480,000 AIDS cases are estimated in the U.S. by the end of 1993 (CDC, 1992). More than one fifth of all AIDS cases have occurred in 20- to 29-year olds. Since the incubation period of the virus is quite long (Curran et al., 1988), many of these reported cases may have originated in the late adolescent years. Given their current rates of other STDs and their contraceptive histories, adolescents and young adults may be at relatively high risk for HIV/AIDS (Brooks-Gunn, Boyer, & Hein, 1988).

The purpose of the present investigation was to take a synergistic approach to contraceptive use adoption using two of the major constructs from the Transtheoretical Model of Change (Prochaska & DiClemente, 1983, 1984), the Stages of Change and Decisional Balance. The primary hypothesis is that the relationship between the stages of contraceptive use and decisional balance for the separate behaviors will follow the general pattern found across a broad range of problem behaviors using a

wide variety of populations (Prochaska et al., 1994). These behaviors have included both the cessation of negative behaviors such as smoking and cocaine use and the acquisition of such positive behaviors as exercise and mammography screening. Previous samples have included college students, IV-drug users, blue collar workers, and physicians. The results from these studies have demonstrated strong evidence for the generalizability of the Transtheoretical Model of behavior change. What is unique to the present study was the simultaneous examination of pregnancy and STD prevention to determine an individual's stage of change and the cognitive cost/benefit associated with both target behaviors. The results could potentially aid clinicians by providing a useful framework for designing interventions tailored to where individuals are in the process of change for the two related behaviors.

Stages of Change

In retrospective, cross-sectional, and longitudinal studies of how people go about changing their cigarette smoking behavior on their own, evidence was discovered that smokers move through a series of stages of change in their efforts to quit (DiClemente & Prochaska, 1982; Prochaska & DiClemente, 1983; Prochaska, DiClemente, Velicer, Ginpil, & Norcross, 1985). These stages have been labelled Precontemplation, Contemplation, Preparation, Action, and Maintenance.

Precontemplation is a period during which smokers are not thinking about quitting smoking (at least not within the next six months). Contemplation is the period of time in which smokers are seriously thinking about quitting smoking in the next 6 months. Preparation was initially defined as smokers thinking about quitting

smoking some time soon (i.e., within the next month), who have also tried to quit smoking in the past year. However, recent research with the model (Tsoh, Rossi, & Prochaska, 1992) has shown that intention to quit smoking defined this stage more accurately than a recent quit attempt. Action is a period ranging from 0 to 6 months after smokers have made the overt change of quitting smoking. Maintenance is defined as the period beginning six months after Action has started and continuing until smoking is no longer a problem.

Many health behavior change programs have had limited effectiveness because interventions have been developed for individuals who are prepared to take action when, in fact, many people are at the Precontemplation or Contemplation stages (DiClemente, 1991; Ockene, Ockene, & Kristellar, 1988). The Transtheoretical Model suggests that interventions will be more efficacious and cost-effective when they are matched to individual stages. To date, research has provided strong support for the stages of change construct (DiClemente et al., 1991; McConaughy, Prochaska, & Velicer, 1983; McConaughy, DiClemente, Prochaska, & Velicer, 1989).

Decisional Balance

Janis and Mann (1977) have conceptualized a conflict theory of decision-making that suggests that sound decisions involve careful consideration of all pertinent information into a decisional "balance sheet" of comparative gains and losses (Mann, 1972). The theory contends that the anticipated gains (or advantages) and the anticipated losses (or disadvantages) can be categorized into four major types of

consequences: (1) utilitarian gains or losses to the self, (2) utilitarian gains or losses for significant others, (3) approval or disapproval from significant others; and, (4) self-approval or self-disapproval (Janis & Mann, 1977; Mann, 1972). The implication is that both the individual and his/her reference groups are taken into account when appraising instrumental and value-based decisions (Janis & Mann, 1968).

Velicer, DiClemente, Prochaska, and Brandenburg (1985) developed a 24-item decisional balance sheet instrument to examine this weighing process across the stages of change for smoking cessation. Over 700 participants were assessed using the measure as part of a larger, longitudinal study. Principal components analysis revealed only two major categories labeled the PROS and CONS of Smoking. The scales demonstrated the ability to differentiate between the distinct groups representing the stages of change in the cessation process, as well as a group of relapsers. Both scales showed strong support for the comparative approach to balancing-out decisions as proposed by Janis and Mann (27). Based on their findings, Velicer et al. (1985) concluded that the decisional balance construct could be successfully integrated into the Transtheoretical Model of Change to examine patterns of cognitive and motivational shifts across the stages of change in the resolution of other health-related behaviors as well. Prochaska et al.(1985) demonstrated the predictive utility of the decisional balance measure.

In the present study, measures were developed based upon the Decisional Balance construct that represent the cognitive and motivational aspects of the decision

to use contraceptives. By developing a pool of items, it was possible to examine the pertinent types of considerations that are weighed by individuals in varying stages of change with respect to adoption of contraceptive and condom use.

Method

Participants

Phase 1: A sample of volunteers were recruited from a freshman level psychology course offered at a northeastern university in 1992. Approximately 500 students were offered the opportunity to participate in the study for partial credit toward their course requirements. A final sample of $N=123$ was retained. Each individual was asked to anonymously complete a questionnaire designed to assess his/her sexual history, attitudes toward and intentions to use specific methods of contraception, a partner's reaction to contraceptive use, ability to effectively communicate in sexual situations, and basic demographics. The questionnaire took approximately 45 minutes to complete.

The mean participant's age was 19.87 and ranged from 18-25 years. The majority of the sample (62%) were females. Cultural diversity for this group was low with 95% of the sample being caucasian. All participants were single and 99% reported being heterosexual. Eighty-seven percent have engaged in both vaginal and oral intercourse, whereas only 14% of these individuals reported ever engaging in anal intercourse. Half of the sample (50%) reported that their first intercourse experience occurred by the time they were 16. More than half (59%) reported using a condom during this sexual debut while 37% claimed either "no method" or

"withdrawal" was used for birth control. Although 47% of the sexually active individuals were having vaginal intercourse with the same partner for at least a year, only 15% said that this was their first, and only, sex partner. In fact, over one-third of the sample (39%) reported having five or more sex partners since becoming sexually active. Seventeen percent reported to be currently having vaginal intercourse with someone else in addition to their main or steady sex partner. Ten percent of the sample had been diagnosed with an STD at one time, and 14% stated that a pregnancy had occurred in one of their relationships. No statistically significant gender differences were found on any of the sexual history items.

Measures

Decisional Balance

Rational scale construction followed the sequential approach described by Jackson (1970, 1971). This process of instrument development first considers theory to outline item content, and then refines the hypothesized scales through factor analytic procedures. Since it was hypothesized that pregnancy prevention and STD prevention represent two distinct constructs, separate instruments were developed: one assessing the PROS and CONS of contraception use for pregnancy prevention and the second measuring the PROS and CONS of contraceptive use for the prevention of STDs.

Item content was based on several areas that are meaningful to the assessment of the advantages (PROS) of contraceptive use such as protection from pregnancy and/or diseases, partner's reaction to contraceptive use, personal responsibility, ease

of use, availability, cost, and perceived effectiveness. The content covered for the disadvantages (CONS) of contraceptive use included such pertinent issues as hassles associated with the different methods, potential side effects, less enjoyment, a partner's negative reaction, distrust of certain methods, and the lack of protection from diseases linked to most methods other than condoms. The initial item pool of 48 items for each instrument was reviewed by three trained judges familiar with the model, two of whom have research experience in contraceptive use. Only items with 100% agreement were retained. Thirty-eight items were agreed upon for the pregnancy prevention measure, whereas agreement was reached on 37 items for disease prevention. A five-point Likert format was used with response options ranging from "1 = not important" to "5 = extremely important". Participants were asked to rate how important each statement is with respect to their decision whether or not to contracept.

Statistical Plan

Using BMDP4M (Dixon, 1988) statistical software program, principle components analyses were conducted for both the pregnancy and disease prevention measures. The number of components to be retained was determined by the Scree Test (Cattell, 1966) and the theoretical interpretation of the component solutions. Both varimax and oblique rotations were performed. All items that possessed component loadings less than .40, were complex or theoretically inconsistent, were dropped and a second PCA was conducted on the remaining items using the same analysis as described above. The main goal was to reduce both instruments to 20

items each for comparability and for convenience with large sample sizes.

Results

Pregnancy Prevention

The initial PCA of the pregnancy prevention contraceptive use measure involved 38 items (17 Pros and 21 Cons). A 38 X 38 correlation matrix was generated from the complete sample ($N = 123$). Mean substitution was used for missing data, which comprised only 1% of the total responses to the pregnancy items. The Scree test suggested that the data supported retention of two factors. A two-component solution was the most readily interpretable and clearly reflected the PROS and CONS of contraceptive use for pregnancy prevention. The oblique rotation results indicated that the correlation between the two factors was small ($-.028$), so the varimax rotation method was used for interpretation and subsequent analyses.

The item sample was then reduced from 38 to 20 items (i.e., 10 PROS and 10 CONS) based on component loadings, impact of the items on coefficient alpha reliabilities, and the breadth of the final scales. The final two scales demonstrated good internal consistency (PROS = .83 and CONS = .87). A second PCA resulted in a clear two factor solution with an adequate amount of the total variance (43%) explained. All factor loadings ranged from .52 to .79 and are presented in Table 1-1 along with their corresponding items.

Insert Table 1-1 about here

According to Guadagnoli and Velicer (1988), following a factor or component analysis, the pattern's stability can be assessed with respect to the number of variables defining a component and with respect to the magnitude of the component loadings. Contrary to popular rules that assert that sample size be determined as a function of the number of variables- rules that lacked both empirical support and a theoretical rationale (Guadagnoli & Velicer, 1988)- these researchers have demonstrated empirically that if components possess four or more variables with loadings above .60, the pattern may be interpreted if the investigation has a minimum sample size (i.e., $N=50$). Given the current findings, the two components representing the PROS and CONS of contraceptive use for pregnancy prevention yielded seven and eight loadings, respectively, that were above the .60 value, supporting the stability of the findings.

Disease Prevention

The initial PCA for the disease prevention contraceptive use measure involved 37 items (15 Pros and 22 Cons). A 37 X 37 correlation matrix was generated from the complete sample ($N = 123$). Mean substitution was used for missing data which comprised 2% of the total responses to the contraception use for disease protection items. Again, the Scree test suggested that the data supported retention of two factors; however, the correlation between the two components was slightly higher (e.g., -.19) when contrasted with the PROS and CONS of pregnancy prevention contraceptive use.

The 37-item scale was then reduced to 20 items (i.e., 10 Pros and 10 Cons) based on the same criteria described above. The final two scales demonstrated good internal consistency (PROS = .88 and CONS = .90). A second PCA resulted in a clear two factor solution accounting for a substantial amount of the total variance (50%). Factor loadings ranged from .61 to .83 indicating stability of the component pattern (35). The factor loading results are shown in Table 1-2, along with their corresponding items.

Insert Table 1-2 about here

Method

Participants

Phase 2: The same data set referred to above was used for staging individuals on both pregnancy and disease prevention contraceptive use. One hundred and seven participants of the total sample reported being sexually active (sexually active = have engaged in vaginal intercourse). Of these, 97% (N = 104) had complete data for staging on contraceptive use for both pregnancy and disease prevention.

Procedure

Two algorithms (i.e., one for pregnancy prevention and one for STD prevention) were developed to classify individuals into one of the five stages of change for the separate contraceptive behaviors: precontemplation (PC), contemplation (C), preparation (P), action (A), and maintenance (M), and are

presented in Table 1-3. Behaviors representative of each stage of contraceptive and condom use were developed using 1-sentence descriptives. Each participant was asked to select the one that best represented his/her current contraceptive behavior. The use of such categorical staging algorithms has been validated with at least fifteen different problem behaviors (Rossi et al., 1992).

Insert Table 1-3 about here

Results

Stages of Change

The results from the classification of individuals according to their readiness for change for contraceptive use for the prevention of pregnancy and STDs, are presented in Table 1-4. Some interesting findings emerged from the examination of these distributions.

Insert Table 1-4 about here

First, regarding pregnancy prevention, clearly the majority from this population (71.6%) were currently using a method of birth control every time they engaged in intercourse, with the smallest percentage of individuals being classified into the precontemplation stage of adoption. Yet, 28.4% of these heterosexually active individuals were not using a method of birth control every time they had

intercourse placing them at risk for unintended pregnancies.

Second, for disease prevention, the situation was almost the reverse, with the majority (63.6%) not using a condom every time they had vaginal intercourse, with the highest percentage of individuals being classified into the precontemplation stage for disease prevention with no intention to change.

Decisional Balance by Stage of Change

The Decisional Balance measures for contraceptive use behaviors were then related to stages of change for the separate target behaviors. As suggested by Velicer et al. (Velicer et al., 1985) the raw scale scores (unweighted sum of the items) from each Decisional Balance measure were transformed into two standardized scores; (1) a PROS T-score ($\underline{M} = 50$, $\underline{SD} = 10$) and (2) a CONS T-score ($\underline{M} = 50$, $\underline{SD} = 10$). Table 1-5 presents the standardized means and standard deviations for the PROS and CONS arranged by stage of contraception use for both disease and pregnancy prevention.

Insert Table 1-5 about here

Pregnancy Prevention A multivariate one-way analysis of variance (MANOVA) with stage of change for pregnancy prevention as the grouping (independent) variable, and the standardized PROS and CONS scores for pregnancy prevention as dependent variables was performed. A significant result (see Table 1-6) indicated mean differences across the derived scores for participants in PC, C, P, A,

or M groups as formed by the stage of change algorithm. The value found for Wilks' lambda (.79) indicated that 21% of the variance in the PROS and CONS was explained by knowing the stages of contraceptive use for pregnancy prevention for individuals.

Follow-up analyses of variance (ANOVAs) isolating each of the dependent variables were performed. Results of these analyses are summarized in Table 1-6. Significant mean differences across the stages of change groups were detected for both the PROS and CONS; however, a Newman-Keuls analysis revealed no specific pairwise mean differences.

Insert Table 1-6 about here

STD Prevention A one-way MANOVA with stage of change for STD prevention as the grouping variable, and the standardized PROS and CONS scores for STD prevention as dependent variables was performed. A significant result (see Table 1-6) indicated mean differences across the standardized scores for participants in PC, C, P, A, or M groups as performed by the stage of change algorithm. Based on the value found for Wilks' lambda (.75), 25% of the variance in the PROS and CONS was explained from knowing the stages of disease prevention for individuals.

Follow-up ANOVAs, isolating each of the dependent variables, were performed. Significant mean differences across the stages of change groups were detected for the PROS, but not for the CONS of disease prevention (see Table 1-6).

This lack of significance across the stages for the CONS is consistent with an earlier study (37) suggesting that some of the negative aspects of STD prevention (e.g., hassles) such as condom use, may persist no matter what stage an individual may be in.

A Newman-Keuls analysis was performed to follow upon the significant effect of the PROS for contraceptive use for disease prevention. The results indicated that the mean Precontemplation PROS score ($\underline{M}$ = 44.41) was significantly lower than those in the Maintenance ($\underline{M}$ = 55.73) and Preparation ($\underline{M}$ = 51.99) groups.

Discussion

This study represents a preliminary attempt to examine the two contraceptive behaviors of pregnancy and disease prevention simultaneously, using two of the major constructs from the Transtheoretical Model, the Stages of Change and Decisional Balance. First, reliable measures for Decisional Balance for using contraceptives for both pregnancy and disease protection were developed to determine the perceived cost/benefit ratio associated with such behaviors. Both instruments resulted in two components, the PROS and CONS, and demonstrated strong psychometric properties.

Second, based on their readiness to change for contraceptive and condom use, individuals were classified into their corresponding stages of change. The results indicated that the majority of the sample (72%) were using a method of birth control every time they engaged in sex. Only a small percentage of individuals (6.4%) were in the precontemplation stage of change for pregnancy prevention. However, over one-quarter (28%) of these heterosexually active individuals were not using a method

of birth control every time they had intercourse.

For STD prevention, the situation was reversed with almost two-thirds of the sample (63.6%) not using condoms every time they engaged in intercourse to protect themselves from exposure to STDs/AIDS. A large percentage of these individuals (37.4%) were in the precontemplation stage with no intention to start using condoms within the foreseeable future.

The differences between birth control use and disease prevention contraceptive use across the five stages of change, in general, indicate that this college population is much further along in the stages of change for pregnancy prevention as compared to STD prevention.

Finally, the relationship between the PROS and CONS and the stages of change appear similar to other problem behaviors with the CONS of adoption outweighing the PROS for individuals in the precontemplation stage and the Pros outweighing the CONS for those in the maintenance stage.

Although many interventions directed toward modifying high-risk sexual behavior emphasize the importance of regular contraceptive use, these data support the contention that contraceptives that prevents pregnancy are very different from contraceptives that prevent the spread of infectious diseases. Obviously, people not only think differently about pregnancy and disease prevention, their behavior with respect to these two goals is quite different as well. The results suggest that most young people view themselves to be at some risk for unplanned pregnancies, and thus use contraception methods to protect themselves. Many do not, however, view

themselves at risk for the contraction of STDs. Perhaps this is due to knowing someone, much like themselves, who has had to deal with the consequences of an unintended pregnancy. Whereas, with regard to STD/AIDS the situation may be somewhat different. Historically, distinct subcultures (e.g., homosexuals and prostitutes) have been at greatest risk for STDs which may have contributed to feelings of invulnerability among those not in these groups and, therefore, a reluctance to engage in disease preventive behaviors (Weisse, Nesselhof-Kendall, Fleck-Kandath, & Baum, 1990). However, evidence suggests that the general heterosexually active public is increasingly at risk as well (Gordin, Gilbert, Hawley, & Willoughby, 1990). Yet, behavior change in the direction of prevention has been small among heterosexually active young adults (McDonald et al., 1990).

Given the preliminary nature of this study, the generalizability of these results is limited. Data were collected from a relatively small sample using a cross-sectional design; therefore, this investigation should be considered a pilot study. Future studies using larger samples, alternative populations, and a longitudinal design are strongly recommended. Confirmatory factor analysis procedures (CFA) are suggested to further validate the decisional balance measures.

Conclusions:

Overall, the findings suggest that two of the key constructs from the Transtheoretical Model, the Stages of Change and Decisional Balance, provide a useful framework for understanding contraceptive and condom use adoption in college students. The findings have important implications for the development of

interventions. First, what is clear is that interventions designed to change high-risk sexual behaviors need to address the differences in people's perceptions and behaviors regarding pregnancy and STD prevention in order to be effective. It has been stated (Fisher, 1990) that each time an individual chooses a method of contraception -other than the condom- that person may be at risk, since this individual is now sexually active, not concerned about pregnancy, and unprotected from STDs. An initial goal for interventions could be to have individuals adopt contraceptives that prevent pregnancy first, since this population seems least resistant to such change. For disease prevention, efforts should be placed in assisting the large percentage of individuals in the precontemplation stage to move to the contemplation stage before they become prepared to take action for using condoms.

Second, the pattern of means for the PROS and CONS across the Stages of Change suggest that interventions designed to increase the use of contraceptives to prevent pregnancy and diseases will be more effective if the PROS of engaging in their use were made more salient for individuals. This recommendation is supported in the present study by the lower PROS scores for people in the precontemplation stage for both pregnancy and STDs prevention as compared to the other stages of change. This principle of increasing the PROS of the target health behavior relative to decreasing the CONS to bring about successful behavior change has been validated with a broad range of health-related behaviors (Prochaska, 1994). Such individual change processes as consciousness raising and self-reevaluation can be utilized to help increase the perceived PROS of healthy behavior change (Prochaska, Velicer,

DiClemente, & Fava, 1988).

Finally, the data suggest the need for a commitment by health care providers to counsel individuals on disease prevention when recommending alternative methods of birth control (Fisher, 1990). Ideally, it is recommended (Hatcher et al., 1990) that two methods of contraception be used every time an individual engages in vaginal intercourse: one that is highly effective at birth control, and the second being the condom, the most efficacious method of barrier protection available today.

Admittedly, this recommendation would be difficult to implement since the data indicate that some young adults are having problems with the consistent use of one method of contraception. Yet, if we are to meet the proposed national health objectives for the year 2000 (Public Health Service, 1991) efforts must be placed on providing sexually active individuals with the contraceptive use and decision-making training necessary to prevent pregnancies and exposure to STDs.

Authors' Notes

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Table 1-1

Final 20 Items of the Decisional Balance Measure for Contraception Use: Pregnancy Prevention

Item	Component	
	I	II
PROS Scale		
1. I would have a sense of control over my fertility, if I used contraceptives.	.52	.10
2. Contraceptive use helps build trust.	.64	.03
3. I would feel more relaxed during sex.	.56	.10
4. I would feel more responsible if I used a method of contraception.	.62	.04
5. If I used contraceptives, I would be "taking care" of myself.	.60	.12
6. I am able to use drug store methods (e.g., condoms, foam, etc.) in front of a partner.	.65	.07
7. My partner is agreeable to using contraceptives.	.56	.07
8. If I used contraceptives, I would have more self-respect.	.69	.07
9. Contraceptive devices are affordable.	.67	.01
10. Most methods are easy to use.	.67	.02

(Table 1-1 continues)

Table 1-1 (continued)

Item	Component	
	I	II
CONS Scale		
11. Using contraceptives takes the romance out of sex.	.18	.65
12. It would be uncomfortable discussing contraceptives with a partner.	.06	.66
13. Using contraceptives violates my religious values.	.10	.55
14. Using contraceptives makes love-making seem unnatural.	.12	.79
15. Having to publicly acquire (clinic, pharmacy) methods is hard for me.	.14	.60
16. Contraceptive use can take the spontaneity out of sex.	.22	.70
17. I imagine pre-sex discussions of pregnancy prevention will result in "botched" sexual encounters.	.10	.78
18. Sex is more exciting without the bother of contraceptives.	.27	.65
19. My partner does not like using contraceptives.	.02	.65
20. Contraception use violates my partner's values.	.00	.59

Note: PRO α = .83, CON α = .87.

Table 1-2

Final 20 Items of the Decisional Balance Measure for Contraception Use: Disease Prevention

Item	Component	
	I	II
PROS Scale		
1. I would feel protected against STDs if my partner and I used condoms.	.75	.06
2. My partner would feel more protected against STDs if we used condoms.	.67	.02
3. I would feel more responsible about STDs if I used condoms.	.74	.04
4. Protecting myself from STDs would increase my self-esteem.	.67	.14
5. Using condoms to guard against the transmission of STDs builds trust.	.67	.08
6. Condoms are easy to use.	.66	.10
7. Sex would be more enjoyable if I felt protected from STDs.	.74	.17
8. Methods that protect you from STDs are easy to obtain.	.69	.23
9. Condoms are affordable.	.62	.20
10. If I used contraceptives to prevent STDs, I would gain my partner's respect.	.64	.03

(Table 1-2 continues)

Table 1-2 (continued)

Item	Component	
	I	II
CONS Scale		
11. My partner would find sex less exciting if a condom were used.	.66	.22
12. I might hurt my partner's feelings if I suggested we use a condom.	.63	.04
13. It is harder to insist on condom use once a commitment has been made to a partner.	.75	.03
14. I would hurt my partner's feelings if I suggested we use a condom when we were already using the Pill.	.76	.10
15. Methods of contraception that prevent STDs are unpleasant to use.	.64	.28
16. I might spoil a sexual encounter if I brought up condom use.	.83	.00
17. Discussing STD prevention makes my partner uncomfortable.	.71	.16
18. Condoms take the spontaneity out of love-making.	.70	.28
19. My partner would be angry if I refused to have sex unless a condom were used.	.61	.10
20. I am uncomfortable discussing STD prevention with a partner.	.70	.02

Note: PRO α = .88, CON α = .90.

Table 1-3
Contraceptive Use Algorithms

Pregnancy Prevention

"Is a method that prevents pregnancy used every time you have intercourse?"

- (1) "No, and I do not intend to start using one **every time** within the next 6 months". (PC)
- (2) "No, but I intend to start using one **every time** within the next 6 months". (C)
- (3) "No, but I intend to start using one **every time** within the next 30 days". (P)
- (4) "Yes, I have been using one **every time** but for less than 6 months". (A)
- (5) "Yes, I have been using one **every time** for more than 6 months". (M)

Disease Prevention

"Is a contraceptive device that prevents the contraction of a sexually transmitted disease (e.g., condom) used every time you have sex?"

- (1) "No, and I do not intend to start using one **every time** within the next 6 months". (PC)
 - (2) "No, but I intend to start using one **every time** within the next 6 months". (C)
 - (3) "No, but I intend to start using one **every time** within the next 30 days". (P)
 - (4) "Yes, I have been using one **every time** but for less than 6 months". (A)
 - (5) "Yes, I have been using one **every time** for more than 6 months". (M)
 - (6) N/A: "My partner and I were virgins and have never had sex with anyone else".^a
-

^aOnly one respondent endorsed the sixth category and was deleted from the staging process.

Table 1-4

Percentages of Individuals in the Five Stages of Change for Contraceptive Use

Preventive Behavior	Stage				
	PC	C	P	A	M
Pregnancy	6.4	9.2	12.8	9.2	62.4
Disease	37.4	11.2	15.0	8.4	27.1

Note: $\underline{N}$ = 104.

Table 1-5

T-Score Means and Standard Deviations of the PROS and CONS across the Stages of Contraceptive Use

		Stage of Adoption				
		PC	C	P	A	M
<u>Pregnancy</u>						
PROS						
	M	42.00	45.03	47.99	45.75	52.77
	SD	8.16	8.94	10.69	12.49	8.55
CONS						
	M	55.47	51.61	50.38	54.95	46.74
	SD	9.46	6.26	5.85	10.40	10.11
<u>Disease</u>						
PROS						
	M	44.41	52.28	51.99	51.54	55.73
	SD	10.48	6.67	9.14	9.22	6.89
CONS						
	M	51.05	51.64	49.45	51.96	45.60
	SD	10.26	11.92	10.85	8.36	8.68

Note: For Pregnancy Scale:

PC: n = 6, C: n = 10, P: n = 14, A: n = 10, M: n = 64.

For Disease Scale:

PC: n = 39, C: n = 11, P: n = 16, A: n = 9, M: n = 29.

Table 1-6

MANOVA/ANOVA Summaries for Stages of Contraceptive Use for Pregnancy and Disease Prevention with Standardized T-scores as Dependent Variables

Type of DV	N	Wilks' Lambda	F (df)	p
<u>Pregnancy</u>				
MANOVA PROS & CONS	104	.79	F(8,196)=3.09,	p=.0027
ANOVA with DV=PROS			F(4, 99)=4.01,	p=.0046
with DV=CONS			F(4, 99)=2.93,	p=.0200
<u>Disease</u>				
MANOVA PROS & CONS	104	.75	F(8,196)=3.85,	p=.0003
ANOVA with DV=PROS			F(4, 99)=7.25,	p=.0000
with DV=CONS			F(4, 99)=1.61,	p=.1787

Part 2

**Application of the Transtheoretical Model to Contraceptive and Condom Use
in Women at High-Risk for HIV Exposure and Transmission**

Abstract

The objective of this study was to develop sensitive measures of condom and other contraceptive behavior change for women at high risk of HIV infection. The applicability of the Transtheoretical Model was assessed for measurement of these behaviors using a diverse sample of 238 at risk for HIV through their intravenous drug use or sexual behavior. Four key constructs of the model were examined: Stages of Change, Decisional Balance (Pros and Cons), Self-Efficacy, and the Processes of Change.

First, it was evaluated whether it was necessary to model contraceptive decision-making and efficacy separately for each contraceptive method, or if a more general measure of contraceptive use was sufficient to describe behavior. To assess validity, we examined the relationships between these key constructs and the stages of change to determine consistency with theory and previous research. Finally, a preliminary measure of the processes of change for condom use was examined to determine its psychometric properties and relationship to the stages of change construct.

Structural equation modeling results suggested that a measure of general contraceptive use could be employed when assessing oral contraceptive and Norplant use, but that condom use required separate assessments for main and other partners. MANOVA and ANOVA analyses confirmed that the relationships between the pros and cons, self-efficacy, and the processes of change were largely consistent with patterns observed with other health-related behaviors, providing support for the validity of the measurement model as applied to the contraceptive and condom use of women at risk.

Application of the Transtheoretical Model to Contraceptive and Condom Use in Women at High Risk for HIV Exposure and Transmission

Unintended pregnancies and exposure to sexually transmitted diseases (STDs) are problems with similar behavioral risk factors and, potentially, similar behavioral preventions (Fisher, 1990). According to Zelnik and Kantner (1977), the use of contraceptives appears to follow a developmental pattern of sorts, beginning with no method of contraception being used, to the use of condoms, to the use of a more effective method of pregnancy prevention, such as oral contraceptives. Therefore, the more sophisticated individuals become with respect to pregnancy prevention, the less protected they may remain from STDs. Given the current rate of unplanned pregnancies and the epidemic proportions of STDs, clinicians must regard the two health problems as linked phenomena with reciprocal effects that demand simultaneous understanding and reduction (Fisher, 1990) if we are to meet the proposed national health objectives for the year 2000 (Public Health Service, 1991).

Rates of Unplanned Pregnancies in the United States

Since the 1970's, unplanned pregnancies and STDS, including human immunodeficiency virus infection (HIV) and the acquired immunodeficiency syndrome (AIDS), have increased in the United States (Public Health Service, 1991). For example, nearly 1 million adolescent females become pregnant each year (Haynes, 1987). American young adults have, in fact, a higher rate of pregnancy as compared to their counterparts in most other developed countries (Alan Guttmacher Institute,

1981; Jones, Forrest, Goldman, Henshaw, Lincoln, Rosoff, Westoff & Wulf, 1985), although the rates of sexual activity are not notably higher (Jones et al., 1985; Westoff, Calot & Foster, 1983). This is due, in part, to poor contraceptive use (Brooks-Gunn & Furstenberg, 1989). On average, men and women report their first sexual intercourse experience to occur between the ages of 13 and 17 (Zabin, Hardy, Smith & Hirsh, 1986). Less than half report using a method of contraception during this initial sexual encounter (Zelnik & Shah, 1983) and even fewer may be regular contraceptive users (Weisse, Nesselhof-Kendall, Fleck-Kandath & Baum, 1990). When considering the problems young adults have in using contraceptives, it is important to recognize that many mature women appear to be equally poor contraceptors (Brooks-Gunn & Furstenburg, 1989; Trussell & Kost, 1987). Intentional pregnancies comprise only 49% of conceptions among married women and only 8% of all pregnancies that result among unmarried women (Jones et al., 1985).

Rates of STDs in the United States

STD infections such as gonorrhea, chlamydia, vaginal warts, pelvic inflammatory diseases (PIDs) and herpes are also occurring at an alarming rate in the United States (Hyde, 1986; Masters, Johnson & Kolodny, 1985). Specifically, 86% of all STDs occur among individuals between the ages of 15 and 29 (Centers for Disease Control, 1991). Furthermore, the sexually active individual today has to deal with the real threat of AIDS. There have been over 196,000 cases of AIDS diagnosed in the United States (Centers for Disease Control, 1991), and a cumulative 390,000 - 480,000 AIDS cases are estimated in the U.S. by the end of 1993 (Centers

for Disease Control, 1992). Current trends suggest that HIV transmission through heterosexual contact is on the rise (Holmes, Karon, & Kreiss, 1990). Women, in particular, have become one of the fastest-growing groups infected with the virus. Sixty percent of the reported heterosexually transmitted cases of HIV are among women (CDC, 1991), and AIDS is currently one of the top 10 causes of death among females of reproductive age (Chu, Buehler, & Berkelman, 1990). The number of reported AIDS cases in women resulting from heterosexual contact increased 16% from 1990 to 1991 (CDC, 1991) and the number of confirmed pediatric AIDS cases increased more than 11% during the same time period (CDC, 1991).

Application of the Transtheoretical Model to Contraceptive and Condom Behavior

The alarmingly high number of reported cases of unplanned pregnancies, STDs, and AIDS underscores the need for interventions designed to modify high-risk sexual behaviors. One promising model of behavior change is the Transtheoretical Model of Change (Prochaska & DiClemente, 1983, 1984, 1986; Prochaska, DiClemente, & Norcross, 1992).

One of the most compelling aspects of the Transtheoretical Model is its ability to empirically integrate concepts from seemingly competitive theories. The model draws upon several major theories such as social learning theory (Bandura, 1977, 1986), the health belief model (Becker, 1974), the theory of reasoned action (Fishbein, 1979), and Janis and Mann's (1977) model of decision making. Model based research has found that both the cessation of high-risk behaviors and the acquisition of healthier behaviors such as consistent contraceptive use, involve a

gradual progression through five stages of change labelled Precontemplation, Contemplation, Preparation, Action, and Maintenance.

Stages of Change

Brief definitions of the five stages of change are as follows: (1)

precontemplation - not intending any behavior change within the next 6 months; (2)

contemplation - intending behavior change within the next 6 months; (3) preparation

- seriously planning change within the next 30 days; (4) action - actively changing

behavior for less than 6 months; and (5) maintenance - maintaining behavior change

for more than 6 months.

Many health behavior change programs have had limited effectiveness, in part, because interventions have been developed for individuals who are prepared to take action when, in fact, many people may be in the Precontemplation or Contemplation stages. The Transtheoretical Model suggests that interventions will be more efficacious and cost-effective when they are matched to individuals' stages.

Processes of Change

The processes of change are covert and overt activities that individuals use to alter their experiences and/or their environments in order to modify affect, behavior, cognitions or relationships. Research to date has supported at least ten distinct processes of change: consciousness raising; self-reevaluation; environmental reevaluation; self-liberation; social liberation; counterconditioning; stimulus control; reinforcement management; helping relationship; and dramatic relief. A common and finite set of change processes has been found across a number of problem areas

including psychological distress, cigarette smoking, and weight control (Prochaska & DiClemente, 1986; Rossi, 1992). Across a number of retrospective, cross-sectional, longitudinal, and intervention studies (e.g., DiClemente & Prochaska, 1982; DiClemente et al., 1991; Prochaska & DiClemente, 1983; Prochaska et al., 1985, 1991) different processes of change are emphasized at different stages of change. This discovery of the integration of the stages and the processes of change holds promise in terms of interventions designed to modify high-risk sexual behavior such as the lack of consistent contraceptive use and/or condom use. Once an individual's stage has been assessed, interventionists would have a better sense of which processes need to be emphasized in order to help the individual progress to the next stage of change. Table 2-1 presents the definitions and representative examples of specific interventions of the Processes of Change.

Insert Table 2-1 about here

Decisional Balance

Janis and Mann (1977) have conceptualized a conflict theory of decision-making which suggests that sound decisions involve careful consideration of all pertinent information into a decisional "balance sheet" of comparative gains and losses (Mann, 1972). The theory contends that the anticipated gains (or advantages) and the anticipated losses (or disadvantages) can be categorized into four major types of consequences: (1) utilitarian gains or losses to the self, (2) utilitarian gains or losses

for significant others, (3) approval or disapproval from significant others; and, (4) self-approval or disapproval (Janis & Mann, 1968, 1977). The implication is that both the individual and his/her reference groups are taken into account when appraising instrumental and value-based decisions (Hoyt & Janis, 1975).

Velicer, DiClemente, Prochaska, and Brandenburg (1985) have developed a 24-item decisional balance sheet instrument to examine this weighing process across the stages of change for smoking cessation. Principal components analysis revealed only two major categories labeled the PROs and CONs of smoking. The scales demonstrated the ability to differentiate between the distinct groups representing the stages of change in the cessation process, as well as a group of relapsers. The two subscales showed strong support for the comparative approach to balancing-out decisions as proposed by Janis and Mann (1977). Based on the findings, Velicer et al. (1985) concluded that the decisional balance construct could be successfully integrated into the stages of change model to examine patterns of cognitive and motivational shifts across the stages in the resolution of other health-related behaviors as well.

The balance between the pros and cons have been found to vary depending on where an individual may be in the stages of change. The Transtheoretical Model of Change hypothesizes that with the adoption of behaviors such as contraceptive use, sexually active individuals in the Action and Maintenance stages will have a decisional balance that emphasizes the positive aspects (i.e. Pros) of contracepting and that individuals in the Precontemplation stage have a decisional balance that emphasizes

the perceived negative aspects (i.e. Cons) of the target behavior. The crossover of the pros and cons is predicted to occur in either the Contemplation or Preparation stages of change. This systematic relationship between the stages of change and these decisional balance constructs have been shown across a wide variety of behaviors (Prochaska et al., 1994) demonstrating the Transtheoretical Model's ability to integrate core constructs from an alternative model of behavior change. The decisional balance construct will allow for the examination of the perceived advantages (pros) of contraceptive use and the perceived disadvantages (cons) of engaging in such behavior that tend to interact in such a way as to tip the balance against the use of contraception and condoms for many individuals (eg., Luker, 1975; Morrison, 1985).

Self-Efficacy

Self-efficacy theory (Bandura, 1977) postulates that confidence in one's ability to perform a specific behavior is strongly related to one's actual ability to perform that behavior. Self-percepts of efficacy have, in fact, been shown to surpass final performance as predictors of future performance (Bandura, Adams, Hardy, & Howells, 1980; DiClemente, 1981). Personal judgments of self-efficacy are not influenced by a response bias to appear socially desirable (Seltenreich, 1990; Velicer, DiClemente, Rossi, & Prochaska, 1990). Self-efficacy judgments are closely linked to the performance of a number of diverse behaviors including HIV risk reduction (Prochaska et al., 1990; Redding, 1992; Schnell, Galavotti, & O'Reilly, in press), sexual assertiveness (Grimley, 1991), exercise (Marcus, Selby, Niaura, & Rossi,

1992), smoking cessation (DiClemente, Prochaska, & Gibertini, 1985), and weight-loss (Bernier & Avard, 1986).

Just as the Processes of Change and the Pros and Cons can be integrated with the stages of change, so too can the important change variable of self-efficacy. For example, scores on a smoking-specific measure of Self-Efficacy were shown to be related to stage-of-change and smoking cessation, with precontemplators and contemplators scoring the lowest and successful maintainers scoring the highest, although clear differentiation between the stages was not revealed (DiClemente et al., 1985). Several other studies have also demonstrated integral relationships between the stages of change dimension and self-efficacy (DiClemente, 1986; DiClemente, Prochaska, Fairhurst, Velicer, Velasquez, & Rossi, 1991; Prochaska, Velicer, Guadagnoli, Rossi, & DiClemente, 1991; Velicer, DiClemente, Rossi, & Prochaska, 1990).

Research Questions

Since the Transtheoretical Model is a "template" of sorts that has been applied to a variety of different behaviors (Grimley, Blais, Velicer, Prochaska, & DiClemente, in press), it seemed promising to take a synergistic approach to the related problems of unplanned pregnancies and exposure to STDs using the major constructs of the model (i.e. Stages of Change, Processes of Change, Decisional Balance, and Self-Efficacy). Several constructs from the model have been applied specifically to the area of HIV safer sex behaviors (Redding, 1992; Redding, Rossi, Velicer, & Prochaska, 1989; Snow, Fitzgerald, & Prochaska, 1988), condom use

(Prochaska et al., 1990), and to both general contraceptive and condom use (Grimley, Riley, Bellis, & Prochaska, 1992). The current investigation, however, represents the most comprehensive and integrated application of the Transtheoretical Model to contraceptive and condom use behaviors to date. Furthermore, due to the dynamic nature of the sexual dyad, specific items reflecting constructs that assess the interpersonal aspects of contraceptive use (e.g., ability to communicate the need for contraceptive use with a partner, partner's support) were incorporated into the model. Such interpersonal constructs have been shown to be strong predictors of contraceptive use in previous studies (Condelli, 1986; Grimley, 1991; Harlow, Grimley, Quina, & Morokoff, 1992) and should be included in any model assessing contraceptive use for both the prevention of pregnancy and the transmission of HIV/STDs.

In addition, women who choose a method of contraception - other than the condom - may perceive themselves to be at low risk for reproductive health problems. Although they may be relatively safe from unintended pregnancies, they may remain unprotected from STDs (Fisher, 1990). It has been recommended (Grimley et al., 1992; Hatcher et al., 1990) that, ideally, two methods of contraception be used: one that is highly effective at birth control and the second being the condom, the most efficacious method of barrier protection available today. The important question of whether or not women who use reliable methods of birth control are considering the need for condom use to protect themselves from diseases warrants empirical investigation.

The final goal of the present investigation was to determine whether or not it is necessary to assess women on each specific method of contraception, or if a meaningful division or category of methods is available. Historical trends in sexual mores suggest that the longstanding division of coitally dependent vs. non-coitally dependent methods may be outdated and perhaps a stronger distinction is possible. For example, at least three reasonable categories come to mind: (1) methods that are dependent on a partner vs. methods that women control, (2) an individual's perceptions of the different methods that prevent pregnancy as compared to those associated with condom use for disease protection (Grimley et al., 1992), and (3) methods that involve long-term planning vs. methods associated with the immediacy of sexual intercourse (Morrison, 1986). The lack of a unifying model or methodology of contraceptive use has hampered the interpretation of numerous studies of contraceptive use published in psychology, medicine, and family planning journals (e.g., Morrison, 1986). The results could potentially aid future research and the development of appropriate interventions designed to modify reproductive health behaviors.

Research Hypotheses

Several research predictions were made: (1) Women could be classified into various stages of contraceptive and condom use and that the majority of women would be in the earlier stages of adoption; (2) Women who consistently use highly effective methods of birth control such as the Pill and Norplant would not be also using condoms to prevent the possible transmission of STDs/HIV; (3) Higher levels of self-

efficacy for contraceptive/condom use and emphasis on the Pros of contraceptive/condom use adoption would be associated with later stages of change; (4) Women would be using at least ten processes of change in their efforts to modify their sexual behaviors; and (5) Preliminary models of contraceptive and condom use could be developed that represent a meaningful categorization of methods.

Method

Participants

Three-hundred and four high-risk women were initially screened to participate in the study. The total recruitment process was overseen by the Principal Investigators from six potential intervention project sites including San Francisco (n=53), Portland (n=49), Oakland (n=52), Pittsburg (n=56), and two sites in the Philadelphia area (n=43 and n=51). The majority of women (56.9%) were living in either homeless shelters or drug treatment facilities. Women were eligible to participate if: (1) they had not been trying to become pregnant in the last six months, (2) they were not planning to become pregnant within the next six months, and (3) they had engaged in vaginal intercourse within the past six months. Thirty-seven women failed to meet the eligibility criteria and were excluded from the study. Women who were currently pregnant or sterilized were assessed only on condom use behavior. Data were available on most measures for N = 238 women. The ages of the participants ranged from 15-46 years with a mean age of 28 years. The ethnic composition consisted of: 70.2% African-American; 13.4% Caucasian; 4.3% Native American; 3.0% Hispanic/Latina; 0.7% Asian; and 7.2% endorsed a category labeled

"Other".

Measures

The survey was administered using an interview format and included five sets of questions including: (1) demographics and background information; (2) Stages of Change for contraceptive use: General birth control, the Pill, condoms, Norplant, IUD, diaphragm, and the sponge; (3) Decisional Balance for contraceptive use: General, the Pill, condoms, and Norplant; (4) Self-Efficacy for using contraceptive use: General, the Pill, condoms, and Norplant; and (5) Processes of Change for Condom Use.

Stages of Change Algorithms

In order to assess where in the process of change women were for the different methods of contraception, a total of eight algorithms were developed: (1) General contraceptive use, (2) the Pill, (3) Norplant, and an "Other" category consisting of (4) the IUD, (5) the diaphragm and the sponge, and (6-8) three staging algorithms for condom use.

The rationale for having three sets of staging items for condom use is based on a number of previous studies (Armstrong, Kenen, & Samost, 1991; Dorfman, Derish, & Cohen, 1992; Prochaska et al., 1990; Rosenberg & Weiner, 1988) that have shown women to be more likely to use condoms with a casual partner than with a steady sexual partner. Based on these findings, three staging algorithms were developed to examine the distributions between: General condom use, condom use with Main partner, and condom use with someone Other than a main partner. The eight

contraceptive and condom staging algorithms are presented in the Appendix.

Decisional Balance Measures

All scales developed in the present investigation followed the sequential approach of scale construction described by Comrey (1988) and Jackson (1970). This process of instrument development first considers theory to outline item content and then refines the hypothesized scales through factor analytic procedures. Five sets of items were constructed to assess the Pros and Cons (Decisional Balance) of contraceptive and condom use. All scales consisted of ten items each. Several items used in the assessment of condom use have been validated in an earlier investigation (Prochaska et al., 1990). The initial item pool was reviewed by trained judges familiar with the model. Only items with 100% agreement were retained. Item content was based on several areas meaningful to the assessment of the advantages (Pros) of contraceptive use such as: protection from pregnancy and/or diseases, partner's reaction to contraceptive use, personal responsibility, ease of use, availability, cost, and perceived effectiveness. The content covered for the disadvantages (Cons) of contraceptive use reflect attitudes noted in the current literature (e.g., Sacco, Levine, Reed, & Thompson, 1991) and include such pertinent issues as hassles associated with the different methods, potential side effects, partner's negative reaction to contraceptive use, less enjoyment, distrust of certain contraceptives, expense, and the lack of protection from diseases linked to non-barrier methods. An item for the Pros of Pill use, for example, is "I would not have to rely on my partner for protection", whereas a Cons item would be "I would not be

protected from diseases". A five-point Likert response format was used with response options ranging from "1 = not important" to "5 = extremely important".

Participants were asked to rate how important each statement is to their decision whether or not to use contraception. For each of the five sets of items based on previous research with the Decisional Balance instruments (e.g., Velicer et al., 1985), it was expected that two relatively uncorrelated subscales reflecting the pros and cons of contraception use would be revealed.

Self-Efficacy: Five ten-item scales were developed to measure Self-Efficacy for contraceptive and condom use. Each participant was asked to rate how confident she would be to use the different methods of contraception in specific sexual situations. Item content for each measure was theoretically comprised of three main types of situations: negative affect, hassles, and interpersonal. Items were written in such a way as to assess the degree of situational pull that might exist (e.g., partner disapproves, using alcohol or drugs) that could induce an individual to have sex without the use of contraception. An example of an item from each subscale is as follows: "How confident are you that you would use...(1) "When I start to worry that my health might be harmed" (negative affect); (2) "When it would be too much trouble" (hassles); and (3) "When I think my partner might get upset" (interpersonal). Each of the items was rated on a five-point Likert type scale with response options ranging from "1 = not at all confident" to "5 = very confident". For each of the five contraceptive categories, a one-factor solution is expected reflecting a global sense of self-efficacy for each specific method of contraception and condom use.

Processes of Change for Condom Use: The development of the measure for the Processes of Change for Condom Use followed the sequential method of scale development (Comrey, 1988; Jackson, 1970). An initial pool of items was generated based on definitions from the stages and processes of change model. Many of the items were adapted and revised for condom use from those used by Prochaska, Velicer, DiClemente, and Fava (1988) for smoking cessation. Content validity was established by having three doctoral level judges classify the items according to conceptual definitions of the 10 change processes: Consciousness Raising, Counterconditioning, Dramatic Relief, Environmental Reevaluation, Helping Relationship, Reinforcement Management, Self Liberation, Self Reevaluation, Social Liberation and Stimulus Control. In addition, another preliminary process, Interpersonal Systems Control, was developed. Evidence supporting this process in the area of safer sex behavior was found previously (Redding, 1992). Interpersonal systems control had been tested initially in smoking cessation studies, however, it merged with Stimulus Control in that population. It may be able to emerge as a separate process given the interpersonal nature of condom use. Each participant was asked to rate how frequently she had experienced similar thoughts/feelings associated with condom use within the past month. Each response was recorded on a five-point Likert scale with response options ranging from "1 = Never" to "5 = Very Often". Some sample items from the total scale are as follows: (1) "I think about things I've seen or heard about how condoms help keep you from getting the AIDS virus during sex." (consciousness raising); (2) "I feel better about myself when I use condoms to

reduce my risk of AIDS." (self-reevaluation); and (3) "I carry condoms when I go out." (stimulus control). Each Process of Change for Condom Use subscale was assessed by four items each, with the exception of self-liberation and stimulus control, which had five items per subscale resulting in a 46-item measure for the Processes of Change for Condom Use.

Results

Characteristics of the Sample

Summary statistics for a number of pertinent variables related to contraceptive and condom use were calculated: Eighty percent of the total sample reported having a main partner and 43% had sex with a man other than a main partner within the last six months. Over one-third of the sample (38.4%) had a partner who was an IV-drug user, or has had a partner who shot drugs within the last five years. Nearly one-quarter of the women (21.8%) had use IV-drugs themselves. Almost one-half of the sample (47.6%) have had sex for "money, drugs, or other things." The majority of the women (89.9%) reported being pregnant at least once with more than one-half (58.2%) reporting that the last time they became pregnant they were "not thinking about it" (i.e., that a pregnancy might occur).

Stages of Change for Contraceptive/Condom Use

The results revealed that no one was currently using an IUD and that only 3.3% of the total sample were using either the diaphragm or the sponge. Table 2-2 shows the joint distribution of the remaining six stages of change algorithms for contraceptive use (PC, C, P, A, M). Several important findings emerged when

examining these distributions.

Insert Table 2-2 about here

First, in terms of specific methods of contraception currently being used, the data indicated that women were much further along in the stages of change for condom use as compared to the Pill and Norplant. Thirty-six per cent of the sample were using condoms "every time" or "almost every time" they had sex with someone other than a main partner and 28.1% were using condoms "every time" or "almost every time" with their main partner. In contrast, only 15.1% were using the Pill as prescribed and only 2.5% were using Norplant.

Second, approximately 39% of the women reported that they were currently using a method of contraception to prevent pregnancy suggesting that a proportion of the sample were using condoms for both pregnancy and disease protection. In fact, when asked "why" condoms were being used with a main partner, 30% stated that they used condoms to prevent both pregnancy and disease; 41% said to prevent disease; and 13% stated that they used condoms to prevent pregnancy alone (22% reported never using condoms with a main partner). When the same question was asked of women having sex with someone other than a main partner, 50% stated that they used condoms to prevent both pregnancy and disease; 41% said to prevent disease; and 4% reported that they used condoms to prevent pregnancy only (5% never used condoms with a casual partner).

Third, consistent with previous studies (Armstrong et al., 1991; Dorfman et al., 1992; Prochaska et al., 1990; Rosenberg & Weiner, 1988) women from this population were using condoms less with main partners as compared to more casual types of partners. More than half of the women (53.6%) were in the Precontemplation stage for condom use with main partners, whereas only one-third (33.6%) were precontemplative for using condoms with Other partners.

Fourth, Table 2-2 reveals that, overall, the majority of the women from this high-risk population remain unprotected from both pregnancy and diseases. When assessed on a global measure of contraceptive use, 61.4% were currently not using any method, with nearly 30% stating that they had no intention to start using birth control within the next six months. More specifically, 63.9% were not currently using condoms every time they had sex with someone other than a main partner; 71.9% were not using condoms every time with a main partner; 84.9% were not using the Pill; and 97.5% were not using Norplant as their birth control choice.

Stages of Action/Maintenance for Specific Methods of Contraception Use by Stages of Condom Use

Tables 2-3a and 2-3b show the joint distributions between women using such highly effective methods of birth control such as the Pill and Norplant by condom use with both Main and Other partners. The results indicate that only about one-third (34.4%) of the women using the Pill were also using condoms with their Main partners and 44% of the Pill users were using both methods with Other partners. Although only a small subsample of women were using Norplant, Table 2-3b

illustrates that none of the Norplant users were using condoms also with a Main partner while only 25% were using both methods with someone other than a steady partner. These findings suggest that the majority of women using either Norplant or the Pill to prevent pregnancies may remain at risk for contracting HIV/AIDS and other STDs.

Insert Tables 2-3a and 2-3b about here

Decisional Balance of the Pros and Cons for Contraceptive/Condom Use

Exploratory Factor Analyses for the Pros and Cons. A 16 X 16 correlation matrix was generated for each Decisional Balance measure (8 Pros and 8 Cons) with the exception of the Pill. As the result of an administrative error, an item reflecting an advantage of Pill use was inadvertently switched with one reflecting a disadvantage of Pill use. These two items were dropped from the analyses leaving seven pros and seven cons for Pill use adoption. Principal components analyses (PCA) were conducted using BMDP4M (Dixon, 1988) statistical software program using oblique (DQUART) rotations. The number of components retained was determined by the Scree Test (Cattell, 1966) and the theoretical interpretation of the component solutions. All items that were complex, below the value of .40, or theoretically inconsistent, were dropped and a second PCA was conducted on the remaining items using the same analysis as described above.

The Scree Test supported retention of two factors for all Decisional Balance measures (e.g., General, Pill, Norplant, and Condom-Main, and Condom-Other). The 2-component solutions clearly reflected the Pros and Cons of contraceptive and/or condom use. The oblique rotation results indicated that all correlations between the two factors were relatively low (range = .01 to .19). All relevant factor loadings ranged from .63 to .94.

Item samples were then reduced from eight (or seven) to five-item subscales (i.e. 5 Pros and 5 Cons) based on component loadings, impact of the items on coefficient alpha reliabilities, and the overall breadth of the final scales. Table 2-4 shows the final 5-item subscales indicating good internal consistency ranging from .87 to .96 for the Pros scales ($\underline{M}$ = .90) and .81 to .96 for the Cons scales ($\underline{M}$ = .84). The reduced-item sets for the Pros and Cons can be found in the Appendix.

 Insert Table 2-4 about here

Confirmatory Factor Analysis (CFA) Models of the Pros and Cons

Confirmatory factor analyses were performed on the reduced-item sets of the Pros and Cons for the General contraceptive use scales and three different methods of contraception (e.g. the Pill, Norplant, condoms). The computer program EQS (Bentler, 1989) was utilized to examine the plausibility of the models.

A basic two-factor model (Model 1) shown in Figure 2-1 examined the reduced item-sets for each of the Pros and Cons measures: one for General

contraceptive use, the Pill, Norplant, Condom-Main, and Condom-Other. The conventional maximum likelihood (ML) estimator was used to analyze all models. The choice of the ML estimator was based on several studies that have shown this estimator to be fairly robust against minor violations of nonnormality (Boomsma, 1983; Harlow, 1986; Huba & Harlow, 1987). Since no one single method of fit has been fully accepted (Bentler, 1990; Bentler & Bonett, 1980; Bollen, 1989), several indices of fit were utilized to determine the overall appropriateness of the proposed models. The following indices were used: (1) the conventional chi-square test; (2) the root mean square residual (RMR) (Joreskog & Sorbom, 1986) with values closer to zero indicating small differences between the model and the data; (3) Bentler and Bonett (1980) normed fit index (NFI), which has values ranging from 0 to 1, with values closer to 1 indicating better fit; (4) Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), which is quite similar to the NFI, but is less dependent on sample size; and (5) Comparative Fit Index (CFI) (Bentler, 1990), which also has values ranging from 0 to 1. Each parameter estimate (e.g., factor loadings, factor correlations, and errors of measurement) was examined for significance using z-ratios.

The overall fit indices for the correlated and orthogonal solutions suggested that the correlated solution for the reduced sets of the Pros and Cons items fit the data well. All factor loadings were significant at the .001 level and ranged from .56 to .97 (see Figures 2-2 to 2-6). Indices of model fit are displayed in Table 2-5a with the Normed and Nonnormed indices omitted for ease of presentation.

Insert Figures 2-1 to 2-6 about here

Insert Tables 2-5a to 2-5c about here

Conceptual Model Testing Using Decisional Balance

In addition to the one basic model utilized separately for each specific method of contraceptives (Model 1), several additional CFA models of the reduced-item sets for the Decisional Balance measures were conducted. Results from these initial runs (not shown) indicated that there were high correlations between General, Pill, and Norplant ($\underline{M} = .93$) and no significant correlations between these methods and both Condom-Main and Condom-Other ($\underline{M} = .12$) supporting the distinction of two separate models of contraception use. Based on these findings two final models were tested.

Model 2a postulated that contraceptives that are effective at preventing pregnancy only, could be best explained by two second-order factors, whereas the condom model, Model 2b, could best be represented by a 4-factor, first-order model. The condom model is based on previous work conducted by Prochaska et al. (1990) that demonstrated that information on Main and Other partner condom use is best modeled on separate factors - as opposed to one general factor. The two hypothesized models of contraception use are illustrated in Figures 2-7 and 2-8.

Insert Figures 2-7 and 2-8 about here

For the first model, Model 2a, it was hypothesized that the correlations between the specific methods of the Pill, Norplant, and the General measure of contraception use could best be explained by a two-factor, second-order model involving the 30 items reflecting the Pros and Cons for pregnancy prevention. The hypothesized hierarchical model is shown in Figure 2-7.

The results from the second-order model of the Pros and Cons for General, Pill, and Norplant indicated that the model fit the data well (see Table 2-5b). All standardized ML factor loadings were significant at the .001 level and ranged from .71 to .94 and are displayed in Figure 2-9. The two higher-order factors were correlated at the .001 level. A substantial proportion of the total variance was explained by the higher-order Pros factor: 79% for General contraceptive use; 89% for the Pill; and 62% of explained variance for the dependent measure, Norplant ($\underline{M}$ = 77%). For the higher-order Cons factor, 51% of the variance was explained for General contraception use, 81% for the Pill, and 60% of the total variance was explained for Norplant ($\underline{M}$ = 64%). These findings suggest that separate assessments of the Pros and Cons of using the Pill and Norplant are not necessary, since the measure for General contraceptive use yields comparable and reliable results.

The second model (Model 2b) involved the 20 items reflecting the Pros and Cons of using condoms with both Main and Other partners (see Figure 2-8). All

factor loadings were significant at .001 and ranged from .89 to .98 and are displayed in Figure 2-10. Separate factors for items concerned with the two different types of partners resulted in a four-factor model with significant correlations between Main and Other factors for both the Pros and Cons. Fit indices (see Table 2-5c) show that Model 2b fit the data well further validating the need to model information on the two types of partners on separate factors as opposed to one general factor (Prochaska et al., 1990).

Insert Figures 2-9 and 2-10 about here

Self-Efficacy for Contraceptive/Condom Use

Exploratory Factor Analysis Models of Self-Efficacy. An 8 X 8 correlation matrix was generated for each eight-item measure for Self-Efficacy assessing women on their level of confidence for using contraception in General, as well as specific methods (e.g., Pill, Norplant, Condom-Main, and Condom-Other) in more risky situations. Principal components analyses (PCA) with oblique rotations were conducted using BMDP4M (Dixon, 1989) computer program. Each of the five factor analyses conducted on the set of eight items assessing Self-Efficacy resulted in a clear one-factor solution that explained from 66% to 86% of the item-variance. All factor loadings fell within the moderate to high range (e.g., .62 to .95). Based on the examination of the factor loadings, item content, and preliminary coefficient Alpha, item samples were reduced from eight to five items for each of the five Self-Efficacy

subscales. Table 2-6 shows good internal consistency for each of the short-version scales. See Appendix for reduced-item scales.

Insert Table 2-6 about here

Confirmatory Factor Analysis (CFA) Models of Self-Efficacy for Contraceptive Use and Condom Use

Confirmatory factor analyses were conducted on the reduced item-sets using the EQS computer program (Bentler, 1989). One basic model, illustrated in Figure 2-11, examined the reduced item-sets for General, the Pill, Norplant, and the two reduced item-sets for condom use (Condom-Main and Condom-Other). It was hypothesized that a one factor solution would emerge.

Table 2-7a provides a summary of the overall fit of each of the manifest-to-latent Self-Efficacy models. All standardized factor loadings were significant at the .001 level and ranged from .64 to .91 and are displayed in Figures 2-12 to 2-16.

Insert Tables 2-7a to 2-7c about here

Insert Figures 2-11 to 2-16 about here

Conceptual Model Testing using Self-Efficacy

Two additional CFA models were hypothesized for the Self-Efficacy items and are shown in Figures 2-17 and 2-18. As with the Decisional Balance measures, it was hypothesized that a second-order factor, with three first order factors consisting of five items each for Self-Efficacy for General, Pill, and Norplant, could best explain the covariances between the three measures of pregnancy prevention (Model 1).

Overall fit indices indicate that the hypothesized second-order model of Self-Efficacy fit the data well (see Table 2-7b). The ML standardized factor loadings ranged from .61 to .91. A fairly substantial proportion of the variance was accounted for by the higher-order factor for each of the dependent measures: 58% for General; 82% for the Pill; and, 37% for Norplant ($\underline{M} = 59\%$).

For the Self-Efficacy for Condom Use model (Model 2), it was hypothesized that separate factors for the ten items concerned with using condoms with Main and Other partners (see Figure 2-18) would result in a better fitting model based on work conducted by Prochaska et al. (1990) and the findings from the Decisional Balance measures for Main and Other in the current investigation.

The results suggested that an orthogonal two-factor solution fit the data as well as the correlated solution for the reduced Self-Efficacy items. All factor loadings were significant at the .001 level and ranged from .65 to .98. These findings provide further support that conceptually distinct factors are needed to adequately model items emphasizing condom use with Main and Other partners. Overall fit indices for the Self-Efficacy models are presented in Table 2-7c. The final two Self-Efficacy models

are presented in Figures 2-19 and 2-20.

Insert Figures 2-17 to 2-20 about here

Confirmatory Factor Analysis (CFA) Models for the Process of Change for Condom Use

Initial item analysis was based on an examination of the distributions for the 46 Processes of Change for Condom Use items, resulting in the elimination of items with skewed distributions. Close examination of the data revealed that many subjects showed an extremity response pattern. When this has been found in other scale development (see Velicer et al., 1990), subjects with the most extreme responses were eliminated for some subsequent analyses, resulting in an $N = 181$. Measurement analyses of the remaining items were conducted using the LISREL VI structural modeling computer program (Jöreskog & Sörbom, 1984). Diagnostic indicators provided by the analysis were used to detect poorly functioning items. Several items with low loadings (less than .40) on their designated (target) factors were deleted. Further item deletions were accomplished through a restricted specification search (MacCallum, 1986; Silvia & MacCallum, 1988) using modification indices, normalized residuals, and first-order derivatives. Complex items were detected in this fashion and eliminated. The goal of item deletion was to reduce the number of items per factor to three, a scale length that has worked well (Prochaska et al., 1988). After poorly functioning items were deleted, additional (and otherwise well

functioning) items were eliminated by emphasizing breadth of construct. These procedures ultimately reduced the number of items from 46 to 28, three items for each of 8 processes of change, and two items for two remaining processes. The 11th process, interpersonal systems control, was correlated .95 with self liberation, likely due to the similarity of item content. Therefore, this process was abandoned for the remainder of the analyses.

Final measurement analyses were conducted on the 28 remaining items, based on complete item data from 238 subjects. Maximum likelihood factor loadings for each item are displayed in Table 2-8. Scale means, standard deviations, and internal consistency (alpha) coefficients for each of the 10 Processes of Change for Condom Use subscales are given in Table 2-9.

Insert Tables 2-8 and 2-9 about here

Decisional Balance by Stage of Change

All Decisional Balance measures for contraceptive use (e.g., General, Pill, Norplant, Condom-Main, and Condom-Other) were related to the Stages of Change for the separate methods. The two scale scores (unweighted sum of the items) for each of the Decisional Balance measures were transformed into two derived scores: (1) a Pros T-score ($\underline{M}$ = 50, $\underline{SD}$ = 10) and (2) a Cons T-score ($\underline{M}$ = 50, $\underline{SD}$ = 10).

Five multivariate one-way analysis of variance (MANOVAs) with the stages of change for contraceptive and condom use as the grouping (independent) variable, and

the derived Pros and Cons scores as dependent variables were performed for each method. Since a behavioral criterion has not been well formulated for the Preparation stage of condom use, it seemed appropriate at this stage of development to collapse the Contemplation and Preparation stages (e.g., PC, C, A, M). The small cell size for the Action stage for General contraceptive use ($n = 8$) was merged with the Maintenance stage so as to stabilize the results (e.g., A/M). Finally, given the small sample size of current users for both the Pill and Norplant, these two methods were collapsed further to represent three stages: (1) not thinking about using (PC); (2) thinking about using (C); and (3) currently using either the Pill or Norplant (A/M). Wilks' lambda and F-tests for each MANOVA (see Table 2-10) indicated the existence of mean differences across the derived scores for women in various groups as formed by the stages of change algorithms for General, Pill, Norplant, and Condom-Main, but not for Condom-Other (e.g., $F(6,110) = 1.09$, $p = .37$).

Across the four significant analyses, a range of 10% to 17% of the variance in the Pros and Cons is explained from knowing an individual's stage of change for contraceptive/condom use based on Wilks lambda. Results from follow-up analyses of variance (ANOVAs) indicate that there were significant differences in the Pros across the stages for all analyses (see Table 2-10). Significant differences between the stages on the Cons of contraception/condom use were found for the Pill only. The lack of significant differences between the stages of change for the Cons of condom use is consistent with previous results (Grimley et al., 1992; Prochaska et al., 1990) suggesting that some of the negative aspects of using condoms (e.g., hassles)

may be felt by individuals no matter what stage of change they are in (Prochaska et. al., in press). For Norplant, the extremely small cell sizes for the Action (n = 4) and Maintenance (n = 2) stages more than likely prevented any true differences from emerging (e.g., low power).

Results from follow-up Tukey tests conducted for each ANOVA, detected significant differences in the Pros between the Precontemplation and the other three stages of change for General and condom-Main; between Precontemplation and Contemplation for Norplant; and between Precontemplation and the Action/Maintenance stage for Pill use adoption. For the Cons, significant differences were detected between the Precontemplation, and the Action/Maintenance stage for PILL use. The results from all MANOVAs, ANOVAs, and follow-up Tukey tests are shown in Tables 2-10.

Insert Table 2-10 about here

The derived Pros and Cons variables were plotted across the stages of change for each method. Using this approach, a remarkably stable pattern between the Pros and Cons has been established across a broad range of problem behaviors (Prochaska et al., 1994).

The graphic relationships between the standardized (T-scores) Pros and Cons for contraceptive and condom use and the Stages of Change are comparable to those found in previous studies and are displayed in Figures 2-21 to 2-25.

The relationship between the pros and cons and the stages of change for General, the Pill, Norplant, and Condom-Main appear to be similar to other problem behaviors with the Cons of adoption for the different methods outweighing the Pros for individuals in the Precontemplation stage and the Pros outweighing the Cons for those in the Maintenance stage. For four out of five methods of contraception, the crossover of the Pros and Cons takes place either in the Contemplation or Preparation stage as predicted. As noted above, the Cons remain fairly consistent across the stages for condom use with Main partners, but decrease dramatically for the Pill and Norplant sometime after Contemplation.

Insert Figures 2-21 to 2-25 about here

Self-Efficacy by Stage of Change

For all measures of Self-Efficacy, one-way ANOVAs and follow-up Tukey tests were conducted with the distinct stages of change for contraceptive use as grouping (independent) variables, and standardized T-scores (Mean = 50, S.D. = 10) for Self-Efficacy as the dependent variable for each method of contraception (e.g., General, the Pill, Norplant, and Condoms with Main and/or Other partner). It was expected that significantly lower mean scores for Self-Efficacy would be detected in the Precontemplation stage as compared to the later stages for both contraception and condom use adoption.

All ANOVAs were significant at .001, indicating differences in perceived Self-Efficacy across the stages of change for all five methods of contraception. Results are shown in Table 2-11. Follow-up Tukey tests detected significant differences between Precontemplation and the other stages of change for all methods. In addition, T-scores for both the Contemplation and Preparation stages for General contraceptive use were significantly lower than those in the Action/Maintenance stage; the Contemplation stage mean scores for Condom-Other were significantly lower than those in the Maintenance group for that method; and the mean scores for individuals in the Contemplation stage for using the Pill were significantly lower than those in the Action/Maintenance stage.

Graphic representations of the T-scores for Self-Efficacy across the Stages of Change are displayed in Figures 2-26 to 2-30. For each of the five contraceptive methods (General, Pill, Norplant, Condom-Main, and Condom-Other) the Self-Efficacy scores show an increase in self-efficacy after the Precontemplation stage that continues to increase with further movement through the stages.

Insert Table 2-11 about here

Insert Figures 2-26 to 2-30 about here

Processes of Change by Stage of General Condom Use

Further model testing was conducted by investigating the relationship between the processes and the stages of change. According to the stages of change model, the processes are used differentially by individuals in the various stages of change. Such results have been obtained consistently in the area of smoking cessation (DiClemente et al., 1991; Prochaska & DiClemente, 1983; Prochaska et al., 1991) and exercise adoption (Marcus, Rossi, Selby, Niaura, & Abrams, 1992). To determine if similar results would also be obtained for General condom use adoption, a MANOVA was conducted using stage of change as the independent variable and the 10 processes of change T-scores as dependent variables. Process scale T-scores were determined by calculating the mean of the summed ratings for the items representing each process. Only women with complete data on all 28 Processes of Change of Condom Use items were retained for the analysis ($N = 176$).

The MANOVA main effect for stage of change was significant, Wilks $\Lambda = .562$, approximate $F(30, 479) = 3.46$, $p < .001$. Follow-up univariate analyses of variance were conducted for each of the 10 processes of change and all were statistically significant (p 's $< .01$). Results are reported in Table 2-12. The effects of stage of change were generally large, with proportions of variance accounted for (η^2 s) ranging from .10 to .29 (Cohen, 1988; Rossi, 1990).

Insert Table 2-12 about here

Follow-up comparisons for each Process of Change for Condom Use subscale as a function of stage of change were conducted using Tukey tests. Precontemplators used all 10 processes of change substantially less often than individuals in the other stages of change. The relationships between the processes and the stages appears to be similar to other problem behaviors with process use increasing with movement through the stages. However, the functional relationship between the processes and the stages differs from other behaviors in that the use of the change processes continues to climb well into the Maintenance stage.

Discussion

The overall findings provide strong support for the applicability of the Transtheoretical Model of Change to contraceptive and condom use adoption for the prevention of pregnancy, STDs, and AIDS in a sample of high-risk women. Important information regarding several aspects of the model was found. First, the general patterns of the findings for the Stages of Change, the Pros and Cons, Self-Efficacy, and the Processes of Change for Condom Use are similar to those found in previous studies on the Transtheoretical Model with different behaviors including smoking cessation (Prochaska & DiClemente, 1983, 1984, 1986, 1991; Prochaska et al., 1991); weight control (O'Connell & Velicer; Prochaska et al., in press); and exercise acquisition (Marcus et al., 1992). These results provide further support for the generalizability of this behavior change model with diverse behaviors and populations.

Second, based on their readiness to change contraceptive and condom use behaviors, women were successfully classified into their corresponding stage of change. Using a global stage measure for contraceptive use, the results indicated that the majority of the sample (61.5%) were not currently using a method of birth control. Nearly one-third of these women (29.4%) were in the Precontemplation stage with no intention to start using birth control within the next six months. For the specific methods of contraception, only 3.3% were using either the diaphragm or the sponge and no one was using the IUD. The lack of endorsement for such methods is consistent with previous results using an alternative population (Grimley et al, 1992) suggesting that such coitally-dependent methods are not perceived as viable contraceptive choices by many contemporary women. Of the total sample, only 15.1% were using the Pill and 2.5% were currently using Norplant as their method of choice.

The condom, with its dual function for pregnancy and disease protection, fared a little better. Approximately one-quarter of the sample (28.1%) reported using condoms every time they engaged in intercourse with a main partner with about one-half of the sample in the Precontemplation stage (53.6%) for consistent condom use with their steady sex partner. As in previous studies (e.g., Prochaska et al., 1990), individuals were further along in the stages of condom use with other (casual) partners as compared to main partners. Thirty-six percent of the women who were having sex with casual partners were consistently using condoms, with data indicating that only about one-third (33.6%) of these women were in the Precontemplation stage

for condom use adoption.

Third, as predicted, the majority of women who were currently using reliable methods of birth control such as the Pill and Norplant, were not also using condoms to protect themselves from exposure to STDs. Only one-third of the Pill users were using condoms with their main partners and only 44% were using both methods with casual partners. Although the number of women using Norplant was admittedly small, not one Norplant user was using condoms to prevent diseases with their steady partner and only 25% reported condom use with someone other than a main partner.

Fourth, reliable measures were developed for both Decisional Balance and Self-Efficacy for using contraceptives in general, Norplant, the Pill, and condom use with both steady and casual sex partners. Short versions for all scales were also constructed providing researchers with convenient, yet reliable, scales to assess contraceptive and condom use. External validity for the measures was also established by relating the measures of the Pros and Cons and Self-Efficacy for General contraceptive use and the different methods of contraception across the stages of change. As hypothesized, both the Pros (advantages) of and Self-Efficacy for contraceptive and condom use adoption were significantly lower in the Precontemplation stage with the exception of the pros of condom use with casual sex partners. However, the current results are encouraging with scores on 9 out of the 10 scales showing an increase after the Precontemplation stage demonstrating that both thinking about contraceptive use and taking some action increase an individual's level of confidence for and salience of the benefits of such behavior.

Fifth, the relationship between the pros and cons and the stages of change for General, the Pill, Norplant, and condom use with a main partner, appear to be similar to other problem behaviors with the Cons of adoption for the different methods outweighing the Pros for individuals in the Precontemplation stage and the Pros outweighing the Cons for those in the Maintenance stage. For four out of five methods of contraception, the crossover of the Pros and Cons takes place either in the Contemplation or Preparation stage as predicted. As noted above, the Cons remain fairly consistent across the stages of condom use, but decrease dramatically for the Pill and Norplant sometime after Contemplation.

Sixth, a preliminary examination of a measure for the Processes of Change for Condom use was conducted that demonstrated that women utilized all 10 processes of change in their efforts to modify their sexual behavior. The processes were organized in a hierarchical fashion, consisting of two-higher order constructs globally characterized as "experiential" and "behavioral" processes of change. The extremity response pattern found with this measure noted above, may have resulted from at least two factors including: (1) the administration of the processes of change using an interview format which could have created a response bias or a need to present oneself in a more positive light; and (2) the items were administered nearly last in a long battery of questions creating fatigue for the respondent. Given these administrative problems, the results found are even more impressive.

Seventh, external validity for the Process of Change for Condom Use was established by an examination of the means across the stages of change for General

condom use. The results indicated that each process was highly related to an individual's stage of change. Precontemplators were found to use each of the 10 processes of change substantially less than individuals in the other stages of change. The relationship between the processes and the stages appears to be similar to other problem behaviors with process use increasing with movement through the stages. However, the functional relationship between the processes and the stages differ from other behaviors in that the use of the change processes continues to climb well into the Maintenance stage. One possible explanation is that the consistent use of condoms requires a great deal of effort on the part of the individual. Such constant vigilance could easily exhaust one's resources and the constant threat of relapse is continues well into the maintenance stage. Another possibility is that studies that have examined the processes of change for smoking cessation have included many long-term maintainers (e.g., years of cessation), whereas the need for the consistent use of condoms is a fairly new phenomenon. Similarly, in a study of exercise acquisition, where maintainers of exercise behavior were found to be relatively short-term (Marcus et al., 1992), the processes of change increased well into maintenance with the threat of relapse remaining high.

Finally, several conceptual models were examined to determine whether or not it is necessary to model contraceptive behavior separately for each specific method or if some meaningful distinctions could be made. Two important findings emerged from these analyses: (1) preliminary support was offered for two models that allow for the separation of such methods as the Pill, Norplant, and General contraception

use from that of the Condom with Main and Other partners; (2) it was determined further that the measure for General contraceptive use could be employed when assessing women on such methods as the Pill and Norplant, reducing the number of measures from 3 to 1, making the process of assessment more convenient with large sample sizes.

Conclusions:

Future assessment development/use of contraceptive and condom use measures should include alternative items that capture women's experiences more fully when using condoms with someone other than their main partner. Studies should also examine whether process use declines with long-term maintenance for condom use. Finally, this research was on a cross-sectional sample of women using self-report data. Validation of the findings in a longitudinal design is strongly recommended.

The overall findings suggest that the constructs of the Transtheoretical Model of Change provide a useful framework for understanding contraceptive and condom use in high-risk women. The findings of this study have important implications for the development of interventions. First, in order to protect high-risk women from developing reproductive health problems, interventions need to be designed that will assist the large percentage of women in Precontemplation to move to the Contemplation stage before they become prepared to take action for using contraceptives and/or condoms.

Second, based on the pattern of means for the Pros and Cons across the Stages of Change interventions designed to increase contraceptive and condom use will be

more effective if the Pros of engaging in their use were made more salient for women. This recommendation is supported in the present study by the consistently lower Pros scores for women in the Precontemplation stage for both contraception and condom use adoption as compared to the other stages of change. This principle of increasing the Pros of the target health behavior relative to decreasing the Cons to bring about successful behavior change has been validated with a broad range of different health-related behaviors (Prochaska, in press).

Third, the data suggest the need for a commitment by health care providers to counsel women about condoms when prescribing alternative methods of birth control to help reduce the risks for pregnancy, STDs, and AIDS, simultaneously (Fisher, 1990).

Finally, the findings support previous results that suggest that women who are at risk for STDs/HIV, are more likely to change sexual behavior with casual partners than with intimate partners or within long-term relationships (Becker & Joseph, 1988). An initial goal for interventions could be to have women adopt condom use with someone other than a main partner, since they are least resistant to such change. Once this goal is reached, then these women are likely to be better prepared to adopt condom use with their steady sex partner.

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Author Notes

Main support for this project was provided by contract grant #CSA-92-109 from the Centers of Disease Control. This paper was partially supported by grants CA27821 and CA50087 from the National Cancer Institute (Cancer Prevention Research Center). Please address correspondence to: Dr. James O. Prochaska, Cancer Prevention Research Center, Flagg Road, University of Rhode Island, Kingston, RI. 02881-0808.

Table 2-1. Titles, Definitions, and Representative Interventions of the Processes of Change

Process	Definitions: Interventions
Consciousness raising	Increasing information about self and problem: observations, confrontations, interpretations, bibliotherapy
Self-reevaluation	Assessing how one feels and thinks about oneself with respect to a problem: value clarification, imagery, corrective emotional experience
Self-liberation	Choosing and commitment to act or belief in ability to change: decision-making therapy, New Year's resolutions, logotherapy techniques, commitment enhancing techniques
Counterconditioning	Substituting alternatives for problem behaviors: relaxation, desensitization, assertion, positive self- statements
Stimulus control	Avoiding or countering stimuli that elicit problem behaviors: restructuring one's environment (e.g., removing alcohol or fattening foods), avoiding high-risk

(Table 2-1 continues)

Table 2-1 (continued)

	cues, fading techniques
Reinforcement	Rewarding one's self or being rewarded by others for making management changes: contingency contracts, overt and covert reinforcement, self-reward
Helping relationships	Being open and trusting about problems with someone who cares: therapeutic alliance, social support, self-help groups
Dramatic relief	Experiencing and expressing feelings about one's problems and solutions: psychodrama, grieving losses, role playing
Environmental reevaluation	Assessing how one's problem affects physical environment: empathy training, and documentaries
Social liberation	Increasing alternatives for nonproblem behaviors available in society: advocating for rights of repressed, empowering, policy interventions

Table 2-2

Stages of Change for Contraceptive and Condom Use

Method	<u>N</u>	PC	C	P	A	M
General Contraceptive Use	231	29.4	5.6	26.4	3.5	35.0
Norplant	237	88.2	3.8	5.5	1.7	0.8
Pill	232	72.8	4.3	7.8	2.6	12.5
General Condom	211	37.0	2.8	30.3	6.6	23.2
Condom-Main	235	53.6	3.4	14.9	7.2	20.9
Condom-Other	122	33.6	4.9	25.4	9.0	27.0

Note: Due to missing data or erratic responses the following could not be staged:

General contraceptive use, n = 4; Norplant, n = 6; Pill, n = 11; General Condom, n = 32; Condom-Main, n = 18; Condom-Other, n = 14.

Table 2-3a

Crosstabulations of Stages of Action/Maintenance for Pill Use by Condom Use with Main Partner (CONDOM-MAIN) and Other Partner (CONDOM-OTHER)

PILL	CONDOM-MAIN					Total
	PC	C	P	A	M	
A/M	16	1	4	1	10	32
	50.00	3.13	12.50	3.13	31.25	
Total	16	1	4	1	10	32

PILL	CONDOM-OTHER					Total
	PC	C	P	A	M	
A/M	1	1	3	0	4	9
	11.11	11.11	33.33	0.00	44.44	
Total	1	1	3	0	4	9

Table 2-3b

Crosstabulations of Stages of Action/Maintenance for Norplant Use by Condom Use with Main Partner (CONDOM-MAIN) and Other Partner (CONDOM-OTHER)

NORPLANT CONDOM-MAIN

	PC	C	P	A	M	Total
A/M	1 33.33	0 0.00	2 66.67	0 0.00	0 0.00	3
Total	2	0	2	0	0	3

NORPLANT CONDOM-OTHER

	PC	C	P	A	M	
Total						
A/M	2 50.00	0 0.00	1 25.00	0 0.00	1 25.00	4
Total	2	0	1	0	1	4

Table 2-4

Coefficient Alphas for Long and Short Versions of the Pros and Cons of
Contraceptive and Condom Use Scales

Method	Pros		Cons	
	# Items	Alpha	# Items	Alpha
GENERAL	8	.87	8	.84
	5	.86	5	.81
PILL	7	.93	7	.87
	5	.94	5	.85
NORPLANT	8	.96	8	.85
	5	.95	5	.82
CONDOM-MAIN	8	.92	8	.87
	5	.93	5	.83
CONDOM-OTHER	8	.84	8	.89
	5	.82	5	.87

Table 2-5a

CFA Model Summary for the Reduced-Item Pros and Cons Scales for Contraceptive and Condom Use

Method				
Model	X ²	df	RMR	CFI
GENERAL (N = 237)				
2-Uncorr. Factors	196.80	35	.21	.93
2-Corr. Factors	109.79	34	.02	.97
PILL (N = 225)				
2-Uncorr. Factors	306.12	35	.28	.90
2-Corr. Factors	131.59	34	.03	.94
NORPLANT (N = 221)				
2-Uncorr. Factors	346.58	35	.28	.89
2-Corr. Factors	189.05	34	.04	.95
CONDOM-MAIN (N = 227)				
2 Uncorr. Factors	157.36	35	.14	.94
2 Corr. Factors	122.37	34	.03	.96
CONDOM-OTHER (N = 117)				
2 Uncorr. Factors	66.87	35	.06	.94
2 Corr. Factors	64.83	34	.04	.94

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Table 2-5b

CFA Hierarchical Model Summary for the Reduced-Item Pros and Cons Scales:
GENERAL, NORPLANT, and the PILL

Model 2a	X ²	df	RMR	CFI
2-Uncorr. Factors	1389.89	399	.24	.89
2-Corr. Factors	1172.77	398	.04	.92

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Table 2-5c

CFA Model Summary for the Reduced-Item Pros and Cons Scales: CONDOM-MAIN
and CONDOM-OTHER

Model 2b	X ²	df	RMR	CFI
4-Factors	818.63	168	.24	.92

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Table 2-6
Coefficient Alphas for the Long and Short Versions of Self-Efficacy for
 Contraceptive and Condom Use Scales

Method	# Items	Alpha
GENERAL	8	.87
	5	.84
PILL	8	.89
	5	.84
NORPLANT	8	.91
	5	.89
CONDOM-MAIN	8	.93
	5	.88
CONDOM-OTHER	8	.92
	5	.87

Table 2-7a_
CFA Summary Model Summary for the Reduced-Item Self-Efficacy Scales for
 Contraceptive and Condom Use

Method Model	X ²	df	RMR	CFI
GENERAL (<u>N</u> = 237)	20.50	5	.02	.98
PILL (<u>N</u> = 225)	30.46	5	.02	.97
NORPLANT (<u>N</u> = 221)	34.01	5	.02	.97
CONDOM-MAIN (<u>N</u> = 227)	36.34	5	.02	.96
CONDOM-OTHER (<u>N</u> = 117)	5.82	5	.01	.99

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Table 2-7b

CFA Hierarchical Model Summary for the Reduced-Item Self-Efficacy Scales:
GENERAL, NORPLANT, and the PILL

Model	X ²	df	RMR	CFI
Model 1	205.71	87	.03	.96

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Tablr 7c

CFA Model Summary for the Reduced-Item for Self-Efficacy Scales: CONDOM-
MAIN and CONDOM-OTHER

Model	X ²	df	RMR	CFI
Model 2				
2-Uncorr. Factors	112.24	35	.03	.98
2-Corr. Factors	111.67	34	.03	.98

Note: X² = Chi-squared; df = degree of freedom; RMR = root mean squared residual; CFI = Comparative fit index.

Table 2-8_
Maximum Likelihood Factor Loadings for the Processes of Change for Condom Use

<u>Item</u>	<u>Factor Loadings</u>
<u>Consciousness Raising</u>	
I think about things I've seen or heard about how condoms help keep you from getting the AIDS virus during sex.	.75
I remember things people have told or shown me about using a condom during sex to keep from getting AIDS.	.76
I remember hearing or seeing something about how you can get AIDS from sex.	.65
<u>Counterconditioning</u>	
When I want to have vaginal or anal sex but don't have a condom, I find other ways to satisfy myself and my partner.	.73
When condoms aren't available, my partner and I do something else that is fun (like oral sex, body massages, etc.) instead of vaginal sex.	.70
<u>Dramatic Relief</u>	
I get pretty stirred up when I hear warnings about sex without a condom.	.61
Remembering stories about people sick with AIDS upsets me.	.78
Seeing pictures of people dying of AIDS upsets me.	.76
<u>Environmental Reevaluation</u>	
I stop to think that if everyone used a condom every time they had sex, AIDS wouldn't be spreading so fast in our community.	.57
I have thought about the fact that I can help stop the spread of AIDS in my community if I use a condom every time I have sex.	.74
I stop to think that sex without a condom is spreading the AIDS virus around my community.	.73

(Table 2-8 continues)

Table 2-8 (continued)

Helping Relationships

There are people in my life who encourage and support my using condoms during sex.	.81
I have someone I can count on when I'm having a hard time using condoms every time I have sex.	.72
I have someone I can talk to about my experiences with trying to use condoms.	.75

Reinforcement Management

I reward myself when I use condoms to reduce my risk of AIDS.	.74
The sex partners I really care about approve of my using condoms during sex.	.81

Self-Liberation

If I am with a man who doesn't want to use a condom I tell myself my health is too important to risk getting infected with AIDS.	.77
I tell myself that I can choose to have sex with a condom.	.73
If I am with a man who tries to get me to have sex without a condom after I've said no, I keep saying no.	.83

Self-Reevaluation

I feel bad about having sex without a condom because I know it increases my risk for AIDS.	.67
I feel better about myself when I use condoms to reduce my risk of AIDS.	.84
When I am tempted to have sex without a condom, I remind myself how much better I feel "the morning after" if I use a condom.	.78

Social Liberation

I notice it's getting easier to find sex partners who don't mind using condoms during sex.	.58
It seems there are more and more people around who want to use condoms during sex.	.70
I notice that condoms are now easier to find in stores and clinics.	.54

(Table 2-8 continues)

Table 2-8 (continued)

Stimulus Control

I keep condoms where I stay.	.72
I carry condoms with me when I go out.	.69
I talk about condoms with my partner before sex even gets started.	.76

Note: N = 238

Table 2-9

Processes of Change for Condom Use: Scale Means and Internal Consistency

Process	# of Items	Mean	SD	Alpha
Consciousness Raising	3	4.30	0.88	.76
Counterconditioning	2	2.91	1.40	.66
Dramatic Relief	3	4.23	0.91	.73
Environmental Reevaluation	3	4.27	0.92	.74
Helping Relationships	3	3.91	1.18	.78
Reinforcement Management	2	3.65	1.34	.73
Self Liberation	3	4.09	1.10	.78
Self Reevaluation	3	4.10	1.10	.78
Social Liberation	3	4.01	0.99	.61
Stimulus Control	3	3.47	1.34	.77

Note: N = 176 subjects completed all items; All scales range from 1-5.

Table 2-10

MANOVA and ANOVA Summaries for the Stages of Contraceptive Use with the Pros and Cons T-Scores

Type of Method	N	Wilks Lambda	F(df)	p
Pros and Cons				
GENERAL	227	.83	F(6,444) = 6.78	< .0000
ANOVA with DV = Pros ¹			F(3,223) = 14.74	< .0000
ANOVA with DV = Cons ²			F(3,223) = .97	ns
NORPLANT	218	.90	F(4,426) = 5.59	< .0002
ANOVA with DV = Pros ³			F(2,215) = 8.24	< .0004
ANOVA with DV = Cons ²			F(2,215) = 1.55	ns
PILL	221	.90	F(4,434) = 6.11	< .0001
ANOVA with DV = Pros ⁴			F(2,218) = 4.69	< .01
ANOVA with DV = Cons ⁴			F(2,218) = 4.18	< .02
CONDOM-MAIN	227	.88	F(6,444) = 4.64	< .0001
ANOVA with DV = Pros ⁵			F(3,223) = 11.92	< .0000
ANOVA with DV = Cons ²			F(3,223) = .06	ns
CONDOM-OTHER	117	.94	F(6,224) = 1.16	ns

Note: ¹Tukey follow-up tests detected significant differences between Precontemplation and the Contemplation and the Action/Maintenance stages.

²No significant differences between any stages.

³Precontemplation significantly lower than the Contemplation stage.

⁴Precontemplation significantly lower than the Action/Maintenance stage.

⁵Precontemplation significantly lower than Contemplation, Action, and the Maintenance stages.

Table 2-11

ANOVA Summaries for the Stages of Contraceptive and Condom Use and Self-Efficacy

Method Type	<u>N</u>	F(df)	p
GENERAL Self-Efficacy	219	F(3,215) = 20.15	.0000
PILL Self-Efficacy	220	F(2,217) = 17.97	.0000
NORPLANT Self-Efficacy	220	F(2,217) = 23.04	.0000
CONDOM-MAIN Self-Efficacy	213	F(3,209) = 68.05	.0000
CONDOM-OTHER Self-Efficacy	115	F(3,111) = 5.55	.001

Note: Precontemplation stage T-scores were significantly less than the other stages for all methods. In addition, the Contemplation stage was significantly lower than the action/maintenance stage for both GENERAL and the PILL and the action stage for CONDOM-OTHER. In addition, the Preparation stage was significantly lower than the ACTION/Maintenance stage for GENERAL contraceptive use.

Table 2-12

Process of Condom Use Means, Standard Deviations and ANOVA Results for the Stages of Change for Condom Use

Scale	Stage of Change				<u>F</u> (3,172)	η^2
	PC	C	A	M		
Consciousness Raising	3.86 (1.05)	4.47 (0.69)	4.69 (0.60)	4.64 (0.53)	10.53	.16
Counter-conditioning	2.38 (1.29)	3.30 (1.31)	2.62 (1.39)	3.32 (1.46)	6.50	.10
Dramatic Relief	3.81 (1.07)	4.39 (0.76)	4.54 (0.74)	4.59 (0.57)	8.62	.13
Environmental Reevaluation	3.78 (1.13)	4.49 (0.65)	4.56 (0.63)	4.66 (0.52)	11.95	.17
Helping Relationships	3.36 (1.37)	4.08 (1.03)	4.31 (0.74)	4.45 (0.75)	9.37	.14
Reinforcement Management	2.77 (1.39)	3.87 (1.10)	4.39 (0.92)	4.58 (0.70)	23.73	.29
Self Liberation	3.45 (1.31)	4.31 (0.79)	4.62 (0.73)	4.67 (0.57)	15.79	.22
Self Reevaluation	3.43 (1.28)	4.42 (0.74)	4.54 (0.67)	4.63 (0.70)	17.21	.23
Social Liberation	3.54 (1.15)	4.17 (0.82)	4.44 (0.76)	4.41 (0.68)	9.22	.14
Stimulus Control	2.50 (1.32)	3.81 (1.08)	4.15 (0.94)	4.37 (0.72)	28.41	.15

Note: Standard deviations are in parentheses. PC = Precontemplation (N = 65); C = Contemplation (N = 61); A = Action (N = 13); M = Maintenance (N = 37); η^2 = effect size (proportion of variance accounted for). All F tests are significant ($p < .01$).

Figure Captions

Figure 2-1. Hypothesized 2-factor model of the pros and cons for each specific method of contraception.

Figure 2-2. Correlated 2-factor model of the pros and cons of GENERAL contraceptive use with standardized parameter estimates.

Figure 2-3. Correlated 2-factor model of the pros and cons of using the PILL with standardized parameter estimates.

Figure 2-4. Correlated 2-factor model of the pros and cons of using NORPLANT with standardized parameter estimates.

Figure 2-5. Correlated 2-factor model of the pros and cons of using condoms with CONDOM-MAIN partner with standardized parameter estimates.

Figure 2-6. Correlated 2-factor model of the pros and cons of using condoms with CONDOM-OTHER partner(s) with standardized parameter estimates.

Figure 2-7. Hypothesized 2-factor hierarchical model of the pros and cons for GENERAL, NORPLANT, and the PILL.

Figure 2-8. Hypothesized 4-factor model of the pros and cons of using condoms with CONDOM-MAIN and CONDOM-OTHER.

Figure 2-9. Final hierarchical, 2-factor correlated model of the pros and cons of GENERAL, NORPLANT, and the PILL with standardized factor loadings and prediction errors for each method of birth control.

Figure 2-10. Final 4-factor model of the pros and cons of using condoms with CONDOM-MAIN and CONDOM-OTHER.

Figure 2-11. Hypothesized one-factor model of Self-Efficacy for each specific method of contraception.

Figure 2-12. One-factor model of Self-Efficacy for GENERAL contraceptive use with standardized parameter estimates.

Figure 2-13. One-factor model of Self-Efficacy for using the PILL with standardized parameter estimates.

Figure 2-14. One-factor model of Self-Efficacy for using NORPLANT with standardized parameter estimates.

Figure 2-15. One-factor model of Self-Efficacy for using condoms with CONDOM-MAIN with standardized parameter estimates.

Figure 2-16. One-factor model of Self-Efficacy for using condoms with CONDOM-OTHER with standardized parameter estimates.

Figure 2-17. Hypothesized hierarchical model of Self-Efficacy for GENERAL, NORPLANT, and PILL use.

Figure 2-18. Hypothesized model of Self-Efficacy for using condoms with CONDOM-MAIN and CONDOM-OTHER.

Figure 2-19. Final hierarchical model of Self-Efficacy for GENERAL, NORPLANT, and PILL use with standardized factor loadings and prediction errors.

Figure 2-20. Final 2-factor model of Self-Efficacy for using condoms with CONDOM-MAIN and CONDOM-OTHER.

Figure 2-21. The pros and cons of using contraceptives in GENERAL (T-scores) by precontemplation (PC), contemplation (C), preparation, and action/maintenance (A/M)

stages.

Figure 2-22. The pros and cons of using the PILL (T-scores) by precontemplation (PC), contemplation (C), and action/maintenance (A/M) stages.

Figure 2-23. The pros and cons of using NORPLANT (T-scores) by precontemplation (C), contemplation (C), and the action/maintenance (A/M) stages.

Figure 2-24. The pros and cons of using condoms with CONDOM-MAIN (T-scores) by precontemplation (PC), contemplation (C), action (A), and maintenance (M) stages.

Figure 2-25. The pros and cons of using condoms with CONDOM-OTHER (T-scores) by precontemplation (PC), contemplation (C), action (A), and maintenance (M) stages.

Figure 2-26. Self-Efficacy for using contraceptives in GENERAL (T-scores) by precontemplation (PC), contemplation (C), preparation, and action/maintenance (A/M) stages.

Figure 2-27. Self-Efficacy for using the PILL (T-scores) by precontemplation (PC), contemplation (C), and action/maintenance (A/M) stages.

Figure 2-28. Self-Efficacy for using NORPLANT (T-scores) by precontemplation (C), contemplation (C), and the action/maintenance (A/M) stages.

Figure 2-29. Self-Efficacy for using condoms with CONDOM-MAIN (T-scores) by precontemplation (PC), contemplation (C), action (A), and maintenance (M) stages.

Figure 2-30. Self-Efficacy for using condoms with CONDOM-OTHER (T-scores) by precontemplation (PC), contemplation (C), action (A), and maintenance (M) stages.

Pros and Cons of Contraceptive Use by StageBCG

Pros and Cons of Pill Use by StageP

Pros and Cons of Norplant by StageN

Pros and Cons of Condom Use by Stage^{VM}

Pros and Cons of Condom Use by StageOP

Confidence - Contraceptive Use by STGBCC

Confidence - Pill Use by STageP

Confidence - Norplant Use by StageN

Confidence - Condom Use by STGCVM

Confidence - Condom Use by STGCOP

PART 3

**Contraceptive and Condom Use Adoption and Maintenance:
A Stage Paradigm Approach**

Abstract

The major purpose of the study was to cross-validate the model-based findings related to the contraceptive and condom use adoption and maintenance behaviors with high risk women, using a second independent sample of $N = 248$ colleg-age men and women. The investigation focused on three of the model's key constructs: the stages of change; decisional balance (i.e., pros and cons); and, self-efficacy for general contraceptive and condom use with main and secondary partners. The overall findings demonstrated that the model developed with high risk women could be successfully applied to an alternative sample. The factor structure for all measures remained intact across samples, however, internal consistencies using coefficient Alpha were lower in the second sample. The pattern of relationships between the stages and the pros and cons were similar across samples as well as with other behaviors examined using the model. The results suggest that the transtheoretical model hold promise as an effective framework for understanding contraceptive and condom use behavior.

Contraceptive and Condom Use Adoption and Maintenance

A Stage Paradigm Approach

The inconsistent use of contraceptives and condoms is a complex problem and an obvious contributor to the current high rates of unplanned pregnancies and sexually transmitted diseases (STDs). Each year in the United States nearly 1 million adolescents become pregnant (Hayes, 1987). The United States has one of the highest abortion rates and one of the highest rates of unintended births in the Western, developed world (Jones et al., 1985). In addition, an estimated 12 million cases of STDs occur each year in the United States with serious health consequences for thousands of children and adults (Roper, Peterson, & Curran, 1993). Moreover, sexually active individuals today have to deal with the threat of infection from the human immunodeficiency virus (HIV), which can lead to the immunodeficiency syndrome (AIDS). There have been over 233,907 cases of AIDS diagnosed in the United States to date (Centers for Disease Control (CDC), 1992), with a conservative estimate of 40,000-80,000 new HIV infections expected in the coming year (National Commission on AIDS, 1993). This study applies The Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992) to contraceptive and condom use in order to examine the model's applicability to these health-related behaviors.

Action-Oriented vs Stage-Matched Programs of Change

The limited effectiveness of many existing behavior change programs designed to increase adoption and maintenance for contraceptive and condom use is due, in

part, to the fact that interventions are based on an action-oriented paradigm. Action-oriented approaches are flawed for at least four reasons: (1) the assumption that all people are ready to change; (2) the over-reliance on reactive recruitment methods; (3) treatments that are mismatched; and (4) outcome measures that are insensitive to any but action-oriented changes.

First, action-oriented approaches are based on the implicit premise that individuals are ready to adopt and comply with various treatment regimens, when, in fact, many individuals are not prepared to take action to modify problematic behaviors (DiClemente, Prochaska, Fairhurst, Velicer, Velasquez, & Rossi, 1991; Ockene, Ockene, & Kristellar, 1988; Prochaska, 1991). Most action-oriented approaches do not employ messages and strategies that are sensitive to the specific needs of all individuals, particularly those who may lack adequate intention, motivation, commitment, or "readiness" to adopt and adhere to new healthy behaviors.

Second, reactive methods are often utilized to deliver services. Many clinicians and other health-care providers wait for their assistance and treatments to be solicited. In research, reactive methods of recruitment are usually employed to elicit individuals into our intervention studies. Traditional reactive recruitment procedures to pre-dominately action-oriented programs for smoking, for example, have resulted in 1 to 5% participation rates (Prochaska, DiClemente, Velicer, & Rossi, 1993; Schmidt, Jeffery, & Hellerstedt, 1989). Proactive approaches, on the other hand, reach out to whole populations at risk, rather than focusing only on small groups of individuals motivated enough to seek help (Chesney, 1993; Kelly, Murphy, Sikkema,

& Kalichman, 1993; Prochaska et al., 1993; Velicer & DiClemente, 1993; Velicer, Rossi, Ruggiero, & Prochaska, in press), allowing us to significantly increase the numbers of people our interventions can impact.

Third, action-oriented approaches to behavior change rely heavily on enhancing behavioral skills in order to modify behavior. Although such techniques are useful and appropriate when dealing with individuals who are ready to take action, they are inappropriate for people who may not be considering a behavior change. In fact, high-intensity change efforts are usually ignored by individuals who are not prepared to take action (DiClemente, 1991). Such mismatching of interventions to where a person made may be in the process of change may inhibit an individual's progress (Prochaska et al., 1992) reducing his/her chances of successful change.

Finally, most action-oriented approaches employ methods and measures that are dichotomous in nature as their outcome criteria (e.g., "absence" or "presence" of the problem) and are sensitive only to changes in behavior. Velicer, Prochaska, Rossi, and Snow (1992) provide a summary and critique of alternative outcome measures for smoking cessation. The same problem exist with measures for other problem behaviors in health psychology. Use of dichotomous measures will always result in a loss of statistical power. However, a bigger problem is that such variables are insensitive to the whole spectrum of emotional, cognitive, and behavioral changes that characterize modification of a problem behavior. In addition, variables such as characteristics of the individual, characteristics of the treatment regimen, features of the problem, and the relationship between the individual and the health care provider,

have been examined in relation to behavior change and have not proved too helpful in predicting healthy behavior acquisition or adherence (Meichenbaum & Turk, 1987).

These observations summarize some of the limitations of existing behavioral change programs and highlight the need for a new behavior change technology (Chesney, 1993). An alternative research paradigm is contained in The Transtheoretical Model of Behavior Change. The model provides a useful framework for understanding how individuals intentionally change their behaviors, with or without professional intervention. The model defines change as a gradual, continuous, and dynamic process. It holds that individuals do not go directly from old behaviors to new behaviors (e.g., noncompliance ----> compliance), but progress through a sequence of stages, and action is only one of these stages. The model has been applied to a broad range of health behaviors (see Prochaska et al., 1994, for a review). In the area of sexual behavior, the model has been theoretically applied to HIV prevention (Prochaska, Redding, Harlow, Rossi, & Velicer, in press), and applied empirically to safer sex practices, in general (Redding, 1993), and to contraceptive and condom use adoption, specifically (Grimley, Riley, Bellis, Prochaska, in press; Grimley, Riley, & Prochaska, in press; Grimley, Riley, & Prochaska, 1993; Grimley, Riley, Prochaska, Redding, Ruggiero, Velicer, & Rossi, 1992; Prochaska, Harlow, Redding, Snow, Rossi, & Velicer 1990). The model's intervention strategy is to provide behavior change programs that match the stage of change people are in, rather than expect individuals to match action-oriented programs. In addition to assessing an individual's intention to change (i.e., stage of

change), the model examines the perceived "payoff" for the individual for adopting and adhering to health-related behaviors (i.e. pros and cons), and examines the person's ability to perform the behavior(s) necessary that will lead to successful behavior change (self-efficacy). A fourth construct of the model, the processes of change, has been successfully applied to contraceptive and condom use behavior and is described in detail elsewhere (Grimley, 1993; Grimley et al., 1993; Grimley et al., 1992).

Application of the Transtheoretical Model of Behavior Change to Contraceptive and Condom Use Adoption and Maintenance

The Stages of Change

Five stages have been identified: (1) precontemplation - not intending any behavior change within the foreseeable future, usually referred to as some time within the next 6 months; (2) contemplation - intending behavior change within the next 6 months; (3) preparation - seriously planning change within the next 30 days and has made some attempt to modify the behavior, but has not reached a specific criterion (e.g., using condoms "every time" for vaginal intercourse); (4) action - has modified a behavior to a specific criterion for less than 6 months; and (5) maintenance - continuing behavior change for more than 6 months. The stages of change dimension of the Transtheoretical Model is cyclical rather than linear, since regression to an earlier stage is possible (Velicer, DiClemente, Rossi, & Prochaska, 1990; Prochaska et al., 1992). The model contends that interventions will be more efficacious and cost-effective when tailored to an individual's stage. The concept of "stages" is

clearly more comprehensive than generating a single prediction rule regarding behavior change, and may better reflect the reality of acquiring new healthy behaviors (Weinstein, 1993) and for adhering to recommended treatment regimens.

Decisional Balance

Another major construct of the transtheoretical model is Decisional Balance (Prochaska et al., in press; Velicer, DiClemente, Prochaska, & Brandenburg, 1985), based on the decision making theory of Janis and Mann (1977). Decisional balance represents the cognitive and motivational aspects individuals consider when making a behavior change. Simply stated, individuals tend to weigh the perceived pros against the cons involved when adopting a new behavior. The construct of Decisional Balance has been successfully integrated with the stages of change dimension (Prochaska et al, 1994; Velicer et al., 1985). Research has shown that a positive decisional balance predicts behavioral change with a broad range of health-related behaviors (Prochaska, 1994; Prochaska et al, 1994). These findings clearly demonstrate that a comprehensive assessment of the potential pros and cons for using contraceptives and condoms should be conducted before making specific recommendations in order to increase adoption and, ultimately, lead to long-term maintenance.

Self-Efficacy

Self-efficacy (Bandura, 1982, 1986) is defined as the conviction that one can successfully execute the behavior required to produce desired outcomes. Perceived self-efficacy has been shown to affect whether individuals consider changing their

behavior, the degree of effort they invest in changing, and long-term maintenance of behavioral change (Bandura, 1982, 1986; O'Leary, 1985; Velicer, DiClemente, Rossi, & Prochaska, 1990). Strecher, DeVellis, Becker, and Rosenstock (1986) have documented the potential usefulness of individual self-efficacy ratings in predicting health behavior change in such areas as cigarette smoking, weight control, contraception, alcohol abuse, pain management, recovery from myocardial infarction, and adherence to exercise programs. In each case, the individual's perception of his or her capabilities was predictive of adherence behavior. An assessment of an individual's perceived level of self-efficacy not only provides useful prognostic information, but also much needed diagnostic tools that can be utilized in selecting adoption and maintenance enhancement procedures (Meichenbaum & Turk, 1987). Like the Decisional Balance measure, Self-efficacy has been integrated into the Transtheoretical Model as one of the critical constructs for assessing intermediate outcome and predicting future success (DiClemente, Prochaska, & Gilbertini, 1985).

What is unique to sexual behavior as compared to other behaviors examined using the Transtheoretical Model is the dyadic relation that exists and the nature of the pattern is critical for this area. Not only is an individual's behavior a consideration, but the attitudes and behavior of a given partner may be influential factors, particularly for condom use. For example, a number of studies have demonstrated the need to model condom use separately for different types of partners (Grimley et al., 1992; Fishbein, Douglas, Rhodes, Hananel, & Napolitano, 1993; Prochaska et al., 1990). The current study employed separate assessments for

condom use with main and other partners. Other variables from the model were developed so as to capture interpersonal and social/situational aspects that may affect willingness or ability to use condoms. The dual function of a condom (disease prevention, pregnancy prevention, or both), was also examined.

Research Hypotheses

The purpose of this study was to examine the application of three constructs from the transtheoretical model - the stages of change, decisional balance, and self-efficacy - to the important issues of contraceptive and condom use adoption and maintenance. All measures examined were previously developed using women at-risk for HIV infection or transmission in a multisite research demonstration project funded by the Centers for Disease Control and Prevention (Galavotti et al., 1993; Grimley et al., 1992). The major purpose of the present study was to cross-validate these measures using a college-age sample of men and women, rather than a normally targeted high risk sample (e.g., intravenous drug users, prostitutes, etc.). An argument is made that during college many young adults experiment with a variety of lifestyle behaviors including alcohol and other drug use, as well as sexual behaviors that may place them at risk for unintended pregnancies and contraction of STDs. Rates of AIDS have grown fastest for persons between the ages of 20-30, with most contracting the virus during their teens and early 20's (CDC, 1992).

A second purpose was to classify individuals into the five stages of change for contraceptive and condom use. Earlier work based on the model (Prochaska et al., in press) stressed the importance of an appropriate behavioral criterion for the

preparation stage of change. The present investigation examined the utility of "intention to change in the next 30 days" combined with the behavioral criterion of currently using birth control and/or condoms "almost always." In addition, based on previous findings with other behaviors (Prochaska et al., 1994), it was hypothesized that individuals in the precontemplation stage would evaluate the negative aspects of using contraceptives and/or condoms as being higher than the pros of their use and that the relation between the pros and cons would be reversed for individuals in the maintenance stage. Lastly, individuals were expected to report the lowest levels of perceived self-efficacy in the precontemplative stage and that confidence levels would rise moderately across the stages of change for the separate contraceptive behaviors.

Method

Procedure

Individuals were recruited from psychology classes at a northeastern university. Each participant was asked to complete an anonymous questionnaire which took approximately 30-45 minutes to complete. Participants were given partial credit toward their course requirements by their individual instructors for completing the survey. Data were collected in 1993.

Approximately 550 students were offered the opportunity to participate in the study and 303 volunteered to be assessed. Only data from single, heterosexually active individuals were analyzed, leaving a final sample size of $N = 248$. The majority of the sample were female (62.5%). The mean age was 18.88 and ranged from 18 to 26. Seventy percent were Catholic and 94.7% were caucasian.

Measures

The measures were embedded in a longer questionnaire. Five types of measures were used in the present study: (1) basic demographics; (2) a traditional sexual history assessment; (3) stages of change algorithms for General Contraceptive Use, Condom Use with Main partner, and Condom Use with Other (e.g., casual) partner(s); (4) Decisional Balance measures; and (5) Self-efficacy measures for the separate contraceptive behaviors.

Stages of Change Algorithms: To assess an individual's readiness to adopt and adhere to birth control and condom use, three separate four-item staging algorithms were utilized for: (1) general contraceptive use; (2) condom use with a main partner; and (3) condom use with casual sex partners.

The rationale for using a general measure for contraceptive use was based on previous findings (Grimley et al., 1992; Grimley, Riley, Velicer, Prochaska, Galavotti, & Cabral, 1993), which demonstrated empirically that the measure could be employed when assessing specific methods of birth control such as the pill and Norplant, yielding comparable and valid results. The two algorithms for condom use have been previously validated (Grimley et al., 1992) providing support for the assessment of individuals with the two types of partners despite the reason for use (disease protection or disease protection). The criterion behavior for both contraceptive and condom use was using them "always" for vaginal intercourse.¹

Decisional Balance (Pros and Cons): Three ten-item measures for the pros and cons of using contraceptives and condoms (five pros and five cons) were

employed. Item content for the pros of each measure involved the advantages (pros) of contraceptive use, such as protection from pregnancy and/or diseases, perceived effectiveness, and ease of use. The content covered by the disadvantages (cons) of contraceptive use include such potential areas of concern as physical side effects, partner's reaction to contraceptive use, and less perceived sexual enjoyment. An item for the pros of condom use, for example, is "I would feel safer from diseases," whereas a cons item is "I would have to rely on my partner's cooperation." Each participant was asked to rate how important each statement is to his or her decision whether or not to use contraceptives. A five-point Likert response option was used ranging from "1 = not important " to "5 = extremely important". Internal consistency (coefficient Alpha) ranged from .82 to .93 for the pros scales and .81 to .87 for the cons scales in a preliminary investigation involving a high risk sample (Grimley et al., 1992).

Self-Efficacy: Three five-item measures were used to examine an individual's perceived ability to use contraceptives and for using condoms with main and casual partners. Participants were asked to rate how confident they would be using contraceptives, in general, and condoms with the two types of partners, in specific sexual situations. Items were written in such a way as to assess the degree of situational pull that might exist (e.g., using alcohol or drugs) that could induce an individual to have intercourse without the use of contraceptives. An example item is, "How confident are you that you would use a condom when you think your partner might get angry"? Each of the items was rated on a five-point Likert scale ranging

from "1 = not at all confident" to "5 = very confident". Reliability coefficients ranged from .84 to .88 in a preliminary study on a high risk sample (Grimley et al., 1992).

Results

Brief Sexual History

Over one-half of the sample (58.7%) had engaged in vaginal intercourse by age 16, with 63.3% reporting that a condom was used during this sexual debut. Forty-five percent had "1-2" partners since becoming sexually active and 25% reported 5 or more. Men reported significantly more partners than women ($p = .009$). Sixty-five percent currently had a main partner and 22.4% of these same individuals had vaginal intercourse with someone else in addition to their primary partner. Regarding the use of specific methods by individuals and their partners to prevent pregnancy: 64.2% used condoms, but not consistently; 27.0% used the pill; 1% used the sponge; and, 7.8% reported using "nothing." No one in the current sample, or their partners, was using the IUD, the diaphragm, or Norplant, suggesting that such methods are not perceived as viable contraceptive choices by contemporary young adults.

Readiness for Change

Out of 248 heterosexual young adults, $n = 245$ were successfully staged for general contraceptive use. Of those individuals with a main partner, $n = 132$ were able to be staged for condom use and $n = 80$ were classified for using condoms with someone other than a primary partner. Table 3-1 presents stage distributions for the

three contraceptive behaviors. The results indicated that less than half of the sample (49.4%) were complying with the recommendation to use contraceptives "always" in order to prevent unplanned pregnancies; 48.6% were adhering to the use of condoms "always" to prevent pregnancy and/or STDs when engaging in vaginal intercourse with casual sex partners, whereas only 29.6% "always" used condoms with their main partners. No gender differences were found for the staging distributions for the three separate target behaviors. These results clearly demonstrate that existing action-oriented approaches directed towards those who are ready to change (i.e. individuals in the preparation stage of change) would miss 18.8% of this college sample who were in the earlier stages of change (i.e., precontemplation or contemplation) and not prepared to use birth control regularly; 30.1% who were not motivationally ready to use condoms consistently with casual partners; and 45.4% who were not prepared to adopt condom use with a main partner. The pattern of readiness found across the target contraceptive behaviors for college men and women is strikingly similar to the one found with high-risk women. In both instances, individuals were more ready to adopt contraceptive use in general, followed by condom use with a casual partner and, lastly, condom use with a primary partner.

Insert Table 3-1 about here

Confirmatory Factor Analysis (CFA) Models of the Pros and Cons

Previous exploratory factor analysis procedures on the pros and cons of

contraceptive and condom use resulted in a two-factor solution for each method (Grimley et al., 1992). For the current investigation, structural equation modeling methods were utilized to confirm the earlier findings using an alternative population. Three CFA methods were examined (i.e., General Contraceptive Use, Condom Use with Main Partner, and Condom Use with Other Partner), using the computer program EQS (Bentler, 1989).

A basic two-factor model for each method was examined utilizing the conventional maximum likelihood (ML) estimator. Since no one single method of fit has been fully accepted (Bentler, 1990; Bentler & Bonett, 1980; Bollen, 1989), several indices of fit were employed to determine the overall appropriateness of the proposed models. The following indices were examined: (1) the conventional chi-square test; (2) the root mean squared residual (RMR; Joreskog & Sorbom) with values closer to zero indicating small differences between the model and the data; (3) Bentler and Bonett (1980) normed fit index (NFI) which has values ranging from 0 to 1, with values closer to 1 indicating better fit; (4) Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), which is quite similar to NFI, but is less dependent on sample size; and (5) the Comparative Fit Index (CFI; Bentler, 1990), which also has values ranging from 0 to 1. Each parameter estimates (e.g., factor loadings, factor correlations, and errors of measurement) was examined for significance using z-ratios.

Two factor loadings for General Contraceptive use (1 pro and 1 con) were not statistically significant and were dropped from subsequent analyses. Final factor loadings for the three separate target behaviors were significant at the .001 level and

ranged from .50 to .99. The final models are displayed in Figures 3-1 and 3-2.

Overall indices of fit for each model of the pros and cons indicated that the models fit the data well: Contraceptive Use, CFA = .93; Condom - Other, CFA = .96; and Condom - Main, CFA = .95.

Insert Figures 3-1 to 3-2 about here

The mean scores on the individual items (not shown) indicated that the highest pro for both general contraceptive use and for condom use with a main partner, was protection from pregnancy. For using condoms with casual partners, the highest reported pro was protection from diseases. These findings suggest that individuals in this sample may perceive themselves at risk for becoming pregnant with a main partner, but see themselves at greater risk for contracting diseases when engaging in vaginal intercourse with casual partners. Coefficient Alphas for the pros ranged from .75 to .78.

The highest con for general contraceptive use was that it can make sex feel unnatural. Relying on a partner's cooperation was found to be the strongest con for using condoms with both types of partners. These findings for the cons are consistent with earlier observations (Grimley et al., 1992) and point out that having to elicit a partner's compliance for using condoms serves as a potential barrier to their use.

There were sex differences on the pros and cons. Women had significantly higher mean pro scores for general contraceptive use (females M = 4.64 vs males M

= 4.23; $p = .0001$), and for condom use with a main partner (females $M = 4.53$ vs males $M = 4.25$; $p = .015$). Men reported higher perceived cons for general contraceptive use, (males $M = 2.18$ vs females $M = 1.80$; $p = .0013$), and for using condoms with a main partner, (males $M = 2.69$ vs females $M = 2.29$; $p = .0077$). No significant sex differences were detected for the pros and cons for using condoms with a casual partner ($p = .06$ and $.07$, respectively).

Pros and Cons across the Five Stages of Change

To provide a standard metric, the pros and cons were converted from raw scores to standard scores and, then, to T-scores ($M = 50$, $SD = 10$). Table 3-2 contains the T-score means and standard deviations for each decisional balance measure by stage of change. Consistent with Prochaska's (1994) "strong and weak principles" of behavior change, the pros of contraceptive and condom use increased approximately one standard deviation between the precontemplation and action stages of adoption for the three contraceptive behaviors, whereas the cons decreased nearly one-half of a standard deviation for two out of three behaviors.

Insert Table 3-2 about here

Three multivariate analysis of variance (MANOVAs) were performed using individuals with complete data on staging and decisional balance measures only. Significant differences between the pros and cons across the stages of change were detected: General Contraceptive Use [$F(8,316) = 2.87$, $p = .004$]; Condom - Main

[$F(8,230) = 6.43, p = .0001$]; and Condom - Other [$F(8, 134) = 2.18, p = .033$].

Follow-up analysis of variance (ANOVAs) detected significant differences for the pros of using contraceptives and condoms: General Contraceptive Use, [$F(4,160) = 5.12, p = .0007$]; Condom - Main, [$F(4,118) = 12.21, p = .0001$]; and Condom - Other, [$F(4,70) = 4.68, p = .002$]. Tukey test results indicated that there were significantly lower scores for individuals in the precontemplation stage for general contraceptive use as compared to the action and maintenance stages; precontemplation scores were significantly lower than the other four stages of change for condom use with a main partner; and, individuals in the precontemplation stage had lower scores than those in the preparation, action, and maintenance stages for using condoms with casual partners. No significant differences were found for the cons of using contraceptives and condoms. This lack of difference found for the cons across the stages is consistent with earlier studies (Grimley et al., 1993; Grimley et al., 1992; Prochaska et al., 1990) and suggests that some of the negative aspects of using contraceptives and condoms (e.g. hassles) may exist no matter what stage of change an individual may be in.

Graphic representation of the pros and cons across the stages are presented in Figure 3-3. Overall, the cons for using contraceptives and condoms are higher than the pros for individuals in the precontemplation stage. The opposite is true for those in the action and maintenance stages of change. The crossover of the pros and cons occurs before, or during the preparation stage. These findings are consistent with those found by Prochaska et al. (1994) with a broad range of behaviors demonstrating

that the crossover of the pros and cons occurs some time before individuals take action to modify problem behaviors. These observations point out that the current expensive media campaigns that focus on the negative aspects of unplanned pregnancy and infection from STDs would be clinically more therapeutic if public policy permitted them to stress the advantages and safety of contraceptives, as well (Zabin, Astone, & Emerson, 1993).

Insert Figure 3-3 about here

Confirmatory Factor Analysis (CFA) Models of Self-Efficacy

Exploratory factor analysis procedures for general contraceptive and condom use Self-Efficacy have been reported elsewhere (Grimley et al., 1992). Based on theses earlier findings, a basic one-factor CFA model for each method was examined using the identical procedures described above with the decisional balance measures.

The final Self-Efficacy models are displayed in Figure 3-4. All factor loadings were significant at the .001 level and ranged from .59 to .97. Overall indices of fit for each model demonstrated that the models fit the data very well: Contraceptive Use, CFA = .96; Condom - Other, CFA = .99; and Condom - Main, CFA = .98.

Insert Figure 3-4 about here

The item means (not shown) indicated that lower levels of self-efficacy were reported for general birth control if individuals were using alcohol or other drugs. Substance use might interfere with birth control use because the majority of the sample used condoms, although not consistently, for pregnancy prevention. Overall, individuals had more confidence for using condoms with other partners, as compared to steady partners ($\underline{M} = 3.63$ vs $\underline{M} = 3.34$, $p = .04$). However, with both types of partners, lower self-efficacy for using condoms was reported when individuals, or their partners, were already using another method of birth control. Reliability coefficients ranged from .82 to .89.

Sex differences for self-efficacy were revealed at the .05 level for two, out of three, contraceptive behaviors. Women reported higher levels of self-efficacy for contraceptive use in general (females, $\underline{M} = 3.69$ vs. males, $\underline{M} = 3.39$), and condom use with a casual partner (females, $\underline{M} = 3.80$ vs. males, $\underline{M} = 3.41$). No sex differences were observed for self-efficacy for condom use with a main partner (females, $\underline{M} = 3.32$ vs. males, $\underline{M} = 3.37$, $p = .85$).

Self-Efficacy Across the Stages of Change

The self-efficacy raw scores were converted to T-scores ($\underline{M} = 50$, $\underline{SD} = 10$). Table 3-3 contains the T-score means and standard deviations for each self-efficacy measure by stage of change. Three separate ANOVAs were performed using individuals with complete data on staging and self-efficacy measures. Significant mean differences were found across the stages for all three contraceptive behaviors: General Contraceptive Use [$F(4,158) = 6.63$, $p = .0001$]; Condom-Main [$F(4,116) =$

56.69, $p = .0001$]; and Condom-Other [$F(4,69) = 10.01$, $p = .0001$]. Follow-up Tukey tests indicated that there were significantly lower scores for individuals in the precontemplation stage for all methods.

Insert Table 3-3 about here

Graphic representation of self-efficacy across the stages of general contraceptive and condom use with the two types of partners are presented in Figure 3-5. For all three behaviors, self-efficacy is the lowest in the precontemplation stage, starts to climb for those further along in the stages of change and, then, peaks in the action or maintenance stage. These findings support the notion that intensive skill-building interventions are more appropriate for individuals who are ready for action, and not for those in the earlier stages of change.

Insert Figure 3-5 about here

Discussion

The overall findings suggest that the measures for the three constructs from the Transtheoretical Model - the stages of change, decisional balance, and self-efficacy - cross-validated using a college sample of men and women and hold promise for application in the area of contraceptive and condom use adoption and maintenance. Several important findings were revealed. First, the behavioral criterion of "almost

always" for the preparation stage performed well. All heterosexually active individuals were successfully classified into the five stages of change for contraceptive and condom use. Half of the sample were not using birth control consistently; one-half of the individuals having vaginal intercourse with other partners were not using condoms; and over two-thirds were not using condoms every time they engaged in vaginal intercourse with their steady partners. These results support and extend previous findings and stress the importance of assessing individual's condom use behavior with the different types of partners. No significant differences in stage distributions across gender were found.

Second, for all three contraceptive behaviors, individuals in the precontemplation stage of change were shown to evaluate the cons as higher than the pros of their use. The opposite was true for those in the maintenance stage. Consistent with earlier findings (Prochaska et al., 1994) the crossover of the pros and cons for the three contraceptive behaviors occurs before action takes place. Model-based research has shown that interventions have the potential to be effective if the pros of engaging in the healthy behavior are emphasized (e.g., Prochaska et al., 1994). In other words, movement from Precontemplation ---> Contemplation is a function of an increase in the perceived pros of using contraceptives and/or condoms. These observations point out the need to make the advantages of using contraceptives and condoms more salient for individuals. Information channels such as sex education courses and public health messages must be revised because they are currently based on the implicit assumption that, to be acceptable, contraceptive

content must be frightening, sexist, or otherwise negative and counterproductive (Byrne, Kelley, & Fisher, 1993). Modification techniques should deal directly with the positive aspects of contraceptive and condom use for individuals who have not yet made a commitment to adopt their use. Once people start thinking more about using contraceptives and/or condoms, then the negative aspects (cons) of their use can be addressed. These principles for effectively using the pros and cons based on an individual's degree of readiness has been replicated with at least twelve different problem behaviors (Prochaska, 1994).

Third, sex differences were revealed for the pros and cons. Women were found to evaluate the pros of contraceptive use, and condom use with main partners, as being higher than the cons of their use. Conversely, men were found to evaluate the cons of using general birth control and for using condoms with main partners, as being higher than the positive aspects of their use. These sex differences with the pros and cons are consistent with those found with safer sex practices, in general (Redding, 1993). The lack of significant sex differences on the pros and cons for using condoms with casual partner(s) suggests that men and women may have similar attitudes regarding condom use in such sexual situations.

Fourth, as predicted, perceived self-efficacy was the lowest for individuals in the precontemplation stage. Self-efficacy was shown to increase for those further along in the stages of change. This observation points out that behavioral skill-training strategies, which are the hallmark of many action-oriented interventions, may be appropriate for only a small percentage of the population at risk - those who are

ready to adopt and comply with consistent contraceptive and condom use.

Information and motivational strategies that will assist individuals to become better prepared for using contraceptive and condoms are needed first, if people are to acquire and adhere to their recommended use. Motivational interviewing (Miller & Rollnick, 1991) holds promise as a mechanism to assist individuals with becoming more motivated to use methods that prevent pregnancy and diseases. Motivational strategies have been shown to integrate well within the stages of change model (DiClemente, 1991). These approaches are useful and appropriate for dealing with individuals in all stages of readiness, but are most effective with the early stages of precontemplation, contemplation, and preparation. Individuals in the later stages (i.e. action and maintenance) may need skills training in addition to motivational strategies (DiClemente, 1991).

Finally, sex differences were found for self-efficacy. Women reported higher levels of self-efficacy for general contraceptive use and for using condoms with other partners. These findings are consistent with earlier studies examining another behavioral skill, assertion for contraceptive and condom use (Grimley, 1993; Grimley et al., in press). No sex differences were found for self-efficacy when using condoms with main partners. In fact, lower levels of confidence were reported by both men and women suggesting that in important intimate relationships issues such as commitment or fidelity may interfere with proper condom use. Assessing condom use with the two types of partners continues to reveal striking differences in attitudes and behaviors.

Conclusions

Since this study was cross-sectional, focusing on college men and women self-reports of sexual behavior, limitations of generalizability exist. Further validation of the findings using different populations and a longitudinal design are needed to more closely examine the issues of contraceptive and condom use adoption and maintenance. Cell sizes for each of the stages were small and only about one-third of the sample were male, placing less confidence on the findings which should be considered preliminary in nature. Finally, as with most models of behavior change, the Transtheoretical Model may lack predictive ability for contraceptive and condom use because its focus is on individual, and not dyadic, change.

In general, the available research on contraceptive and condom use adoption and adherence does not create optimism. The high numbers of reported cases of unplanned pregnancies, STDs, and HIV underscore the urgent need for the development of effective interventions designed to modify high-risk sexual behavior. A number of authors (Chesney, 1993; Coates, 1990; Kelly et al., 1993; Prochaska et al., 1993) have asserted that to effectively impact on major health problems, clinicians and other researchers must integrate and synthesize principles of behavioral change with those of public health. Such action would entail the extension and application of psychological theories, assessments, interventions, and research to the health problems of whole populations (Rugg, 1990). In order to reach this goal, behavioral scientists will have to shift from an action-oriented paradigm to a stage-matched paradigm in order to meet the needs of individuals at various stages of readiness.

Programs of behavior change based on the framework of the Transtheoretical Model have demonstrated their ability to proactively recruit large percentages of populations, rather than expect people to react to public health messages or advertisements (Prochaska et al., 1993). For example, recruitment procedures utilizing the model's proactive approach, has produced 65 to 70% participation rates, whereas more traditional reactive recruitment procedures to predominately action-oriented programs for smoking have resulted in only 5% participation rates (Prochaska et al., 1993; Schmidt et al., 1989).

These high recruitment rates and ongoing participation rates found with smoking have strong implications for other areas of behavior. The assertion that interventions that work well in the area of smoking cessation or exercise may not apply to sexual behavior (Kelly et al., 1993) appears to be the result of researchers looking at the "content" of interventions and not at the "process." Many clinicians and other researchers have been trained to focus on specific problems rather than the underlying principles associated with change. The processes of change have been shown to be remarkably similar across behaviors that have involved both the cessation of unhealthy behaviors and the acquisition of healthy behaviors (Prochaska et al., 1994; Rossi, 1992). Clinicians and other health care providers could potentially benefit by utilizing the framework of the Transtheoretical Model of Behavior Change to modify high-risk sexual behavior. Its proactive methods and stage paradigm approaches represent a new and effective behavior change technology that holds promise in the areas of unplanned pregnancies, STDs, and HIV/AIDS prevention.

Authors' Notes

This paper was supported by Grants CA27821 and CA50087 from the National Cancer Institute and CSA-92-109 from the Centers of Disease Control and Prevention. Send reprint requests to Diane M. Grimley, Cancer Prevention Research Center, University of Rhode Island, Kingston, RI. 02881-0808, (401) 792-2830, FAX (401) 792-5562, BITNET address: GVA101@URIACC.URI.EDU.

¹ Staging algorithms are available upon request.

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Table 3-1

Percentages of Individuals in the Five Stages of Change for Contraceptive and Condom Use

Method	Stage of Change				
	PC	C	P	A	M
General Contraceptives	6.1%	12.7%	31.8%	11.8%	37.6%
Condom - Other	13.8%	16.3%	21.3%	20.0%	28.8%
Condom - Main	33.3%	12.1%	25.0%	12.9%	16.7%

Note: Due to missing data and/or erratic responses the following were staged for the separate target behaviors: General Contraceptives, N = 245; Condom - Other, N = 80; Condom - Main, N = 132.

Table 3-2

T-Score Means and Standard Deviations of the Pros and Cons across the Stages of General Contraceptive and Condom Use

		Stage of Change				
Method		PC	C	P	A	M
General Contraceptive						
Pros	<u>M</u>	42.23	45.59	51.23	54.45	50.91
	<u>SD</u>	12.18	12.21	6.03	3.42	9.22
Cons	<u>M</u>	52.68	53.98	51.00	47.19	48.92
	<u>SD</u>	9.55	8.40	9.88	9.87	10.96
Condom - Main						
Pros	<u>M</u>	43.95	51.35	53.35	55.81	56.30
	<u>SD</u>	9.48	8.31	3.91	4.45	3.66
Cons	<u>M</u>	52.62	53.41	50.24	46.96	45.43
	<u>SD</u>	9.85	10.80	8.38	13.83	9.56
Condom - Other						
Pros	<u>M</u>	40.47	48.51	50.40	54.36	53.79
	<u>SD</u>	15.09	11.38	10.90	4.56	4.97
Cons	<u>M</u>	50.58	49.83	48.41	50.45	49.80
	<u>SD</u>	12.43	9.33	8.25	9.43	12.60

Table 3-3

T-Score Means and Standard Deviations for Self-Efficacy across the Stages of General Contraceptive and Condom Use

Method	Stage of Change				
	PC	C	P	A	M
General Contraceptive					
<u>M</u>	43.58	43.93	46.84	55.35	52.85
<u>SD</u>	7.97	7.30	7.67	9.62	11.12
Condom - Main					
<u>M</u>	40.19	49.27	56.01	57.88	60.00
<u>SD</u>	7.56	4.00	4.98	5.60	3.81
Condom - Other					
<u>M</u>	40.72	45.78	53.48	57.25	55.23
<u>SD</u>	7.37	6.90	9.03	8.52	7.61

Figure Captions

Figure 3-1. Two-factor model of the pros and cons of General Contraceptive Use with standardized parameter estimates.

Figure 3-2. Two-factor model of the pros and cons of Condom Use with Main Partner and Condom Use with Other Partner(s) with standardized parameter estimates.

Figure 3-3. The pros and cons (T-score means) of using contraceptives in General, Condoms with a Main Partner, and Condoms with someone Other than a main partner by precontemplation (PC), contemplation (C), preparation (P), action (A), and maintenance (M) stages of change.

Figure 3-4. One-factor models of Self-Efficacy for General contraceptive use, Condom Use with Main partner, and Condom Use with a Other partners, with maximum likelihood factor loadings.

Figure 3-5. Self-Efficacy (T-score means) for using contraceptives in General, for using Condoms with a Main partner, and for using Condoms with someone Other than a main partner by precontemplation (PC), contemplation (C), preparation (P), action (A), and maintenance (M) stages of change.

Pros and Cons of General Contraceptive Use

Pros and Cons of Condom Use - Main Partner

Pros and Cons of Condom Use - Other Partner(s)

Confidence of General Contraceptive Use

Confidence of Condom Use - Main Partner

Confidence of Condom Use - Other Partner(s)

BF 176.5
C 765
1994
v. 2

CONTRACEPTIVE AND CONDOM USE FOR THE PREVENTION OF

PREGNANCY, STDs, AND AIDS:

A TRANSTHEORETICAL APPROACH

BY

DIANE MARIE GRIMLEY

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENT FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

1994

32693973

Part 4

The Stages and the Processes of Change
for
Contraceptive and Condom Use

Abstract

The Transtheoretical Model contends that both the cessation of high-risk behaviors and the acquisition of healthy behaviors involve the progression through five stages of change: Precontemplation, Contemplation, Preparation, Action, and Maintenance. This model has also demonstrated that individuals in different stages apply different processes in their efforts to change. The stages and the processes of contraceptive use and condom use were investigated with 248 single, heterosexually active college men and women. The results indicate that individuals are further along in the stages of change for general contraceptive use compared to condom use. Structural equation modeling results revealed eight processes of change for contraceptive use and ten processes of change for condom use. Hierarchical modelling revealed that the first-order factors could best be represented by two higher-order factors labelled "experiential and behavioral." Significant MANOVAs and ANOVAs on the processes of change across the stages for both contraceptive and condom use were revealed, as well as distinct sex differences in terms of process use.

The Stages and the Processes of Change for

Contraceptive and Condom Use

Approximately 2,740 adolescents become pregnant each day in the United States (National Center for Health Statistics, 1987); this comes to over 1 million U.S. teens impregnated each year. Although the adolescent years have been associated with the lack of contraceptive use, one in six single women in their 20's regularly engages in intercourse without using any method of birth control (King, 1986). In a recent study of college-age men and women, 28% were not using a form of birth control every time they had intercourse (Grimley, Riley, Bellis, & Prochaska, in press).

Sexually transmitted diseases (STDs) are also occurring at an alarming rate in the United States. An estimated 12 million cases of STDs occur each year in the United States causing serious health consequences for thousands of children and adults (Roper, Peterson, Curran, 1993). Specifically, 86% of all STDs occur among individuals between the ages of 15 to 29 (Centers for Disease Control (CDC), 1991). Moreover, the sexually active individual today has to deal with the real threat of infection from the human immunodeficiency virus (HIV) and the acquired immunodeficiency syndrome (AIDS). There has been over 210,000 cases of AIDS diagnosed in the United States to date (CDC, 1992). In the United States and throughout the world, the majority of HIV cases are sexually transmitted (Roper et al., 1993).

Earlier research in the area of contraceptive use (Zelnik & Kantner, 1977) pointed out that the use of contraceptives appears to follow a developmental pattern beginning with no contraceptive method being used, to the use of condoms, to the use of a more effective method of birth control, such as oral contraceptives. More recent data, however, indicate that condom use is likely at first intercourse for more than half of these cases (Forrest & Singh, 1990). Despite this positive behavior change, other data suggest that the more sexual partners women have had, the more likely they are to use oral contraceptives and the less likely they are to use condoms (MacDonald et al., 1990). These research findings demonstrate the need for health care providers to regard unplanned pregnancies and exposure to STDs as linked health problems with the potential for reciprocal effects that demand simultaneous understanding and reduction (Fisher, 1990), if we are to meet the proposed national health objectives for the year 2000 (Public Health Services, 1991).

The purpose of the present was to examine both contraceptive and condom use for men and women using two of the major constructs from the Transtheoretical Model of change (Prochaska & DiClemente, 1983, 1984, 1986, 1992) - the stages and the processes of change. Taking such a multiple health risk approach could potentially allow for interventions to be developed that target both contraceptive behaviors simultaneously leading to enhanced reproductive health.

Application of the Transtheoretical Model to Contraceptive and Condom Use

One of the most compelling aspects of the transtheoretical model is its ability to empirically integrate concepts from seemingly competitive theories. The model

draws upon several major theories such as social learning (Bandura, 1977, 1986), the health belief model (Becker, 1974), the theory of reasoned action (Fishbein, 1979), and Janis and Mann's (1977) model of decision making. Model based research has found that both the cessation of high-risk behaviors and the acquisition of healthier behaviors such as using contraceptives every time intercourse is engaged in, involve a gradual progression through the five stages of change labelled Precontemplation, Contemplation, Preparation, Action, and Maintenance.

Stages of Change

Brief descriptions of the five stages of change are as follows: (1) precontemplation - not intending any behavior change within the next 6 months; (2) contemplation - intending behavior change within the next 6 months; (3) preparation - seriously considering planning change within the next 30 days and has made some attempt to modify the behavior, but has not reach a specific criterion (e.g., using a condom every time an individual engages in vaginal intercourse); (4) action - actively changing behavior for less than 6 months; and, (5) maintenance - maintaining behavior change for more than 6 months.

Many behavior change programs have had limited effectiveness because interventions have been developed for individuals who are prepared to take action when, in fact, many people are in the precontemplation or contemplation stages (DiClemente, 1991; Ockene, Ockene, & Kristellar, 1988; Prochaska, 1991). The transtheoretical model suggests that interventions will be more efficacious and cost-effective when they are matched to individual stages.

Processes of Change

The processes of change have their theoretical origin in such variable approaches as behavioral, cognitive, experiential, humanistic, and psychoanalytic therapies (Prochaska, 1978). These processes represent both covert and overt activities that individuals use to alter their experiences and/or environments in order to affect behavior, cognitions or relationships. Research to date has supported at least ten distinct processes of change: consciousness raising; self-reevaluation; environmental reevaluation; self-liberation; social liberation; counterconditioning; stimulus control; reinforcement management; helping relationship; and, dramatic relief. A common and finite set of change processes have been found across a number of addictive and non-addictive problem areas with different processes of change being emphasized at different stages of change (e.g., DiClemente & Prochaska, 1982; DiClemente et al., 1991; Prochaska & DiClemente, 1983; Prochaska et al., 1985, 1991). This integration of the stages and the processes of change holds promise in terms of interventions designed to modify high-risk sexual behavior such as the lack of consistent contraceptive and/or condom use. Once an individual's stage has been determined, interventions would have a better sense of which processes need to be emphasized in order to help an individual progress to the next stage of change. Recent work (Redding, 1993) has shown that this construct can be applied to safer sex behaviors providing further support for the model in the area of contraceptive and condom use. Table 4-1 presents the definitions and representative examples of specific interventions of the processes of change.

Insert Table 4-1 about here

Research Hypotheses:

Several research predictions were made: (1) individuals could be classified into the five stages of change for contraceptive and condom use and that the majority would be in the earlier stages of change for the separate target behaviors; (2) individuals would be further along in the stages of change for general contraceptive use to prevent unplanned pregnancies than condom use for the prevention of STDs; (3) both men and women would be further along in the stages of change for condom use with casual partner(s) than with a main partner; (4) the processes of change for contraceptive and condom use could be successfully applied to the sexual behavior of both men and women; and, (5) individuals in the precontemplation stage for the separate target behaviors would be using significantly fewer processes of change.

Method

Participants

Individuals were recruited from two psychology classes at a northeastern university. Approximately 565 students were offered the opportunity to participate in the study for partial credit toward their course requirements. Three hundred and three men and women volunteered to be assessed. Only data from single, heterosexually active individuals under the age of twenty-nine were analyzed in this investigation leaving a final sample size of $N = 248$. Each participant was asked to

anonymously complete a questionnaire that took approximately 30-45 minutes to complete. Data were collected in the spring, 1993. Over one-third of the sample (37.5%) were male. The mean age was 18.88 years and ranged from 18-26. Seventy percent were Catholic and nearly all (94.7%) were caucasian.

Measures

The survey included items representing additional constructs from the transtheoretical model (decisional balance and self-efficacy), as well as measures assessing sexual communication/assertiveness and perceived risk described elsewhere (Grimley, 1993). For this investigation five sets of questions were used: (1) basic demographics; (2) a traditional sexual history assessment (e.g., age at first vaginal intercourse, number of sex partners, etc.); (3) stages of change algorithms for contraceptive and condom use; (4) processes of change for birth control use; and, (5) processes of change for condom use to prevent STDs/HIV.

Stages of Change Algorithms

In order assess where in the process of change individuals were for both birth control and condom use, three separate four-item staging algorithms were utilized for: (1) general birth control use; and two measures for disease prevention: (2) condom use with a main partner; and, (3) condom use with a casual sex partner (Grimley, Riley, Prochaska, Redding, Ruggiero, Velicer, & Rossi, 1992).

The rationale for using three separate staging algorithms is based on an earlier investigation that demonstrated empirically that a measure of general contraceptive use could be employed when assessing specific methods of birth control (e.g., the Pill and

Norplant), yielding comparable and valid results (Grimley et al., in press; Grimley et al., 1992). The use of two separate measures for condom use, one for main partner and the other for casual partners, is based on two independent studies (Grimley et al., 1992; Prochaska et al., 1990) demonstrating the need to model condom use separately for the two different types of partners.

Processes of Change for Birth Control Use

Two measures assessing process use were used: one measuring general birth control use and the second measuring disease prevention (i.e. condom use).

Rational scale construction of the processes of change for birth control followed the sequential approach described by Jackson (1970, 1971). This process of instrument development first considers theory to outline item content and then refines the hypothesized scales through factor analytic procedures. Items were adapted from those used with smoking cessation (Prochaska, Velicer, DiClemente, & Fava, 1988) and for condom use (e.g., Grimley et al., 1992). The initial 40-item measure was reviewed by two trained judges familiar with the transtheoretical model, both of whom have research experience in the area of contraceptive use. Each participant was asked to rate how frequently he/she had experienced similar thoughts/feelings associated with birth control use within the past month. Each response was recorded on a five-point Likert scale with response options ranging from "1 = Never" to "5 = Repeatedly". Some sample items from the total scale are as follows: (1) "I recall information I've seen on the benefits of using birth control" (consciousness raising); (2) "The partners I really care about approve of using birth control" (reinforcement

management); and, (3) "If birth control is not available, I don't have vaginal sex" (counterconditioning). Each process of change for birth control use subscale was assessed by four items each. Based on previous findings (e.g., Prochaska et al., 1988), it was expected that a correlated ten-factor solution would emerge.

Processes of Change for Condom Use

The measure of the processes of condom use is the counterpart to the processes of change for birth control use measure described above. Most items assessing process use for condoms have been previously validated in a sample of high-risk women (Grimley et al., 1992). Some items were modified for use with both men and women. Several new items were written for the present study in order to have at least four items per process to support proper identification of each process factor (Guadagnoli & Velicer, 1988) and to increase the internal consistency (range .61 to .78) of the original 28-item measure. The final measure included 40 items. Some examples of typical items are: "I tell myself that I am going to try harder to use a condom every time I have sex" (self-liberation); "I feel more responsible when I use condoms every time I have sex" (self-reevaluation); and, "I carry condoms when I go out" (stimulus control). Each participant was asked to rate how frequently he/she had experienced similar thoughts and feelings associated with condom use within the last past month. Each response was recorded on a five-point Likert scale with response options ranging from "1 = Never" to "5 = Repeatedly". It was expected that a correlated 10-factor solution representing the ten processes of change would emerge.

Results

Sex History of the Sample

In addition to engaging in vaginal intercourse, the majority of the sample had performed oral sex (85.1%) with men reporting the performance of oral sex significantly more than women ($p=.0007$). Fifteen percent had engaged in anal sex at least once. Over one-half of the sample (58.7%) reported having vaginal intercourse by age 16 with 63.3% stating that a condom was used during first intercourse. Forty-five percent stated to have had "1-2" partners since becoming sexually active; 25% reported having 5 or more with men claiming to have had significantly more sex partners than women ($p=.009$). Although 65% reported having a main sex partner, 22.4% of these same individuals stated that they have had vaginal intercourse with someone else in addition to their main partner. Four percent had been told that they had contracted an STD at one time and 9.3% said that a pregnancy had occurred in one of their relationships. Regarding the use of specific methods by individuals and their partners to prevent pregnancy: 64.2% reported the use of condoms; 27.0% were using the pill; 1% used the sponge; and 7.8% reported using "nothing." No one in the current sample (or their partner) was using an IUD, the diaphragm, or Norplant suggesting that such methods are not perceived as viable contraceptive choices by many contemporary college enrolled young adults (Grimley et al., in press; Grimley et al., 1992).

Stages of Change for Contraceptive and Condom Use

Table 4-2 reveals the joint distributions of the stages of change for the three

target behaviors: general birth control use, condom use with main partner, and condom use with someone other than a main partner. Several interesting findings emerged from the examination of these distributions.

Insert Table 4-2 about here

First, as hypothesized, individuals were further along in the stages of change for general birth control use as compared to condom use. These findings are consistent with an earlier study of college men and women (Grimley et al., in press), and with a second independent sample of minority women (Grimley et al., 1992). Only 9% of the sample were in the precontemplation stage for birth control use with no intention to start using birth control any time soon, as compared to 33.6% for condom use with a main partner and 13.8% for condom use with a casual partner. However, when combined with the percentages of individuals in the contemplation and preparation stages of change, the results indicate that half of these single, heterosexually active college students (50.6%) were not using a method to prevent pregnancy every time they engaged in intercourse. No gender differences were revealed for the staging distributions for general birth control use.

Second, as predicted, individuals were further along in the stages of change for using condoms with casual partners as compared to a main partner providing further support for the need to assess condom use separately for the two types of partners (Grimley et al., 1992; Prochaska et al., 1990). More than twice as many

individuals (33.6%) were in the precontemplation for using condoms with a steady partner, in contrast to those using condoms with a casual partner (13.8%). Overall, 70.2% were not using a condom every time they had vaginal intercourse with a main partner and 51.4% were not using condoms every time with casual sex partners. No gender differences were found for the staging distributions for condom use for either main or other partner(s).

Processes of Change for Birth Control Use Model

Since using structural equation modelling requires the application of a well specified theory such as the transtheoretical model, it seemed appropriate to utilize this procedure to examine the proposed model. A confirmatory factor analysis (CFA) was performed on the 40-item measure for the processes of change for birth control use. The computer program EQS (Bentler, 1989) was utilized to examine the plausibility of the model. The convention maximum likelihood (ML) estimator was employed to analyze the model. Since no single method of fit has been fully accepted (Bentler, 1990; Bentler & Bonett, 1980; Bollen, 1989), three indices of fit were used to determine the overall appropriateness of the proposed model: (1) the conventional chi-square test; (2) the root mean squared residual (RMR) (Joreskog & Sorborn, 1986) with values closer to zero indicating small differences between the model and the data; and, (3) the Comparative Fit Index (CFI) (Bentler, 1990) which has values ranging from 0 to 1 with values closer to 1 indicating better model fit. Each parameter estimate (e.g., factor loadings, factor correlations, and errors of measurement) was examined for significance using z-ratios.

Results from initial runs of the proposed model indicated that the subscale of social liberation was linearly dependent on a number of other parameter estimates and was dropped from subsequent analyses. In addition, self-liberation merged with self-reevaluation that has occurred in other areas of application (Prochaska & DiClemente, 1985). Next, all items with nonsignificant factor loadings were deleted. The final model resulted in a correlated eight-factor solution. The overall model fit indices were: $X^2(190) = 2759.946$, $p < .001$; RMR = .05; and CFI = .88, representing adequate fit. The ML factor loadings and the final 19 items are presented in Table 4-3. Scale means, standard deviations, and internal consistency using coefficient alpha for each of the processes of change for birth control use subscales are given in Table 4-4.

Insert Tables 4-3 and 4-4 about here

Processes of Change for Condom Use Model

Factor analysis procedures utilized to examine the measure of the processes of change for condom use were identical to those described above. The 40-item measure was reduced to 34 items based on nonsignificant factor loadings, internal consistency, and the overall breath of the constructs. All ten processes were revealed. The overall fit indices for the condom model were: $X^2(332) = 971.583$, $p < .001$; RMR = .05; and, the CFI = .88. The remaining ML factor loadings were significant at .01, and are presented in Table 4-5 along with their corresponding items. Scale means,

standard deviations, and internal consistency using coefficient alpha are given in Table 4-6.

Insert Tables 4-5 and 4-6 about here

Hierarchical Model Testing

Prochaska, Velicer, DiClemente, & Fava (1988) have demonstrated that the processes of change for smoking cessation were organized into two hierarchical factors subsequently labelled "experiential" and "behavioral." The experiential factor consists of consciousness raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation. The behavioral factor consists of counterconditioning, helping relationship, reinforcement management, and stimulus control.

Based on these findings, two separate hierarchical models were tested: one for the processes of change for birth control use and the second for the processes of change for condom use. Standardized ML parameter estimates for the structural relationships among the processes of change first-order factors and their two hierarchical factors are displayed in Figures 4-1 and 4-2. These results are similar to those found by Prochaska et al. (1988). The correlation between the two higher-order factors for birth control use was .951. The correlation between the two condom use higher-order factors was .945, which is identical to findings in an earlier study using high-risk women only (Grimley et al., 1992).

Insert Figures 4-1 and 4-2 about here

Stage X Processes of Change for Birth Control Use

External validity for the processes of change for birth control was established by examining the relationship between the processes of change and the stages of change for birth control use. A multivariate analysis of variance (MANOVA) was performed using the five stages of change as the grouping (independent) variable and the processes of change as dependent measures. The raw scale scores (unweighted sum of the items) from each process subscale were transformed into standardized scores ($M = 50$, $SD = 10$). Only individuals with complete data on all process and staging items were retained for the analysis ($n = 168$).

The MANOVA yielded significant results: approximate $F(32,551.08) = 3.95$, $p < .001$. The value found for Wilks' lambda (.467) indicated that 53% of the variance in the processes of change for birth control use was explained by knowing the stage of general contraceptive use for individuals.

Follow-up analysis of variance (ANOVAs) isolating each of the dependent variables were performed. Significant differences in process use across the stages were found for 7 out of 8 processes, with self-reevaluation being the exception ($p = .36$). Follow-up Tukey tests revealed that precontemplators had lower mean process scores than those further along in the stages of change. Sex differences were also revealed ($p < .0001$), with women using all eight processes of change for birth

control use significantly more than men. Graphs of the experiential and behavioral processes of change for birth control use are displayed in Figures 4-3 and 4-4.

Insert Figures 4-3 and 4-4 about here

Stage X Processes of Change for Condom Use

Further model testing was investigated by examining the relationship between the processes of change for condom use and the stages of change for condom use with main and other partners.

Main Partner: As with the birth control process items, the raw scale scores for each of the 10 process subscales were transformed into standardized scores ($\underline{M} = 50$, $\underline{SD} = 10$). The five stages of change for using condoms with a main partner were used as the independent variable and the processes of change for condom use as dependent variables. Only individuals with complete data on all processes and staging items were retained for the analysis ($\underline{n} = 105$).

The MANOVA yielded significant results: approximate $\underline{F}(40,346) = 1.59$, $p = .016$. The value found for Wilks' lambda (.528) indicated that 47% of the variance in the processes of change for condom use was explained by knowing the stages of change for condom use with a main partner for individuals.

Follow-up ANOVAs isolating each of the dependent variables detected the existence of significant mean differences for 6 out of the 10 processes: reinforcement management, self-liberation, self-reevaluation, counterconditioning, helping

relationship, and social liberation. Tukey follow-up tests revealed that the mean scores for individuals in the precontemplation stage were significantly lower than those for people in the action and maintenance stages. Sex differences were revealed ($p = .005$) with women using three processes significantly more than men: dramatic relief, self-liberation, and helping relationships. Men in contrast, were using stimulus control significantly more than women. The graphs for the two hierarchical factors of the processes of change for condom use across the stages for condom use with a main partner are displayed in Figures 4-5 and 4-6.

Insert Figures 4-5 and 4-6 about here

Other Partner: The raw process subscale scores were transformed to standardized scores ($M = 50$, $SD = 10$). The five stages of change for condom use with a casual partner were used as the grouping variable with the ten processes of change as dependent variables. Only individuals with complete data were retained for analysis ($n = 74$). A significant MANOVA resulted: approximate $F(40, 119.03) = 2.59$, $p = .000$. The value found for Wilks' lambda (.205) indicated that nearly 80% of the variance in the processes of change for condom use was explained by knowing an individual's stage of change for condom use with casual partner(s).

Follow-up ANOVAs isolating each of the dependent process variables detected significant mean differences for 9 out of 10 processes of change for condom use, with the exception being dramatic relief ($p = .36$). Follow-up Tukey tests revealed that

process scores for individuals in the precontemplation stage were significantly lower than those in the preparation, action, and maintenance stages for using condoms with someone other than a main partner; the mean for stimulus control, however, was only lower than that of the maintenance stage. Sex differences were found for process use with casual partners: approximate $F(10,61) = 5.51, p = .0000$. Follow-up tests indicated that women used four processes of change significantly more than men when engaging in vaginal intercourse with someone other than a main partner: consciousness raising, self-liberation, helping relationship, and social liberation. Men, on the other hand, were using stimulus control significantly more than women. The graphs for the experiential and behavioral processes are presented in Figures 3-7 and 4-8.

Insert Figures 4-7 and 4-8 about here

Discussion

The overall findings provide strong support for the applicability of the transtheoretical model of change to contraceptive and condom use adoption for the prevention of pregnancy, STDs, and AIDS in a college sample. First, the general pattern of the findings of the stages of change and the processes of change are similar to those found in previous studies using the transtheoretical model with such diverse behaviors as smoking cessation (Prochaska & DiClemente, 1983, 1984, 1986, 1992; Prochaska et al., 1991), and exercise acquisition (Marcus et al., 1992). These results

provide further support for the generalizability of this behavior change model using different behaviors and populations and its applicability to the examination of multiple health risk behaviors.

Second, based on their readiness to change for contraceptive and condom use adoption, individuals were successfully classified into their corresponding stage of change. As predicted, individuals were further along in the stages of change for general contraceptive use than for condom use. Using a general contraceptive use measure, the results indicated that the majority of the sample (50.6%) were not currently using a method of birth control every time they had intercourse with only 9% of these individuals having no intention to start doing so any time soon.

For condom use, less than one-third of the sample (29.9%) reported using condoms every time they engaged in vaginal intercourse with a main partner with the largest percentage (33.6%) in the precontemplation stage. As predicted, individuals were further along in the stages of condom use with a casual partner as compared to a main partner. Half of the individuals who were having vaginal intercourse with casual partners were consistently using condoms, with only 13.8% in the precontemplation stage for condom use adoption.

Fourth, the processes of change for both birth control use and condom use were successfully applied to the sexual behavior of both men and women. The findings indicate that men and women were utilizing at least eight processes of change for contraceptive use and all ten processes of change for condom use in their efforts to modify their sexual behaviors. The processes of change for the separate target

behaviors were organized in a hierarchical fashion, consisting of two higher-order constructs globally characterized as experiential and behavioral processes of change.

Fifth, external validity for both the processes of change for contraceptive use and for condom use was established by the examination of the process means across their corresponding stages of change. The results indicated that each process was highly related to an individual's stage of change. Precontemplators were found to use fewer processes than those further along in the stages of change. The relationships between the processes of change for contraceptive use and for condom use appear to be similar to other problem behaviors with process use increasing with progression through the stages. However, the functional relationship between the processes and the stages of change differed with some of the behavioral processes (e.g. stimulus control and counterconditioning) continuing to climb well into the maintenance stage. Yet, if an individual chooses to use condoms every time he/she engages in sex, for example, then it would be expected that such process use would continue to be engaged in throughout the maintenance stage and beyond. Furthermore, counterconditioning (e.g., not having vaginal intercourse if birth control is not available) would also be example of proper process use beyond the action stage.

Sixth, although the transtheoretical model defined the sexual behavior of men and women well supporting its use in this area, several sex differences did emerge. For example, women were using all eight processes of change for birth control use significantly more than men. Women were also using significantly more processes when using condoms with both main and other partners; stimulus control was the only

process of change men used more. Such higher process use by women would be easier to explain, in part, for birth control if the majority of the sample (64.2%) had not reported that they and their partners were using condoms, although not consistently, to prevent pregnancy. At first glance, these results might suggest that the long-standing policy objective to increase male responsibility in preventing unintended pregnancies (Sonenstein, 1986), STDs, and HIV/AIDS has not been reached. However, other findings from the study dispute this speculation. First, no sex differences in the stage distributions for contraceptive or condom use were found. In other words, women were no further along in the stages of change for using birth control or condoms than were men. Second, higher process use is not indicative of successful change. Processes use, in order to be facilitate ongoing change, must correspond with the appropriate stage of change, otherwise such behavior may, in fact, hinder an individual's progress (Prochaska, DiClemente, & Norcross, 1992). What these results may reflect are the different attitudes men and women hold regarding contraceptive use. Research has shown that men evaluate the negative aspects of using contraceptives, in general, and condom use specifically, as higher than the positive aspects of their use (Grimley, 1993; Grimley et al., in press). Men have also demonstrated more negative feelings regarding the practice of safer sex behaviors (Redding, 1993). These findings suggest that public health messages that stress the need for women to use condoms with their partners need to be stressed more strongly for men as well (Byrne, Kelly, & Fisher, 1993). Since the best a woman can do to protect herself from STDs and AIDS, for instance, is to try to

persuade her partner to use a condom, her task would be easier if her partner held more positive attitudes towards condom use. Finally, the fact that women reported using stimulus control to a significantly lower degree than men may reflect the fact that the social norms have not changed despite these same public health messages. Many women feel uncomfortable with the notion of carrying condoms and asserting their use with a partner (Grimley, 1991). Despite the need to protect themselves from STDs/HIV, women may still be concerned with appearing "easy" or "ready for sex" if they are the ones who make condoms available during intercourse (e.g., Luker, 1975; Sacco, Rickman, Thompson, Levine, & Reed, 1993).

Conclusion:

Future development and use of the processes of change measure for contraceptive use should include some additional items tapping the processes of social liberation and self-liberation to determine if these factors emerge using other samples. Also, this research was on a cross-sectional sample of college men and women using self-report data. Validation of the findings in a longitudinal design using alternative populations is strongly recommended.

The overall findings suggest that these two constructs from the transtheoretical model, the stages and the processes of change, provide a useful framework for understanding contraceptive and condom use. The findings from this investigation have important implications for the development of interventions. First, in order to protect individuals from developing reproductive health problems, interventions need to be designed that will assist individuals in the precontemplation stage to progress to

the contemplation stage before they will be prepared to take action for using contraceptives and/or condoms every time they engage in vaginal intercourse. Model based research to date has demonstrated that progression from precontemplation to the contemplation stage is a function of an increase in the positive aspects (pros) of engaging in a healthy behavior change. This principle of increasing the pros of a target health behavior relative to decreasing the cons (negative aspects) of change has been replicated using at least twelve different health-related behaviors (Prochaska, in press).

Second, based on the stage distributions for all three target behaviors, it is suggested that interventions assist individuals with general contraceptive use adoption first, since these individuals are least resistant to such change. Next, they could target condom use with casual sex partners. Once these goals are reached, then perhaps individuals will be better prepared to adopt condoms with their steady sex partners. The pattern for the stage distributions found in the present study using men and women college students is strikingly similar to those found using a sample of high-risk women only (Grimley et. al., 1992). In both instances individuals were found to be further along in the stages of change for birth control use, followed by condom use with casual sex partners, and, lastly, condom use with a main partner. These results suggest that a similar intervention strategy may apply across the different populations.

Third, the sex differences found in this study suggest the need to rethink existing public health approaches designed to reduce unplanned pregnancies, STDs, and

HIV/AIDS. Most interventions that have been developed to target reproductive health problems have been directed towards women only. These data strongly suggest that more emphasis should be placed on changing the attitudes and lack of process use for contraceptive and condom use for men as well. Such a prevention approach could potentially result in more open communication between the sexes regarding contraceptive and condom use, more of a shared sense of responsibility for the consequences of sexual behavior, and promote healthier and more satisfying sexual relationships.

Authors' Notes

This paper was supported in part by Grants CA27821 and CA50087 from the National Cancer Institute and CSA-92-109 from the Centers of Disease Control and Prevention. Send reprint requests to Diane M. Grimley, Cancer Prevention Research Center, University of Rhode Island, Kingston, RI. 02881-0808, (401) 792-2830, BITNET address: GVA101@URIACC.URI.EDU. Special thanks to Jason X. Prochaska for his assistance on graphic designs.

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Table 4-1

Titles, Definitions, and Representative Interventions of the Processes of Change

Process	Definitions: Interventions
Consciousness raising	Increasing information about self and problem: observations, confrontations, interpretations, bibliotherapy
Self-reevaluation	Assessing how one feels and thinks about oneself with respect to a problem: value clarification, imagery, corrective emotional experience
Self-liberation	Choosing and commitment to act or belief in ability to change: decision-making therapy, New Year's resolutions, logotherapy techniques, commitment enhancing techniques
Counterconditioning	Substituting alternatives for problem behaviors: relaxation, desensitization, assertion, positive self- statements

(Table 4-1 continues)

Table 4-1 (continued)

Stimulus control	Avoiding or countering stimuli that elicit problem behaviors: restructuring one's environment (e.g., removing alcohol or fattening foods), avoiding high risk cues, fading techniques
Reinforcement management	Rewarding one's self or being rewarded by others for making changes: contingency contracts, overt and covert reinforcement, self-reward
Helping relationship	Being open and trusting about problems with someone who cares: therapeutic alliance, social support, self-help groups
Dramatic relief	Experiencing and expressing feelings about one's problems and solutions: psychodrama, grieving losses, role playing
Environmental reevaluation	Assessing how one's problem affects physical environment: empathy training, and documentaries
Social liberation	Increasing alternatives for nonproblem behaviors available in society: advocating for rights of repressed, empowering, policy interventions

Table 4-2

Percentages of Individuals in the Five Stages of Change for Contraceptive and Condom Use

Method	<u>N</u>	Stages				
		PC	C	P	A	M
General Contraceptives						
	245	9.0	36.7	4.9	11.8	37.6
Condom - Main	134	33.6	32.1	4.5	12.7	17.2
Condom - Other	80	13.8	31.3	6.3	20.0	28.8

Note: PC = precontemplation; C = contemplation; P = preparation; A = action; and, M = maintenance.

Table 4-3

Maximum Likelihood Factor Loadings and Corresponding Items for the Processes of
Change for Birth Control Use

Item	Factor Loading
Consciousness Raising	
I remember hearing about the effectiveness of the different methods of birth control at preventing pregnancy.	.68
I recall information I've seen on the benefits of using birth control.	.88
Counterconditioning	
If birth control is not available, I don't have vaginal sex.	.76
When I am tempted to have sex without using birth control, I stop to think how free from worry I would be if I resist.	.70
Dramatic Relief	
Hearing stories about people who become pregnant, when they don't want to, make me feel nervous.	.73
Warnings about the risks of unplanned pregnancies move me emotionally.	.70

(Table 4-3 continues)

Table 4-3 (continued)

Environmental Reevaluation

I think about how I can help stop the increase of unplanned pregnancies in my community by making sure that birth control is used every time I have sex. .84

I stop to think that having sex without using birth control is increasing the rate of unintended pregnancies in my community. .73

I've been thinking that if every couple used birth control, the number of unplanned pregnancies in my community would not be on the rise. .60

Helping Relationship

I have someone who listens when I need to talk about problems that I may be having using birth control every time I have sex. .55

I have someone who supports my decision to always use birth control. .69

Reinforcement Management

I think that other people respect me for using birth control. .69

The partners I really care about approve of using birth control. .74

I feel good about myself when I use birth control every time I have sex. .84

(Table 4-3 continues)

Table 4-3 (continued)

Self-Reevaluation

I feel more responsible using birth control, as directed, to avoid pregnancies in my relationship.	.70
I think about how using birth control every time I have sex might make me feel better about myself.	.63
I have made a commitment to myself to have sex only when birth control is used.	.81

Stimulus Control

I always make sure birth control is used before I will have sex.	.86
I make it a point to discuss birth control with a partner before we even have vaginal sex.	.71

Table 4-4

Processes of Change for Birth Control Use: Scale Means, Standard Deviations, and Internal Consistency

Process	# of Items	<u>M</u>	<u>SD</u>	Alpha
Consciousness Raising	2	4.32	0.88	.74
Counterconditioning	2	3.40	1.23	.70
Dramatic Relief	2	4.02	0.99	.65
Environmental Reevaluation	3	3.90	1.05	.76
Helping Relationship	2	3.72	1.23	.61
Reinforcement Management	3	4.18	0.84	.77
Self-Reevaluation	3	3.86	1.00	.76
Stimulus Control	2	3.62	1.14	.75

Note: All scales range from 1 - 5.

Table 4-5

Maximum Likelihood Factor Loadings and Corresponding Items for the Processes of Change for Condom Use.

Item	Factor Loadings
Consciousness Raising	
I think about things I've seen or heard about how condoms help keep you from getting the AIDS virus during sex.	.66
I remember things people have told or shown me about using a condom during sex to keep from getting AIDS.	.75
I remember hearing or seeing something about how you can get AIDS from sex.	.74
Counterconditioning	
If I feel pressured by a partner to have sex without a condom I don't give in.	.58
When I want to have vaginal or anal sex but don't have a condom, I find other ways to satisfy myself and my partner.	.77
When condoms aren't available, my partner and I do something else that is fun (like oral sex, body massages, etc.) instead of vaginal sex.	.76

Table 4-5 (continued)

If I am tempted to have sex without a condom, I stop to
 think how free from worry I would be if I resisted. .78

Dramatic Relief

I get pretty stirred up when I hear warnings about having
 sex without a condom. .52

Remembering stories about people sick with AIDS upsets me. .82

Seeing pictures of people dying of AIDS upsets me. .74

Environmental Reevaluation

I stop to think that if everyone used a condom every time they
 had sex, AIDS wouldn't be spreading so fast in
 our community. .52

I have thought about the fact that I can help stop the spread of
 AIDS in my community if I use a condom every time I
 have sex. .79

I stop to think that sex without a condom is spreading the AIDS
 virus around my community. .75

I stop to think that using a condom protects my partner, as
 well as myself. .76

Helping Relationships

There are people in my life who encourage and support my using
 condoms during sex. .84

Table 4-5 (continued)

I have someone I can count on when I'm having a hard time using condoms every time I have sex.	.74
I have someone I can talk to about my experiences with trying to use condoms.	.84
I have someone in my life who supports my decision to use condoms.	.86
Reinforcement Management	
I reward myself when I use condoms to reduce my risk of AIDS.	.67
The sex partners I really care about approve of my using condoms during sex.	.69
I feel good about myself when I am able to use condoms consistently.	.84
Self-Liberation	
If I am with a partner who doesn't want to use a condom I tell myself my health is too important to risk getting infected with AIDS.	.87
I tell myself that I can choose to have sex with a condom.	.76
If I am with a partner who tries to get me to have sex without a condom after I've said no, I keep saying no.	.86
I tell myself that I am going to try harder to use a condom every-time I have sex.	.75

Table 4-5 (continued)

Self-Reevaluation

I feel bad about having sex without a condom because I know it
increases my risk for AIDS. .79

I feel better about myself when I use condoms to reduce my risk
of AIDS. .81

When I am tempted to have sex without a condom, I remind myself
how much better I feel "the morning after" if I use
a condom. .75

I feel more responsible when I use condoms everytime I have sex. .73

Social Liberation

I notice it's getting easier to find sex partners who don't mind
using condoms during sex. .72

It seems there are more and more people around who want to use
condoms during sex. .64

I find society changing in ways that make condom use
more acceptable. .68

I've noticed that a lot of people are talking about the importance
of regular condom use. .60

Stimulus Control

I keep condoms where I stay. .92

I carry condoms with me when I go out. .66

Table 4-6

Processes of Change for Condom Use: Scale Means, Standard Deviations, and Internal Consistency

Process	# of Items	<u>M</u>	<u>SD</u>	Alpha
Consciousness Raising	3	4.35	0.76	.76
Counterconditioning	4	3.65	1.03	.81
Dramatic Relief	3	4.22	0.77	.75
Environmental Reevaluation	4	4.25	0.82	.81
Helping Relationship	4	4.10	0.94	.86
Reinforcement Management	3	3.91	0.94	.72
Self Liberation	4	3.94	0.96	.77
Self Reevaluation	4	4.08	0.93	.82
Social Liberation	4	4.21	0.78	.78
Stimulus Control	2	2.83	1.34	.75

Note: All scales range from 1 - 5.

Figure Captions

Figure 4-1. Two-factor hierarchical model of the processes of change of change for general birth control use with standardized parameter estimates. Experiential Processes: CR = consciousness raising; DR = dramatic relief; ER environmental reevaluation; and SR = self-reevaluation. Behavioral Processes: CC = counterconditioning; HR = helping relationships; RM = reinforcement management; and SC = stimulus control.

Figure 4-2. Two-factor hierarchical model of the processes of change of change for condom use with standardized parameter estimates. Experiential Processes: CR = consciousness raising; DR = dramatic relief; ER environmental reevaluation; SR = self-reevaluation; and SO = social liberation. Behavioral Processes: CC = counterconditioning; HR = helping relationships; RM = reinforcement management; SL = self-liberation; and SC = stimulus control.

Figure 4-3. Experiential processes of change for contraceptive use (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Experiential Processes: CR = consciousness raising; DR = dramatic relief; ER = environmental reevaluation; and SR = self-reevaluation.

Figure 4-4. Behavioral processes of change for contraceptive use (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Behavioral Processes: CC = counterconditioning; HR = helping relationships; RM = reinforcement management;

and SC = stimulus control.

Figure 4-5. Experiential processes of change for condom use with MAIN PARTNER (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Experiential Processes: CR = consciousness raising; DR = dramatic relief; ER = environmental reevaluation; SO = social liberation; and SR = self-reevaluation.

Figure 4-6. Behavioral processes of change for condom use with MAIN PARTNER (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Behavioral Processes: CC = counterconditioning; HR = helping relationships; RM = reinforcement management; SC = stimulus control; and self-liberation.

Figure 4-7. Experiential processes of change for condom use with OTHER PARTNER (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Experiential Processes: CR = consciousness raising; DR = dramatic relief; ER = environmental reevaluation; SO = social liberation; and SR = self-reevaluation.

Figure 4-8. Behavioral processes of change for condom use with OTHER PARTNER (T-score means) across the five stages of change (PC = precontemplation; C = contemplation; P = preparation; A = action; and M = maintenance. Behavioral Processes: CC = counterconditioning; HR = helping relationships; RM = reinforcement management; SC = stimulus control; and self-liberation.

Two Hierarchical Factors
of the
Processes of Change
for Condom Use

Two Hierarchical Factors
of the
Processes of Change
for Birth Control Use

Experiential Processes of Contraceptive Use

Behavioral Processes of Contraceptive Use

Experiential Processes of Condom Use - Main

Behavioral Processes of Condom Use - Main

Experiential Processes of Condom Use – Other

Part 5

Condom Use Assertion and the Stages of Change

with

Main and Other Partners

Abstract

A measure assessing an individual's ability to assert the use of condoms was developed using $N=248$ heterosexually active college men and women. Both principal component analysis (PCA) and structural equation modeling (SEM) procedures were performed. External validity for the assertion for condom use measure was established by integrating the measure with the stages of change dimension from the transtheoretical model of behavior change. The transtheoretical model posits that both the cessation of high-risk behaviors and the acquisition of healthy behaviors involve the progression through five stages of change: Precontemplation, Contemplation, Preparation, Action, and Maintenance. The results indicated that individuals were further along in the stages of change for using condoms with a casual partner, as compared to a steady partner. The degree to which assertive condom use behavior was engaged in was related to an individual's stage of readiness for using condoms with the two types of partners. The utility of stage-matched intervention strategies, as opposed to the action-oriented approaches to modify high-risk sexual behavior, is discussed.

Condom Use Assertion and the Stages of Change

with Main and Other Partners

Rates of sexually transmitted diseases (STDs) have increased for many heterosexuals since the beginning of the acquired immunodeficiency syndrome (AIDS) epidemic (Rolfs & Nakashima, 1990), and limited counseling and testing to change sexual behavior have shown little or no benefit (Higgins, Galavotti, O'Reilly et al., 1991; Otten, Zaidi, Wroten, Witte, & Peterson, 1993; Zenilman, Erickson, Fox, Reichart, & Hook, 1992). An estimated 12 million cases of STDs occur each year, causing serious health consequences for thousands of children and adults (Roper, Peterson, & Curran, 1993). Specifically, 86% of all STDs occur among individuals between the ages of 15 to 29 (Centers for Disease Control and Prevention (CDC), 1991). There are currently 233,907 people in the United States who have been diagnosed with AIDS (CDC, 1992a). Recent trends suggest that transmission of the human immunodeficiency virus (HIV) through heterosexual contact is on the rise (Holmes, Karon, & Kreiss, 1990). In the United States, women, in particular, have become one of the fastest-growing groups infected with the virus that can lead to AIDS (Chu, Buehler, & Berkelman, 1990). As of January, 1993, nearly 28,000 women reportedly have AIDS (CDC, 1993).

The high number of reported cases of STDs and HIV/AIDS underscores the need for the development of effective interventions designed to modify high-risk sexual behaviors, such as the lack of consistent condom use. Health psychology has an preminent role to play by providing these behavioral change programs (Chesney,

1993) developed on the basis of formal theory, since theoretically driven interventions may have greater potential to be efficacious and lead to more generalizable outcomes, as compared to those that are based on informal grounds (Byrne, Kelley, & Fisher, 1993; Coates, 1990; Fishbein & Middlestadt, 1989; Fisher & Fisher, 1992).

The purpose of the present study was to support and extend previous evidence on the applicability of the stages of change construct of the transtheoretical model (Prochaska & DiClemente, 1983, 1984, 1986, 1992) to the acquisition of condom use. The transtheoretical model has been specifically cited as a health behavior change model that holds promise in the area of sexual behavior change (CDC, 1992b). Prochaska, Redding, Harlow, Rossi, & Velicer (in press) have provided a comprehensive review of the theoretical application of the model to HIV prevention. Empirically, the model has been successfully applied to the practice of general safer sex behaviors (Redding, 1993; Redding, Rossi, Velicer, & Prochaska, 1989) and, specifically, to contraceptive and condom use adoption (Grimley, Riley, Bellis, & Prochaska, in press; Grimley, Prochaska, Velicer, & Riley, 1993a; Grimley, Riley, & Prochaska, 1993b; Grimley, Riley, Prochaska, Redding, Ruggiero, Velicer, & Rossi, 1992; Prochaska, Harlow, Redding, Snow, Rossi, & Velicer, 1990). What is unique to the current study was the examination of a new construct, assertiveness for condom use, in relation to the stages of change dimension of the transtheoretical model. The ability to appropriately communicate the need for condom use with a potential partner is critical to the practice of safer sex behaviors (Catania et al., 1989; Fisher & Fisher, 1992; Grimley, 1991; Harlow, Quina, Morokoff, Rose, & Grimley, 1993) and, thus,

warrants examination within the framework of the transtheoretical model when assessing condom use behavior.

Application of the Transtheoretical Model to Condom Use

One of the most compelling aspects of the transtheoretical model is its ability to empirically integrate concepts from seemingly competitive theories. The model presently draws from several major theories such as social learning theory (Bandura, 1977, 1986), the health belief model (Becker, 1974), the theory of reasoned action (Fishbein, 1979), and Janis and Mann's (1977) of decision making. Model based research has found that both the cessation of high-risk behaviors and the acquisition of healthier behaviors such as the consistent use of condoms, involve a gradual progression through five stages of change labelled Precontemplation, Contemplation, Preparation, Action, and Maintenance.

Stages of Change

The stages of change dimension of the transtheoretical model helps to answer the question "when" changes occur. Brief descriptions of the five stages of change are as follows: (1) precontemplation - not intending any behavior change within the next 6 months; (2) contemplation - intending behavior change within the next 6 months; (3) preparation - seriously planning change within the next 30 days and made some attempt to modify the behavior, but has not reached a specific criterion (e.g., using a condom every time one engages in vaginal intercourse); (4) action - has modified a behavior to a specific criterion for less than 6 months; and, (5) maintenance - continuing such behavior change for more than 6 months.

Many behavior change programs have had limited impact because interventions have been developed for individuals who are prepared to take action when, in fact, many people are in the precontemplation or contemplation stages (DiClemente et al., 1991; Ockene, Ockene, & Kristellar, 1988; Prochaska, 1991). The transtheoretical model suggests that interventions will be more efficacious and cost-effective when they are matched to an individuals's stage of change.

Assertiveness for Condom Use

Behavioral skills such as the ability to communicate with, and to be effectively assertive with, a potential sex partner are necessary to the practice of safer sex behaviors (Fishbein et al., 1991). One conceptualization of assertiveness within the sexual context has been formulated by Quina, Harlow, Gibson, and Morokoff (1990). These researchers have operationally defined sexual assertiveness as the ability to initiate wanted or desired sexual encounters, to refuse unwanted or potentially high-risk sexual activities, and to discuss and insist upon contraceptive and condom use with a partner. Correlates of sexual assertiveness have been investigated using two independent samples of college-age women (Grimley, Harlow, Morokoff, & Quina, 1993). The results indicated that high assertion within sexual encounters was strongly associated with higher levels of self-efficacy for AIDS-preventive behaviors, and with such interpersonal factors as previous sexual victimization and low expectancy of a negative reaction from a partner for engaging in such behavior.

In another investigation using men and women, assertiveness was examined for contraceptive use, in general, and condom use, specifically (Grimley et al., in press).

The results indicated that 37.9% of the sample were not insisting upon the use of birth control with a given partner, and over two-thirds (67.8%) were not refusing to have vaginal intercourse if a condom were not available. Numerous other studies have shown that sexual communication skills are related to the practice of safer-sex behaviors (e.g., Catania et al., 1989; Harlow et al., 1993; Polit-O'Hara & Kahn, 1985), and that AIDS-specific assertiveness skills are associated with practicing AIDS preventive behaviors in heterosexual women (Catania et al., 1989; Harlow et al., 1993), as well as intravenous drug users (Zielony & Willis, 1990).

Research Questions and Hypotheses

Previous studies have found the stages of change construct from the transtheoretical model to be an effective dimension for integrating other dynamic constructs such as the processes of change, which have their theoretical origins in diverse systems of psychotherapy (DiClemente et al., 1991; Gottlieb, Galavotti, McCuan, & McAlister, 1991; Prochaska, 1984; Prochaska & DiClemente, 1983; Prochaska, Rossi, & Wilcox, 1991), decisional balance, or the pros and cons of making a healthy behavior change (see Prochaska et al., 1994, for a review), and self-efficacy (DiClemente, 1986; DiClemente et al., 1991; Prochaska, Velicer, Guadagnoli, Rossi, & DiClemente, 1991; Velicer, DiClemente, Rossi, & Prochaska, 1990), which Bandura (1977, 1986) views as the most important construct in social learning theory. This study represents an initial attempt to develop a psychometrically sound measure assessing one's ability to assert the use of condoms with a given partner and to establish external validity by demonstrating integral

relationships between the stages of change for condom use dimension and condom use assertion. Only the sexual behavior of heterosexually active men and women was examined in the present investigation.

It was predicted that: (1) individuals could be classified into the five stages of readiness for condom use adoption, with the majority of individuals being in the earlier stages of change; (2) individuals would be further along in the stages of change for condom use with casual sex partners, as compared to main partners; and, (3) higher levels of assertiveness for condom use would be associated with the later stages of change, since the behavioral processes of change are emphasized in the later stages (DiClemente et al., 1991; Gottlieb et al., 1991; Prochaska & DiClemente, 1983).

Method

Participants

Men and women were recruited from psychology classes at a northeastern university. Nearly 565 individuals were recruited to participate in the study, of which 303 volunteered to be assessed. Only data from single, heterosexually active individuals under the age of 29 were retained for all analyses, leaving a final sample of $N=248$. The mean age was 18.88 years and ranged from 18 to 26. Over one-third of the sample (37.5%) were male; 70% were Catholic; and almost all (94.7%) were caucasian.

Procedure

Each volunteer was asked to anonymously complete a questionnaire, which took approximately 30-45 minutes to complete. Participants were given partial credit

toward their course requirements by their individual instructors. Data were collected in 1993.

Measures

The survey used in the current study included measures representing additional constructs from the transtheoretical model - processes of change, decisional balance, and self-efficacy - described in detail elsewhere (Grimley et al., 1993a; Grimley et al., 1993b). Five sets of questions were utilized in the present investigation: (1) basic demographics; (2) a traditional sexual history assessment (e.g., age at first intercourse, method of birth control used during first vaginal intercourse, number of sex partners, etc.); (3) stages of change algorithm for condom use with main partner; (4) stages of change algorithm for condom use with casual partner(s); and (5) the Assertiveness for Condom Use measure.

Stages of Change for Condom Use

To assess an individual's readiness for using condoms, two separate four-item staging algorithms were employed: one for condom use with a main partner and the second for condom use with casual sex partners. The rationale for using two separate measures to assess condom use is based on findings from two independent studies (Grimley et al., 1992; Prochaska et al., 1990). Both studies demonstrated the need to model condom use separately for the two types of partners.

Readiness for using condoms with a main partner was assessed by establishing whether an individual had a steady sexual partner of the opposite sex. If "yes," individuals were asked how often they used a condom when engaging in vaginal sex

(e.g., "1 = every time" to "5 = never"). Individuals were classified into the Maintenance stage if condoms were used "every time" they engaged in intercourse for 6 months or more, or in the Action stage if they had been doing so for less than 6 months. Individuals were in Preparation if they reported that they were not currently using condoms "every time," but intended to start doing so within the next 30 days, and met the behavioral criterion of using condoms "almost always." Individuals reporting that they intended to start using condoms "every time" in the next 6 months were classified into the Contemplation stage, whereas those not intending to start doing so within the next 6 months were in the Precontemplation stage for using condoms with a main partner. The same approach was utilized for assessing condom use with casual sex partners, prefixed by the question: "In the last 6 months, have you had vaginal intercourse with someone of the opposite sex who was not your main partner?" The two condom use algorithms have been validated in a measurement study (Galavotti et al., 1993; Grimley et al, 1992) for a multi-site research demonstration project to prevent the spread of HIV in women and infants funded by the Centers for Disease Control and Prevention (CDC).

Assertiveness for Condom Use

Items were developed based on Quina et al.'s (1990) Sexual Assertiveness Scale. The concepts of sexual refusal and discussion/insistence upon birth control assertiveness were adapted to generate four items in the present study. The following items were developed: (1) "If a partner does not want to use a condom, I insist that we do"; (2) "If a partner won't use a condom, I say "no" to vaginal sex"; (3) "When

a sex partner does not want to talk about using condoms, I tell him/her we have to talk anyway"; and, (4) "If a partner tries to get me to have sex without using a condom after I've said no, I keep saying no." Each participant was asked to rate how frequently he/she had engaged in assertive condom use within the past month. Each response was recorded on a five-point Likert scale ranging from "1 = Never" to "5 = Repeatedly." Both principal component analysis and structural equation modeling procedures were performed on the Assertiveness for Condom Use measure.

Results

Sex History of the Sample

In addition to engaging in vaginal intercourse, the majority of the sample (90.7%) reported receiving oral sex, and 85.1% had performed oral sex on a partner. Fifteen percent had engaged in anal intercourse at least once. Although over half of the sample (58.7%) reported having vaginal sex by age 16, nearly one-third (30.0%) reported their first intercourse experience occurred by the time they were 15. Sixty-three per cent used a condom during this first intercourse encounter. Fifty-four per cent had three or more sex partners since becoming sexually active, with men reporting significantly more partners than women ($p = .009$). Sixty-five percent currently had a main sex partner and 22.4% of these same individuals reported having vaginal intercourse with someone in addition to their steady partner. Nearly forty percent (39.8%) reported using condoms to prevent both unintended pregnancies and diseases with their main partner, as compared to 75.3% of those having vaginal intercourse with a casual partner. Although 27.9% had been tested for HIV, only one

of these individuals could say with certainty that his/her partner had been tested also.

Stages of Change for Condom Use

Table 5-1 reveals the percentages of individuals in the various stages of readiness for using condoms with main and other partner(s). As predicted, individuals were further along in the stages of change for using condoms with a casual partner, as compared to a main partner [$\chi^2(12) = 31.07, p = .002$]. The results indicated that 48.8% of the sample were using condoms every time they engaged in vaginal intercourse with a casual partner, with only 13.8% in the precontemplation stage of change. Yet, 51.4% of the individuals having sex with casual partners were not using condoms every time they engaged in intercourse.

In contrast, only 29.9% of the sample were using condoms every time with their steady sex partners, with 33.6% in the precontemplation stage. Overall, 70.2% were not using condoms every time they engaged in intercourse with a main partner. No sex differences were found for the stage distributions for using condoms with either main or casual partner(s).

Insert Table 5-1 about here

Assertion for Condom Use

Principal Component Analysis of Assertiveness for Condom Use: A 4 x 4 correlation matrix was generated for the measure of assertiveness. A principal component analysis (PCA) using DQUART oblique rotation was conducted using

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Table 5-1

Percentages of Individuals in the Five Stages of Change for Condom Use with Main and Casual Partners

Type of Partner	Stage of Change				
	PC	C	P	A	M
Main	33.6	32.1	4.5	12.7	17.2
Casual	13.8	31.3	6.3	20.0	28.8

Note: For Main partner, $N = 134$; for Casual partner, $N = 80$. PC = precontemplation; C = contemplation; P = preparation; A = action, and M = maintenance.

Table 5-2

Means, Standard Deviations, and Factor Loadings for the Assertiveness for Condom Use Items

Item	<u>M</u>	<u>SD</u>	Factor
Loading			
1. If a partner does not want to use a condom, I insist that we do.	3.60	1.38	.865
2. If a partner won't use a condom, I say "no" to vaginal sex.	3.42	1.40	.904
3. When a sex partner does not want to talk about condoms, I tell him/her we have to talk anyway.	3.59	1.26	.825
4. If a partner tries to get me to have sex without using a condom after I've said no, I keep saying no.	3.64	1.36	.868

Note: Range = 1 to 5.

Table 5-3

Structural Modeling Results for Assertiveness for Condom Use

Item	ML Factor Loading	Residual
1.	.88	.32
2.	.91	.17
3.	.77	.40
4.	.84	.30

Note: All factor loadings were significant at $p < .001$.

Table 5-4

T-Score Means and Standard Deviations for Assertiveness and Condom Use across the Stages of Change for Condom Use

Type of Partner		Stage of Adoption				
		PC	C	P	A	M
Main	<u>M</u>	45.61	52.29	52.27	55.99	56.64
	<u>SD</u>	7.61	5.79	9.33	4.49	6.16
Casual	<u>M</u>	41.37	49.42	51.14	54.14	53.62
	<u>SD</u>	4.75	5.05	4.40	5.81	5.37

Note: For Main Partner, (PC) **Precontemplation**: n = 45; (C) **Contemplation**: n = 31; (P) **Preparation**: n = 5; (A) **Action**: n = 17; and, (M) **Maintenance**: n = 21. For Casual Partner, (PC) **Precontemplation**: n = 11; (C) **Contemplation**: n = 20; (P) **Preparation**: n = 5; (A) **Action**: n = 16; and, (M) **Maintenance**: n = 21.

Figure Captions

Figure 5-1. Assertion for condom use with Main partners (T-score means) across the five stages of change.

Figure 5-2. Assertion for condom use with Other partners (T-score means) across the five stages of change.

Assertion for Condom Use with Main Partner

Assertion for Condom Use with Other Partner

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Part 6

Conceptual Model Testing of Self-Efficacy and Assertiveness For Condom Use
with Main and Other Partners

Abstract

Conceptual modeling testing of two related condom use behavior skills, self-efficacy and assertiveness, were conducted using the same 248 college men and women as in the previous study. Two models were hypothesized for using condoms with main and other partners: 1) a simple one-factor, manifest-to-latent variable model and 2) a correlated two-factor, manifest-to-latent variable model. Results from the structural equation analyses indicated that the two-factor model fit the data well: CFI = .98 (Main Partner) and CFI = .96 (Other Partner). These findings suggest that the two behavioral skills represent distinct factors and that assessments and interventions that include both constructs could potentially add to our understanding of condom use behavior. It is suggested that the construct of assertiveness for condom use be included within the framework of the Transtheoretical Model when examining high risk sexual behavior.

Conceptual Model Testing of Self-Efficacy and Assertiveness for Condom Use with Main and Other Partners

In the area of STDs and AIDS prevention, certain behavioral skills are critical to the practice of low risk sexual behaviors. It has been demonstrated that the ability to appropriately communicate the need for using condoms with a given partner is associated with safer sex behaviors (Catania et al., 1989; Fisher & Fisher, 1992; Grimley, 1991; Grimley, Riley, & Prochaska, in press; Harlow, Quina, Morokoff, Rose, & Grimley, 1993; Polit-O'Hara & Kahn, 1985). In addition, in a number of studies, self-efficacy (Bandura, 1977, 1986), or the perception that one has the ability to use condoms in specific sexual situations, has been shown to be strongly related to their use (Fisher & Fisher, 1992; Goldman & Harlow, 1993; Grimley, 1991; Grimley, Prochaska, Velicer, & Riley, 1994; Grimley, Riley, Prochaska, Redding, Ruggiero, Velicer, & Rossi, 1992; Harlow et al., 1993; Jemmott & Jemmott, 1992; Prochaska, Harlow, Redding, Snow, Rossi, & Velicer, 1990; Wulfert & Wan, 1993).

Both condom use assertion and self-efficacy with primary and casual partners were examined using a sample of college-age men and women (Grimley, et al., in press; Grimley et al., 1994). The two behavioral change measures were integrated with the stages of change dimension from the Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1983, 1984, 1986, 1992). The pattern across the stages was similar with both self-efficacy and assertiveness being the lowest in the precontemplation stage and increasing moderately across the stages of readiness for using condoms with the two types of partners. Similarities also existed in terms of

sex differences with women reporting higher levels of self-efficacy and assertion for using condoms with casual partners, and no sex differences found for condom use assertiveness or confidence when engaging in vaginal intercourse with main partners. It has been argued that many self-report measures assessing AIDS-relevant behavioral skills actually measure an individual's perceived self-efficacy with respect to performing specific preventive behaviors (Fisher & Fisher, 1992). Finally, the scale score correlations found for the two measures were $r = .65$ for condom use with a main partner and $r = .68$ with other partners. These correlations involved measured variables that are assumed to be attenuated in nature. It would be expected that the use of latent variables, which theoretically, disattenuate the correlation among variables, would result in higher correlational values. Such assumptions suggest that the two behavioral constructs may, in effect, be measuring the same construct. These findings and subsequent speculations lead to the hypothesis that it may not be necessary to assess individuals on the two separate measures because they may share a great deal of overlapping variance. Such a statement, however, warrants empirical support. The purpose of the present study was to examine the structural relationship between the two constructs of self-efficacy and assertiveness for condom use with main and other partners using covariance equation modeling techniques.

Method

The college sample ($N = 248$) used in the present study has been described in detail in Parts 3-5 of this dissertation. Sixty-two percent of the sample were female. The mean age was 18.88 years and ranged from 18 to 26. Seventy percent were

catholic and almost all were caucasian.

Measures

Self-Efficacy: Two five-item measures were previously developed and validated that examined an individual's perceived ability to use condoms with main and other partners (Grimley et al., 1992; Grimley et al., 1994). Participants were asked to rate how confident they would be using condoms with the two types of partners in specific sexual situations. Items were written in such a way as to assess the degree of situational pull that might exist (e.g., using alcohol or drugs) that could induce an individual to have intercourse without the use of condoms. An example item is, "How confident are you that you would use a condom when you think your partner might get angry"? Each of the items are rated on a five-point Likert scale ranging from "1 = not at all confident" to "5 = very confident". Reliability coefficients are .82 (Other Partner) and .89 (Main Partner) using the college-age sample.

Assertion for Condom Use: Items were developed based on Quina, Harlow, Gibson, and Morokoff's (1990) Sexual Assertiveness Scale. This scale operationalizes assertiveness in the sexual context as the ability to initiate wanted or desired sexual encounters, to refuse unwanted or potentially high-risk sexual activities, and to discuss and insist upon contraceptives and/or condom use with a given partner.

The concepts of sexual refusal and discussion/insistence upon birth control

assertiveness were adapted to generate four items to assess condom use assertion (Grimley et al., in press). A sample item is as follows: "If a partner does not want to use a condom, I insist that we do". Each frequency response is recorded on a five-point Likert scale ranging from "1 = Never" to "5 = Repeatedly". Internal consistency for the four-item measure using coefficient Alpha is .89 with the current sample.

Statistical Plan

A one-factor, measure-to-latent variable model for both self-efficacy and assertiveness has been previously examined and the results reported in detail elsewhere (Grimley et al., 1993; Grimley et al., in press). Confirmatory factor analysis (CFA) procedures were employed in the present study also to examine the proposed models. The conventional maximum likelihood (ML) estimator was utilized based on several studies that have shown ML to be fairly robust against minor violations of nonnormality (Boomsma, 1983; Harlow, 1986; Huba & Harlow, 1987). Since no single index of fit has been fully accepted (Bentler, 1990; Bentler & Bonett, 1980; Bollen, 1989), several indices of fit were utilized to determine the overall appropriateness of the hypothesized models. The following indices were used: (1) the conventional chi-square test; (2) the root mean square residual (RMR; Joreskog & Sorbom, 1986), with values closer to zero indicating small differences between the model and the data; (3) Bentler and Bonett (1980) Normed Fit Index (NFI) which has values ranging from 0 to 1, with values closer to 1 indicating better fit; (4) Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), which is quite similar to the NFI, but is

less dependent on sample size; and, (5) Comparative Fit Index (CFI; Bentler, 1990), which also has values ranging from 0 to 1. Each parameter estimate (e.g., factor loadings, factor correlations, and errors of measurement) was examined for significance using z-ratios.

Hypothesized Models

For both types of partners, two models were proposed for condom use self-efficacy and condom use assertion: (1) Model A: a one-factor, first-order model and (2) Model B: a correlated two-factor, first-order model.

Results

Comparisons of overall model fit indices are presented in Table 6-1. The results indicated that Model B, the two-factor correlated model, fit the data better for condom use with both types of partners. The residuals of the final models were low (.03) and CFA values, for example, demonstrated excellent fit: .98 (main partner) and .96 (other partners). All factor loadings were significant at the .001 level and ranged from .77 to .97. The two final models of condom use efficacy and assertion are displayed in Figures 6-1 and 6-2.

Insert Table 6-1 and Figures 6-1 to 6-2 about here

Discussion

The current investigation examined the structural relationship between self-efficacy and assertiveness for condom use with main and other partners. The hypothesis that self-efficacy and assertiveness might be one construct (i.e. factor) was not supported. The results indicated that conceptually distinct factors are needed to adequately explain these two behavioral skills for condom use. Future studies should determine if similar structural relationships exist between latent factors using alternative populations.

These findings point out that the construct of assertiveness, as with the construct of self-efficacy, when integrated within the Transtheoretical Model of Behavior Change, potentially adds to our understanding of condom use behavior. Assessments of condom use for the prevention of unintended pregnancies and exposure to HIV/STDs that include both constructs may allow for a more comprehensive understanding of condom use behavior. Although the pattern of self-efficacy and assertiveness across the stages of change with both types of partners looks quite similar, unique variance is explained when the two variables are used in unison. Assessments that include the two behavioral constructs may increase our knowledge of sexual behavior and lead to more effective intervention strategies in order to promote consistent condom use.

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Figure Captions

Figure 6-1. Correlated, two-factor model of self-efficacy and assertiveness for condom use with main partners with standardized parameter estimates.

Figure 6-2. Correlated, two-factor model of self-efficacy and assertiveness for condom use with main partners with standardized parameter estimates.

Table 6-1

Confirmatory Factor Analysis Model of Condom Use Self-Efficacy and Assertiveness

Model	X ²	RMR	NFI	NNFI	CFI
Partner Type					
Main					
1-factor	633.89	.12	.72	.64	.73
2-factor	65.14	.03	.97	.98	.98
Other					
1-factor	744.38	.14	.73	.64	.73
2-factor	124.25	.03	.95	.95	.96

Note: X² = chi-squared; RMR = root mean squared residual; NFI = Normed Fit Index; NNFI = Nonnormed Fit Index; and CFI = Comparative Fit Index.

SELF-EFFICACY AND ASSERTIVENESS FOR CONDOM USE WITH MAIN PARTNERS

SELF-EFFICACY AND ASSERTIVENESS FOR CONDOM USE WITH OTHER PARTNERS

PART 7

**Perceived Risk and Sexual Abuse History
Applied to Stages of Change for Condom Use**

Abstract

Two additional variables were examined for their meaningfulness when applied to contraceptive and condom use - perceived risk (for pregnancy and for contracting STDs/AIDS), and a history of sexual abuse - using $N = 248$ young men and women college students. The results indicated that perceived risk for STDs and AIDS were not related to the stages of change for using condoms with main and other partners, whereas perceived risk for pregnancy was shown to be highest for those in the precontemplation stage of change for using birth control, and decreased for individuals further along in the stages. Stage distribution percentages for using contraceptives and/or condoms were similar for individuals with a history of sexual abuse when compared with those reporting no abuse. The findings suggest that perceived risk for pregnancy has some applicability for college students, whereas perceived risk for AIDS and other STDs, as well as sexual abuse do not add to our understanding of contraceptive and/or condom use with this population.

Perceived Risk and Sexual Abuse History

Applied to Stages of Change of Condom Use

When examining a fairly new area of research, no project goes without some "failures." Although nonsignificant findings do not generally lead to publications, they add significantly to our understanding of the phenomenon under investigation. The purpose of the present paper was to examine two variables - perceived risk and sexual abuse - within the framework of the transtheoretical model to determine their usefulness when examining contraceptive and condom use for college-age men and women.

Conflicting results exist in the literature regarding the efficacy of perceived risk when assessing high-risk sexual behavior (see Montgomery et al., 1989, for a review). For example, perceived risk has been shown not to predict safer sex behaviors in college students (Redding, 1993). Findings such as these have led some researchers (Brown, DiClemente, & Reynolds, 1991) to go so far as to say that perceived risk (as well as other variables from the health belief model framework) do not fit well with the HIV epidemic.

Another construct, sexual abuse, has been shown to be a strong predictor of unsafe sexual activities in the general population. In a community sample, Zierler et al. (1990) found that individuals who had experienced childhood sexual abuse reported more frequent sexual contact with casual partners, and were two times more likely to have multiple partners on an average yearly basis as compared with those

reporting no history of abuse. Previous sexual victimization has also been shown to lead to problems in current sexual relationships for women (Quina & Carlson, 1989). Others who have experienced sexual abuse and rape may be apprehensive about going for family planning services which they believe might cause them physical or emotional pain (Armstrong, Kenen, & Samost, 1991).

Both perceived risk and sexual abuse were related to the stages of change in the present paper in order to examine their relationship to contraceptive and condom use adoption.

Method

Participants

Characteristics of the sample ($N = 248$) and recruitment procedures are described in detail In Parts 3 & 4 of this text. The mean age was 18.88 and ranged from 18 to 26. The majority were female (62.5%), catholic (70.0%), and almost all were caucasin (94.7%).

Measures

Perceived Risk: Three seperate items were developed to establish an individual's perceived risk for STDs, AIDS, and pregnancy. Participants were asked: (1) "What are your chances of getting STDs such as Herpes, gonorrhea, chlamydia, or genital warts?"; (2) "What are your chances of getting AIDS?"; and (3) "What are your chances that a pregnancy might occur in one of your relationships?". A seven-point scale, ranging from "1 = not possible" to "7 = almost certain" was utilized.

Sexual Abuse: Three items were developed to assess childhood and adult sexual abuse: (1) "As a child, did anyone ever touch you in a way that you felt was sexually inappropriate?"; (2) "As a young adult, has anyone ever pressured you to have sex when you really did not want to?"; and (3) "As a young adult, has anyone ever physically forced you to have sex when you did not want to." Response options ranged from "1 = No" to "5 = Yes, more than 3 times."

Stages of Change: Three separate staging algorithms were employed to assess an individual's readiness for using birth control and/or condoms with main and other partners. The algorithms were developed using women at risk for HIV infection or transmission in a multisite research project funded by the Centers of Disease Control and Prevention (Galavotti et al., 1993; Grimley et al., 1992).

Results

Perceived Risk: The means and the standard deviations for perceived risk are given in Table 7-1. The results indicated that college students perceive themselves to be at greatest risk for pregnancy ($\underline{M} = 2.68$) as compared with STDS or AIDS ($\underline{M} = 2.56$ and $\underline{M} = 2.53$, respectively). The raw scores for perceived risk were converted to T-scores ($\underline{M} = 50$, $\underline{SD} = 10$) and integrated with their corresponding stages of change algorithms. The results found significant differences for general birth control use ($p = .0001$). Follow-up Tukey tests detected significant differences for individuals in the precontemplation stage as compared to those in action and maintenance; contemplators had significantly lower mean scores than those found in the maintenance stage for general contraceptive use. Graphic representation of

perceived risk for pregnancy across the stages of general birth control use is displayed in Figure 7-1. No differences were found for perceived risk for STDs or AIDS across the stages of condom use with either main or other partners.

Insert Table 7-1 about here

Insert Figure 7-1 about here

Sexual Abuse: Frequency of abuse was fairly low in the current sample, but clearly present. Thirteen percent ($n = 31$) reported sexual abuse as a child, 32.4% ($n = 80$) had been pressured as a young adult to have sex when they did not want to, and 8.9% ($n = 22$) reported being raped. Not surprisingly, women reported more sexual abuse than men both as children and as young adults.

Indiviudals who reported previous sexual abuse were teased out and compared across the stages with the rest of the sample for the three contraceptive behaviors. Since some of the cell sizes for abuse were small (e.g., less than 5 cases) chi-square analyses could not be calulated. However, Table 7-2 presents that percentages of abused indiviuals in the five stages of change for birth control and condom use with the two types of partners, as compared with those who did not report abuse. Interestingly, the findings indicated that, in general, there were fewer precontemplators and more maintainers among the abused group for the separate

target behaviors.

Insert Table 7-2 about here

Discussion

The present study examined perceived risk and sexual abuse to determine their relationship to contraceptive and condom use among college men and women. The results indicated that individuals from this population perceived themselves to be at risk for pregnancy, but see themselves at lower risk for STDs and AIDS. Perception of risk for diseases was not statistically significant across the stages of change for condom use with main and other partners, suggesting that the use of such a variable with the current population may not be too useful. Other researchers (e.g., Weisse et al., 1990) have argued that when applied to AIDS prevention, any and/or all variables from the health belief model, call for consideration of issues specific both to AIDS prevention and to components of the model. Issues of vulnerability to AIDS will be very different depending upon which population is being addressed. Gay men have some perception of their vulnerability to AIDS, which may lead them to the increased adoption of less risky sexual behaviors (Weisse et al., 1990). College students, on the other hand, may see their susceptibility to AIDS as being very low and may be more resistant to risk-reduction efforts. It is essential, therefore, that intervention strategies be tailored toward specific groups at risk for HIV/AIDS.

Incidence of childhood sexual abuse was low in the present sample. This finding was expected since many individuals who have experienced such a traumatic event never make it to a college setting. Survivors of early sexual abuse who escape the more common route of teen-age pregnancy (with subsequent dropping out of school) and drug abuse appear to have some special aspects to their personality. Admittedly, the current survey did not differentiate between abuse by a family member from abuse by a stranger, which could have different effects on the findings. Also, as with perceived risk, a global item was employed to determine each type of abuse, which may not be sensitive enough to capture the essence of each construct. However, the results indicated that survivors of sexual abuse were not putting themselves at any greater risk by being in the earlier stages of adoption for contraceptive and condom use. In fact, less were in the precontemplation stage and more were in the maintenance stage of change, although perhaps not significant in statistical sense, for the three contraceptive behaviors.

In conclusion, the overall results suggest that perceived risk, when applied to STDs and AIDS, may be a useful variable to consider when addressing the sexual behavior of alternative populations, but not for college men and women. Alternatively, college-age individuals may be minimizing their chances for exposure to diseases.

A history of sexual abuse also appears to be a poor predictor of current sexual behavior for this population. However, investigations using different populations such as drug treatment facilities, family planning centers, and other institutions within the

general population would be advised to assess for sexual victimization. Health care providers within such settings must be able to deal with issues related to self-esteem, sexual violence, communication, and risk reduction, yet few do. For example, Moore and Fleming (1989) reported that 98% of women undergoing drug treatment described sex-related problems, but 86% claimed that their counselors never addressed sexuality or sexual concerns. In other words, each population has its own set of relevant issues that need to be considered.

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Table 7-1

Means and Standard Deviations for Perceived Risk for Pregnancy, STDS, and AIDS

Behavioral Risk	<u>M</u>	<u>SD</u>
Pregnancy	2.68	1.21
STDS	2.56	1.19
AIDS	2.53	1.05

Note: All scales ranged from 1 to 7. Higher scores indicate higher perceived risk.

Table 7-2

Percentages of Individuals in the Five Stages of Change for Using Contraceptives and Condoms for Abused vs Nonabused

	Stage of Adoption				
	PC	C	P	A	M
Type of Abuse					
Method					
Childhood					
Birth Control					
ABUSED	3.2	19.4	25.8	9.7	41.9
NO ABUSE	6.5	11.7	32.7	12.1	36.9
Condom - Main					
ABUSED	33.3	20.0	13.3	6.7	26.7
NO ABUSE	33.3	11.1	26.5	13.7	15.4
Condom - Other					
ABUSED	12.5	25.0	12.5	25.0	25.0
NO ABUSE	13.9	15.3	22.2	19.4	29.2
Pressured Sex					
Birth Control					
ABUSED	1.2	8.5	39.0	8.5	45.7
NO ABUSE	8.5	15.2	28.0	13.4	34.8
Condom - Main					
ABUSED	34.1	6.8	27.3	13.6	18.2
NO ABUSE	32.6	15.4	23.6	12.4	15.7

Table 7-2 continues

Table 7-2 (cont.)

Type of Abuse	PC	C	Stage of Adoption		
			P	A	M
Method					
Condom - Other					
ABUSED	12.5	12.5	8.3	29.2	37.5
NO ABUSE	14.0	17.5	26.3	17.5	24.6
Rape					
Birth Control					
ABUSED	0.0	4.8	38.1	00.0	57.1
NO ABUSE	6.7	13.4	31.2	12.9	35.7
Condom - Main					
ABUSED	33.3	8.3	33.3	8.3	16.7
NO ABUSE	33.3	12.5	24.2	13.3	16.7
Condom - Other					
ABUSED	12.5	25.0	12.5	12.5	37.5
NO ABUSE	13.9	15.3	22.2	20.8	27.8

Note: For Childhood Abuse: Birth Control, $\underline{n}$ = 31 No Abuse, $\underline{n}$ = 214; Condom - Main, $\underline{n}$ = 15, No Abuse, $\underline{n}$ = 117; Condom - Other, $\underline{n}$ = 8, No Abuse, 72. For Pressured Sex: Birth Control, $\underline{n}$ = 82, No Abuse, $\underline{n}$ = 164; Condom - Main, $\underline{n}$ = 44; No Abuse, $\underline{n}$ = 89; Condom - Other, $\underline{n}$ = 24; No Abuse, $\underline{n}$ = 57; Rape: Birth Control, $\underline{n}$ = 21, No Abuse, $\underline{n}$ = 224; Condom - Main, $\underline{n}$ = 12; No Abuse, $\underline{n}$ = 120; and Condom - Other, $\underline{n}$ = 8, No Abuse, $\underline{n}$ = 72.

Figure Captions

Figure 7-1. Perceived risk for pregnancy (T-score means) across the five stages (PC = precontemplation, C = contemplation, P = preparation, A = action and M = maintenance) of adoption for general contraceptive use.

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Perceived Risk for Pregnancy

Part 8

Abstract

Two samples were compared on contraceptive and condom use behavior. The CDC sample ($N = 238$) involved women at risk for HIV transmission or infection. The cross-validation study involved a second, independent sample comprised of college-age men and women ($N = 248$). All measures developed based on the major constructs from the Transtheoretical Model of Behavior Change - stages of change, decisional balance, self-efficacy, and processes of change - were utilized. Although the measures cross-validated, some differences in attitudes and behaviors between the two samples emerged and are discussed. Recommendations for future assessment and intervention studies are delineated.

Contraceptive and Condom Use Behavior:

Comparison of the CDC and University Samples

The purpose of this paper was to examine some of the overall findings from the CDC measurement study and the cross-validation study that involved a second, independent sample. The measurement study consisted of women at high risk for reproductive health problems, whereas the second sample was comprised of both men and women college students. Since such very different populations have been utilized throughout this program of research, it seemed interesting to examine some of the similarities and/or differences in contraceptive and condom use behavior that emerged. Data from the pilot study are not utilized because different assessment instruments were employed.

Method

CDC Sample

Procedure

Women were recruited from such diverse settings as homeless shelters, addiction treatment facilities, and prison located in several cities in the United States including San Francisco, Portland, Oakland, Pittsburgh, and two sites in the Philadelphia area. These seven sites are participating in a multisite research demonstration project to prevent the spread of HIV in women and infants. An anonymous survey was administered using an interview format. Participation was voluntary and women were monetarily compensated for completing the questionnaire.

A convenience sample of 304 impoverished women at risk for HIV infection or transmission were initially screened to participate in the measurement study funded by the Divisions of Reproductive Health and the STD/HIV Prevention of the Centers for Disease Control and Prevention. Based on eligibility criteria explained elsewhere (Grimley et al., 1992), $N = 238$ had data available on most measures.

The mean age was 28 years and ranged from 15 to 46. The majority of the sample (70.2%) were African-American. Eighty percent currently had a main partner and 43% had vaginal intercourse with a man other than a primary partner within the last six months.

College Sample

Procedure

Men and women were recruited from psychology classes at a northeastern university. Each participant was asked to complete an anonymous questionnaire which took about 30-45 minutes to complete. Students were given partial credit toward their course requirements by their individual instructors for filling out the survey.

Approximately 550 individuals were offered the opportunity to participate in the investigation and 303 volunteered to be assessed. Only data from single, heterosexually active individuals were analyzed, leaving a final sample size of $N = 248$. The majority were female (62.5%). The mean age was 18.88 and ranged from 18 to 26. Almost all (94.7%) were caucasian. Sixty-five percent reported having a main partner and 22.4% of these same individuals had vaginal intercourse with

someone in addition to their steady partner.

Measures

Comparisons of the two samples were based on measures representing the major constructs from the Transtheoretical Model (Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992). The following measures were employed:

Stages of Change: Three four-item algorithms were utilized to determine an individual's readiness of change for contraceptive use, condom use with main partners, and condom use with other partners. The action criterion of using methods "almost every time/every time" was used with the CDC sample, whereas using contraceptives and condoms "every time" was the criterion implemented with the college sample.

In addition, three different criteria were examined for the preparation stage of change for using contraceptives and condoms: (1) intention only, (2) intention + currently using condoms at least "sometimes," and (3) intention + currently using condoms "almost always."

Decisional Balance: Three ten-item scales representing the Pros (five items) and the Cons (five items) of using contraceptives in general, and for using condoms with main and other partners;

Self-Efficacy: Three five-item scales assessing an individual's confidence for using contraceptives in general, and for using condoms with the two types of partners.

Processes of Change of Condom Use: A 28-item version of the processes of change was developed with the CDC sample. This earlier version, plus several new additional items (40 in total) were examined with the college-age sample. The processes of contraceptive use measure was developed using the college sample only, so no comparisons are available.

Results

Stages of Change

Table 8-1 presents the stage distributions for the three separate contraceptive behaviors for the two samples. The behavioral criterion for the preparation stage of "almost always" was chosen as the best representation of this stage to date. This decision was based on the rationale that a more stringent criterion is warranted and because the results appeared similar to those found with other health-related behaviors. A comparison of the three different criteria are presented in Table 8-2 and will be discussed further later.

The findings in Table 8-1 clearly demonstrates that for both samples, individuals were further along in the stages of change for using contraceptives in general, followed by condom use with other partners, and, finally, condom use with main partners. These findings suggest that a similar intervention strategy could be employed with both populations, targeting birth control use first because individuals appear least resistant to such change. Next, condom use with other partners could be targeted. One optimistic speculation is that once individuals start using condoms "every time" with casual partners they may become better prepared to use condoms

with their primary partners. However, the dynamics of such important intimate relationships cannot be underestimated.

Although fairly comparable percentages of individuals from both samples were in the maintenance stage of adoption, there were fewer precontemplators in the college group, as well as more preparation and action people, suggesting that this college population was further along in the stages of change for using birth control and condoms than was the CDC sample.

Insert Tables 8-1 to 8-2 about here

Table 8-2 shows all three contraceptive behaviors using the different preparation stage criteria. These results demonstrate that the use of intention alone to define this stage classified many more individuals into the preparation stage prematurely. Although the findings associated with the notion of using condoms currently at least "sometimes" appeared better, the behavioral criterion of using condoms "almost always" was more sensitive, despite the fact that it could be interpreted by some researchers as being too stringent a criterion. However, the choice of the more conservative criterion was based on the rationale that it would be a mistake to move people too quickly through the stages. If individuals are not adequately prepared to use contraceptives and condoms, their risk for relapse may increase. It should be noted, however, that the CDC has settled on the behavioral criterion of using contraceptives/condoms at least "sometimes" for the preparation

stage in their research. A manuscript demonstrating the CDC's rationale is currently under review for publication (Galavotti, 1993, personal communication).

Crosstabulations of PILL X CONDOM

Tables 8-3a and 8-3b display the percentages of individuals using the pill as their (or their partner's) main method of birth control and their readiness for using condoms for disease prevntion for the two samples. The results indicated that half (50%) of the high risk women with a main partner were in the precontemplation stage for using condoms every time when having vaginal sex, as compared with over two-thirds (66.67%) of the college students. Over one-third of the CDC sample were in the action or maintenace stage for using both the pill and condoms, whereas only 11% of the college students reported using both methods with their primary partners.

With other partners the situation was striking different. Admittedly, sample sizes were small (CDC, $\underline{n}$ =9, COLLEGE, $\underline{n}$ = 7), nearly three-quarters (71.43%) of the college sample used both the pill for pregnancy protection and condoms for disease protection when engaging in intercourse with other partners. Less than one-half of the CDC sample (44.44%) used both methods for protection with casual partners. These findings demonstrate that college students perceive themselves to be at low risk for diseases with their main partners as compared with other partners.

Insert Tables 8-3a and 8-3b about here

Decisional Balance

Item means, standard deviations, and reliability estimates using coefficient Alpha for the pros and cons of the three target behaviors are given in Table 8-4. Generally speaking, the pro and cons scores are comparable across the two samples, with the exception being the cons of contraceptive use. At least three items appear to have little meaning for the college sample - contraceptives "cost too much", their use is "against beliefs", and using contraception is "too much trouble." Reliability coefficients for all subscales were lower with the college sample as well.

For general contraceptive use, the highest reported pro for women at risk was not having to deal with the results of a pregnancy ($\bar{M} = 4.27$), followed closely by safety from pregnancy ($\bar{M} = 4.23$). With college students, two of the pro items had nearly identical mean scores for using birth control: "My partner would not have to worry about me becoming pregnant" ($\bar{M} = 4.60$), and "I would not have to deal with the results of a pregnancy" ($\bar{M} = 4.59$). The biggest disadvantage of using contraceptives for both samples was, "It can make sex seem unnatural."

The highest pro for using condoms with main partners endorsed by the CDC sample was protection from diseases; for college men and women it was protection from pregnancy. When using condoms with someone other than a main partner, both samples reported that protection from diseases was the strongest advantage.

Finally, for the cons of condom use, both samples agreed that the biggest disadvantage of using condoms with both types of partners was having to rely on a partner's cooperation.

In conclusion, the CDC sample and the college sample shared more similarities than differences on the pros and cons for using birth control and condoms. Two obvious exceptions for the pros involved college students wanting to protect their partners from anxiety over unplanned pregnancies and their focus on pregnancy protection when using condoms with primary partners. Interestingly, college students reported higher mean con scores than the CDC sample for having to rely on a partner's cooperation for using condoms, particularly with main partners. Overall, reliance on a partner's compliance for using condoms seems to be a potential barrier of condom use for both populations.

Insert Table 8-4 about here

Self-Efficacy

Table 8-5 displays the item means, standard deviations, and reliability coefficients for the three confidence measures. Alpha coefficients for self-efficacy for using birth control and condoms were comparable for the two samples.

The results point out that women in the CDC sample reported lower confidence for using contraceptives, in general, if they experienced side effects. College men and women, on the other hand, reported lower levels of confidence for using contraceptives if they had been using alcohol or other drugs.

In both samples, individuals reported lower confidence for using condoms with a main partner as compared to casual partners. In the CDC sample, confidence levels

were the lowest for using condoms with both types of partners if women thought that their partners might get angry. College students rated confidence for using condoms with both main and other partners to be the lowest if they were already using another method of birth control.

Insert Table 8-5 about here

These results point out that confidence for using condoms for the high risk sample is related to a given partner's negative reaction, whereas using another method of birth control may weaken confidence levels for individuals in the college-age sample. These findings suggest that different intervention strategies may need to be stressed for the two samples. For example, women in the CDC sample may need to become more aware of the real need to protect themselves and their health in sexual encounters. College students, on the other hand, may need to become more aware of the need to protect themselves from diseases when using methods other than the condom for birth control.

Processes of Change for Condom Use

Galavotti et al. (1992) initially developed 40-items to assess process use for using condoms. A few additional items were generated and tested in the CDC study, bringing the total number to forty-six. The results from the measurement study indicated that 28 items fared well.

The cross-validated study using college men and women utilized the original 28-item scale. Several new items were added in order to have at least four items per process resulting in a 40-item measure. In the final analysis, a 34-item measure of the processes of change for condom use was retained, maintaining all previously validated items from the measurement study with the exception of one stimulus control item.

Participants in both samples were asked to rate how frequently each item was used or experienced within the past month. Each response was recorded on a five-point Likert scale ranging from "1 = Never" to "5 = Repeatedly."

The means, standard deviations, and reliability coefficients for each of the ten processes of change for condom use subscales are given in Table 8-6. In general the mean process scores are higher than those found with smoking behavior. Process mean scores were fairly comparable across the two samples, with the most dramatic differences occurring for counterconditioning and stimulus control.

Insert Table 8-6 about here

Discussion

The results from this program of study utilizing alternative populations indicate that the Transtheoretical Model provides a useful framework for examining contraceptive and condom use behavior. The model was successfully applied to women in homeless shelters, drug treatment facilities, women in prison, and college-

age men and women.

Although college students were further along in the stages of readiness for using contraceptives and/or condoms with main and other partners, the pattern of use was strikingly similar. In both samples individuals were least resistant to using contraceptives, followed by condom use with other partners, and finally, condom use with main partners. These findings suggest that similar intervention strategies could be applied when targeting contraceptive and/or condom use behavior. Also, the results suggest that when it comes to using condoms in important sexual relationships, individuals may be less concerned about risk and more concerned with relationship issues. For example, many women in the CDC sample reported that their main partners were currently using intravenous drugs, or had used them in the past five years. Despite the fact that over 20% of the college students with a main partner reported engaging in vaginal intercourse with another partner since the beginning of their relationship, they perceived the status of "main partner" as being relatively safe. This statement is supported by the findings that both samples reported using two methods (e.g., pill and condoms) more often when engaging in intercourse with casual partners, as compared with more important sexual partners. An individual's perceived level of risk for STDs may be overshadowed by such basic human needs as the need to be accepted and loved by a significant other or, perhaps, survival needs, particularly for the impoverished women in the CDC sample. Although the Transtheoretical Model assesses the pros and cons in order to tap some of these attitudes, interventions that conduct "values clarification" or a "needs assessment" for

individuals might allow for better application/effectiveness of the model's intervention strategies.

College men and women were more concerned about their partners worrying about unintended pregnancies. Both rated protection from pregnancy (and its consequences) as the strongest advantages of using contraceptives. Both samples agreed that the biggest con of using birth control was that it can make sex feel unnatural.

Differences emerged for the pros of condom use with main partners. The CDC sample reported protection from diseases as being the strongest pro; college students reported protection from pregnancy as the biggest advantage of using condoms in primary relationships. These findings suggest that the two samples have fundamentally different attitudes about condom use with main partners. Although one might speculate that college students are not at serious risk for STDs and AIDS when compared with the CDC sample, the data clearly indicate that college men and women do not perceive themselves at high risk for diseases within primary relationships. In contrast, when engaging in vaginal sex with other partners, both samples reported the number one advantage of using condoms was protection from diseases.

Having to rely on a partner's cooperation for using condoms was reported as the major con of condom use with the two types of partners in both populations.

Some obvious differences were found for confidence in specific sexual situations. Women in the CDC sample reported the lowest level of confidence for using birth control if they experienced side effects. College students, on the other

hand, reported lowest confidence for contraceptive use if they had been using alcohol or other drugs. College men and women reported that they used condoms, although not consistently, as their main method of birth control, perhaps explaining why side effects may not be a major concern and alcohol/drug use might be associated with lower efficacy for birth control use.

When using condoms with both types of partners, women in the CDC sample reported the least confidence if their partner became upset about it. In contrast, college men and women said they were the least confident using condoms if they were already using another method of birth control.

Although the mean scores for the processes of change for condom use were unusually high as compared with those found for smoking behavior, no dramatic differences in terms of process use were found, with the exceptions of counterconditioning and stimulus control. College men and women reported using substitute behaviors for vaginal intercourse if condoms were not available, or otherwise not an option, more often than the CDC sample. Women in the CDC sample carried condoms with them and kept condoms where they stayed more often than college men and women. An argument could be made that condoms are less of a necessity for the college men and women who are able to counter their risks from unprotected vaginal intercourse by engaging in other sexual activities such as oral sex, or mutual masturbation. In any case, having a condom with you is a necessary precondition to condom use, yet it was the lowest mean subscale for college students and the next to lowest (counterconditioning was the lowest) for high-risk women.

Recommendations for Future Studies

Based on the findings from this program of research on contraceptive and condom use with different populations, several recommendations for future investigations are made:

(1) When determining an individual's stage of change, algorithms comprised of the current seven-point intention scale could be replaced with a simple "yes" or "no" response. An extensive investigation of the algorithms' intention scale resulted in this type of breakdown (Galavotti, 1993, personal communication).

(2) Although the behavioral criterion of using contraceptives and/or condoms "almost always" fared well in the present study, future investigations might explore this issue further. One possible approach may be to include an additional item assessing frequency of use within, say, the last ten sexual encounters, as a secondary outcome measure. Such action might allow for some comparisons between responses. Admittedly, determining cut-off categories for the use of contraceptives and/or condoms either "sometimes" or "almost always" based on frequency of use (e.g., the last 10 times) could be considered somewhat arbitrary, it may be helpful by providing some validity for the current findings.

(3) One concern regarding the pros of using contraceptives and, particularly condom use, is that protection from pregnancy and/or diseases does not appear to be enough of an incentive to motivate some individuals to engage in their use. In order to increase the pros of making a healthy behavior change one standard deviation before a person in the precontemplation stage takes action (Prochaska, 1994), requires

stressing more about the advantages of their use. When it comes to specific methods of birth control, for example the pill, a case could be made for the potential of certain health benefits from its use, such as protection from some forms of cancer; Norplant gives you protection for five years and its use does not interrupt sex; Depro-Provera contains no estrogen and lasts for three months, etc. What advantage in addition to "safety" can be stressed for using condoms other than, perhaps, minimal side effects as compared to other methods and, possibly, sustaining an erection? It is difficult to outweigh the cons of using condoms. The pros of condom use are up against powerful disincentives such as a partner's disapproval and decreased sexual pleasure. Furthermore, the cons of condom use do not decrease over time for individuals in the action or maintenance stage suggesting that the risk of relapse remains high. These findings point out the apparent challenges that exist for interventions designed to increase condom use in high risk samples.

(4) Studies examining confidence for using condoms might include items that examine introducing the notion of condom use in an ongoing sexual relationship, as opposed to the start of a new sexual relationship. Different dynamics come into play in such sexual situations, all of which can weaken an individual's level of confidence.

(5) Studies examining condom use should assess this behavior with the different types of partners. Recent studies (e.g., Goldman & Harlow, 1993; Redding, 1993; Sacco et al., 1993) have reported gender differences for general condom use that were found not to be stable when the examination included main vs other partners (see Part 5). A more sensitive assessment involves including both types of partners.

This research has demonstrated that similar to previous studies, women were found to perceive the pros of condom use as being higher than the cons with main partners. Yet, in contrast to other studies, no gender differences emerged for the pros and cons of condom use with casual partners suggesting that men and women share similar attitudes in such sexual situations. Again, as in previous studies, women felt more efficacious regarding condoms and asserting their use with other partners, but no gender differences were found for condom use efficacy or assertiveness within primary relationships. These gender differences across partner type are extremely important, as well as informative. Therefore, recommendations for interventions that stress gender differences should also emphasize partner type.

(6) Building on the fifth recommendation, future studies might consider assessing individuals on the processes of change for condom use separately with different types of partners, as opposed to process use in general. Since it is clear that condom use has to be modeled separately with the two types of partners, and that individuals are further along in the stages of change for using condoms with other partners as compared with primary partners, it would be expected that different degrees of process use would also come into play. Such differences may hold significance for interventions designed to increase condom use with a given partner based on the type of relationship.

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Table 8-1

Stages of Change for Using Contraceptives and Condoms with Main and Other Partners

Sample	Stage of Change					
	Method	PC	C	P	A	M
<hr/>						
Gen. Contraceptive						
CDC		23.6	20.2	18.0	3.4	34.8
College		6.1	12.7	31.8	11.8	37.6
Condom - Other						
CDC		26.2	29.5	8.2	9.0	27.0
College		13.8	16.3	21.3	20.0	28.8
Condom - Main						
CDC		45.6	21.1	5.5	7.2	20.7
College		33.3	3.8	33.3	12.9	16.7

Table 8-2

CDC 1992 Staging Algorithms

Method					
Behavioral Criterion	Stage of Adoption				
	PC	C	P	A	M
Gen. Contraceptive					
Intention Only	23.6	8.2	30.0	3.4	34.8
Sometimes/Almost Always	23.6	14.2	24.0	3.4	34.8
Almost Always	23.6	20.2	18.0	3.4	34.8
Condom - Main					
Intention Only	45.6	7.6	19.0	7.2	20.7
Sometimes/Almost Always	45.6	11.4	15.2	7.2	20.7
Almost Always	45.6	21.1	5.5	7.2	20.7
Condom - Other					
Intention Only	26.2	5.7	32.0	9.0	27.0
Sometimes/Almost Always	26.2	12.3	25.4	9.0	27.0
Almost Always	26.2	29.5	8.2	9.0	27.0

Table 8-2 continues

Table 8-2 (continued)

College Students 1993 Staging Algorithms

Method					
Behavioral Criterion	Stage of Adoption				
	PC	C	P	A	M
Gen. Contraceptive					
Intention Only	6.1	2.0	42.4	11.8	37.6
Sometimes/Almost Always	6.1	6.1	38.4	11.8	37.6
Almost Always	6.1	12.7	31.8	11.8	37.6
Condom - Main					
Intention Only	33.3	3.8	33.3	12.9	16.7
Sometimes/Almost Always	33.3	7.6	29.5	12.9	16.7
Almost Always	33.3	12.1	25.0	12.9	16.7
Condom - Other					
Intention Only	13.8	2.5	35.0	20.0	28.8
Sometimes/Almost Always	13.8	10.0	27.5	20.0	28.8
Almost Always	13.8	16.3	21.3	20.0	28.8

Table 8-3a

Crosstabulations of the Stages of Action/Maintenance for Pill use by Condom use with Main Partners

CDC Sample						
PILL	CONDOM-MAIN					
	PC	C	P	A	M	Total
A/M	16	1	4	1	10	32
	50.0	3.13	12.50	3.13	31.25	
College Sample						
	12	2	2	1	1	18
	66.67	11.11	11.11	5.56	5.56	

Table 8-3b

Crosstabulations of the Stages of Action/Maintenance for Pill use by Condom use with Other Partners

CDC Sample						
PILL	CONDOM-OTHER					
	PC	C	P	A	M	Total
A/M	1	1	3	0	4	9
	11.11	11.11	33.33	0.00	44.44	
College Sample						
	0	2	0	3	2	7
	0.00	28.57	0.00	42.86	28.57	

Table 8-4

The Pros and Cons of Contraceptive and Condom Use: A comparison of the CDC and College-age Samples

Method	CDC		College	
Item	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
GENERAL CONTRACEPTIVE USE				
Pros	Alpha = .86		Alpha = .77	
1. I would be safer from pregnancy.	4.23	(1.23)	4.12	(.65)
2. I would feel more responsible.	4.15	(1.20)	4.20	(1.21)
3. I would not have to deal with the results of a pregnancy.	4.27	(1.23)	4.59	(1.01)
4. I would be free to have sex without worrying about getting pregnant.	4.19	(1.30)	4.30	(1.89)
5. My partner would not have to worry about me becoming pregnant.	3.74	(1.51)	4.60	(.93)
Cons	Alpha = .81		Alpha = .80	
1. Birth control methods can make sex feel unnatural.	2.81	(1.55)	2.39	(1.30)
2. It would be too much trouble.	2.51	(1.51)	1.69	(1.18)
3. It would cost too much.	2.51	(1.61)	1.69	(1.10)
4. It is against my beliefs.	2.17	(1.61)	1.66	(1.23)
5. Sex would be less exciting.	2.49	(1.59)	2.27	(1.30)
CONDOM - MAIN				
Pros	Alpha = .93		Alpha = .75	
1. I would be safer from diseases.	4.37	(1.23)	4.49	(1.06)
2. I would feel more responsible.	4.08	(1.36)	4.17	(1.12)
3. It protects my partner as well as myself.	4.35	(1.27)	4.50	(.91)
4. I would be safer from pregnancy.	4.16	(1.40)	4.69	(.79)
5. It is easily available.	4.22	(1.27)	4.27	(1.11)

Table 8-4 continues

Table 8-4 (continued)

Method	CDC		College	
Item	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Cons	Alpha = .83		Alpha = .78	
1. It makes sex feel unnatural.	2.63	(1.62)	2.55	(1.38)
2. It would be too much trouble.	2.14	(1.55)	2.14	(1.31)
3. My partner would get angry.	2.36	(1.60)	2.00	(1.30)
4. I would have to rely on my partner's cooperation.	2.74	(1.70)	3.31	(1.46)
5. My partner would think that I do not trust him (her).	2.59	(1.69)	2.10	(1.22)
CONDOM - OTHER				
Pros	Alpha = .82		Alpha = .78	
1. I would be safer from diseases.	4.64	(.86)	4.80	(.56)
2. I would feel more responsible.	4.34	(1.16)	4.29	(1.01)
3. It protects my partner as well as myself.	4.54	(.98)	4.52	(1.00)
4. I would be safer from pregnancy.	4.40	(1.17)	4.64	(.86)
5. It is easily available.	4.32	(1.23)	4.29	(1.08)
Cons	Alpha = .87		Alpha = .78	
1. It makes sex feel unnatural.	2.33	(1.55)	2.33	(1.31)
2. It would be too much trouble.	2.21	(1.46)	1.98	(1.29)
3. My partner would get angry.	2.22	(1.52)	2.51	(1.38)
4. I would have to rely on my partner's cooperation.	2.62	(1.58)	2.90	(1.45)
5. My partner would think that I "play around."	2.34	(1.62)	2.41	(1.48)

Note: All scales ranged from 1-5.

Table 8-5

Item Means, Standard Deviations, and Alpha Coefficients for the Measures of Self-Efficacy for Contraceptive and Condom Use

Method	CDC		College	
Item	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
GENERAL CONTRACEPTIVE USE	Alpha = .84		Alpha = .89	
1. When a method of birth control is not on hand.	3.04	(1.62)	3.46	(1.36)
2. When you had been using alcohol or other drugs.	3.04	(1.74)	3.33	(1.30)
3. When your partner gets upset about it.	3.35	(1.63)	3.56	(1.28)
4. When you (or your partner) feel side effects.	2.51	(1.63)	3.56	(1.28)
5. When it is too much trouble.	3.02	(1.63)	3.63	(1.32)
CONDOM - MAIN	Alpha = .88		Alpha = .89	
1. When you have been using alcohol or other drugs.	2.88	(1.71)	3.23	(1.44)
2. When you are sexually aroused.	3.04	(1.66)	3.47	(1.45)
3. When you think your partner might get angry.	2.83	(1.68)	3.75	(1.36)
4. When you are already using another method of birth control.	2.94	(1.66)	2.51	(1.48)
5. When you want your partner to know you are committed to your relationship.	3.24	(1.70)	3.72	(1.46)
CONDOM - OTHER	Alpha = .87		Alpha = .82	
1. When you think the risk of disease is low.	4.15	(1.30)	3.91	(1.27)
2. When you have been using alcohol or other drugs.	3.72	(1.51)	3.55	(1.25)

(Table 8-5 continues)

Table 8-5 (continued)

3. When you think your partner might get angry.	2.83	(1.68)	3.71	(1.27)
4. When you are already using another method of birth control.	3.68	(1.52)	3.24	(1.44)
5. When you are sexually aroused.	3.61	(1.50)	3.75	(1.30)

Note: All scales ranged from 1-5. Lower scores indicate less confidence.

Table 8-6
Processes of Change for Condom Use

Process	Sample	# of items	<u>M</u>	<u>SD</u>	Alpha
Consciousness Raising					
	CDC	3	4.30	0.88	.76
	College	3	4.35	0.76	.76
Counterconditioning					
	CDC	2	2.91	1.40	.66
	College	4	3.65	1.03	.81
Dramatic Relief					
	CDC	3	4.23	0.91	.73
	College	3	4.22	0.77	.75
Environmental Reevaluation					
	CDC	3	4.27	0.92	.74
	College	4	4.25	0.82	.81
Helping Relations					
	CDC	3	3.91	1.18	.78
	College	4	4.10	0.94	.86
Reinforcement Management					
	CDC	2	3.65	1.34	.73
	College	3	3.91	0.94	.72
Self Liberation					
	CDC	3	4.09	1.10	.78
	College	4	3.94	0.96	.77
Self Reevaluation					
	CDC	3	4.10	1.10	.78
	College	4	4.08	0.93	.82
Social Liberation					
	CDC	3	4.01	0.99	.61
	College	4	4.21	0.78	.78
Stimulus Control					
	CDC	3	3.47	1.34	.77
	College	2	2.83	1.34	.75

Note: All scales ranged from 1-5.

Part 9

Overview of the Major Findings

Overview of the Major Findings

In summarizing this dissertation, I conclude by listing the major findings from the three independent studies:

- * The behaviors of pregnancy prevention and disease prevention need to be represented by two separate constructs
- * A general measure of birth control can be employed when examining hormonal methods of contraception
- * Condom use needs to be modeled separately with main and secondary partners
- * Individuals were further along in the stages of change for pregnancy prevention as compared with those with disease prevention
- * Individuals were further along in the stages of change when using condoms with other partners, as compared with their main partners
- * Counseling individuals on the need for condom use when recommending alternative methods of birth control is warranted
- * Individuals in the precontemplation stage of change have lower pros scores for using contraceptives and condoms as compared with the other stages of change; the opposite is true for those in the maintenance stage
- * College students have a fundamentally different attitude regarding the use of condoms with their main partners (i.e., pregnancy prevention), as compared to casual partners
- * Self-efficacy is the lowest for individuals in the precontemplation stage and continues to rise with further movement through the stages

- * Individuals report lower confidence for using condoms with main partners, as compared with casual partners
- * High risk women report lowest confidence for using condoms if their partner becomes angry; college men and women have the least confidence for using condoms if they are already using another method of birth control
- * The construct of sexual assertiveness adds to our understanding of condom use and should be included in the model when examining condom use
- * Women perceive the advantages of using birth control and condoms as being higher than the cons; men evaluated the cons as being higher. Yet, no sex differences were found for the pros and cons for using condoms with casual partners, suggesting that men and women have similar attitudes regarding condom use in such situations
- * Women reported higher confidence and assertiveness for using birth control in general and for using condoms with casual partner as compared with men; no sex differences were found with confidence or assertiveness when using contraceptives/condoms with a main partner suggesting that such relationship issues as trust, commitment, and fidelity come into play for both sexes
- * The experiential processes of change for birth control and condom use were shown to peak in the preparation stage, whereas some of the behavioral processes continued to climb into the maintenance stage
- * Sex differences were found with the processes of change; the only process used more frequently with men was stimulus control (e.g., carrying condoms)

Appendix A

Decision-Making and Contraceptive Use

1. What is your sexual orientation?

- (1) Asexual
- (2) Bisexual
- (3) Lesbian
- ☒ (4) Heterosexual
- (5) Homosexual

4. The information I have gained about contraception has been mainly from:

- (1) Discussions with a parent or guardian
- ☒ (2) Friends/acquaintances
- (3) School (e.g., sex education class)
- (4) Church or religious group
- (5) Books/magazines/TV/movies

5. I engage in only safer-sex practices, such as abstinence, body-rubs/masturbation, or vaginal intercourse with a condom.

- ☒ (1) NO, and I do intend to within the next 6 months.
- (2) NO, but I intend to within the next 6 months.
- (3) NO, but I intend to within the next 30 days.
- (4) YES, I have been doing so for less than 6 months.
- ☒ (5) YES, I have been doing so for more than 6 months.

6. Have you ever engaged in oral sex?

☒ YES

NO

7. Have you ever engaged in anal intercourse?

YES

☒ NO

8. Have you ever engaged in vaginal intercourse?

☒ YES

NO

*If you have never engaged in vaginal intercourse, please skip to #49.

9. Have you engaged in vaginal intercourse within the last 3 months?

☒ YES

☐ NO

10. How old were you the first time you had vaginal intercourse?

(1) 13 yrs. old or under

(2) 14 yrs. old

☒ (3) 15 yrs. old

(4) 16 yrs. old

(5) 17 yrs. old

☒ (6) 18 yrs. old or older

11. At the time of your first vaginal intercourse encounter, what method of contraception did you and your partner use?

☒ (1) none

(2) withdrawal

☒ (3) condom

(4) Pill

(5) other: Please list _____

12. Have you ever been told that you have a sexually transmitted disease (STD)?

☐ YES

☒ NO

13. How many sex partners have you had since you began having vaginal intercourse?

(1) 1

☒ (2) 2

(3) 3

(4) 4

☒ (5) 5 or more

14. Do you currently have a regular, or main sexual partner?

☒ YES

☐ NO

15. How long have you and this partner been having vaginal intercourse?

☒ (1) less than 1 month

(2) 1-3 months

☒ (3) 3-6 months

(4) 1 year or more

(5) not having vaginal intercourse with this partner

16. In addition to your main partner, do you have intercourse with any other person(s)?

☐ YES

☒ NO

17. Do you use any method of contraception to prevent pregnancy?

☒ YES

☐ NO

18) How often do you use a method of contraception when you have vaginal intercourse?

- (1) every time
- (2) almost every time
- ☒ (3) sometimes
- (4) almost never
- (5) never

19) For how long have you been using contraceptives?

- (1) less than 1 month
- (2) 1-2 months
- ☒ (3) 3-5 months
- (4) 6 months or longer

20) Do you plan to start using contraceptives **every time** you have vaginal intercourse within the next 30 days?

YES

☒ NO

ALREADY DO

21) Do you plan to start using contraceptives **every time** you have vaginal intercourse within the next 6 months?

☒ YES

☒ NO

ALREADY DO

Which of the following methods do (did) you use, at least once, in your present, or most recent relationship.?

☒ (22) the pill	☒ (1) yes (2) no
☒ (23) condoms	☒ (1) yes (2) no
☒ (24) condoms with spermicide	☒ (1) yes (2) no
☒ (25) the pill with a condom	☒ (1) yes (2) no
☒ (26) IUD	☒ (1) yes (2) no
(27) diaphragm	(1) yes ☒ (2) no
(28) spermicide alone	☒ (1) yes ☒ (2) no
(29) withdrawal	☒ (1) yes ☒ (2) no
(30) foam	(1) yes ☒ (2) no
(31) sponge	☒ (1) yes ☒ (2) no
(32) Norplant	☒ (1) yes ☒ (2) no
(33) douching	☒ (1) yes ☒ (2) no
(34) other: Please list _____	

35. Has your method of contraception changed during the course of your present, or most recent, relationship (e.g., changed from condom to the pill)?

☒ YES

NO

36. Has your method of contraception changed over time (e.g., different from the used with a previous partner)?

☒ YES

NO

37. Is a contraceptive device that prevents pregnancy used **every time** you have intercourse?

- (1) NO, and I don't intend to start using one **every time** within the next 6 months.
- (2) NO, but I intend to start using one **every time** within the next 6 months.
- (3) NO, but I intend to start using one **every time** within the next 30 days.
- (4) YES, I have been using one **every time** for less than 6 months.
- (5) YES, I have been using one **every time** for more than 6 months.

38. Is a contraceptive device that prevents the contraction of a sexually transmitted disease (STD) (e.g., condoms) used **every time** you have sex?

- (1) NO, and I don't intend to start using one **every time** within the next 6 months.
- (2) NO, and I don't intend to start using one **every time** within the next 30 days.
- (3) NO, but I intend to start using one **every time** within the next 30 days.
- (4) YES, I have been using one **every time** for less than six months.
- (5) YES, I have been using one **every time** for more than six months.

The last time a method of contraception was not used while having sex, was it because:

(39) you couldn't afford it	(1) yes (2) no
(40) none were available	(1) yes (2) no
(41) you had been drinking too much alcohol	(1) yes (2) no
(42) you didn't feel like it	(1) yes (2) no
(43) sex was too spontaneous	(1) yes (2) no
(44) this has <u>never</u> happened to me	(1) yes (2) no

45. Has a pregnancy ever occurred in one of your relationships?

YES

NO

46. I always refuse to have intercourse with a partner if we don't have a condom.

- (1) NO, and I do not intend to within the next 6 months.
- (2) NO, but I intend to within the next 6 months.
- (3) NO, but I intend to within the next 30 days.
- (4) YES, I have been doing so for less than 6 months.
- (5) YES, I have been doing so for more than 6 months.

47. I **always** insist upon contraceptive use with a partner.

- (1) NO, and I do not intend to within the next 6 months.
- (2) NO, but I intend to within the next 6 months.
- (3) NO, but I intend to within the next 30 days.
- (4) YES, I have been doing so for less than 6 months.
- (5) Yes, I have been doing so for more than 6 months.

48. I discuss the use of contraceptives with my partner.
- (1) NO, and I do not intend to within the next 6 months.
 - (2) NO, but I intend to within the next 6 months.
 - (3) NO, but I intend to within the next 30 days.
 - (4) YES, I have been doing so for less than 6 months.
 - (5) YES, I have been doing so for more than 6 months.
49. I **always** abstain from vaginal intercourse activity to prevent pregnancy.
- (1) NO, and I do not intend to within the next 6 months.
 - (2) NO, but I intend to with the next 6 months.
 - (3) NO, but I intend to within the next 30 days.
 - (4) YES, I have been doing so for less than 6 months.
 - (5) YES, I have been doing so for more than 6 months.
50. I **always** abstain from all intercourse activities (e.g., vaginal, oral, and anal) to prevent the contraction of any sexually transmitted diseases.
- (1) NO, and I do not intend to within the next 6 months.
 - (2) NO, but I intend to within the next 6 months.
 - (3) NO, but I intend to within the next 30 days.
 - (4) YES, I have been doing so for less than 6 months.
 - (5) YES, I have been doing so for more than 6 months.

Answer the following questions using the 5-point scale:

- 1 = not at all important
- 2 = slightly important
- 3 = moderately important
- 4 = very important
- 5 = extremely important

Please indicate **HOW IMPORTANT** each of the following statements is to your decision whether or not to use contraceptives:

	Not at all					
Extremely						Important
	Important					Important
51. Contraception prevents pregnancy.	1	2	3	4	5	
52. If I used contraceptives, I would have a sense of control over my fertility.	1	2	3	4	5	
53. If I used contraceptives, I would gain my partner's respect.	1	2	3	4	5	
54. Contraceptive use helps build trust.	1	2	3	4	5	
55. If I used contraceptives, I would						

feel more relaxed during sex.	1	2	3	4	5
56. I would feel more responsible if I used a method of contraception.	1	2	3	4	5
57. Contraceptive use gives me control over my sexuality.	1	2	3	4	5
58. Contraceptive devices are easy to acquire.	1	2	3	4	5
59. If I used contraceptives, I would be "taking care" of myself.	1	2	3	4	5
60. The Pill is highly reliable.	1	2	3	4	5
61. Most contraceptives are easy to use.	1	2	3	4	5
62. I am able to use drug store methods (e.g., condoms, foam, etc.) in front of a partner.	1	2	3	4	5
63. Condoms are highly reliable.	1	2	3	4	5
64. My partner is agreeable to using contraceptives.	1	2	3	4	5
65. If I used contraceptives, I would have more self-respect.	1	2	3	4	5
66. Contraceptive devices are affordable.	1	2	3	4	5
67. Most methods are easy to use.	1	2	3	4	5
68. I'd be embarrassed to use drug store methods (condoms, foam, etc.) in front of a partner.	1	2	3	4	5
69. Waiting 4-6 weeks for an appointment to get the pill is a long time when the decision to have sex has been made.	1	2	3	4	5
70. Using contraceptives takes the romance out of sex.	1	2	3	4	5
71. I'd worry about appearing "easy" if I were always prepared for sex.	1	2	3	4	5
72. I'd have to be very comfortable with my body to use drug store methods (e.g., condoms, foam, etc.)	1	2	3	4	5

73. It would be uncomfortable discussing contraceptives with a partner.	1	2	3	4	5
74. Using contraception violates my religious values.	1	2	3	4	5
75. Using contraception makes love making seem unnatural.	1	2	3	4	5
76. I'd feel less sexual sensations if condoms were used.	1	2	3	4	5
77. Having to publicly acquire (clinic, pharmacy) methods of contraception is hard for me.	1	2	3	4	5
78. Pregnancy is just about the most important thing women can achieve.	1	2	3	4	5
79. It is difficult to feel sensuous and seductive while using a condom.	1	2	3	4	5
80. I'm afraid that my health care provider may react negatively to requests for contraception.	1	2	3	4	5
81. Contraception use can take the spontaneity out of sex.	1	2	3	4	5
82. I imagine that pre-sex discussions of pregnancy prevention will result in "botched" sexual encounters.	1	2	3	4	5
83. Using contraception makes love making seem less "pure".	1	2	3	4	5
84. Sex is more exciting without the bother of contraceptives.	1	2	3	4	5
85. My partner does not like using contraceptives.	1	2	3	4	5
86. Contraception use violates my partner's values.	1	2	3	4	5
87. Some methods of contraception interfere with the momentum of love making.	1	2	3	4	5
88. Pregnancy is one way to see how committed a partner really is.	1	2	3	4	5

89. My partner would find sex less exciting if a condom were used.	1	2	3	4	5
90. Pregnancy could be one way to validate a man's masculinity.	1	2	3	4	5
91. I would feel protected against STD's if my partner and I used condoms.	1	2	3	4	5
92. Condoms are readily available.	1	2	3	4	5
93. My partner would feel more protected against STD's if we used condoms.	1	2	3	4	5
94. I would feel more responsible about STD's if I used condoms.	1	2	3	4	5
95. My partner is agreeable to the use of condoms.	1	2	3	4	5
96. Protecting myself from STD's would increase my self-esteem.	1	2	3	4	5
97. Using condoms to guard against the transmission of STD's builds trust.	1	2	3	4	5
98. Condoms are easy to use.	1	2	3	4	5
99. Condoms are the most effective method of barrier protection available.	1	2	3	4	5
100. Sex would be more enjoyable if I felt protected from STD's.	1	2	3	4	5
101. Methods that protect you from STD's are easy to obtain.	1	2	3	4	5
102. Condoms are affordable.	1	2	3	4	5
103. If I used contraceptives to prevent STD's, I'd gain my partner's respect.	1	2	3	4	5
104. Spermicides are easy to use.	1	2	3	4	5
105. Protecting myself from STD's would increase self-respect.	1	2	3	4	5
106. I might hurt my partner's feelings if I suggested we use a condom.	1	2	3	4	5
107. Its harder to insist upon condom use once a commitment has been made					

to a partner.	1	2	3	4	5
108. I would be afraid of hurting my partner's feelings by suggesting using a condom if we were already using the pill.	1	2	3	4	5
109. Methods of contraception that prevent STD's are unpleasant to use.	1	2	3	4	5
110. If I thought that my partner would get upset, I wouldn't discuss condom use.	1	2	3	4	5
111. I feel awkward using a condom.	1	2	3	4	5
112. I'd be afraid my partner would go elsewhere for sex if I insisted on condom use.	1	2	3	4	5
113. It's embarrassing to buy condoms.	1	2	3	4	5
114. I'd be afraid that I would spoil a sexual encounter if I brought up condom use.	1	2	3	4	5
115. Discussing STD prevention makes my partner uncomfortable.	1	2	3	4	5
116. I'd be afraid that my partner would get upset if I discussed STD prevention.	1	2	3	4	5
117. Spermicide are messy to use.	1	2	3	4	5
118. My partner would be suspicious about my fidelity if I suggested that we use a condom.	1	2	3	4	5
119. My partner would feel less sexual sensations if condoms were used.	1	2	3	4	5
120. I would feel hurt if my partner refused to have sex unless we used a condom.	1	2	3	4	5
121. Condoms take the spontaneity out of love making.	1	2	3	4	5
122. My partner would be angry if I refused to have sex unless we used a condom.	1	2	3	4	5

123. I am uncomfortable discussing STD prevention with a partner.	1	2	3	4	5
124. I would be upset if my partner refused to have sex unless we used a condom.	1	2	3	4	5
125. Using the Pill causes weight gain.	1	2	3	4	5
126. Using the Pill may lead to the inability to become pregnant later.	1	2	3	4	5
127. The Pill has side effects.	1	2	3	4	5
128. Intra-uterine devices (IUD's) are dangerous to use.	1	2	3	4	5
129. The sponge tends to slip out of place.	1	2	3	4	5
130. The Pill protects women from some forms of cancer.	1	2	3	4	5
131. Spermicide irritate the skin.	1	2	3	4	5
132. Spermicide increase the risk of urinary infections.	1	2	3	4	5
133. Norplant is a highly effective birth control device.	1	2	3	4	5

The following thoughts/experiences can affect the use of condoms for some people. Think about any similar thoughts/experiences you may be currently having, or have had, in the last month. Please rate the FREQUENCY of each event using the following 5-point scale:

- (1) Never
- (2) Almost Never
- (3) Sometimes
- (4) Often
- (5) Very often

	Never		Very Often		
134. I think about information I've seen on TV or other places about how condoms help to keep you from getting AIDS.	1	2	3	4	5
135. I remember someone personally talking to me about how to use a condom during vaginal intercourse to					

keep from getting AIDS.	1	2	3	4	5
136. I remember information I've seen on the benefits of using condoms.	1	2	3	4	5
137. I tell myself that I can choose to have vaginal sex with or without a condom.	1	2	3	4	5
138. I tell myself I am able to use condoms during vaginal intercourse if I want to.	1	2	3	4	5
139. I tell myself that if I try hard enough I can keep from having vaginal sex without a condom.	1	2	3	4	5
140. I promise myself not to have vaginal sex without a condom.	1	2	3	4	5
141. I notice that condoms are now a lot easier to find in stores and clinics.	1	2	3	4	5
142. I notice that it's getting easier to find sex partners who don't mind using condoms during vaginal sex.	1	2	3	4	5
143. I know some people refuse to have vaginal sex with a partner who won't use condoms.	1	2	3	4	5
144. It seems that there are more and more people around who want to use condoms during vaginal sex.	1	2	3	4	5
145. Having unprotected sex, which increases my risk of AIDS, makes me feel bad about myself.	1	2	3	4	5
146. I get upset when I think about the times I may have put myself or my partner at risk for AIDS not using condoms.	1	2	3	4	5
147. I think about how changing some of my sexual behaviors might make me feel better about myself.	1	2	3	4	5
148. Having sex that increases my risk for AIDS doesn't make me feel like a caring, responsible person.	1	2	3	4	5
149. I stop to think I could give the					

AIDS virus to my sex partner if we don't use condoms every time I have vaginal sex.

1 2 3 4 5

150 I think about the idea that I can help stop the spread of AIDS in my community if I use a condom every time I have vaginal sex.

1 2 3 4 5

151. I am considering the belief that if everyone used a condom every time they had vaginal sex, AIDS wouldn't be spreading so fast in our community.

1 2 3 4 5

152. I stop to think that vaginal sex without a condom is spreading the AIDS virus around my community.

1 2 3 4 5

153. When condoms aren't available, I don't get anything started sexually with a partner.

1 2 3 4 5

154. When I am tempted to have vaginal sex without a condom, I think about how good I feel "the morning after" I've had sex **with** a condom.

1 2 3 4 5

155. When condoms aren't available, I have oral sex instead of vaginal sex.

1 2 3 4 5

156. When I want to have sex but don't have a condom, I find ways other than vaginal or anal sex to satisfy myself and my partner.

1 2 3 4 5

157. I keep condoms in my house.

1 2 3 4 5

158. I carry condoms with me when I go out.

1 2 3 4 5

159. I avoid situations where it would be hard for me to use a condom (such as being drunk or high during sex).

1 2 3 4 5

160. I talk about condoms with my partner before sex even gets started.

1 2 3 4 5

161. I believe that other people think well of me for using condoms to reduce my risk of AIDS.

1 2 3 4 5

162. The sex partners that I really care about approve of my using condoms

during vaginal intercourse.	1	2	3	4	5
163. There are people in my life who encourage and support my using condoms during vaginal intercourse.	1	2	3	4	5
164. I feel better about myself when I use condoms to reduce my risk of AIDS.	1	2	3	4	5
165. Warnings about the risks of getting AIDS through vaginal intercourse really get to me.	1	2	3	4	5
166. Seeing pictures of people dying of AIDS upsets me.	1	2	3	4	5
167. I get pretty stirred up when I hear warnings about vaginal intercourse without a condom.	1	2	3	4	5
168. Remembering stories about people sick with AIDS upsets me.	1	2	3	4	5
169. I can talk to at least one person about my experience in trying to use condoms whenever I have vaginal sex.	1	2	3	4	5
170. I have someone who listens when I need to talk about having sex that puts me at risk for AIDS.	1	2	3	4	5
171. I have someone I can count on when I'm having problems making condoms a part of my sex life.	1	2	3	4	5
172. Special people in my life accept me as I am whether or not I'm using condoms to avoid getting the AIDS virus.	1	2	3	4	5

Background Information:

173. Race:
- (1) Afro-American
 - (2) Asian-American
 - (3) Hispanic-American
 - (4) Native American
 - (5) White
 - (6) Other

174. Year in school: (1) Freshman
 (2) Sophomore
 (3) Junior
 (4) Senior
175. Parents income: (1) under 20,000
 (2) 20,000-39,999
 (3) 40,000-59,999
 (4) 60,000-79,999
 (5) more than 80,000
176. Current living arrangements:
 (1) single, not living with sexual partner
 (2) single, living with sexual partner
 (3) married
 (4) separated or divorced
 (5) other
177. Religious affiliation:
 (1) Catholic
 (2) Eastern
 (3) Jewish
 (4) Protestant
 (5) Other
178. sex: (1) female
 (2) male
179. Your age is: _____years.

Thank you

Appendix B

SECTION A

1. What method(s), if any, do you use to keep from getting pregnant now?

- ☐ 1) Norplant (skip to question 2 below)
- ☐ 2) Condoms (Skip to question 3 below)
- ☐ 3) Birth Control Pill (Skip to question 4 below)
- ☐ 4) Other (If diaphragm, IUD, sponge, skip to question 5 below; all others skip to question 6 below)
List _____
- ☐ 5) Nothing (Skip to question 6 below)

2. How long have you been using Norplant?

Response: _____

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

-Skip to question 6 below-

3. How long have you been using condoms to keep from getting pregnant?

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

And how often do you use a condom to keep from getting pregnant when you have sex?

- ☐ 1) Every time
- ☐ 2) Almost every time
- ☐ 3) Sometimes
- ☐ 4) Almost never

-SKIP TO QUESTION 6 BELOW-

4. How long have you been using the Pill? _____

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

How often, in a month, do you miss or forget to take a Pill?

- ☐ 0-2 times a month

___ 3 or more times a month
-skip to question 6 below-

5. Other:

If IUD:

How long have you been using? ____

-Skip to question 6 below-

If diaphragm or sponge:

How long have you been using? ____

And how often do you use a (Diaphragm/Sponge) to keep from getting pregnant when you have sex?

- ___ 1) Every time
- ___ 2) Almost every time
- ___ 3) Sometimes
- ___ 4) Almost never

-go on to question 6-

6. Now I'd like to ask you about some (other) birth control methods that you may or may not be thinking about using.

In the next six months, how likely do you think it is that you will start using the pill every day?

- ___ 1) Extremely sure I will
- ___ 2) Quite sure I will
- ___ 3) Slightly sure I will
- ___ 4) Undecided -- not sure if I will or won't
- ___ 5) Slightly sure I won't
- ___ 6) Quite sure I won't- Skip to question 8
- ___ 7) Extremely sure I won't- Skip to question 8

7. In the next 30 days, how likely do you think it is that you will start using the pill every day?

- ___ 1) Extremely sure I will
- ___ 2) Quite sure I will
- ___ 3) Slightly sure I will

- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

****If Norplant is circled in Reminder Box, skip to question 10**

8. In the next six months, how likely do you think it is that you will start using Norplant?

(Probe: It's a method of birth control that is put into the arm to keep you from getting pregnant for up to 5 years.)

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't- Skip to question 7
- ☐ 7) Extremely sure I won't- Skip to question 7

9. In the next 30 days, how likely do you think it is that you will start using Norplant?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

****If condom is circled in Reminder Box, skip to question 12**

10. In the next six months, how likely do you think it is that you will start using condoms every time you have vaginal sex?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't- Skip to question 12
- ☐ 7) Extremely sure I won't- Skip to question 12

11. In the next 30 days, how likely do you think it is that you will start using condoms every time you have vaginal sex?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

12. In the next six months, how likely do you think it is that you will start using ANY OTHER method of birth control?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't- (Skip to question 15)
- ☐ 7) Extremely sure I won't- (Skip to question 15)

13. In the next 30 days, how likely do you think it is that you will start using ANY OTHER method of birth control?

(Show CARD B, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

14. What method are you thinking about using?

The next set of questions may sound like others I've asked before, but they are a little different.

15. When you have sex, how often do you use a birth control method to keep from getting pregnant?

(Show card AA, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)

- ☐ 1) All the time
- ☐ 2) Almost all the time
- ☐ 3) Sometimes-- skip to question 16
- ☐ 4) Almost never-- skip to question 16
- ☐ 5) Never-- skip to question 16

- 15a. How long have you been using birth control methods to keep yourself from getting pregnant (all the time/almost all the time) you have sex?

(Record answer as given by respondent, then categorize as 1, 2, or 3 below)

Response: _____

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days-- less than 6 months
- ☐ 3) Six months or more

16. In the next six months, how likely do you think it is that you will start using birth control all the time?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't- (Skip to PAGE 10)
- ☐ 7) Extremely sure I won't- (Skip to PAGE 10)

17. In the next 30 days how likely do you think it is that you will start using birth control every time you have sex?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

CONFIDENCE: General

I'm going to read a list of situations that might affect people's use of birth control. Use the scale on this card (show CARD B) to tell me for each situation HOW CONFIDENT or SURE you are that you would use birth control.

(1 = Not at all confident, 5 = Extremely confident)

Here's the first one. **HOW CONFIDENT, OR SURE**, are you that you would use birth control:

	Not at all confident				Extremely confident	
1. When a method of birth control is not right on hand.	1	2	3	4	5	
2. When you have been using alcohol or other drugs.		1	2	3	4	5
3. When your partner gets upset about it.	1	2	3	4	5	
4. When you feel the side effects.	1	2	3	4	5	
5. When it is too much trouble.	1	2	3	4	5	

ADVANTAGES of BIRTH CONTROL USE: General

I am going to read a list of possible advantages of using birth control for vaginal sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these advantages is to you in deciding whether or not to use birth control.

(Not at all important, 5 = Very important)

	Not At All Important				Very Important	
1. I would be safer from pregnancy.	1	2	3	4	5	
2. I would feel more responsible.	1	2	3	4	5	
3. I would not have to deal with the results of a pregnancy.	1	2	3	4	5	
4. I would be free to have sex without worrying about getting pregnant.	1	2	3	4	5	
5. My partner would not have to worry about me becoming pregnant.	1	2	3	4	5	

DISADVANTAGES OF BIRTH CONTROL USE: General

I am going to read a list of possible DISadvantages of using birth control for vaginal sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these DISadvantages is to you in deciding whether or not to use birth control.

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
6. Birth control methods can make sex feel unnatural.	1	2	3	4	5
7. It would be too much trouble.	1	2	3	4	5
8. It would cost too much.	1	2	3	4	5
9. It is against my beliefs.	1	2	3	4	5
10. Sex would be less exciting.	1	2	3	4	5

CONFIDENCE: PILL

I'm going to read a list of situations that might affect people's use of the Pill. Given what you have just told me about your thinking about using the Pill, use the scale on this card (show CARD C) to tell me for each situation HOW CONFIDENT or SURE you are that you would use the Pill to keep from getting pregnant.

(1 = Not at all confident, 5 = Extremely confident)

Here's the first one. How CONFIDENT, OR SURE, are you that you would use Pill:

	Not at all confident				Extremely confident
1. When you are busy.	1	2	3	4	5
2. When you are not expecting to have sex for awhile.	1	2	3	4	5
3. When you have been using alcohol or other drugs.	1	2	3	4	5
4. When you have a lot of problems in your life.	1	2	3	4	5
5. When your are feeling side effects.	1	2	3	4	5

ADVANTAGES OF THE PILL

I am going to read a list of possible advantages of using the Pill for vaginal sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these advantages is to you when deciding whether or not to use Pill to keep from getting pregnant.

(1 = Not at All Important, 5 = Very important)

	Not At All Important				Very Important
1. I would feel safer from pregnancy.	1	2	3	4	5
2. I would not have to rely on my partner.	1	2	3	4	5
3. I would feel more responsible.	1	2	3	4	5
4. I would have a sense of control.	1	2	3	4	5
5. I would not have to deal with the results of pregnancy.	1	2	3	4	5

DISADVANTAGES OF THE PILL

Now I am going to read a list of possible DISadvantages of using the Pill for vaginal sex. Use the scale on THIS card (show CARD D) to tell me how important each of these DISadvantages is to you when deciding whether or not to use the Pill to keep from getting pregnant.

(1 = Not at All Important, 5 = Very Important)

	Not at All Important				Very Important
6. I would need to go to a doctor.	1	2	3	4	5
7. I would have to remember to take a Pill every day.	1	2	3	4	5
8. I might feel side effects, like weight gain.	1	2	3	4	5
9. I would worry that my health might be harmed.	1	2	3	4	5
10. It is against my beliefs.	1	2	3	4	5

CONFIDENCE: Norplant

I'm going to read a list of situations that might affect people's use of Norplant. Given what you have just told me about your thinking about using Norplant, use the scale on this card (show CARD C) to tell me for each situation HOW CONFIDENT or SURE you are that you would use Norplant.

(1 = Not at all confident, 5 = Extremely confident)

Here's the first one. How CONFIDENT, OR SURE, are you that you would use Norplant:

	Not at all confident			Extremely confident	
1. When you can feel it.	1	2	3	4	5
2. When you start having periods that are not regular.	1	2	3	4	5
3. When you start to feel side effects.	1	2	3	4	5
4. When you start to hear bad things about it.	1	2	3	4	5
5. When other people can see it.	1	2	3	4	5

ADVANTAGES OF NORPLANT

I am going to read a list of possible advantages of using Norplant for vaginal sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these advantages is to you when deciding whether or not to use Norplant to keep from getting pregnant.

(1 = Not at all important, 5 = Very important)

	Not At All Important			Very Important	
1. I would be safer from getting pregnant.	1	2	3	4	5
2. I would feel more responsible.	1	2	3	4	5
3. I would feel more responsible.	1	2	3	4	5
4. I would not have to rely on my partner.	1	2	3	4	5
5. I would not have to deal with the results of pregnancy.	1	2	3	4	5

DISADVANTAGES OF NORPLANT

I am going to read a list of possible DISadvantages of using Norplant for vaginal sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these DISadvantages is to you when deciding whether or not to use Norplant to keep from getting pregnant.

(1 = Not at all important, 5 = Very important)

	Not At All Important			Very Important	
6. My partner might not approve of Norplant.	1	2	3	4	5
7. I would worry about the possible health effects of Norplant.	1	2	3	4	5
8. It would be too much trouble.	1	2	3	4	5
9. It would worry that my health might be harm.	1	2	3	4	5
10. I fear that it has not been tested long enough.	1	2	3	4	5

SECTION B

VAGINAL SEX WITH MAIN PARTNER

2. When you have vaginal sex with your main partner, how often do you use a condom? (Show CARD A, instructing respondent to pick the best answer. Read aloud slowly while the respondent looks at card.)

- ☐ 1) Every time (Circle "every time" in question 3 below.)
- ☐ 2) Almost every time (Circle "almost every time" in Question 3 below.)
- ☐ 3) Sometimes (Skip to Question 4 below.)
- ☐ 4) Almost never (Skip to Question 4 below.)
- ☐ 5) Never (Skip to Question 4 below.)

3. How long have you been using a condom (every time/almost every time) you have vaginal sex with your main partner?

(Record answer as given by respondent, then categorize as 1,2, or 3 below.)

Response: _____

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days -- less than six months
- ☐ 3) Six months or more (If EVERY TIME is circled: Skip to Question 6)

4. In the next six months, how likely do you think it is that you will start using condoms every time you have vaginal sex with your main partner?

(Show CARD B, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't (Skip to Question 6)
- ☐ 7) Extremely sure I won't (Skip to Question 6)

5. In the next 30 days, how likely do you think it is that you will start using condoms every time you have vaginal sex with your main partner?

(Show CARD B, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

CONFIDENCE

I'm going to read a list of situations that might affect people's use of condoms. Use the scale on this card (show CARD C) to tell me for each situation HOW CONFIDENT or SURE you are that you would use condoms every time you have vaginal sex with YOUR MAIN PARTNER.

(1 = Not at all confident, 5 = Extremely confident)

Here's the first one. HOW CONFIDENT, OR SURE, are you that you would use condoms:

	Not at all confident					Extremely confident				
1. When you have been using alcohol or other drugs.	1	2	3	4	5					
2. When you are sexually aroused.	1	2	3	4	5					
3. When you think your partner might get angry.	1	2	3	4	5					
4. When you are already using another method of birth control.	1	2	3	4	5					
5. When you want your partner to know										

you are committed to
your relationship.

1 2 3 4 5

ADVANTAGES OF CONDOM USE - MAIN PARTNER

I am going to read a list of possible advantages of using Condoms every time you have sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these advantages is to you in deciding whether or not to use condoms every time you have vaginal sex with your main partner.

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
1. I would be safer from disease.	1	2	3	4	5
2. I would feel more responsible.	1	2	3	4	5
3. It protects my partner as well as myself.	1	2	3	4	5
4. I would be safer from pregnancy.	1	2	3	4	5
5. It is easily available.	1	2	3	4	5

DISADVANTAGES OF CONDOM USE - MAIN PARTNER

I am going to read a list of possible DISadvantages of using Condoms every time you have sex. Now use the scale on THIS card (show CARD C) to tell me how important each of these DISadvantages is to you in deciding whether or not to use condoms every time you have vaginal sex with your main partner.

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
6. It makes sex feel unnatural.	1	2	3	4	5
7. It would be too much trouble.	1	2	3	4	5
8. My partner would be angry.	1	2	3	4	5
9. I would have to rely on my partner's cooperation.	1	2	3	4	5
10. My partner would think that I do not trust him.	1	2	3	4	5

SECTION C

CONDOM USE WITH OTHER PARTNER(S)

In this section I'll be asking questions about vaginal sex with any man who is not your main partner.

3. When you have vaginal sex (as appropriate: ... with someone other than your main partner...), how often do you use a condom? (Show **CARD A**, instructing respondent to pick the best answer. Read aloud slowly while the respondent looks at card.)
- ☐ 1) Every time (Circle "every time" in question 4 below.)
 - ☐ 2) Almost every time (Circle "almost every time" in Question 4 below.)
 - ☐ 3) Sometimes (Skip to Question 5 below.)
 - ☐ 4) Almost never (Skip to Question 5 below.)
 - ☐ 5) Never (Skip to Question 5 below.)
4. How long have you been using a condom (every time/almost every time) you have vaginal sex (as appropriate: ... with someone other than your main partner)? (Record answer as given by respondent, then categorize as 1,2, or 3 below.)
- Response: _____
- ☐ 1) 30 days or less
 - ☐ 2) More than 30 days -- less than six months
 - ☐ 3) Six months or more (If EVERY TIME is circled: (Skip to Question 7)
5. In the next six months, how likely do you think it is that you will start using condoms every time you have vaginal sex (as appropriate: ... with someone other than your main partner)? (Show **CARD B**, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)
- ☐ 1) Extremely sure I will
 - ☐ 2) Quite sure I will
 - ☐ 3) Slightly sure I will
 - ☐ 4) Undecided -- not sure if I will or won't
 - ☐ 5) Slightly sure I won't
 - ☐ 6) Quite sure I won't (Skip to Question 7)
 - ☐ 7) Extremely sure I won't (Skip to Question 7)

6. In the next 30 days, how likely do you think it is that you will use condoms every time you have vaginal sex (as appropriate: ... with someone other than your main partner)? (Show CARD B, instructing respondent to pick the best answer. Read aloud slowly while respondent looks at card.)

- ___ 1) Extremely sure I will
- ___ 2) Quite sure I will
- ___ 3) Slightly sure I will
- ___ 4) Undecided -- not sure if I will or won't
- ___ 5) Slightly sure I won't
- ___ 6) Quite sure I won't
- ___ 7) Extremely sure I won't

CONFIDENCE

I'm going to read a list of situations that might affect people's use of condoms. Use the scale on this card (show CARD C) to tell me for each situation HOW CONFIDENT or HOW SURE you are that you would use condoms every time you have vaginal sex with (as appropriate: ... with someone other than your main partner).

(1 = Not at all confident, 5 = Extremely confident)

Here's the first one. **HOW CONFIDENT, OR SURE,** are you that you would use condoms:

	Not at all confident				Extremely confident
1. When you think the risk of diseases is low.	1	2	3	4	5
2. When you have been using alcohol or drugs.	1	2	3	4	5
3. When you are sexually aroused.	1	2	3	4	5
4. When you think your partner might get upset.	1	2	3	4	5
5. When you are already using another method of birth control.	1	2	3	4	5

ADVANTAGES OF CONDOM USE - OTHER PARTNERS

I am going to read a list of possible advantages of using Condoms every time you have sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these advantages is to you in deciding whether or not to use condoms every time you have vaginal sex (as appropriate: ... with someone other than your main partner).

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
1. I would be safer from disease.	1	2	3	4	5
2. I would feel more responsible.	1	2	3	4	5
3. It protects my partner as well as myself.	1	2	3	4	5
4. I would be safer from pregnancy.	1	2	3	4	5
5. It is easily available.	1	2	3	4	5

DISADVANTAGES OF CONDOM USE - OTHER PARTNERS

I am going to read a list of possible DISAdvantages of using Condoms every time you have sex. Now use the scale on THIS card (show CARD D) to tell me how important each of these DISAdvantages is to you in deciding whether or not to use condoms every time you have vaginal sex (as appropriate: ... with someone other than your main partner).

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
6. It makes sex feel unnatural.	1	2	3	4	5
7. It would be too much trouble.	1	2	3	4	5
8. My partner would be upset.	1	2	3	4	5
9. My partner would think that I "play around".	1	2	3	4	5
10. I would have to rely on my partner's cooperation.	1	2	3	4	5

Contraceptive and Condom Use Survey (1993)

SECTION A

1. The information I have gained about contraception has been mainly from:

- (1) Discussions with a parent or guardian
- (2) Friends/acquaintances
- (3) School (e.g., sex education class)
- (4) Church or religious group
- (5) Books/magazines/TV/movies

2. My sexual orientation is:

- (1) Asexual
- (2) Bisexual
- (3) Heterosexual
- (4) Homosexual
- (5) Don't Know/Not Sure

3. Have you ever received oral sex?

- (1) YES (2) NO

4. Have you ever performed oral sex?

- (1) YES (2) NO

5. Have you ever engaged in anal intercourse?

- (1) YES (2) NO

6. Have you ever engaged in vaginal intercourse?

- (1) YES (2) NO

***If you have never engaged in vaginal intercourse, please skip to
SECTION C, Page 12**

7. How often have you engaged in vaginal intercourse within the last year?

- (1) haven't had vaginal sex in the past year
- (2) only once
- (3) several times in the past year
- (4) several times a month
- (5) several times a week

8. How old were you the first time you had vaginal intercourse?

- (1) 13 yrs. old or under
- (2) 14 yrs. old
- (3) 15 yrs. old
- (4) 16 yrs. old
- (5) 17 yrs. old
- (6) 18 yrs. old or older

9. At the time of your first vaginal intercourse encounter, what method of contraception did you and your partner use?

- (1) none
- (2) withdrawal
- (3) condom
- (4) Pill
- (5) other: Please list _____.

10. How many sex partners have you had since you began having vaginal intercourse?

- (1) 1-2
- (2) 3-4
- (3) 5-6
- (4) 7-10
- (5) 11 or more

11. Have you engaged in vaginal intercourse within the last 6 months?

- (1) YES
- (2) NO

12. How many partner have you had in the last 6 months?

- (1) haven't had vaginal sex in the last 6 months
- (2) 1
- (3) 2-3
- (4) 4-5
- (5) more than 5

13. How many sex partners have you had in the last 6 months with whom you **did not** use a condom?

- (1) haven't had vaginal sex in the last 6 months
- (2) 1
- (3) 2-3
- (4) 4-5
- (5) more than 5

14. How many sex partners have you had in the last 3 months?

- (1) haven't had vaginal sex in the last 3 months
- (2) 1
- (3) 2-3
- (4) 4-5
- (5) more than 5

15. Have you ever been told that you have a sexually transmitted disease (STD)?

- (1) YES
- (2) NO

16. Have you ever been tested for HIV/AIDS?

- (1) YES
- (2) NO

17. Has your partner ever been tested for HIV/AIDS?

- (1) YES
- (2) NO
- (3) DON'T KNOW

The last time a method of contraception was not used while having sex, was it because:

(18) you couldn't afford it	(1) yes (2) no
(19) none were available	(1) yes (2) no
(20) you had been drinking too much alcohol	(1) yes (2) no
(21) you didn't feel like it	(1) yes (2) no
(22) sex was too spontaneous	(1) yes (2) no
(23) this has <u>never</u> happened to me	(1) yes (2) no

24. Has a pregnancy ever occurred in one of your relationships?

- (1) YES
- (2) NO

25. Do you ask your partner(s) about his/her sexual history **before** ever having sex?

(1) Never	(0 % of the time)
(2) Almost never	(25 % of the time)
(3) Sometimes	(50 % of the time)
(4) Almost always	(75 % of the time)
(5) Always	(100 % of the time)

26. Do you ask your partner(s) about his/her drug use before ever engaging in sex?

(1) Never	(0 % of the time)
(2) Almost never	(25 % of the time)
(3) Sometimes	(50 % of the time)
(4) Almost always	(75 % of the time)
(5) Always	(100 % of the time)

27. Do you tell your partner that you won't have vaginal sex unless a condom is used?

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

28. Do you refuse to have intercourse with a partner if you don't have a condom.

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

29. Do you talk about the need for birth control with your partner(s)?

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

30. Do you refuse to have intercourse with a partner if birth control is not used?

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

31. Do you insist upon birth control use with a partner.

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

32. Do you insist that a condom be used with a partner.

(1) Never	(0% of the time)
(2) Almost never	(25% of the time)
(3) Sometimes	(50% of the time)
(4) Almost always	(75% of the time)
(5) Always	(100% of the time)

33. What are your chances of getting AIDS?

- (1) Not possible
- (2) Very unlikely
- (3) Somewhat unlikely
- (4) Equal (50/50)
- (5) Somewhat likely
- (6) Very likely
- (7) Almost certain

34. Compared to other students, what are your chances of getting AIDS?

- (1) Much less
- (2) Less
- (3) A little less
- (4) Same
- (5) A little more
- (6) More
- (7) Much more

35. What are your chances of getting a sexually transmitted disease (STD) such as Herpes, gonorrhea, chlamydia, or genital warts?

- (1) Not possible
- (2) Very unlikely
- (3) Somewhat unlikely
- (4) Equal (50/50)
- (5) Somewhat likely
- (6) Very likely
- (7) Almost certain

36. Compared to other students, what are your chances of getting an STD?

- (1) Much less
- (2) Less
- (3) A little less
- (4) Same
- (5) A little more
- (6) More
- (7) Much more

37. What are your chances of a pregnancy occurring in one of your relationships?

- (1) Not possible
- (2) Very unlikely
- (3) Somewhat unlikely
- (4) Equal (50/50)
- (5) Somewhat likely
- (6) Very likely
- (7) Almost certain

38. Compared to other students, what are your chances of a pregnancy occurring in one of your relationships?

- (1) Much less
- (2) Less
- (3) A little less
- (4) Same
- (5) A little more
- (6) More
- (7) Much more

39. Are you currently abstaining from vaginal sex?

- (1) No, and I don't intend to start within the next 6 months.
- (2) No, but I intend to start within the next 6 months.
- (3) No, but I intend to start within the next 30 days.
- (4) Yes, I have been doing so for less than 6 months.
- (5) Yes, I have been doing so for more than 6 months.

40. As a child, did anyone ever say anything to you, or look at you, in a way that you felt was sexually inappropriate?

- (1) No
- (2) Yes, 1 time
- (3) Yes, 2 times
- (4) Yes, 3 times
- (5) Yes, more than 3 times

41. As a child, did anyone ever touch you in a way that you felt was sexually inappropriate?

- (1) No
- (2) Yes, 1 time
- (3) Yes, 2 times
- (4) Yes, 3 times
- (5) Yes, more than 3 times

42. As a young adult, has anyone ever pressured you to have sex when you really did not want to?

- (1) No
- (2) Yes, 1 time
- (3) Yes, 2 times
- (4) Yes, 3 times
- (5) Yes, more than 3 times

43. As a young adult, has anyone ever physically forced you to have sex when you did not want to?

- (1) No
- (2) Yes, 1 time
- (3) Yes, 2 times
- (4) Yes, 3 times
- (5) Yes, more than 3 times

44. Have you ever used IV-drugs?

(1) YES (2) NO

45. Have you ever had a sex partner who used IV-drugs?

(1) YES (2) NO (3) DON'T KNOW

46. Have you ever had a blood transfusion?

(1) YES (2) NO

47. Have you ever had a sex partner who has had a blood transfusion?

(1) YES (2) NO (3) DON'T KNOW

48. Do you have a MAIN or STEADY sex partner?

(1) YES (2) NO - Skip to Section B, on next page.

49. Have you had vaginal intercourse with anyone else, since the start of your relationship?

(1) YES (2) NO

50. What are the chances that your partner has had vaginal intercourse with someone else, since the start of your relationship?

- (1) Not possible
- (2) Very unlikely
- (3) Somewhat unlikely
- (4) Equal (50/50)
- (5) Somewhat likely
- (6) Very likely
- (7) Almost certain

SECTION B

1. What method(s), if any, do you and your partner(s) use to keep from getting pregnant now?

- ☐ 1) Norplant (Skip to question 2 below)
- ☐ 2) Condoms (Skip to question 3 below)
- ☐ 3) Birth Control Pill (Skip to question 4 below)
- ☐ 4) Other (If diaphragm, IUD, sponge, Skip to question 5 below; all others Skip to question 6 below)
List _____
- ☐ 5) Nothing (Skip to question 6 below)

2. How long have you been using Norplant?

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

-Skip to question 6 below-

3. How long have you been using condoms to keep from getting pregnant?

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

3b. And how often do you use a condom to keep from getting pregnant when you have sex?

- ☐ 1) Every time
- ☐ 2) Almost every time
- ☐ 3) Sometimes
- ☐ 4) Almost never

-SKIP TO QUESTION 6 BELOW-

4. How long have you been using the Pill?

- ☐ 1) 30 days or less
- ☐ 2) More than 30 days, less than six months
- ☐ 3) Six months or more

How often, in a month, do you miss or forget to take a Pill?

- ☐ 0-2 times a month
- ☐ 3 or more times a month

-skip to question 6 below-

5. Other:
If IUD:

How long have you been using? _____

-skip to question 6 below-

If diaphragm or sponge:

How long have you been using? _____

And how often do you use a (Diaphragm/Sponge) to keep from getting pregnant when you have sex?

- ☐ 1) Every time
- ☐ 2) Almost every time
- ☐ 3) Sometimes
- ☐ 4) Almost never

-go on to question 6-

The next set of questions may sound like the set that you just answered, but they are a little different.

6. When you have sex, how often is a method of birth control used?

- ☐ 1) All the time
- ☐ 2) Almost all the time
- ☐ 3) Sometimes-- skip to question 7
- ☐ 4) Almost never-- skip to question 7
- ☐ 5) Never-- skip to question 7

6a. How long have you been using birth control methods (all the time) to prevent pregnancy when you have sex?

- ☐ 1) 30 days or less --skip to page 12, Section C
- ☐ 2) More than 30 days--less than 6 months --skip to page 12, Section C
- ☐ 3) Six months or more --skip to page 12, Section C

7. In the next six months, how likely do you think it is that you will start using some form of birth control all of the time?

- ___ 1) Extremely sure I will
- ___ 2) Quite sure I will
- ___ 3) Slightly sure I will
- ___ 4) Undecided -- not sure if I will or won't
- ___ 5) Slightly sure I won't
- ___ 6) Quite sure I won't- (Skip to PAGE 12, SECTION C)
- ___ 7) Extremely sure I won't- (Skip to PAGE 12, SECTION C)

8. In the next 30 days how likely do you think it is that you will start using some form of birth control all of the time?

- ___ 1) Extremely sure I will
- ___ 2) Quite sure I will
- ___ 3) Slightly sure I will
- ___ 4) Undecided -- not sure if I will or won't
- ___ 5) Slightly sure I won't
- ___ 6) Quite sure I won't
- ___ 7) Extremely sure I won't

SECTION C

EVERYONE ANSWERS

The next section of questions have to do with contraceptive use. You may or may not be planning to use birth control yourself, but when you answer these questions, please think about how YOU feel about contraceptive methods, in general.

CONFIDENCE: General

Listed below are situations that might affect some people's use of birth control. HOW CONFIDENT (HOW SURE) are you that you would use birth control in these situations, using the following 5-point scale.

(1 = Not at all confident, 5 = Extremely confident)

	Not at all confident			Extremely confident	
1. When a method of birth control is not right on hand.	1	2	3	4	5
2. When you have been using alcohol or other drugs.	1	2	3	4	5
3. When your partner gets upset about it.	1	2	3	4	5
4. When you, or your partner, feel side effects.	1	2	3	4	5

Processes of Change for Birth Control Use

The following thoughts/experiences can affect the use of birth control methods for some people. Think about any similar thoughts/experiences you may be currently having, or have had, in the last month. Please rate the FREQUENCY of each event using the following 5-point scale:

- 1 = Never
- 2 = Seldom
- 3 = Occasionally
- 4 = Often
- 5 = Repeatedly

	Never				Repeatedly
1. I have someone who supports my decision to always use birth control.	1	2	3	4	5
2. I remember someone talking to me about the importance of birth control use.	1	2	3	4	5
3. I feel bad about having sex without using birth control because I know it increases the chances of a pregnancy occurring in one of my relationships.	1	2	3	4	5
4. I know people who refuse to have sex if birth control isn't available.	1	2	3	4	5
5. I feel more responsible using birth control, as directed, to avoid pregnancy.	1	2	3	4	5
6. When my partner does not want to talk about birth control, I tell him/her we have to talk anyway.	1	2	3	4	5
7. Hearing stories about people who become pregnant, when they don't want to, make me feel nervous.	1	2	3	4	5
8. I always make sure birth control is used before I will have sex.	1	2	3	4	5
9. If my partner tries to get me to have sex without using birth control after I've said no, I keep saying no.	1	2	3	4	5
10. I remember hearing about the effectiveness of the different methods of birth control at preventing pregnancy.	1	2	3	4	5
11. I tell myself that if I try hard enough I can keep from having sex without the use of birth control.	1	2	3	4	5

12. If my partner does not want to use birth control, I insist that we do.	1	2	3	4	5
13. I recall information I've seen on the benefits of using birth control.	1	2	3	4	5
14. I feel upset when I hear about people like my partner and myself having to deal with the consequences of an unplanned pregnancy.	1	2	3	4	5
15. I know at least one person who I can turn to for advice regarding which method of birth control fits my life style.	1	2	3	4	5
16. I think about information I've read in articles or books about the importance of using birth control every time I have sex.	1	2	3	4	5
17. My partner is pleased that we use birth control.	1	2	3	4	5
18. I've been thinking that if every couple used birth control, the number of unplanned pregnancies in my community would not be on the rise.	1	2	3	4	5
19. I tell myself that I can choose to have sex with or without using birth control.	1	2	3	4	5
20. I think about how a pregnancy might affect my family.	1	2	3	4	5
21. I have made a commitment to myself to have sex only when birth control is used.	1	2	3	4	5
22. I've notice that sex partners are becoming more aware of the need for consistent birth control use.	1	2	3	4	5
23. I avoid situations like drinking alcohol or getting high because I may be less likely to use birth control.	1	2	3	4	5
24. When birth control methods are not available and I want to have sex, I find ways other than vaginal sex to satisfy myself and my partner.	1	2	3	4	5
25. I find society changing in ways that make it easier to get birth control.	1	2	3	4	5
26. I think that other people respect me	1	2	3	4	5

for using birth control.

27. It seems as if a lot people I know are using birth control every time they have sex.	1	2	3	4	5
28. I get upset when I think about the times I have placed myself, or my partner, at risk for pregnancy by not using birth control.	1	2	3	4	5
29. I tell myself I am able to use birth control methods every time I have sex, if I want to.	1	2	3	4	5
30. I think about how using birth control every time I have sex might make me feel better about myself.	1	2	3	4	5
31. I stop to think that having sex without using birth control is increasing the rate of unintended pregnancies in my community.	1	2	3	4	5
32. When birth control is not available, I don't get anything started sexually with my partner.	1	2	3	4	5
33. If birth control is not available, I don't have vaginal sex.	1	2	3	4	5
34. I make it a point to discuss birth control use with a partner before we ever have vaginal sex.	1	2	3	4	5
35. I avoid partners who pressure me to have sex without using birth control.	1	2	3	4	5
36. The partners I really care about approve of using birth control methods.	1	2	3	4	5
37. I think about how I can help stop the increase of unplanned pregnancies in my community by making sure birth control is used every time I have sex.	1	2	3	4	5
38. I feel good about myself when I use birth control every time I have sex.	1	2	3	4	5
39. Warnings about the risks of unwanted pregnancies move me emotionally.	1	2	3	4	5
40. When I am tempted to have sex without using birth control, I stop and think	1	2	3	4	5

how free from worry I would be if I resist.

41. It really worries me when I think about a pregnancy occurring in one of my relationships.	1	2	3	4	5
42. I have someone who listens when I need to talk about problems that I may be having using birth control every time I have sex.	1	2	3	4	5
43. I have someone in my life who accepts me as I am, whether or not I use birth control.	1	2	3	4	5
44. If a partner won't use birth control, I say "no" to vaginal sex.	1	2	3	4	5

SECTION D

VAGINAL SEX WITH MAIN PARTNER

1A. Do you have a main or steady sex partner of the opposite sex?

- ☐ 1) Yes
- ☐ 2) No- Skip to SECTION E, Page 22

1B. How long have you been with this partner?

- ☐ 1) 1 - 6 months
- ☐ 2) 1 year
- ☐ 3) 2 years
- ☐ 4) 3 years
- ☐ 5) 4 years or more

1C. Have you ever discussed condom use with your main partner?

- ☐ 1) Yes
- ☐ 2) No

2. When you have vaginal sex with your main partner, how often do you use a condom?

- ☐ 1) Every time
- ☐ 2) Almost every time
- ☐ 3) Sometimes (Skip to Question 4 below.)
- ☐ 4) Almost never (Skip to Question 4 below.)
- ☐ 5) Never (Skip to Question 4 below.)

3. How long have you been using a condom (every time) you have vaginal sex with your main partner?

- ☐ 1) 30 days or less (Skip to Question 4)
- ☐ 2) More than 30 days -- less than six months (Skip to Question 4)
- ☐ 3) Six months or more (Go on to Question 3a)

3a. Have you been using a condom (every time) you have vaginal sex with your main partner for about:

- ☐ 1) 1 year
- ☐ 2) 2 years
- ☐ 3) 3 years
- ☐ 4) 4 or more years

- Skip to Question 6 -

4. In the next six months, how likely do you think it is that you will start using condoms every time you have vaginal sex with your main partner?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't (Skip to Question 6)
- ☐ 7) Extremely sure I won't (Skip to Question 6)

5. In the next 30 days, how likely do you think it is that you will start using condoms every time you have vaginal sex with your main partner?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

6. When having vaginal sex with your main partner, why do you use condoms?

- ☐ 1) to prevent pregnancies
- ☐ 2) to prevent sexually transmitted diseases (such as V.D., or HIV/AIDS)
- ☐ 3) to prevent both pregnancies and diseases
- ☐ 4) don't know why, partner made the decision
- ☐ 5) never use condoms

7. Thinking about your past experience with condoms with your main partners, would you say that your experience has been:

- ☐ 1) All bad
- ☐ 2) Mostly bad but some good
- ☐ 3) About half bad - half good
- ☐ 4) Mostly good but some bad
- ☐ 5) All good
- ☐ 6) Never used/DK

CONFIDENCE

Listed below are several situations that might affect some people's use of condoms. **HOW CONFIDENT or SURE** are you that you would use condoms every time you have vaginal sex with **YOUR MAIN PARTNER** in these situations, using the following scale?:

(1 = Not at all confident, 5 = Extremely confident)

HOW CONFIDENT are you that you would use condoms:

	Not at all confident				Extremely confident
1. When you have been using alcohol or other drugs.	1	2	3	4	5
2. When you are sexually aroused.	1	2	3	4	5
3. When you think your partner might get angry.	1	2	3	4	5
4. When you are already using another method of birth control.	1	2	3	4	5
5. When you want your partner to know you are committed to your relationship.	1	2	3	4	5

ADVANTAGES AND DISADVANTAGES OF CONDOM USE - MAIN PARTNER

Listed below are several possible reasons for using Condoms every time you have sex. **HOW IMPORTANT** is each of these advantages/disadvantages to you in deciding whether or not to use condoms every time you have vaginal sex with your main partner in these situations, using the following 5-point scale?:

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
1. I would be safer from disease.	1	2	3	4	5
2. It makes sex feel unnatural.	1	2	3	4	5
3. It would be too much trouble.	1	2	3	4	5
4. My partner would be angry.	1	2	3	4	5
5. I would feel more responsible.	1	2	3	4	5
6. My partner would think that					

I do not trust him/her.	1	2	3	4	5
7. It protects my partner as well as myself.	1	2	3	4	5
8. It would be safer from pregnancy.	1	2	3	4	5
9. They are easily available.	1	2	3	4	5
10. I would have to rely on my partner's cooperation.	1	2	3	4	5

SECTION E

CONDOM USE WITH OTHER PARTNER(S)

This section deals with questions regarding having vaginal sex with someone of the opposite sex who is not your main partner.

1. In the last 6 months, have you had sex with someone other than a main partner?
 - ☐ 1) Yes
 - ☐ 2) No - Go to Page 26 (Processes of Condom Use)
2. How many of your other partners have you discussed condom use with?
 - ☐ 1) All
 - ☐ 2) Most
 - ☐ 3) Some
 - ☐ 4) None
3. When you have vaginal sex with someone other than your main partner, how often do you use a condom?
 - ☐ 1) Every time
 - ☐ 2) Almost every time
 - ☐ 3) Sometimes (Skip to Question 5 below.)
 - ☐ 4) Almost never (Skip to Question 5 below.)
 - ☐ 5) Never (Skip to Question 5 below.)
4. How long have you been using a condom (every time) you have vaginal sex with someone other than your main partner?
 - ☐ 1) 30 days or less (Skip to Question 5)
 - ☐ 2) More than 30 days -- less than six months (Skip to Question 5)
 - ☐ 3) Six months or more (Go on to Question 4a)

4a. Have you been using a condom (every time) you have vaginal sex with someone other than your main partner for about:

- ☐ 1) 1 year
- ☐ 2) 2 years
- ☐ 3) 3 years
- ☐ 4) 4 or more years

- Skip to Question 7 -

5. In the next six months, how likely do you think it is that you will start using condoms every time you have vaginal sex with someone other than your main partner)?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't (Skip to Question 7)
- ☐ 7) Extremely sure I won't (Skip to Question 7)

6. In the next 30 days, how likely do you think it is that you will use condoms every time you have vaginal sex with someone other than your main partner)?

- ☐ 1) Extremely sure I will
- ☐ 2) Quite sure I will
- ☐ 3) Slightly sure I will
- ☐ 4) Undecided -- not sure if I will or won't
- ☐ 5) Slightly sure I won't
- ☐ 6) Quite sure I won't
- ☐ 7) Extremely sure I won't

7. When having vaginal sex with someone other than your main partner, why do you use condoms?

- ☐ 1) to prevent pregnancies
- ☐ 2) to prevent sexually transmitted diseases (such as V.D., or HIV/AIDS)
- ☐ 3) to prevent both pregnancy and disease
- ☐ 4) don't know why, partner made the decision
- ☐ 5) never use condoms

8. Thinking about your past experience with condoms with someone other than your main partner, would you say that your experience has been:

- ☐ 1) All bad
- ☐ 2) Mostly bad but some good
- ☐ 3) About half bad - half good
- ☐ 4) Mostly good but some bad
- ☐ 5) All good
- ☐ 6) Never used/DK

CONFIDENCE

Listed are several situations that might affect people's use of condoms.

HOW CONFIDENT or HOW SURE are you that you would use condoms every time you have vaginal sex with someone other than your main partner in these situations, using the following 5-point scale?:

(1 = Not at all confident, 5 = Extremely confident)

HOW CONFIDENT are you that you would use condoms:

	Not at all confident				Extremely confident
1. When you think the risk of diseases is low.	1	2	3	4	5
2. When you have been using alcohol or drugs.	1	2	3	4	5
3. When you cannot discuss condom use with a partner.	1	2	3	4	5
4. When you think your partner might get upset.	1	2	3	4	5
5. When you are already using another method of birth control.	1	2	3	4	5

ADVANTAGES AND DISADVANTAGES OF CONDOM USE - OTHER PARTNERS

Listed are several possible reasons for using Condoms every time you have sex. **HOW IMPORTANT** is each of these advantages/disadvantages to you in deciding whether or not to use condoms every time you have vaginal sex with someone other than your main partner in these situations, using the following 5-point scale?:

(1 = Not at all important, 5 = Very important)

	Not At All Important				Very Important
1. I would be safer from disease.	1	2	3	4	5
2. It would be too much trouble.	1	2	3	4	5
3. It would be safer from pregnancy.	1	2	3	4	5
4. My partner would be upset.	1	2	3	4	5
5. I would feel more responsible.	1	2	3	4	5

6. My partner would think that I "play around".	1	2	3	4	5
7. It protects my partner as well as myself.	1	2	3	4	5
8. It is easily available.	1	2	3	4	5
9. It makes sex feel unnatural.	1	2	3	4	5
10. I would have to rely on my partner's cooperation.	1	2	3	4	5

PROCESSES OF CHANGE FOR CONDOM USE

The following thoughts/experiences can affect the use of CONDOMS for some people. Think about any similar thoughts/experiences you may be currently having, or have had, in the last month. Please rate the FREQUENCY of each event using the following 5-point scale:

- 1 = Never
- 2 = Seldom
- 3 = Occasionally
- 4 = Often
- 5 = Repeatedly

	Never				Repeatedly
1.) I keep condoms where I stay.	1	2	3	4	5
2.) I remember hearing that using condoms with spermicide is the most effective way to prevent diseases.	1	2	3	4	5
3.) If I feel pressured by a partner to have sex without a condom, I don't give in.	1	2	3	4	5
4.) I get upset when I hear stories about people getting AIDS and other sexually transmitted diseases (STDs) from their partners.	1	2	3	4	5
5.) I carry condoms with me when I go out.	1	2	3	4	5
6.) Using a condom makes my partner feel cared about.	1	2	3	4	5

7. I feel more responsible when I use condoms every time I have sex.	1	2	3	4	5
8. I find society changing in ways that make condom use more acceptable.	1	2	3	4	5
9. If a partner does not want to use a condom, I insist that we do.	1	2	3	4	5
10. I notice it's getting easier to find sex partners who don't mind using condoms during sex.	1	2	3	4	5
11. I talk about condoms with my partner before sex even gets started.	1	2	3	4	5
12. I think about things I've seen or heard about how condoms help keep you from getting the AIDS virus and other diseases during sex.	1	2	3	4	5
13. I reward myself when I use condoms to reduce my risk of AIDS and other diseases.	1	2	3	4	5
14. The sex partners I really care about approve of my using condoms during sex.	1	2	3	4	5
15. It seems that there are more people around who want to use condoms during sex.	1	2	3	4	5
16. I stop to think that if everyone used a condom every time they had sex, AIDS and other STDs wouldn't be spreading so fast in our community.	1	2	3	4	5
17. I get pretty stirred up when I hear warnings about sex without a condom.	1	2	3	4	5
18. If I am with a partner who doesn't want to use a condom, I tell myself my health is too important to risk getting infected with AIDS and other STDs.	1	2	3	4	5
19. I feel bad about having sex without a condom because I know it increases					

my risk for AIDS and other STDs.	1	2	3	4	5
20. I avoid partners who pressure me to have sex without a condom.	1	2	3	4	5
21. I remember things people have told or shown me about using a condom during sex to keep from getting AIDS and other STDs.	1	2	3	4	5
22. I have thought about the fact that I can help stop the spread of AIDS/STDs in my community if I use a condom every time I have sex.	1	2	3	4	5
23. I feel good about myself when I am able to use condoms consistently.	1	2	3	4	5
24. I tell myself that I can choose to have sex with a condom.	1	2	3	4	5
25. When I want to have vaginal or anal sex but don't have a condom, I find other ways to satisfy myself and my partner.	1	2	3	4	5
26. I remember hearing or seeing something about how you can get AIDS and other STDs from sex.	1	2	3	4	5
27. Remembering stories about people sick with AIDS upsets me.	1	2	3	4	5
28. I stop to think that sex without a condom is spreading the AIDS virus and other STDs around my community.	1	2	3	4	5
29. If I am with a partner who tries to get me to have sex without a condom after I've said no, I keep saying no.	1	2	3	4	5
30. I feel better about myself when I use condoms to reduce my risk of AIDS and other STDs.	1	2	3	4	5
31. I have someone I can count on when I'm having a hard time using condoms every time I have sex.	1	2	3	4	5
32. When condoms aren't available, my partner and I do something else that is fun (like oral sex, body					

massages, etc.) instead of vaginal sex.	1	2	3	4	5
33. I stop to think that using a condom protects my partner, as well as myself.	1	2	3	4	5
34. There are people in my life who encourage and support my using condoms.	1	2	3	4	5
35. I tell myself that I am going to try harder to use a condom every time I have sex.	1	2	3	4	5
36. If a partner won't use a condom, I say "no" to vaginal sex.	1	2	3	4	5
37. I've noticed that a lot of people are talking about the importance of regular condom use.	1	2	3	4	5
38. I avoid using alcohol or drugs before, or during, sex.	1	2	3	4	5
39. When a sex partner does not want to talk about condoms, I tell him/her we have to talk anyway.	1	2	3	4	5
40. Seeing pictures of people dying of AIDS upsets me.	1	2	3	4	5
41. When I am tempted to have sex without a condom, I remind myself how much better I feel "the morning after" if I use a condom.	1	2	3	4	5
42. I have someone I can talk to about my experiences with trying to use condoms.	1	2	3	4	5
43. If I am tempted to have sex without a condom, I stop to think how free from worry I would be if I resist.	1	2	3	4	5
44. I have someone in my life who supports my decision to use condoms.	1	2	3	4	5
45. If a partner tries to get me to have sex without using a condom after I've said no, I keep saying no.	1	2	3	4	5
46. I notice that condoms are now easier to find in stores and clinics.	1	2	3	4	5

SECTION F

Background Information:

1. Race:
 - (1) African-American
 - (2) Asian-American
 - (3) Hispanic-American
 - (4) Native American
 - (5) White
 - (6) Other
2. Year in school:
 - (1) Freshman
 - (2) Sophomore
 - (3) Junior
 - (4) Senior
3. Parents income:
 - (1) under 20,000
 - (2) 20,000-39,999
 - (3) 40,000-59,999
 - (4) 60,000-79,999
 - (5) more than 80,000
4. Current living arrangements:
 - (1) single, not living with sexual partner
 - (2) single, living with sexual partner
 - (3) married
 - (4) separated or divorced
 - (5) other
5. Religious affiliation:
 - (1) Catholic
 - (2) Hindu
 - (3) Islamic
 - (4) Jewish
 - (5) Protestant
 - (6) Other
6. Sex:
 - (1) female
 - (2) male
7. Your age is: _____years.

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