

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

U·M·I

University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600

Order Number 9417489

Adolescents and AIDS: The theory of reasoned action

Astone, Janetta Weikman, Ph.D.

City University of New York, 1994

Copyright ©1994 by Astone, Janetta Weikman. All rights reserved.

U·M·I

300 N. Zeeb Rd.
Ann Arbor, MI 48106

A

ADOLESCENTS AND AIDS:
THE THEORY OF REASONED ACTION

by

JANETTA WEIKMAN ASTONE

A dissertation submitted to the Graduate Faculty in Psychology
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy, The City University of New York

1994

1994

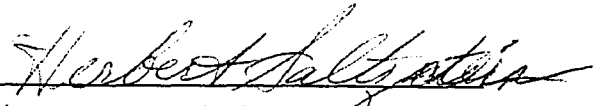
JANETTA WEIKMAN ASTONE

All Rights Reserved

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

1-19-94


Date



Chair of Examining Committee

1-19-94

Date



Executive Officer

Charles Winick Ph.D.

Glen Hass Ph.D.

Robert Fullilove Ed.D.

Barry Spunt Ph.D.

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

ADOLESCENTS AND AIDS: THE THEORY OF REASONED ACTION

by

Janetta Astone

Advisor: Professor Herbert Saltzstein

This study investigated how well the theory of reasoned action (TRA) predicted intentions -- to have sex, to use condoms and to smoke marijuana -- in a sample of 115 minority adolescents, between 13 and 18 years old, attending two Police Athletic Leagues in New York City. The degree to which intentions predicted self-reported behavior was also examined. Overall, the findings were in support of the theory of reasoned action.

Multiple regression analysis revealed that the indirect measures of attitude and subjective norm were significant contributors to the prediction of intention to have sex, to use condoms and to smoke marijuana. Direct measures of attitude and subjective norm predicted intention to smoke marijuana; however, only attitude was a significant contributor to the prediction of intentions to have sex and use condoms. Indirect and direct measures of perceived behavioral control were added to attitude and subjective norm but did not significantly contribute to the prediction of

intention to behave.

Logistic regression analysis showed that intentions significantly contributed to the prediction of having sex and using condoms, but not to the prediction of smoking marijuana.

Adolescents had a high degree of AIDS knowledge; however, no correlation was found between the adolescents' degree of AIDS knowledge and their intentions to use condoms. Research recommendations and intervention implications are discussed.

TABLE OF CONTENTS

LIST OF TABLES	viii
LIST OF FIGURES	xi
ACKNOWLEDGEMENTS	xii
ABSTRACT	iv
1. INTRODUCTION	1
Adolescents and AIDS	
Theory of Reasoned Action	
Literature Review: Adolescent Risk-Taking Behavior and the Theory of Reasoned Action	
Theory of Planned Behavior: Overview	
Theory of Planned Behavior: Literature Review	
Adolescents and AIDS Knowledge	
2. METHOD	35
Overview of Analysis	
Hypotheses	
Overview of Measurement	
Elicitation Study: Overview	
Elicitation Study: Results	
3. MEASUREMENT	43
Attitude and Belief Scale	
Behavior Scale	
AIDS Knowledge Scale	

4. RESULTS	49
Pilot Study	
Main Study	
AIDS Knowledge	
Attitudes and Subjective Norms Predict Intentions	
Intentions Predict Behavior	
5. DISCUSSION	90
Importance of the Attitudinal Component	
Direct and Indirect Measures of Subjective Norm	
Perceived Behavioral Control	
08 Knowledge	
6. APPENDIX I.....	108
Means and Standard Deviations of the Independent Variables Using Indirect Measures	
7. APPENDIX II.....	118
Assessment Instruments	
8. REFERENCES	145

LIST OF TABLES

Table	Page
1. Attitude measurement	12
2. Subjective norm measurement	13
3. Elicitation group responses for having sex	41
4. Elicitation group responses for using condoms	41
5. Elicitation group responses for smoking marijuana	41
6. Correlations of indirect and direct measures of	49
attitude, subjective norm and perceived control for having sex, smoking marijuana and using condoms	
7. Demographics on Time 1 and Time 2 samples	51
8. Comparisons of means on intentions to have sex	51
have sex, use condoms and smoke marijuana between adolescents who did and did not attend Time 2.	
9. Means and standard deviations for each	63
behavioral belief item and evaluative item for the indirect measure of attitude toward having sex	
10. Means and standard deviations for each normative	64
belief item and motivation to comply item for the indirect measure subjective norm of having sex	
11. Means and standard deviations for each	65
behavioral belief item and evaluative item for the indirect measure of attitude toward using condoms	
12. Means and standard deviations for each normative	66
belief item and motivation to comply item for the indirect measure of subjective norm of using condoms	
13. Means and standard deviations for each	67
behavioral belief item and evaluative item for the indirect measure of attitude toward smoking marijuana	

14. Means and standard deviations for each normative68
belief item and motivation to comply items for
the indirect measure of subjective norm of smoking
marijuana
15. Means and standard deviations for each69
perceived control item for the indirect measure of
perceived control of having sex.
16. Means and standard deviations for each70
perceived control item for the direct measure of
perceived control for having sex.
17. Means and standard deviations for each70
perceived control item for the indirect measure of
perceived control of using condoms.
18. Means and standard deviations for each71
perceived control item for the direct measure of
perceived control of using condoms.
19. Mean and standard deviation for each71
perceived control item for the indirect measure of
perceived behavioral control for smoking marijuana.
20. Mean and standard deviation for each72
perceived control item for the indirect measure of
perceived behavioral control for smoking marijuana.
21. Percent of adolescents responding true, false,76
and don't know on the AIDS Knowledge Survey.
22. Regression model using **direct** measures of81
attitude, subjective norm and perceived behavioral
control in the prediction of having sex.
23. Regression model using **direct** measures of82
attitude, subjective norm and perceived behavioral
control in the prediction of smoking marijuana.
24. Regression model using **indirect** measures of82
attitude, subjective norm and perceived behavioral
control in the prediction for using condoms.
25. Regression model using **indirect** measures of84
attitude, subjective norm and perceived behavioral
control in the prediction for having sex.

26. Regression model using **indirect** measures of.....85
attitude, subjective norm and perceived behavioral
control in the prediction for having sex.
27. Regression model using **indirect** measures of.....85
attitude, subjective norm and perceived behavioral
control in the prediction for using condoms.
28. Logistic regression model using intention and89
perceived behavioral control to predict self-reports
of having sex. Analytic step one: Intention to have
sex entered on step 1.
29. Analytic step two: Direct measure of perceived90
control entered on step 2
30. Logistic regression model using intention and91
perceived behavioral control to predict
self-reported condom use. Analytic step one:
Intention to use condoms entered on step 1.
31. Analytic step two: Direct measure of perceived92
control entered on step 2
32. Logistic regression model using intention and93
perceived behavioral control to predict self-
reported marijuana use. Analytic step one:
Intention to smoke marijuana entered on step 1.
33. Analytic step two: Direct measures of perceived94
control entered on step two
34. Regression Results: Significant contributors to95
the prediction of intention to have sex, to use
condoms and to smoke marijuana. Significance of
intention in the prediction of self-reported behavior

LIST OF ILLUSTRATIONS

Figure	Page
1. Theory of Reasoned Action	10
2. Theory of Planned Behavior	28
3. Percentage, by age, of adolescents who reported having sex, smoking marijuana and using condoms	58
4. Percentage, by sex, of adolescents who reported having sex, smoking marijuana and using condoms	59
5. Percentage of adolescents reporting intention to have sex, smoke marijuana and use condoms	60

ACKNOWLEDGEMENTS

I would like to thank God for guiding my footsteps and give Him the glory for this accomplishment. I want to thank my full committee, Drs. Herb Saltzstein, Glen Hass, Charles Winick, Robert Fullilove, and Barry Spunt for their support in the completion of my dissertation. I would especially like to thank my Committee Chairman, Dr. Herbert Saltzstein who provided encouragement, invaluable advise and positive reinforcement. I thank him for his expedient reviews of my work and his accessibility, characteristics which are rare in academia today. Likewise, I thank Dr. Robert Fullilove who provided many hours of his statistical expertise.

I want to thank my husband, Scott, who shared the responsibilities of maintaining a household and raising our three sons. He saw me the whole way through and provided the encouragement and motivation to finish when it sometimes felt like it was impossible to do. To my sons, Alexander, Zachary and Oliver, I thank you for your patience and your love which helped to keep it all in perspective. Thanks to my mom, Olive Weikman, who taught me that I could do whatever I wanted and that persistence was the key.

I also want to thank Dr. Stephen Schinke for providing me with the opportunity to join his AIDS and Adolescents project. My thanks to Donzell Mitchell, Manhattan Bureau Supervisor of the Police Athletic League, for his enthusiasm in the study. I thank him for reviewing the written materials and for his input for implementing effective recruitment strategies. Thanks to the many PAL staff including Sam Moore who assisted in the data collection. I want to thank, Donna Weikman and Richard Giannadeo for assisting with the pilot studies. I learned a great deal during that time. My thanks also to all my colleagues in the Behavioral Science Training Program, past and present, who spent so much time looking through numerous revisions and providing suggestions and insight that was of immeasurable help. A special thanks to Dr. Deborah Hillman who spent hours editing the final versions and taught me a great many things, grammar being only one of them. I want to thank the many people who took an interest in seeing the completion of this dissertation; Dr. Greg Falkin, Dr. Bruce Johnson, Dr. Mangai Natarajan, Dr. David Kressel, Dr. Josephine Hawke, Dr. Denise Cantalupo, Claudia Laundis, Dorothy and Con Astone and Camille Fine.

Introduction

This research is concerned with the problem of adolescents' continued engagement in high-risk behaviors associated with HIV transmission. A systematic examination of inner-city adolescents' attitudes, beliefs, and intentions regarding sexual intercourse, condom use, and marijuana use was conducted within the theoretical framework of the theory of reasoned action (Ajzen, 1985). Minority adolescents' personal beliefs and attitudes regarding the performance of high-risk behaviors, as well as the adolescents' perception of how significant others would respond to their performance of these high-risk behaviors, are reported.

The theory of reasoned action has had extensive success in predicting human behavior and has provided a means for predicting intentions to have sex, to use condoms and to smoke marijuana. It also provided a systematic way to understand the underlying determinants of the adolescents' attitudes and intentions regarding these behaviors.

The theory of reasoned action has recently been extended to the theory of planned behavior which incorporates the construct of perceived behavioral control. The theory of reasoned action was formulated to predict volitional behaviors. Perceived behavioral control was added to the theory of reasoned action in order to improve the understanding and prediction of behaviors not under volitional

control. This research included the construct of perceived behavioral control to increase the prediction of risky behaviors believed to be nonvolitional, as well as to understand how adolescents perceived the extent to which they had control over whether to smoke marijuana, have sexual intercourse and use condoms. The adolescents' degree of AIDS knowledge was assessed to determine the relationship between knowledge and behavioral intentions to use condoms, as well as knowledge and self-reported condom use.

This research has theoretical implications and social significance, as it provided a way to assess the predictive power of the theory of reasoned action within an adolescent minority population. This is significant because there are few studies that used the theory of reasoned action to predict these high-risk behaviors within a minority adolescent population. To date, there are no studies using the theory of reasoned action to predict intentions to have sexual intercourse, or to predict self-reported sexual intercourse. Unlike numerous studies which solely assess how attitudes and subjective norms predict intentions, this research examined the entire theory of reasoned action, including how intentions predict self-reported behavior.

The theory of planned behavior, an extended version of the theory of reasoned action, is in its early developmental stages. The model requires applications to test the robustness of the construct of perceived behavioral control. This was

done through an examination of adolescents' high risk behaviors.

Adolescents and AIDS

At the end of December 1989, the Centers for Disease Control and Prevention reported that there were 451 teens diagnosed with AIDS. By the end of 1990 the number had risen to 585 and at the end of 1992 it reached 946 (Center of Disease Control, 1992). Adolescent AIDS cases have increased 77% over a two year period, and AIDS is the sixth leading cause of death for people between the ages of 15 and 24. Of the reported AIDS cases, relatively few are in the 13-18 year age group, however 21% of reported cases in the general population are in the 20-24 year age group. This is of great importance since the latency period for HIV is now estimated to be between one and seven (or more) years. Thus, many of these individuals may have been exposed to HIV during adolescence, with symptoms manifesting years later (Centers for Disease Control, 1988). There has been a consensus, in recent years, that if adolescents are not targeted for AIDS prevention programs now, while the numbers of AIDS cases are still contained, there is a serious risk that the incidence of AIDS will spread at a rapid and uncontrollable rate within the adolescent population.

This presents a formidable challenge, since many aspects of the adolescent stage of development render adolescents vulnerable to participation in high-risk behaviors associated

with HIV transmission. For example, adolescents' thinking is often characterized by personal fable, imaginary audience, and egocentrism (Elkind, 1978). The accentuation of personal fable during adolescence creates intense feelings of uniqueness and immortality. Adolescents experience a heightened sense of exclusion from negative events which allows them to feel invulnerable to AIDS. This attitude creates a false sense of security and does not motivate the adolescent to reduce participation in high-risk behaviors or to take precautionary actions. At this age there is also great difficulty in responding to requests to refrain from behaviors whose negative consequences do not occur for years. Today's adolescents are bombarded with the social problems of homelessness and environmental catastrophes. The emergence of AIDS adds credence to a frequently observed fatalistic attitude translating into feelings of helplessness which have long been known to lead to nonperformance of behaviors (Seligman, 1977). In this case, the nonperformance of behaviors concerns those which are risk-reducing. Thus, feelings of helplessness and invulnerability may co-exist or alternate, leading to the same immobilization of reasonable action. Adolescents' lack of risk reducing behaviors may also be a result of their struggle with Post Traumatic Stress Syndrome (Robert Fullilove, personal communication, 1993). Each day inner-city adolescents are confronted with overwhelming stressors: sexual and physical abuse, violence at

home, school and on the streets, and AIDS- related deaths . Taking precautions to avoid the possibility of dying from AIDS in ten years has lower priority than dealing with more immediate life-threatening crises. Inner-city minorities have been found to be at higher risk for HIV infection. They are also the ones' who are most often confronted with highly stressful environments that decrease the likelihood of using precautionary behaviors.

Finally, risk-taking, which is a common aspect of adolescence, often includes behaviors which are linked to the transmission of HIV. Drug experimentation and sexual exploration are the very behaviors which are highly risk-related, and they are also highly associated with this age group. Social scientists agree that there is a need to study adolescent risk-taking behaviors within a theoretical framework which will allow for the understanding and prediction of these behaviors. Such research will facilitate the design and implementation of interventions, which can result in the reduction of risk taking behaviors.

The following discussion introduces the theory of reasoned action, explains the measures, and discusses its relevance to the study of adolescent risk-taking behaviors: having sex, using condoms, and smoking marijuana.

Theory of Reasoned Action

Social psychology has long been interested in the attitude-behavior relationship. The general consensus is that attitudes influence and predict behavior, yet typically the correlations between the two are modest at best. This limitation was brought to the forefront in a review paper by Wicker (1969) which concluded that in order to increase the predictability of behavior, it is necessary to examine other variables in addition to attitudes. Some social psychologists followed this assumption in an effort to increase the accuracy of predicting behaviors (Fazio and Zanna, 1981), while other researchers have proposed that increasing the number of variables in order to increase predictability would result in little gain as long as the basic methodology remained flawed. Ajzen and Fishbein (1973) took the position that attaining higher correlations between the measure of attitude and the performance of behavior required comparable measures of specificity for both constructs, attitude and behavior. Predicting a single act requires that the attitude measurement be a specific measure of the attitude towards that act. Global attitude measurement of a specific act would naturally result in low correlations. The theory of reasoned action (Fishbein and Ajzen, 1975) employed this measurement approach and yielded a substantial amount of empirical support for the model within a diverse set of applications (for a review of the literature see Ajzen and Fishbein, (1980); Fishbein and

Ajzen, (1975); critical discussion of the theory can also be found in Miniard and Cohen, (1981)). As stated by Fishbein et al. (1987), "it is possible to account for behaviors of various kinds by reference to a relatively small number of concepts embedded within a single theoretical framework."

The theory of reasoned action is based on the assumption that human beings are rational and make systematic use of the information available to them in the words of Fishbein et al.:

We don't subscribe to the view that human social behavior is controlled by unconscious motives or overpowering desires, nor do we believe that it can be characterized as capricious or thoughtless. Rather, we argue that people consider the implication of their actions before they decide to engage or not engage in a given behavior.

They go on to say:

though we take the position that beliefs determine attitudes and subjective norms and that these in turn influence intentions, we do not mean to imply that prior to performing the action, people systematically scrutinize the determinants of their behavior. Rather, we view the processes involved as largely automatic or implicit, and only in rare cases do we become fully aware of these processes. (1987, p.245)

It is traditionally believed that adolescents' behavior is determined by irrational beliefs and external social pressures. Adolescents are viewed as impulsive decision-makers, compelled by the immediate consequences of their choices and therefore prone to discount the risk of AIDS. For these reasons, it is posited that the use of an expectancy-value model would be unsuccessful in the prediction of behaviors that have long been presumed to be under the sole influence of passion, distraction, and impulse. However, the

theory of reasoned action has been successful in predicting a wide range of behaviors including, smoking marijuana and using contraceptives (Cook, 1980; Adler, 1987), indicating that adolescent risk-taking behavior is the result of rational thought processes. Melton (1988) argues that an adolescents' decision to engage in a risky behavior is determined by his or her analysis of the costs and benefits of engaging in that behavior. Gardener et al. (1991) argue that "adolescents' disposition to discount their futures is itself a rational response to the uncertainty of the transition from youth to adulthood."

The theory of reasoned action is a unique and comprehensive social-psychological expectancy-value model which includes a personal and a social factor, each weighted for its relative importance. The measures use items that are derived from the population being studied, therefore the measures are age-appropriate and culturally sensitive to the sample being studied. The TRA takes into account the adolescent's beliefs about a particular behavior, how the adolescent perceives the consequences of performing that behavior, who the most influential people are with regard to each behavior, and to what extent the adolescent wants to comply with these people.

The theory of reasoned action can be thought of as a series of assumptions, the central one being that **intentions can predict behavior**. The stronger the intention to perform a

behavior the more likely the subsequent performance of that behavior. In order to understand the intentions of an individual, it is necessary to know what the person's attitudes are regarding the behavior (attitude), and how the person perceives the social pressures to perform the behavior (subjective norm).

The theory also assumes that **Intentions can be better understood and predicted by a weighted combination of two conceptually independent constructs: attitude toward the behavior and subjective norm.** In some instances, intentions are predicted to a greater extent by attitudinal factors, and for other behaviors the normative factors will play a greater role in predicting intentions. Since the object of the theory of reasoned action is to understand, as well as predict behaviors, Fishbein and Ajzen attempted to understand an individual's attitudes and subjective norms. Attitudes are understood by assessing the individuals beliefs regarding their performance of a behavior (behavioral beliefs). "Behavioral beliefs are beliefs that performing the behavior will lead to certain outcomes and the evaluative aspects of those beliefs are the person's attitude" (Fishbein and Middlestadt, 1987, p.367). Subjective norms are understood by assessing the normative beliefs which are the individual's beliefs that particular persons important to them (referents) think that they should perform the behavior - and by assessing the degree to which the individual wants to comply with these

referents. A third assumption is that **Attitudes and subjective norms are linked to behavioral and normative beliefs** (see Fig. 1).

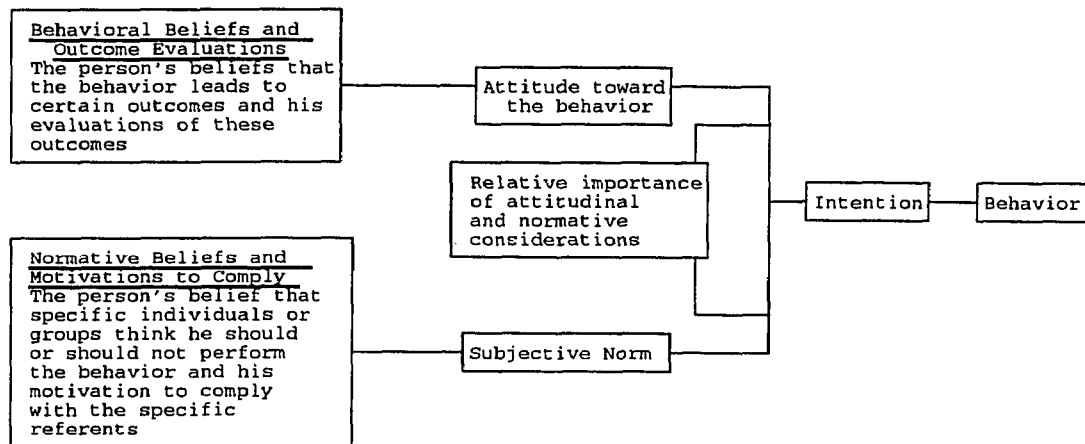


Figure 1

Relations among beliefs, attitude, subjective norm, intention, and behavior in the theory of reasoned action

According to the theory of reasoned action, there are three requirements in order for a strong association between behavioral intentions and behavior to occur: (1) the measure of intentions must be specific to the behavior in question (Ajzen, 1982; Ajzen and Fishbein, 1977), (2) the intention must remain the same between the time of measurement and the time of actual behavior, and (3) the behavior must be under volitional control (Fishbein and Ajzen, 1975).

In the following two sections, the conceptually distinct constructs, attitude and subjective norm, will be discussed separately. First "attitude" will be defined, its components will be identified, and the method for measuring this

construct will be detailed. The same format will be followed with respect to the concept of subjective norm.

Attitude Toward the Behavior

Attitude toward the behavior refers to the individual's negative or positive evaluation of performing the behavior. According to the theory, attitudes can be predicted by "behavioral beliefs" which are defined as one's salient beliefs relevant to the behavior. More specifically, each behavioral belief refers to the likelihood that the behavior will lead to certain consequences. The strength of a behavioral belief is obtained by requesting that the adolescents rate their level of agreement or disagreement with that belief (e.g. "If I use a condom, it will decrease the risk of me (my girlfriend) from getting pregnant") on a 7-point very unlikely-very likely scale).

The evaluation of outcome refers to whether the behavioral belief (getting pregnant) is judged by the adolescent to be positive or negative. The subject is asked to rate on a 7-point good-bad scale the statement: "For me, decreasing the risk of pregnancy is." A quantitative formula devised by Fishbein and Ajzen (1975) is used to obtain a measure of attitude: $\text{Attitude} = \text{behavioral beliefs} \times \text{evaluation of outcomes}$. Each behavioral belief item is multiplied by the corresponding evaluation of outcome item, and the products are summed to produce a measure of attitude.

Table 1.

Example of an Attitude measurement $A = (b) \times (e) = 110$

<u>Consequences of using a condom</u>	<u>Belief</u>		<u>Evaluation</u>		
1. decrease risk of pregnancy	7	x	7	=	49
2. decrease risk of HIV infection	5	x	7	=	35
3. decrease sexual pleasure	7	x	2	=	14
4. increase risk of rejection of partner	6	x	2	=	12

					110

This example of an attitude measurement shows that there are four belief statements used to assess the indirect measure of attitude. The strength of the four behavioral beliefs, as judged by this hypothetical subject, are: 7, 5, 7, and 6 respectively, and the corresponding evaluations are 7, 7, 2, and 2. The products of the behavioral belief strength and the evaluations are $(7 \times 7) = 49$, $(7 \times 5) = 35$, $(7 \times 2) = 14$ and $(6 \times 2) = 12$ summing to 110. Therefore, for this subject, the indirect measure of attitude toward condom use is 110.

The theory of reasoned action has repeatedly demonstrated that attitudes are predictive of behavioral intentions, and that intentions are predictive of behavior. Assessing adolescents' attitudes provides a way to understand the underlying motivations for their behaviors. Equally important, the theory of reasoned action provides a means of modifying attitudes that encourage risky behaviors.

Subjective norm

Subjective norm is defined as the perceived social pressure to perform or not perform a certain behavior. Social norms are linked to "normative beliefs," which are defined as the adolescent's perceptions of how relevant others (referents) would respond to his or her engaging in a particular behavior. Motivation to comply refers to the extent to which the adolescent wants to comply with the referent. A quantitative formula is used to obtain a measure reflective of subjective norm: Subjective norm = Normative beliefs x Motivation to comply. The strength of each normative belief item is multiplied by the corresponding motivation to comply item. The resulting products are summed, creating an indirect measure of subjective norm.

Table 2.

Example of a Subjective Norm Measurement

Important referents	NB		MC	=	(NB) (MC)
1. boyfriend/girlfriend	2	x	7	=	14
2. parents	6	x	1	=	6
					<u>20</u>

The subjective norm is an especially powerful construct when dealing with adolescents. The importance of social influence on adolescents' behavior should not be underestimated. At no other time is the perception of what others do, or the perception of what others expect you to do

in order to remain part of the in-group, so strong as in this stage of development (Sherif et.al.1963).

The theory of reasoned action is one of the few theories which incorporates the subjective norm along with an assessment of personal attitudes toward a behavior. This provides a comprehensive and meaningful way to examine adolescents' choice to have sex, use condoms and smoke marijuana. The TRA provided a means for determining the relative strength of the influence that peers, parents, partners, and other specified referents exert on adolescents to have sex, use condoms, and smoke marijuana. Theories which do not incorporate social pressures to behave are excluding a powerful influence on adolescent behavior.

Literature Review of Adolescent Risk-Taking Behavior and the Theory of Reasoned Action

Adolescents and Sexual Activity

Within the United States, approximately half of all adolescents between the ages of 15 and 19 have had at least one incidence of sexual intercourse. Hingson and Strunin (1992) found an increase in the overall proportion of

adolescents who reported having sex: from 55% in 1989 to 66% in 1990.

Certain subgroups of the adolescent population exhibit an increase in risky sexual behaviors, putting them at high risk for HIV infection. One study found that the mean age of first

sexual intercourse was 12 years old for inner-city adolescent females who had been held in detention centers, were homeless, or were living in group homes (Hein et al. 1978). The risk of HIV infection is especially high for these adolescents, as their sexual behaviors include unsafe sex with numerous partners. Sorenson (1973) identified the "sexual adventurer" as having a behavioral profile high in risky behaviors. As defined by Sorenson, the sexual adventurer is an adolescent who has had at least 17 sexual partners by the end of his or her teens and an average of 3.2 sexual partners in the month preceding the interview. In the United States, 41% of the male and 13% of the female teenagers fall into the sexually active category. Broering et al (1989) found that, of the teenagers in their study, 41% of the females and 65% of the males claimed to have had anal sex on more than one occasion.

Sexual intercourse is one of the two primary means of HIV transmission, and is particularly risky without the use of a latex condom. The high rate of unsafe sexual activity among teens is verified by the high rate of teen pregnancy. Every day in New York State, approximately 180 teens become pregnant (Randolph et al, 1986), and among young people 10 to 14 years old, the rate of unwanted pregnancies, increased by 23% from 1983 to 1987. The risk of HIV infection exists for both teens and their unborn babies.

Another objective indicator of unsafe sex is the rate of occurrence of sexually transmitted diseases (STD's). In the

last ten years, a large proportion of the adolescent population has been afflicted with a sexually transmitted disease. In fact, the rate of STD's ranks highest for individuals under 25 and declines exponentially with increasing age (Bell and Holmes, 1984). One might think that given the perils of AIDS, the rate of STD's would be on the decline, yet this is far from the case. Indeed, the rate of STD's is at an all-time high. The highest rates of gonorrhea, syphilis, chlamydia, and other STD's exists in the adolescent population (Hein, 1987). Exposure to STD's poses serious consequences, as STD's provide an easy route for transmission of HIV through the associated lesions or cuts in the genital area. There is also speculation that the physiological differences between female adolescents and adult women, such as vaginal Ph level and absence of protective hormones which increases the occurrence of STD's in adolescents, may also increase the female adolescents' susceptibility to HIV infection (Hein, 1989). " Whether or not young adolescent females with early age at first intercourse are also at increased risk for HIV infection and consequent alterations in immune status is unknown at this time" (Hein, 1989 p.293). From 1950 to 1988, rates of gonorrhea quadrupled among adolescents between the ages of 10 and 14, and they tripled among those 15 to 19 years old. Documented increases in the more common forms of STD's suggests that HIV is concurrently rising. Quinn et al. (1988) found that among a group of inner-

city adolescents who were being seen at an STD clinic, 2.2% of those 15-19 years tested positive for HIV.

One explanation for the high rate of STD's is nonuse or inconsistent use of condoms. Earlier studies of contraceptive use among adolescents are replete with findings of nonuse of all types of contraception (Zelnik and Kantner, 1979; Sorenson, 1973; for a review see Morrison, 1985).

Adolescents and Contraception

Hingson and Strunin (1992) found that of the sexually active male and female adolescents in their study, 37% reported "never using" condoms, and 33% responded that they used a condom "only some of the time." In addition, 18% reported unprotected sex with more than one partner in the previous year, and 3% reported unprotected sex with intravenous drug users. Similar findings have been reported by Pleck et. al. (1990) and Norris et. al. (1990).

The evaluation of the adolescents' intentions to use condoms required an assessment of their attitudes and salient beliefs towards using condoms. This was useful since, up to the present, there have been strikingly few studies examining adolescents' attitudes and beliefs regarding various types of contraception (Morrison, 1985). Morrison (1985) states that the existing studies fall into two types: broad studies of attitudes toward contraception in general, and specific studies of attitudes toward oral contraception. Only recently has there been a focus on attitudes and beliefs about condoms

(Jemmott et al, 1990). Most of these studies have found that condoms are perceived as clumsy, awkward, and embarrassing, and they are thought to decrease sexual pleasure. Norris et al. (1990) examined beliefs about condoms in a group of minority adolescents whose beliefs were broken down into positive and negative categories. The positive beliefs included the ideas that condoms provide protection from getting pregnant, as well as protection from getting AIDS. The negative beliefs included the ideas that condoms delay orgasm, break, decrease pleasure, are uncomfortable, stay inside the partners body, come off if lubricant is used, are a disposal problem, imply casual sex, and are expensive. With the exception of the one question regarding protection against AIDS, this study allowed the adolescents to generate their own beliefs about condoms.

There has been a large number of empirical investigations regarding the issues of parent, peer, and partner influence on adolescent sexual behavior and contraceptive use (Fox, 1980; Thompson and Spanier, 1978; Nathanson and Becker, 1986). Based on this literature, it is safe to say that adolescents' decisions regarding sexual behavior and contraception are not made in social isolation. Peers, parents, and partners have all been found to be influential in determining the adolescent's behavior. It appears, however, that peers, parents and partners provide alternative sources of support, rather than complementary sources of support (Thompson and

Spanier, 1978; Nathanson et al, 1986). Thompson et al. (1978) found that the degree of support from a partner played a critical role in whether or not contraception was used. In addition, it was found that peers were influential only when the respondent's relationship with her sexual partner was weak. Nathanson and Becker (1986) found that parents played a significant role regarding whether or not the adolescents in their study obtained contraception. Peers were much less influential when parents were thought to approve of a visit to a family planning clinic. Other studies have shown that the adolescents' preferred reference group for sexual information and sexual norms is the peer group (Fox, 1980).

Using the theory of reasoned action permitted the exploration of both attitudinal and normative influences on contraception. Fisher (1984), using the theory of reasoned action, found that, among university men, the most commonly cited beliefs about condoms are that they prevent pregnancy, interrupt the sex act, and dull the sensation of sex. Adler et al. (1987) found support for the theory of reasoned action in their examination of intention to use four different methods of birth control-- the pill, condoms, a diaphragm and withdrawal-- in a sample of 505 adolescents. They found that for females, beliefs about the consequence of each methods, and evaluations of the consequences, were significantly related to the subjects' overall attitude toward using each method of birth control.

Barling and Moore (1990) used aspects of the theory of reasoned action to assess attitudes toward AIDS precautions and the intention to use condoms, in a sample of 370 adolescents between the ages of 15 and 16 years old. They found that those who intended to use condoms expressed more mature attitudes toward sexual planning and had positive attitudes toward condoms. Fishbein and Jaccard (1973) found that attitudes and norms relevant to family planning were able to predict family planning intention and behavior. Jaccard and Davidson (1972) found that attitude and subjective norm explained 84% of the variance in the intention to use oral contraceptives. The Bauman and Udry (1987) study used the subjective expected utility (which equals "attitude" in the theory of reasoned action) to explain adolescent sexual behavior. Their research showed that a measure of the subjective expected utility of sexual activity was correlated with sexual activity in a cross-section and that it predicted sexual activity, prospectively.

Studies directed toward identifying the factors that reduce the early onset of intercourse within the adolescent population have many merits. These include: reducing teen pregnancy rates, reducing STD's, and preventing the transmission of HIV. This review of the literature revealed that the theory of reasoned action has been successful in predicting the intention to use contraception and, in one case it predicted self-reported contraceptive use. The present

study expands the field of knowledge of adolescent risk behavior by using the theory of reasoned action in the prediction of intention to have sex and use condoms, and in the prediction of self-reported sexual intercourse and condom use.

Adolescents and Drug Use

The 1988 National Household Survey on Drug and Alcohol Abuse reported that between 1985-1988, there was a decreased trend in illicit drug use. However, a staggering number of teenagers are still involved in illicit drug use. The Household Survey (1990) found that almost 2 million teenagers reported current drug use.

The National Household Survey (1990) found that "marijuana remains the most commonly used illicit drug in the United States," even though it is on a downward trend (NIDA, 1990). The use of marijuana is examined in this research for several reasons. Of particular significance is the large number of adolescents who smoke marijuana. According to the National Household Survey (1986) there are 6.2 million individuals between the ages of 12 and 17 who admit to having used marijuana at some time in their lives. The survey reports that 2.7 million of these young people have used marijuana in the last month, and 4.8 million have used it in the past year. Exploring attitudes toward marijuana is particularly relevant to this age group. According to Johnston, et al. (1992) high school seniors showed annual prevalence rates of 22% for

marijuana, 3% for cocaine, 7% for stimulants, 4% for LSD and 2% for inhalants. Research has found that the rate of initiation for marijuana begins to climb at age 13 and that it peaks around age 18 (Kandel et al, 1984). According to the theory of progressive drug use, smoking marijuana can be the first step toward a more dangerous and involved affair with other illicit drugs (Kandel and Margules, 1978). Broher and Anglin (1987) identified a number of behavioral and psychological risk factors relating to adolescents' use of cocaine. Prime among these, was prior involvement with other drugs, most notably marijuana (Chitwood, 1985; Clayton, 1985; Kandel, 1985; Newcomb and Bentler, 1986; White, 1988). Examining adolescents' beliefs, perceived social pressures, attitudes, and intentions in regard to smoking marijuana provides an understanding of why adolescents engage in this risky behavior. Such an understanding is useful in designing effective interventions to prevent the use of marijuana. Preventing adolescents from smoking marijuana, and/or stopping those who are currently using it may be preventing more serious forms of drug use.

Drug use in any form can be classified as a high-risk behavior associated with HIV transmission. This is due to the drugs' physiological and psychological effects on the body. Drug use has been associated with decreasing the effectiveness of the immune system, decreasing one's inhibitory system and increasing high risk sexual behaviors. In numerous studies,

increasing high risk sexual behaviors. In numerous studies, the use of drugs has been an important predictor of high-risk sexual behavior and/or lack of condom use. Specifically, Siegal et al. (1988) found that the use of drugs and alcohol was the variable most highly related to continued engagement in high-risk sexual behavior. Keller et al, (1991) in their examination of HIV-related sexual behaviors among inner-city adolescents, found that even moderate use of alcohol or marijuana predicted high-risk sexual behaviors.

In relation to attitudes and drugs, Kadushin (1972) found that a high incidence of drug use among teenagers 15 to 18 year old was significantly related to favorable attitudes toward drugs. Seffrin and Seehafer (1976) examined the drug-taking beliefs, opinions, and behavior of junior and senior high school students and found that the major reasons for using drugs were: "fun," "excitement," "because everyone else does," and "relaxation".

Parents and peers are two sources of social influence that have been examined in relation to adolescent drug use. Research has shown that "(1) family environment is an important factor in drug use among youths; (2) a relationship exists between the drug use of young people and that of their parents " (Dembo et al. 1980, p. 172). Smart and Fejer (1972) examined the affects of parental drug use on the drug behaviors of 8,865 students between the ages of 11 and 18. They found a positive relationship between the students'

reports of parental drug use and their self-reported drug use. Ringwalt and Palmer (1989) asked students to rate the importance of reasons for not using cocaine or crack. The students' reasons in descending order of importance: it is addicting, my parents don't want me to use it, my friends don't want me to use it, it can make me feel depressed, and my teachers and counselors at school are against it.

Although parents exert some influence on adolescents' behavior, it has been proposed that the greatest influence resides within the peer group. Kandel (1985) using data from longitudinal studies of adolescents over a ten year period was able to examine real-life friendships over time and found that both parents and friends exert influence on the adolescent but in different areas of their lives...

Parents are especially important for future life plans, while peers are most important for involvement in illicit drug use. However, for drug use itself, there are different patterns of influence depending upon the stage of drug involvement. Peers are especially important for initiation into marijuana use, while parental factors gain in importance in the transition from marijuana use to the use of other illicit drugs (Kandel, 1985, p.140).

The rejection of peers and the resulting ostracism from one's social group can be painful, if not downright devastating. "If a person wants to stay in a group, he will be susceptible to influences coming from the group and he will be willing to conform to the rules which the group sets up" (Festinger, Schacter, and Back, 1950, p.91). Indeed, it has been found that peer pressure is one of the most successful predictors of youth substance use (Dembo et al., 1980; Sarvela et al.,

1988). Within a group of 265 middle school students, Sarvela and McClendon (1988) found that personal drug use was correlated with peer drug use. "Parents whose relationships with their children were strong enough to enable them to forbid or strongly discourage marijuana use and still hold the relationship together were more successful in minimizing initiation than parents whose attitudes and behavior suggested a more permissive stance" (Glynn, 1979; Jessor and Jessor 1977). Burkett and Jessen (1975) found a relationship between positive family involvement/attachment and decreased marijuana use.

The theory of reasoned action has been used to understand and predict marijuana use (Ajzen et al., 1982; Beardon and Woodside, 1978, Pomazal and Brown, 1977). Beardon and Woodside (1978) found the TRA useful in predicting and explaining marijuana-related intentions and behavior in 251 male and female university students. Behavior involving marijuana was found to be significantly affected both by ones' personal beliefs and by perceptions of the beliefs of "significant others." Cook et. al. (1980) found support for the TRA in the prediction of marijuana, amphetamines and minor tranquilizers.

The preceding discussion has focused on the increase in adolescent sexual activity, the high rate of teen pregnancy, the explosive number of adolescent cases of STD's, and the lack of condom use, and marijuana use. This information has been presented at length in an effort to expose the critical

and immediate need for behavior change within the adolescent population. Each of these issues has serious negative ramifications in and of itself. Yet, collectively, in the midst of the AIDS epidemic, they constitute a massive threat to the health and well-being of the nation's adolescents.

It can be concluded that increased condom use, delay of sexual intercourse, and decreased marijuana use are essential goals in preventing the transmission of HIV. An examination of adolescents' attitudes, beliefs, and intentions regarding high-risk behaviors is essential in order to identify the underlying determinants that may be responsible for the persistence of risky behaviors in the face of the AIDS crisis. Identification and subsequent understanding of these determinants is the first step toward designing an effective prevention program.

Theory of Planned Behavior

It is the third requirement of the theory of reasoned action -- "the behavior must be under volitional control"-- (Fishbein and Ajzen, 1975) that acted as an impetus in the reformulation of the theory of reasoned action to include nonvolitional behaviors, goals, and outcomes. Ajzen (1985) made the assertion that using intentions as the sole predictor of behavior was inadequate when attempting to predict behaviors which are not under one's control. "To ensure accurate prediction of behavior over which individuals have only limited control, we must assess not only intention but

also obtain some estimate of the extent to which the individual is capable of exercising control over the behavior in question" (Ajzen and Madden, 1986, p.456). The variable of perceived behavioral control (PBC) was formulated to assess the degree of control over the behavior. Perceived behavioral control is defined as "the person's beliefs as to how easy or difficult the performance of the behavior is likely to be" (Ajzen et al., 1986, p. 345). It is measured by assessing one's beliefs about the amount of resources and opportunities at his or her disposal. This includes both internal and external factors such as time, knowledge, opportunities, access to supplies, dependence on others to perform the behavior, and dispositional characteristics. Unlike the indirect measures of attitude and subjective norm, the indirect measure of perceived behavioral control is unique in that it is not derived through a multiplicative formula. This is probably because it is lacking an evaluative component (i.e. the evaluation variable and the motivation to comply variable).

The theory of planned behavior asserts that the construct of perceived behavioral control will significantly increase the extent to which one can accurately predict intentions to perform nonvolitional behaviors, as well as the extent to which one can predict actual behaviors. The objective of this research was to determine the adolescents' perceptions of control in deciding whether to have sex, smoke marijuana, and

use condoms, and to increase the prediction of each of the behaviors perceived to be nonvolitional.

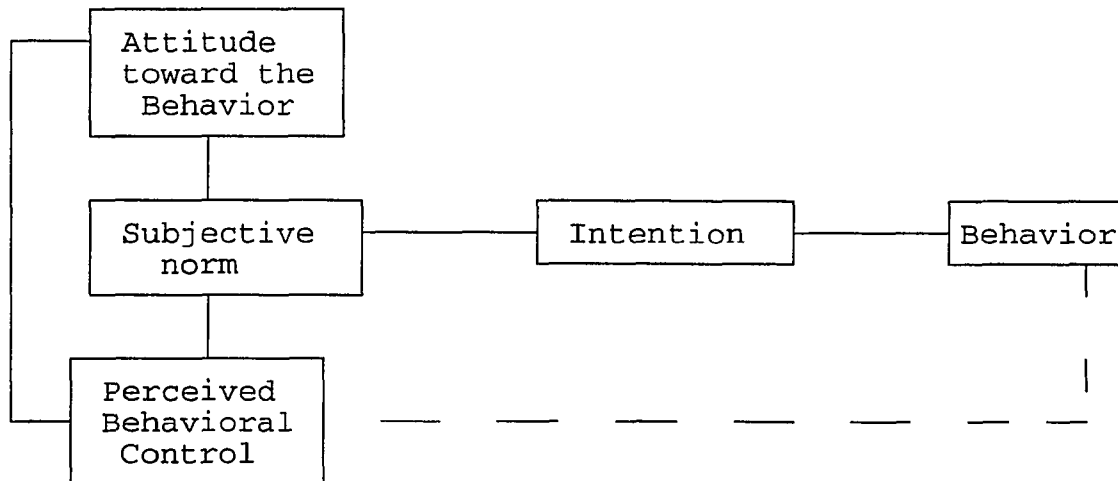


Figure 2. Theory of planned behavior

Theory of Planned Behavior : Literature Review

The theory of planned behavior emerged five years ago and, to date, there are only a handful of studies assessing the contribution of perceived behavioral control in the prediction of nonvolitional behavior (Shifter and Ajzen, 1985; Ajzen and Madden, 1986; Fishbein and Stasson, 1990). Several of these studies will be discussed. Shifter and Ajzen (1985) examined the interaction between weight loss intentions and perceived behavioral control over body weight. Intention to lose weight was found to correlate significantly with attitude, subjective norm, and perceived control. Perceived control significantly improved the prediction of weight loss behavior and, in fact, was found to be the best single

predictor of weight loss. Fishbein and Stasson (1990) employed the theory of planned behavior in an effort to identify factors that would influence 185 nonacademic employees' attendance at training sessions for using newly installed single and multi-line phone systems. The study investigated the contribution of perceived behavioral control in the prediction of intentions and behavior. Unlike previous studies using the theory of planned behavior (Shifter and Ajzen, 1985; Ajzen and Madden, 1986), Fishbein and Stasson found that perceived control did not improve predictions of motivational intention, nor did it improve actual behavior.

Ajzen and Madden (1986) conducted two studies in order to explore the extent to which perceived behavioral control was able to predict intentions and behavior. The first of these, examined the class attendance of 169 undergraduate college students. It was found that each of the three independent variables -- attitude, subjective norm and perceived behavioral control-- significantly and independently contributed to the prediction of intentions to attend class. The addition of perceived behavioral control to the theory of reasoned action was found to improve the accuracy of predicting intentions. In relation to behavior, it was found that perceived control did not significantly contribute to the prediction of class attendance. Ajzen and Madden (1986) changed the criterion in Study 2 from class attendance to the attainment of a behavioral goal, namely getting an "A" in a

certain course. In this study it was found that perceived behavioral control did assist in the prediction of the outcome behavior, namely the grades obtained by the college students. Fishbein and Stasson (1990) account for these results by asserting that the theory of planned behavior has only been successful in predicting nonvolitional goal outcomes. It has been substantially less successful in predicting actual behaviors. For example, in the previous study by Ajzen and Madden (1986), perceived behavioral control was found to be insignificant in the prediction of the actual behavior of attending class; however, perceived behavioral control was significant in predicting the goal of getting an "A."

Conclusion

The goal of the present research included testing the entire theory of reasoned action in the prediction of risky behaviors, as well as subjecting certain aspects of the theory of planned behavior to methodological investigations. Past research has used various aspects of the theory of reasoned action either alone, or in combination with variables from other theories, to examine high-risk behaviors. Studies using the theory of reasoned action have examined how attitudes and subjective norms predict intentions, but they have not examined the extent to which intentions predicted behavior. This study examined the entire theory of reasoned action in the prediction of having sex, using condoms, and smoking marijuana. Few studies, if any, have used the theory

of reasoned action in the examination of having sex. Few studies have been conducted using only the variables in the theory of reasoned action in the prediction of smoking marijuana and using condoms. Additionally, this is one of the few studies which examines the contribution of perceived behavioral control to the prediction of high-risk behaviors among inner-city adolescents.

The social significance of this research lies in the theoretical framework of the TRA which encourages the translation of the findings into interventions. It is the contention of this thesis that the theory of reasoned action will be a useful vehicle for which to better understand and predict adolescents' high-risk behaviors.

Adolescents and AIDS Knowledge

Knowledge is believed to be a necessary prerequisite for behavior change. In order for behavior to change with regard to HIV, people need to know what the virus is, the routes of transmission, methods of protection, and their own personal risk status. To date, the majority of interventions have been educational campaigns designed to provide information on modes of transmission and methods of prevention. While many programs have resulted in significant gains in children's knowledge about AIDS, risk-reduction behaviors have rarely occurred. It is now understood that knowledge alone is unlikely to produce changes in behavior (Office of Technology Assessment, 1988).

Several studies have examined adolescents' knowledge of

AIDS. A comparison of the results of three major studies conducted between 1984 and 1987, revealed an increase in AIDS knowledge within the teenage population (Price, 1985; DiClemente et al., 1986; Strunin and Hingson, 1987). In the first of three studies, Price (1985) concluded that the adolescents in his study had a low degree of AIDS knowledge. Only three of the 19 items from the knowledge questionnaire were correctly answered by 75% of the 250 students. Several years later, DiClemente (1986) examined the association between gender, ethnicity, and length of residence in the San Francisco Bay area, and adolescents' knowledge and attitudes about AIDS. In contrast to Price's (1985) study, DiClemente found that over 80% of the students correctly identified modes of transmission: 91% identified sexual intercourse and 81% identified IV drug use. However, it was found that 40% of the 1325 adolescents did not know that using condoms was a means of reducing the likelihood of contracting HIV. Significant differences in degree of AIDS knowledge were found between ethnic groups of adolescents: Caucasians had greater knowledge than African-Americans, Asians and Latinos. Finally, in a series of telephone interviews, Strunin and Hingson (1987) questioned 829 randomly sampled adolescents between the ages of 16 and 19 years. They found that 92% of the teens were correctly aware of heterosexual transmission and 98% were correctly informed of transmission by homosexual activities. No significant differences in knowledge were found between

drug users and non-drug users. A myriad of studies since then have shown a continued sophistication in adolescents' AIDS knowledge.

Unfortunately, studies assessing the relationship between knowledge and behavior have demonstrated the well known phenomenon referred to as the health behavior gap (Manning et al., 1989). Simply stated, and repeatedly demonstrated, the acquisition of knowledge is not usually followed by appropriate action. Researchers have attributed this to the threshold effect, whereby the improvement of attitudes and the enhancement of knowledge influence behavior only up to a point. Any increases after that point no longer affect behavior.

Evidence for the threshold effect can be found in a few studies. In the first of two studies, Strunin et al. (1987) found that despite high knowledge scores, only 15% of the sexually active adolescents in their study, reported behavior change due to concern for developing AIDS. Using methods of protection (i.e. practicing "safe sex") were reported by a mere 10% of the sample. Some of the other less effective changes in behavior included: more selective about sex partner 35%, more careful 25%, avoid sex 10%, monogamous 3%, reduce time of sex 1%. Two years later, knowledge of AIDS had continued to increase, and changes in sexual behaviors due to concern with AIDS increased from 15% to 34%. An increase in the use of condoms was noted from 2% in 1986 to 19% in 1988,

yet 70% of sexually active adolescents continued to engage in unsafe sex some or all of the time. Goodman et.al. (1989) examined the beliefs, attitudes, knowledge, and behavior of inner-city minority youth. It was found that regardless of the degree of AIDS knowledge, only 39% of the sample reported implementing behavior change as a result of concern with AIDS.

Although notable impacts on behavior have occurred following aggressive educational efforts, there are still serious numbers of individuals who maintain their participation in high-risk behaviors (DesJarlais, 1985; Martin, 1987). Education appears to be a necessary yet insufficient condition for effective long-term behavior change. Although, knowledge alone, cannot make long-term behavior change, the degree of AIDS knowledge possessed by the adolescent should be taken into consideration when designing preventive interventions. As stated by Barling et al (1990) "in order to be effective, programs for adolescents must be relevant to the youths' current knowledge, beliefs, attitudes, interests and behaviors" (Barling and Moore, 1990).

There is no debate that adolescents are at high risk for contracting HIV in the absence of an effective program which provides accurate information and is successful in attaining risk-reduction behavior. This study examined the association between the adolescents' degree of AIDS knowledge and their intentions to use condoms.

Method

Overview of Analysis

This research set out to test how well the theory of reasoned action, an expectancy value theory, could predict risky behaviors: having sex, using condoms and smoking marijuana, in a sample of inner-city adolescents. According to the theory of reasoned action, the independent variables -- attitude and subjective norm -- can predict the dependent variable, intention to behave. In addition, the independent variable, intention to behave, can predict self-reported behavior. In other words, the adolescents' personal attitudes towards having sex, using condoms and smoking marijuana combined with their perceived social pressures to engage in these behaviors will strongly influence their intentions to engage in these behaviors. Furthermore, the adolescents' intentions to have sex, use condoms, and smoke marijuana, will predict whether or not they actually engage in each of the behaviors.

In this study I also examined the extent to which the adolescents perceived each behavior -- having sex, using condoms, and smoking marijuana-- as under their control. For those behaviors believed to be nonvolitional, the inclusion of the perceived behavioral control variable was expected to increase the prediction above and beyond the theory of reasoned action. Previous studies have shown contradictory results regarding this aspect of the theory (Ajzen and Madden,

1986; Schifter and Ajzen, 1987; Fishbein and Stasson, 1990). The association between AIDS knowledge and intentions to use condoms was also assessed.

Hypotheses

1. The indirect and direct measures of attitude and subjective norm will be positively correlated.
2. Attitudes and subjective norms will predict intentions.
3. For behaviors believed to be nonvolitional, adding perceived behavioral control to subjective norms and attitudes will increase the accuracy in predicting intentions.
4. Intentions will predict self-reported behavior.
5. For nonvolitional behaviors, adding perceived behavioral control to intentions will increase accuracy of predicting behaviors (beyond the theory of reasoned action).
6. There will be a positive relationship between AIDS knowledge and intentions to use condoms.

Overview of Measurement

There were four phases involved in conducting this study, each of which will be discussed in detail in subsequent sections:

- (1) an elicitation study,
- (2) questionnaire construction,
- (3) a pilot study, intended to test the questionnaire and
- (4) the main study, which used the revised questionnaire.

The data collected from the main study was used to test the

support of the hypotheses. It should be noted that different groups of subjects participated in each phase of the study: the elicitation study, the pilot study, and the main study.

Elicitation Study

The method Fishbein (1973) recommends for measuring beliefs and attitudes toward the performance of a behavior is to construct a questionnaire (which is referred to in this study as the "Attitude and Belief Scale") which employs subject-generated items obtained from an "elicitation study" (for details on the elicitation study, see Fishbein, 1973)

A sample of African-American and Latino adolescents (N=16), between the ages of 13-18 years, participated in the elicitation study. The elicitation study was conducted as a focus group, where these 16 adolescents shared their beliefs about various issues regarding having sex, using condoms, and smoking marijuana. These issues included: whether or not the adolescent should have sex, use condoms, and smoke marijuana, the amount of control they felt they had in whether or not they engaged in each behavior and the people that influenced their decisions. The responses from this group of subjects provided the basis for the formation of the items on the Attitude and Belief scale. The same issues were discussed regarding the adolescents use of alcohol. These responses were similarly formed into items on the Attitude and Belief scale. However, the pilot study revealed that the adolescents were unable to respond to the large number of items without losing

concentration. It was decided that rather than compromise test reliability, this study would only focus on three high risk behaviors: having sex, using condoms and smoking marijuana. The choice to examine smoking marijuana rather than using alcohol was made in light of the few studies have been conducted which examine the effects of adolescents' marijuana consumption and HIV related behaviors. One study which did examine the effects of marijuana smoking and HIV related behaviors found that adolescents who smoked marijuana were less likely to engage in risk-reduction behaviors (Hingson et. al., 1992).

Instrument Used in the Elicitation Study

The instrument used in this part of the study was an open-ended questionnaire designed to obtain responses about the adolescents' intentions to use condoms within the next 30 days. The adolescents were asked to list reasons why they would always use condoms and reasons why they would not always use condoms (behavioral belief items). They were requested to list the people who would agree and disagree with their choice to use condoms, and to indicate which of these people they would most likely listen to regarding condom use (normative belief items). Finally, the adolescents were asked to list the kinds of factors (e.g., embarrassing, too expensive) that would prevent them from using condoms even though they wanted to use them (perceived behavioral control items). The same format was used to assess the adolescents'

beliefs about having sex and smoking marijuana.

Process for the Elicitation Study

The subjects were divided into two groups, one consisting of males and the other of females. The two groups were run sequentially by the same researcher, and the procedure for both groups was the same. The researcher did not know the subjects' names or backgrounds. First, an explanation of the purpose of the study was given, along with a briefing on what was to occur during the study. Anonymity and confidentiality were stressed throughout. Following the introduction, each subject was given a booklet containing four hypothetical situations. Two of the situations involved fictitious teenagers who were confronted with dilemmas which required decisions about whether to have sex and whether to use condoms; two other situations required the fictitious teens to make decisions about whether to use drugs. The use of the stories provided a means for the subjects to discuss sensitive issues without fear of judgment or ridicule. The researcher read one of the four stories to the subjects while the subjects read along. This was done to alleviate any reading difficulties that the subjects might have had. After each story was read, the subjects were asked to comment on the behaviors of the fictitious characters. As the group rapport progressed, the discussions became more relaxed and more personal. The process continued until all four stories were read and discussed.

After all of the situations had been read and discussed, an elicitation survey was administered. The subjects were instructed that during the discussion many ideas were expressed, which they may or may not have agreed with. In the elicitation surveys, they were asked to write down the beliefs that they agreed with. The survey also gave subjects an opportunity to write down anything that they may have felt uncomfortable discussing within the group.

Each question was read to the subjects with specific instructions on how to fill out the survey. The subjects were instructed not to write their names on the surveys. The questionnaires were turned face down and collected after everyone had completed the survey.

Results of the Elicitation Study

Subjects

A sample of sixteen adolescents with the same characteristics as the sample in the main study participated in the study. The adolescents in the elicitation study were between the ages of 13 and 18 - 10 African American (5 females and 5 males) and 6 Hispanics (3 females and 3 males). Although male and females were interviewed separately, their responses on the questionnaire were combined. The elicitation survey made separate inquiries regarding the use of marijuana, cocaine, and crack. However, the adolescents' responses, in relation to cocaine and crack, had minimal variation and the only self-reported drug use involved marijuana. On that basis,

only marijuana use was examined in this study. Tables 3-5 summarizes the responses from the elicitation study for each behavior.

Table 3. Elicitation group responses for having sex

Personal beliefs about having sex	Referents for sex having sex	Perceived control for having sex
1. Having sex relieves stress	1.Mother/father	1. Not having sex would ruin my relationship
2. Because I love my partner	2.Boy/girlfriend	2. You're not part of the group if you don't have sex
3. Could get me/my partner pregnant	3.Friends	3. You're treated like a grown-up if you have sex
4. Sex feels good	4.Best friend	
5. I'm not old enough	5.Brother/sister	
6. Sex is fun		

Table 4. Elicitation group responses for using condoms

Personal beliefs about using condoms	Referents for using condoms	Perceived control for using condoms
1. Stops me/ my partner from getting pregnant	1.Mother/father	1.Spoils the mood
2 Protects me from getting a disease	2.Boy/girlfriend	2.Buying them is embarrassing
3. Protects me from AIDS	3.Friends	3.Would upset my partner
4. Makes sex feel uncomfortable	4.Best friend	
	5.Brother/sister	

Table 5. Elicitation group responses for smoking marijuana

Personal beliefs about smoking marijuana	Referents for smoking marijuana	Perceived control for smoking marijuana
1. Ruins my health	1. Mother/Father	1. When I have serious problems
2. Can get brain damage	2. Boy/girlfriend	2. When I hang with the wrong crowd
3. Could hurt my family	3. Friends	3. When I have alot of problems
4. Makes me feel relaxed	4. Best Friend	
5. My friends do		
6. Its fun		

Measurement

Three scales were used in this research; A Knowledge Scale of AIDS (DiClemente, et al 1987), the Attitude and Belief Scale and the Behavior Scale.

Attitude and Belief Scale

The Attitude and Belief Scale contained the following variables: belief strength, evaluation of the outcome, attitude, normative beliefs, motivation to comply, subjective norm, perceived behavioral control, and behavioral intentions.

The responses from the elicitation study were formulated into items which measured each of the variables in the theory of reasoned action. Each of the measures was developed as detailed by Ajzen and Madden (1985). Both direct and indirect measures were developed for each of the independent variables: attitudes, subjective norms, and perceived behavioral control.

Behavioral Belief Strength

The behavioral beliefs obtained from the elicitation study were embedded in a 7-point "not at all likely-very likely" scale. This provided a measure of the strength of the belief that the behavior would lead to a certain outcome. For instance, the adolescents were asked to rate the extent to which they agreed with the following statement: "Having sex will get me/my partner pregnant" 1 for "not at all likely" and 7 for "very likely".

Evaluation of the outcome

Each behavioral belief item, had a corresponding item, which determined whether or not the outcome was judged by the subject to be good or bad. The evaluation of outcome was obtained by asking the respondents to rate each outcome on a 7-point good-bad scale. For example: "For me(my partner), getting pregnant right now is 1 for "bad" and 7 for "good".

Attitude

In order to obtain an indirect (belief-based) measure of the attitude toward the behavior, each behavioral belief item was multiplied by the corresponding evaluation of outcome item. The sum of these products formed the indirect measure of attitude. The Attitude and Belief Scale contained six behavioral belief items for sex, six behavioral belief items for pot and four behavioral belief items for condoms. The internal consistency for the indirect measure of attitude scales - having sex, using condoms and smoking marijuana- as indexed by coefficient alpha were: .58, .61 and .60, respectively.

A direct measure of attitude towards the behavior was also assessed. It consisted of the sum of three items embedded in evaluative semantic differential scales: For example, " Having sex is good-bad, wise-foolish and moral-immoral." The internal consistencies for the direct measure of attitude scales- having sex, smoking pot and using condoms- as indexed by coefficient alpha were: .90, .91 and .90.

Normative beliefs

Subjects in the elicitation study provided a list of significant people (referents) who influence their participation in each of the behaviors. Each of the referents were embedded in a 7-point scale measuring the likelihood that each referent would approve or disapprove of the subjects performance of the behavior. For example, subjects responded to "My friends would approve of me using condoms." They rated this statement, 1 for "not at all likely " and 7 for "very likely."

Motivation to comply

Each normative belief item had a corresponding motivation to comply item. Motivation to comply was assessed by asking the respondent to indicate how much they wanted to do what each of the people (referents) thought they should do. For example, "When it comes to using condoms I want to do what my friends think I should do" 1 for "not at all likely" and 7 for "very likely". This provided a way to assess the people who were most influential to the subject with regards to each behavior and to what degree the subject wanted to comply with that referent.

Subjective norm

In order to get a measure of subjective norm, each normative belief item was multiplied by the corresponding motivation to comply item. The sum of these products formed the indirect measure of subjective norm. Each of the behaviors

had five referents; mother/father, brother/sister, friend, best friend, girl/boyfriend. The internal consistency for each indirect measure of subjective norm scale- having sex, using condoms and smoking marijuana- as indexed by coefficient alpha were: .74, .64 and .80.

A direct measure of subjective norm was also obtained by multiplying two items: "most people who are important to me think I should use condoms" by "when it comes to using condoms how much do you want to do what the people who are important to you think you should do", 1 for "not at all likely" and 7 for "very likely".

Perceived behavioral control

The indirect measure of perceived control was obtained by summing three items for each behavior developed to assess external or internal influences that would affect the adolescents' beliefs about their control regarding each behavior. The indirect measure of perceived behavioral control for using condoms included the following items: For me, using condoms spoils the mood; For me, buying condoms is embarrassing; For me, using condoms would upset my partner, (refer to Table 3 for perceived behavioral control items for smoking marijuana and having sex) The internal consistency for the direct measures of perceived behavioral control scales for - having sex, using condoms and smoking marijuana- as indexed by coefficient alpha were: .75, .50 and .43.

The sum of the following two items provided a direct measure of perceived behavioral control: "For me, to ask my partner to use a condom is" (difficult-easy) and "How much control do you have over whether or not you use a condom?" (very little control-complete control). The internal consistency for the direct measure of perceived behavioral control scales for - having sex, using condoms and smoking marijuana- as indexed by coefficient alpha were: .50, .50 and .77.

Behavioral intention

Behavioral intention was measured by one item for each behavior. The adolescent was asked to respond to the statements: "I will have sex during the next thirty days", "I will always use condoms during the next 30 days" and "I will smoke marijuana during the next 30 days", on a 7-point scale ranging from 1 for "not at all likely" and 7 for "very likely".

Behavior Scale

The behavior scale made inquiries about the adolescents' behaviors over the previous 30 days including: how often did you have sexual intercourse over the past 30 days?, how often did you use a condom over the past 30 days? "how often did you use marijuana over the past 30 days?"

AIDS Knowledge Scale

AIDS knowledge was assessed with a 25-item questionnaire, developed by DiClemente et al. (1987), inquiring about the transmission and treatment of AIDS. As one of three subscales of the AIDS Information Survey, the questionnaire requested that subjects provided a "True", "False" or "Don't Know" response to all questions. The internal consistency of the Knowledge Scale was satisfactory as indexed by coefficient alpha .72.

Results

Pilot Study

The purpose of the pilot study was to test the quality of the questionnaire, including the readability of the questions and the clarity of the instructions on using the 7-point scales. The pilot study also assessed the degree of internal consistency of the direct and indirect measures. The survey was administered to 20 adolescents representative of the adolescents in the main study.

The survey took close to an hour, which exceeded the subjects' attention span. The adolescents openly verbalized this and had difficulty concentrating after a half hour. As a result, an additional survey inquiring about alcohol use was dropped, reducing the length of the Attitude and Belief Scale. The wording of several items was modified.

Table 6.

Correlations of indirect measures and direct measures of attitude, subjective norm and perceived control for having sex, smoking marijuana and using condoms.

		DIRECT MEASURES		
		Attitude	Subjective Norm	Perceived control
INDIRECT MEASURES	Sex	.64***	.50***	.21*
	Pot	.50***	.61***	.17
	Condom	.40***	.61**	.26*
		*** p<.001	** p<.01	*p<.05

Hypotheses 1. The indirect and direct measures of attitude and subjective norm will be positively correlated.

In order to test the first hypotheses a correlational analysis was conducted. Table 6 presents the correlations between the direct and indirect measures of attitude, subjective norm and perceived behavioral control, for each of the behaviors. With one exception, the first hypotheses was supported since the indirect and direct measures are strongly correlated and are consistent with previous research findings (Ajzen and Madden, 1985). The indirect and direct measure of perceived control for marijuana was not significantly correlated indicating a weakness in the measurement of this variable.

Main Study

Subjects

In the main study, there were 115 adolescents at Time 1: 64 females (57.7%) and 47 males (42.3%). Seventy-two percent of the adolescents were African-American, 20% were Latinos, 3% were White, 1% was Asian and 5% identified as "Other". The mean age of the entire group was 16. By Time 2, 30 adolescents had dropped out of the study. As shown in Table 7, no significant differences were detected between the Time 1 and Time 2 samples with regard to age, gender or ethnicity.

Table 7.

Demographics relating to Time 1 and Time 2 samples

		TIME 1	TIME 2	
MEAN AGE		16	16	(p<.30)
GENDER	MALE	42%	47%	(p<.10)
	FEMALE	58%	53%	
ETHNICITY	AFRICAN-AMERICAN	72%	71%	(p<.50)
	LATINO	20%	20%	
	WHITE	3%	2%	
	OTHER	5%	7%	

Comparisons of the means of beliefs and intentions between adolescents who did and did not attend time 2 were conducted. Although there were no significant difference between the two groups on beliefs and intentions Table 8 shows that there was a trend for adolescents who dropped out of the study too report a greater intention to engage in high risk behaviors than those who attended the entire study.

Table 8.

Comparisons of means on intention to have sex, use condoms and smoke marijuana between adolescents who did and did not attend Time 2.

	Attended T2 (n=84)	Dropped Out (n=30)
Intend to have sex	3.3	3.8
Intend to use condoms	5.1	4.8
Intend to smoke pot	2.1	2.7

Procedure

A community organization rather than a school was chosen as the place of study so as to reach the teens that are often lost in a school-based sample. Often, the youth who are at greatest risk for being exposed to HIV do not attend school on a regular basis or have dropped out. The Police Athletic League (PAL) was amenable to having the youth who attended the aftercare program participate in this research. All data collection took place at the Duncan Police Athletic League and the Phipps Police Athletic League, in New York City. The Police Athletic League, Inc. (PAL) is a private, non-profit, non-sectarian agency that has been serving the needs of New York City youngsters throughout the five boroughs for over 75 years. Today, PAL is the largest independent youth agency in New York City, serving approximately 60,000 boys and girls each year. PAL's network of programs and youth centers reach into neighborhoods where few other youth agencies go, providing constructive activities, guidance and support for the children of these communities. During the past decade, as a result of the increase in homeless, unemployed and underprivileged families, the need for PAL services in New York City has increased dramatically. Where PAL once functioned primarily as a "recreation agency", it now offers a multiplicity of services to young people who range in age from 6 months to 19 years. The PAL Phipps Center serves the Greater Harlem area and the PAL Duncan Center serves the Hells

Kitchen area. All of the adolescents were recruited from the after-school segment of the PAL's. The after-school program serves, male and female adolescents, between the ages of 13-18 years. The PAL Phipps center serves primarily adolescents from Afro-American and Latino descent whereas the PAL Duncan center is more ethnically diverse, serving Asian and Caucasian adolescents; however, the majority of adolescents are also from African-American and Latino descent. The major goal of PAL is to improve the quality of life of underprivileged youngsters of New York City through educational, recreational and cultural programs. Its objective is to deter the youth of the city from involvement in criminal activities by providing them with a safe place to play, learn and grow into productive citizens.

Subject participation was on a voluntary basis. In exchange for their participation in the study, adolescents received a ticket for a concert. Institutional consent, subjects' consent, and direct parental consent were obtained prior to data collection. All materials were approved by the Area Supervisor prior to administration.

Prior to the study, several recruitment strategies were planned and implemented in order to reach as many teens as possible. Posters announcing the study, referred to as the "Teenage Awareness Program," were made and hung in high-traffic areas in the PAL's. One week prior to the data collection, the youth were invited to a pizza party at the

PAL's where the teens were given pizza, drinks and snacks. During this party, the researcher spoke to the group of adolescents about the study and what was required of them if they decided to participate. Additionally, the researcher attended a monthly parents meeting at the PAL's to inform the parents about the Teenage Awareness Program (including the goals of the study and the kinds of questions their children would be asked) to allay any concerns the parents might have had and to answer any questions about the study. Overall, the parents were supportive of the study and were instrumental in signing and returning the consent forms.

The researcher administered the questionnaire package containing the Knowledge of AIDS Scale (DiClemente et al., 1986) and the Attitude and Belief Scale. The researcher provided the adolescents with verbal instructions on how to fill out the questionnaires, allowing adequate time for questions. Issues of confidentiality and anonymity were emphasized, and a debriefing occurred at the end of the study.

Thirty days after the initial data collection, a measure of behavior was administered. This measure specifically asked whether the adolescents engaged in sexual intercourse, used a condom or smoked marijuana during the proceeding 30-day period. Administration of the behavior measure was similar to the initial collection of data. A coding system was developed in order to match Time 1 and Time 2 questionnaires. Each of the subjects signed their name next to a code number as they

turned in their survey at Time 1. At Time 2 (thirty days later), they found their name on the original list (developed at Time 1) along side their code numbers. The adolescents then put their code number on the Time 2 survey. Thirty adolescents dropped out of the study at Time 2, leaving 84 adolescents with complete information.

Dependent Variables- Self-reported Behavior

As Figure 3 and 4 shows, almost half (49%) of the adolescents in this study reported having sex. The majority of adolescents who had sex were male between the ages of 16 and 18. Older males were also more likely to report using condoms. Slightly more than twice the number of males who had sex (68%) compared with females who had sex (32%), reported using condoms in the past 30 days. The findings taken together suggest that, although more males than females report having sex, they are more likely than females to use condoms during sex. This finding is consistent with previous research on adolescent contraceptive use. Perhaps females do not have the negotiating skills to request that their partner use a condom and find it harder to initiate the use of condoms.

Figure 3 and 4 shows the findings regarding marijuana use. The vast majority (87%) of the adolescents in this study said that they did not smoke marijuana. All of the adolescents who did report smoking marijuana were older (16-18 years) and were more likely to be males than females. One reason for the large number of adolescents who reported never smoking marijuana may

be the self-selection of the youth in this study. The Police Athletic League (PAL) runs various recreational, cultural, and academic programs. It is reasonable to assume that those involved in the PAL are more likely to be sports-minded and academically involved and therefore less likely to smoke marijuana. Additionally, the findings are consistent with current drug use trends which show that marijuana use is decreasing among high school seniors (Johnston, 1992). The possibility that adolescents did not report their marijuana use as a result of the "social desirability" factor, cannot be ignored. However, several measures were taken to reduce this possibility, including assuring the adolescents of the confidentiality of their surveys. Nurco (1988) lists several strategies to reduce concealment or under-reporting of drug use. The strategies that were employed in this study include: assuring subjects of the confidentiality of the information, enlisting the support of the respondents by explaining the main objectives of the study, appealing to altruism, and concentrating on recent information.

In conclusion, the findings indicate that older males are most likely to have sex and smoke marijuana. However, a greater proportion of the older males in the study were also found to use condoms.

Intention

Intention was measured with one item for each behavior, which asked the adolescent to indicate whether he/she: "will have sex in the next 30 days," "will smoke marijuana in the next 30 days," and "will use condoms in the next 30 days." Each item was measured on a 7-point Likert scale, ranging from 1 for "not at all likely" to 7 for "very likely".

For purposes of reporting the findings, three groups were formed: (1) those who were likely to have sex, use condoms, and smoke marijuana (as indicated by a response of 1, 2, or 3 on the intention item), (2) those who were unsure (as indicated by a response of 4 on the intention item) and (3) those who were unlikely to engage in each behavior (as indicated by a response of 5, 6, or 7 on the intention item). Figure 5 shows that almost half of the adolescents had "good intentions." In other words, they did not intend to have sex, and they did intend to use condoms.

More than 80% of the adolescents did not intend to use marijuana. Approximately 13% to 16% of the adolescents fell into the unsure category for having sex, however very few adolescents were "unsure" about their intentions to smoke marijuana.

FIGURE 3
Percentage of adolescents reporting having sex, smoking marijuana, and using condoms, by age

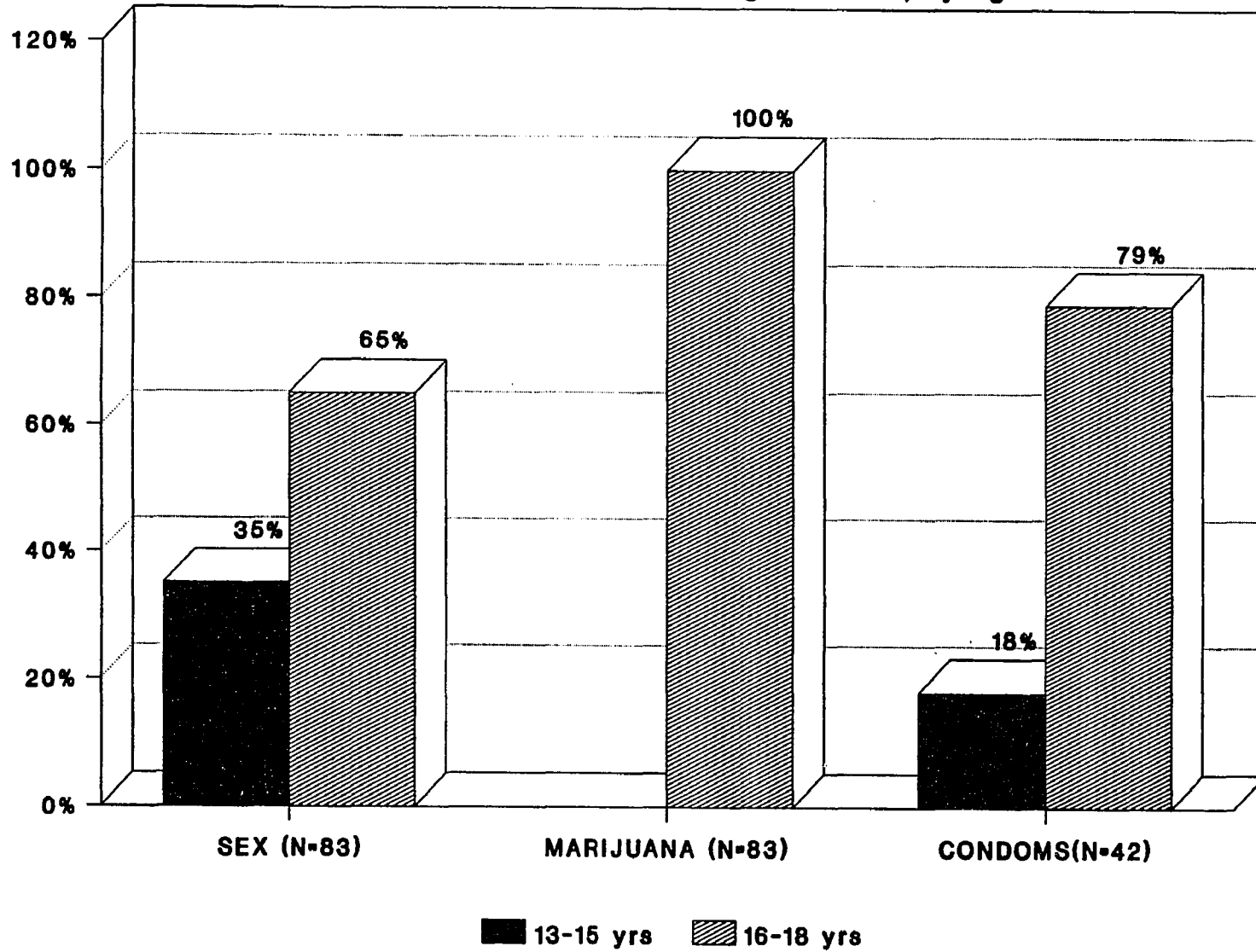


FIGURE 4
Percentage of adolescents reporting having sex,
smoking marijuana, and using condoms, by gender

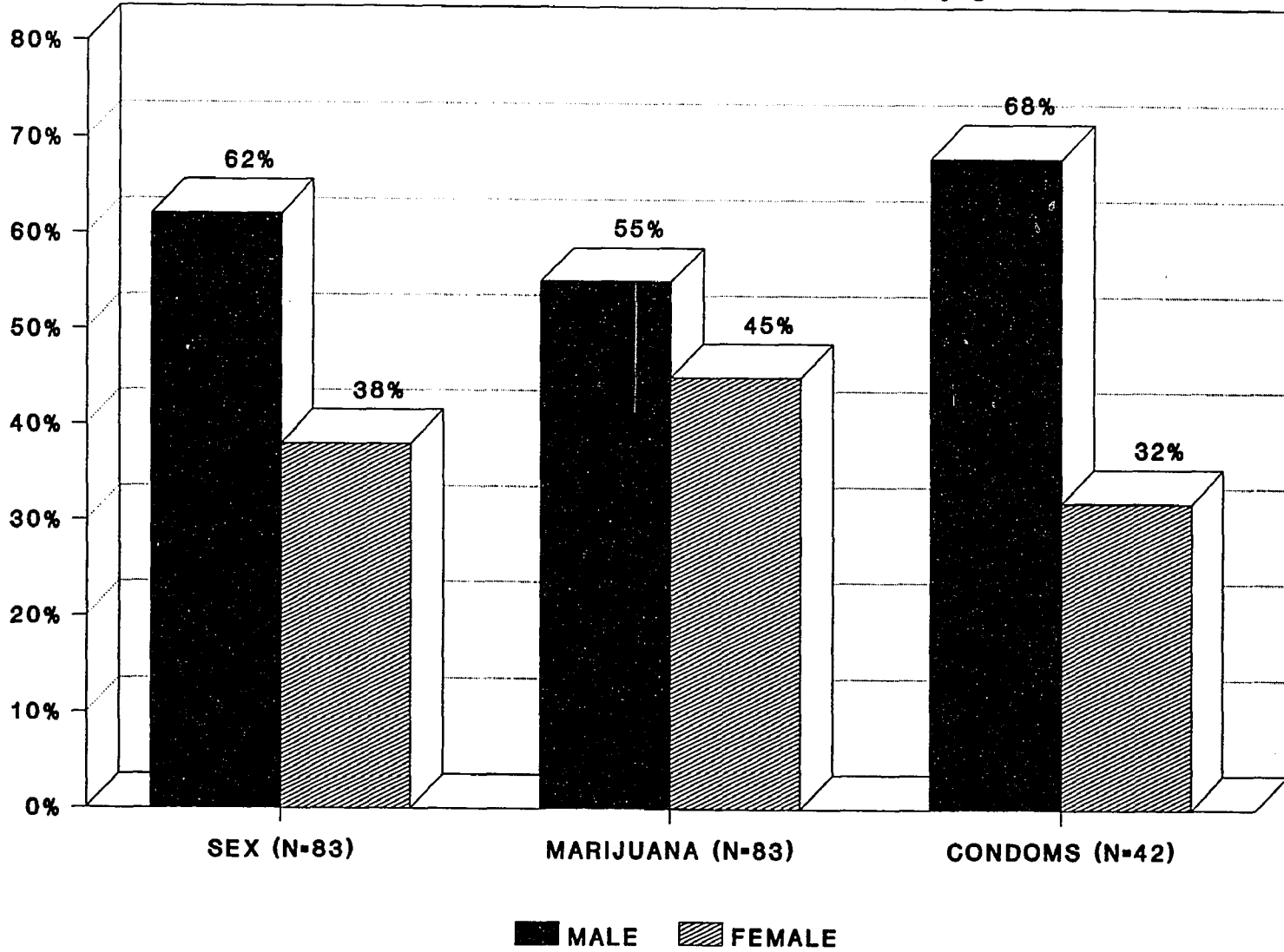
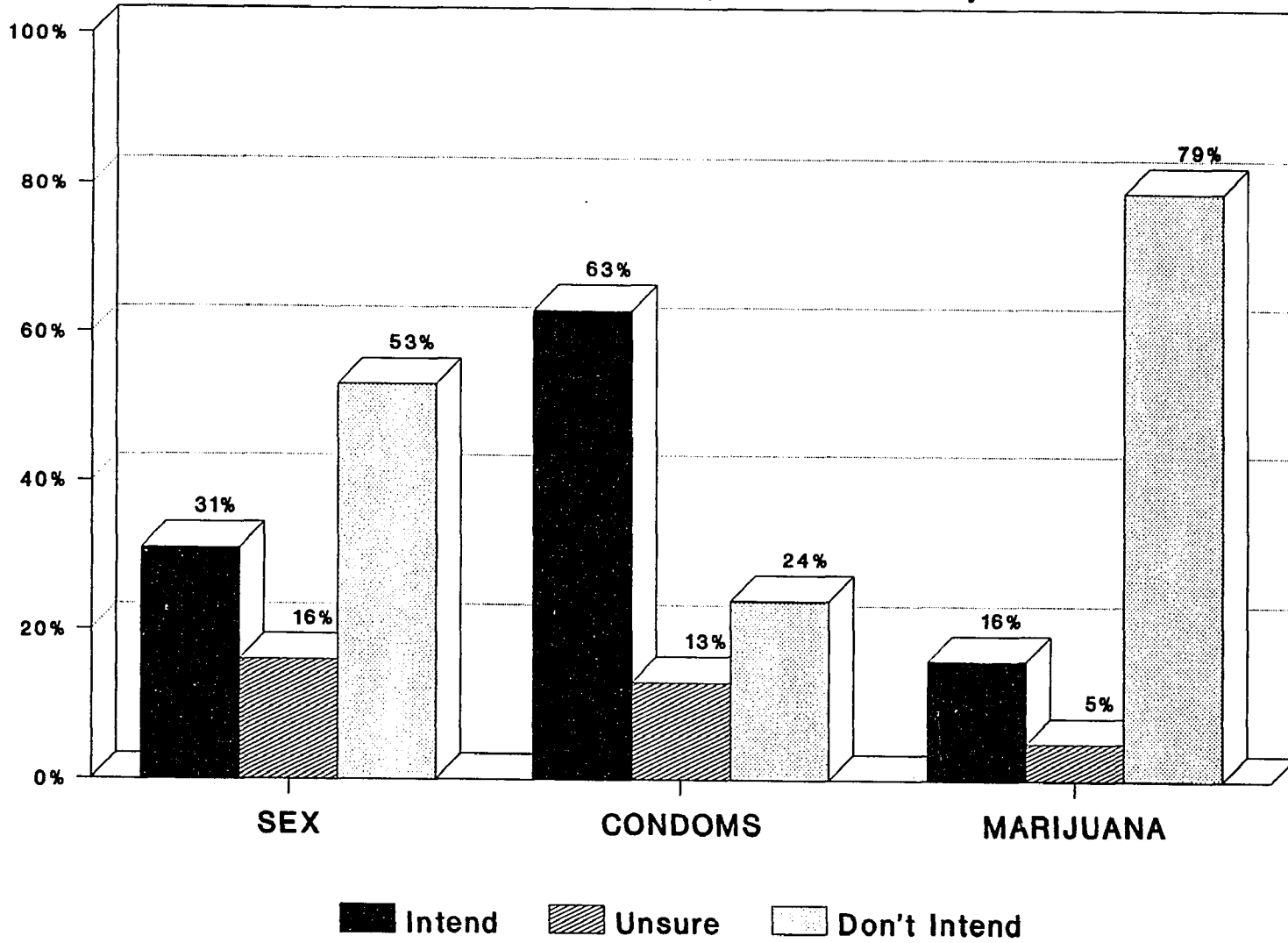


FIGURE 5
Percent of adolescents reporting intention
to have sex, use condoms, and smoke marijuana



These findings suggest that the adolescents in this study were more likely to contemplate having sex than smoking marijuana. This has both positive and negative implications. On the positive side, whether it be a function of the sample or a sign of the times, these adolescents appear to be aware of the risks associated with smoking marijuana and do not intend (at least in the next 30 days) to do so. The findings also suggest that having sex, even unsafe sex, is perceived as less risky than smoking marijuana. The AIDS epidemic proves otherwise since sexual intercourse is a primary means of HIV transmission. The adolescents' intentions suggest that given the opportunity and a willing partner, they will put themselves at risk and have sex. Adolescents' acceptance of abstinence from sex in the face of the AIDS crisis, has yet to be achieved.

Independent Variables

The independent variables include the direct and indirect (belief-based) measures of attitude, subjective norm, and perceived control for each of the behaviors. Tables 8-19 present the group means for each of the items on the Attitude and Belief Scale. The items in these tables are arranged according to the personal beliefs, subjective norms, and perceived control scales for each behavior. Each item ranged from 1 for "not at all likely" to 7 for "very unlikely" with higher means reflective of the group's general tendency to agree with an item, and lower means reflective on their

tendency to disagree. A discussion of the independent variables, as measured by the indirect measures of attitude and subjective norm, will follow¹. Perceived behavioral control will be discussed separately.

¹Similar results were found using direct measures of attitude and subjective norm; therefore, only the findings using the indirect measures will be discussed. Findings using the direct measures will be reported in the Appendix.

Indirect measures

Table 9.

The mean and standard deviation for each behavioral belief item and evaluative item on the survey comprising the indirect measure of attitude for sex.

Behavioral Belief items for having sex	mean	sd
1. Having sex relieves stress	3.8	2.2
2. Because I love my partner	3.1	2.1
3. Could get me/my partner pregnant	2.9	2.1
4. Sex feels good	4.7	2.1
5. I'm not old enough	4.0	2.3
6. Sex is fun	4.3	2.3
Evaluative items for having sex	mean	sd
1. Relieving my stress is	5.7	1.7
2. Showing my partner how much I love him/her is	5.6	1.7
3. Getting pregnant now is	2.0	1.7
4. Feeling good is	6.0	1.6
5. Waiting till I'm older to have sex is	3.7	2.2
6. Having fun is	6.0	1.6
Indirect measure of attitude toward sex (The sum of all the products of the behavioral belief items multiplied by the corresponding evaluative items).		
	MEAN	113.0
	SD	49.5

Table 10.

The mean and standard deviation for each survey item concerning normative beliefs and motivation to comply, on the survey comprising the indirect measure of subjective norm for sex.

Normative Belief items for having sex	mean	sd
1. My mother/father thinks I should have sex	2.0	1.6
2. My boy/girlfriend thinks I should have sex	3.5	2.2
3. My friends think I should have sex	4.1	2.3
4. My best friend thinks I should have sex	3.7	2.3
5. My bro/sis thinks I should have sex	2.6	2.2
Motivation to Comply items for having sex	mean	sd
1. Regarding sex how much do you want to do what your mother/father thinks you should do?	3.9	2.1
2. Regarding sex...boy/girlfriend thinks you should do?	3.6	2.0
3. Regarding sex...friends think you should do?	3.2	2.2
4. Regarding sex...best friend thinks you should do?	3.4	2.1
5. Regarding sex...bro/sis thinks you should do?	3.3	2.3
Indirect measure of Subjective Norm (the sum of all the products of the normative belief items multiplied by the corresponding motivation to comply items)		
MEAN 59.2 SD 40.5		

Table 11.

The mean and standard deviation for each behavior belief item and evaluative item on the survey comprising the indirect measure of attitude for using condoms.

Behavioral Belief items for using condoms	mean	sd
1. Stops me/my partner from getting pregnant	5.4	2.1
2. Protects me from getting a disease	5.7	1.9
3. Protects me from getting AIDS	5.6	2.0
4. Makes sex feel different/uncomfortable	3.8	2.2
Evaluative items for using condoms	mean	sd
1. Preventing myself from getting pregnant at this time of my life is	6.2	1.7
2. Protecting myself from getting a disease is	5.1	2.3
3. Preventing myself from getting AIDS is	5.2	2.3
4. Feeling uncomfortable during sex is	5.6	2.1
Indirect measure of attitude toward using condoms (The sum of all of the products of the behavioral belief items multiplied by the corresponding evaluative items)		
	MEAN	110.0
	SD	43.9

Table 12.

The mean and standard deviation for each survey item concerning normative beliefs and motivation to comply, on the survey comprising the indirect measure of subjective norm for using condoms.

Normative Belief items for using condoms	mean	sd
1. My mother/father thinks I should use condoms	6.1	1.7
2. My boy/girlfriend thinks I should use condoms	5.1	2.3
3. My friends think I should use condoms	5.2	2.3
4. My best friend thinks I should use condoms	5.6	2.1
<hr/>		
Motivation to Comply items for using condoms	mean	sd
1. Regarding condoms how much do you want to do what your mother/father thinks you should do?	5.1	2.3
2. Regarding...boy/girlfriend thinks you should do?	4.3	2.3
3. Regarding ...friends think you should do?	3.7	2.4
4. Regarding ...best friend thinks you should do?	3.9	2.4
<hr/>		
Indirect measure of Subjective Norm (the sum of all the products of the normative belief items multiplied by the corresponding motivation to comply items)		
	MEAN	99.1
	SD	57.8

Table 13.

The mean and standard deviation for each behavioral belief item and evaluative item on the survey comprising the indirect measure of attitude for smoking marijuana.

Behavioral Belief items for smoking marijuana	mean	sd
1. Ruins my health	2.6	2.4
2. Can get brain damage	3.0	2.4
3. Would hurt my family	2.7	2.4
4. Makes me feel relaxed	2.5	2.1
5. Helps me fit in	1.8	1.6
6. Is fun	2.2	2.0
Evaluative items for smoking marijuana	mean	sd
1. Ruining my health is	1.4	1.2
2. Having brain damage is	1.2	1.0
3. Hurting my family is	1.8	1.7
4. Feeling relaxed is	5.4	2.3
5. Fitting in is	4.5	2.1
6. Having fun is	5.1	2.2
Indirect measure of attitude toward smoking marijuana. (The sum of all of the products of the behavioral belief items multiplied by the corresponding evaluation of outcome items)		
	MEAN	35.1
	SD	26.4

Table 14.

The mean and standard deviation for each survey item concerning normative beliefs and motivation to comply, on the survey comprising the indirect measure of subjective norm for smoking marijuana.

Normative Belief items for smoking marijuana	mean	sd
1. My mother/father thinks it's O.K. if I smoke pot	1.2	.92
2. My boy/girlfriend thinks I should smoke pot	1.5	1.4
3. My friends think I should smoke pot	2.2	2.0
4. My best friend thinks I should smoke pot	1.7	1.7
Motivation to Comply items for smoking marijuana	mean	sd
1. Regarding smoking pot how much do you want to do what your mother/father thinks you should do?	3.8	2.7
2. Regarding...boy/girlfriend thinks you should do?	2.6	2.3
3. Regarding ...friends think you should do?	2.4	2.1
4. Regarding ...best friend thinks you should do?	2.4	2.1
Indirect measure of Subjective Norm for smoking marijuana (the sum of all the products of the normative belief items multiplied by the corresponding motivation to comply items)		
	MEAN	19.0
	SD	19.9

Table 15.

Mean and standard deviation for each perceived control item comprising the indirect measure of perceived behavioral control for having sex.

Perceived control items for having sex	mean	sd
1. Not having sex would ruin my relationship	5.2	2.2
2. You're not part of the group if you don't have sex	5.1	2.2
3. You're treated like a grown-up if you have sex	5.3	2.0
Indirect measure of perceived behavioral control for having sex (the sum of the means of the perceived control items)		
	MEAN	15.7
	SD	5.2

Table 16.

The mean and standard deviation for each item of the direct measure of perceived control for sex.

Perceived control items for having sex	mean	sd
1. Telling my boy/girlfriend that I don't want to have sex is	4.8	2.3
2. How much control do you have whether or not you have sex	4.8	2.3
3. If I wanted to I could easily tell my boy/girlfriend that I don't want to have sex	5.7	1.8
Direct measure of perceived control for having sex (the sum of the means of the perceived control items)		
	MEAN	15.3
	SD	4.5

Table 17.

Mean and standard deviation for each perceived behavioral control item comprising the indirect measure of perceived behavioral control for using condoms.

Perceived control items for using condoms	mean	sd
1. Spoils the mood	4.3	2.3
2. Buying them is embarrassing	4.7	2.4
3. Would upset my partner	5.5	1.9
Indirect measure of perceived behavioral control for using condoms (the sum of all the means of the perceived control items)		
	MEAN	14.5
	SD	4.6

Table 18.

The mean and standard deviation for each item comprising the direct measure of perceived behavioral control for using condoms. (Numbers in parentheses indicate the item number on the survey).

Perceived control items for using condoms	mean	sd
1. Telling my boy/girlfriend that I don't want to use a condom is	5.8	1.8
2. How much control do you have whether or not you use a condom	6.0	1.7
3. If I wanted to I could easily get my boy/girlfriend to use a condom	5.6	2.0
Direct measure of perceived control for using condoms (the sum of the means for all three items)		
	MEAN	17.4
	SD	4.5

Table 19.

Mean and standard deviation for each perceived control item comprising the indirect measure of perceived behavioral control for smoking marijuana.

Perceived control items for smoking marijuana	mean	sd
1. When I have serious problems	5.7	2.2
2. When I hang with the wrong crowd	6.0	1.9
Indirect measure of perceived behavioral control for smoking marijuana (the sum of the means for the perceived control items)		
	MEAN	11.7
	SD	3.4

Table 20.

The mean and standard deviation for each item, comprising the direct measure of perceived control for smoking marijuana.

Items comprising the direct measure of perceived control for smoking marijuana	mean	sd
1. For me to get and smoke pot is	4.6	2.7
2. How much control do you have whether or not you smoke pot	6.2	1.7
3. If I wanted to I could easily say no to me friends about smoking pot	5.6	2.4
Direct measure of perceived control for smoking (the sum of the means of the perceived control items)		
	MEAN	17.4
	SD	4.5

Behavioral Beliefs

Tables 9, 11, and 13 present the group means for each behavioral belief item for having sex, using condoms, and smoking marijuana, respectively.

As the group means in Table 11 show, the majority of adolescents have positive personal beliefs about using condoms. This finding implies that among these adolescents there is a general acceptance of the educational messages that condoms are useful in protecting oneself against AIDS and other sexually transmitted diseases. Table 13 shows that the majority of adolescents have negative beliefs about smoking marijuana, which is consistent with their self-reported non-

use of marijuana. The group means in Table 9 show that the group's beliefs about having sex are less clear than their beliefs about the other two behaviors. The means border around 4, the middle of the scale, indicating neither a strong agreement nor disagreement with the items. The question of whether or not to engage in sexual intercourse seems to present a considerable amount of conflict for these adolescents. This seems understandable given the inconsistent messages to which today's adolescents are exposed. The print media, advertisements, movies, and television all cast sexual intimacy as the norm. It is socially acceptable, even expected for people in their teen years. On the other hand, the adolescents receive an opposite message; that premarital sex is dangerous. As the AIDS epidemic continues, as more and more adolescents continue to become infected with HIV, it is time to present a clear and consistent message to today's youth about having sex.

Subjective Norms

Tables 10, 12 and 14 present the group means for the normative belief items on the Attitude and Belief scale for; having sex, using condoms and smoking marijuana, respectively. For behaviors, having sex and smoking marijuana, the greatest amount of pressure is perceived by the group as coming from their friends, including their best friend. However, for using condoms parental pressure is perceived to be the greatest pressure.

Tables 10, 12 and 14 also present the group means for the motivation to comply items for: having sex, using condoms, and smoking marijuana, respectively. With regard to having sex and smoking marijuana, the adolescents do not appear to be motivated to comply with others' pressures. Interestingly, the findings indicate that for all of the behaviors, the adolescents are more willing to comply with their parents' pressures than with the pressures of their friends, although this is most apparent with respect to using condoms.

Perceived Behavioral Control

Tables 15-20 present the means for the perceived behavioral control items on the Attitude and Belief scale for: having sex, using condoms, and smoking marijuana, respectively. The group means for each of the behaviors, using indirect measures presented in Tables 15, 17, and 19, indicate that the adolescents perceived themselves to have little control over whether they engaged in each behavior. This is in contrast to the findings using the direct measures of perceived behavioral control, as can be seen in Tables 16, 18, and 20. The group means on the direct measures of perceived behavioral control indicate that the vast majority of adolescents believed they had a lot of control over whether to have sex, use condoms, and smoke marijuana. Past research has shown a consistency in the findings using direct and indirect measures of perceived behavioral control.

AIDS Knowledge

Adolescents' responses to the AIDS Information Survey (DiClemente et al., 1987) were analyzed in an effort to assess the degree of AIDS knowledge the adolescents possessed. The responses to the knowledge section of the questionnaire, shown in Table 21, indicate that the majority of adolescents are knowledgeable about the methods of transmission of HIV. However, between 10% and 20% of all the adolescents responded incorrectly or did not know on most items. Myths regarding the transmission of HIV are for the most part dispelled for these adolescents. However, it appears that the current status of treatment for AIDS is confusing for the youth. More than 20% of the group did not know whether AIDS can be cured. Over 30% did not know whether the cause of AIDS is known, whether women are more susceptible to HIV when they have their period, and whether people who have AIDS also have lots of other diseases. Over 40% did not know whether HIV was caused by the same virus as V.D. or whether there was a vaccine that could treat AIDS. The mean score for the group (where 30 is the highest score) was 22.

Table 21. Percent responding True, False, and Don't Know to AIDS Knowledge Survey. (Underlined percentage reflects the correct response).

Questions	True	False	Don't Know
1. AIDS is a medical condition in which your body cannot fight off diseases	<u>85%</u>	10%	5%
2. AIDS is caused by a virus	<u>79%</u>	8%	13%
3. AIDS is a condition you are born with	<u>12%</u>	<u>73%</u>	14%
4. Stress causes AIDS	2%	<u>84%</u>	14%
5. If you kiss someone with AIDS, you can get AIDS	9%	<u>75%</u>	15%
6. If you touch someone with AIDS you can get the disease	3%	<u>90%</u>	7%
7. All gay men have AIDS	9%	<u>79%</u>	12%
8. What you eat can give you AIDS	5%	<u>84%</u>	10%
9. Anybody can get AIDS	<u>90%</u>	4%	5%
10. AIDS can be cured	<u>5%</u>	<u>70%</u>	24%
11. Women are more likely to get AIDS during their period	11%	<u>52%</u>	37%
12. AIDS can be spread by using someone's personal belongings, like a comb or hairbrush	0%	<u>87%</u>	13%
13. AIDS is not at all serious it is like having a cold	10%	<u>81%</u>	10%
14. AIDS is caused by the same virus that causes VD	14%	<u>41%</u>	45%
15. The cause of AIDS is unknown	10%	<u>56%</u>	32%
16. Just being around someone with AIDS can give you the disease	5%	<u>83%</u>	13%
17. Having sex with someone who has AIDS is one way of getting it	<u>84%</u>	8%	7%
18. If a pregnant women has AIDS there is a chance it may harm her unborn baby	<u>81%</u>	9%	9%
19. Most people who get AIDS usually die from the disease	<u>84%</u>	6%	10%
20. Using a condom during sex can lower the risk of getting AIDS	<u>85%</u>	8%	7%
21. You can get AIDS by shaking hands with someone who has it	7%	<u>85%</u>	8%
22. Receiving a blood transfusion with infected blood can give a person AIDS	<u>78%</u>	6%	16%
23. You can get AIDS by sharing a needle with a drug user who has the disease	<u>85%</u>	8%	7%
24. AIDS is a life-threatening disease	<u>84%</u>	6%	9%
25. People with AIDS usually have lots of other diseases as a result of AIDS	<u>37%</u>	30%	32%
26. All gay women have AIDS	5%	<u>74%</u>	20%
27. There is no cure for AIDS	<u>63%</u>	<u>11%</u>	23%
28. I can avoid getting AIDS by exercising regularly	<u>10%</u>	<u>73%</u>	16%
29. AIDS can be cured if treated early	11%	<u>53%</u>	35%
30. A new vaccine has recently been developed for the treatment of AIDS.	29%	<u>27%</u>	42%

· Correlations between AIDS Knowledge and
Intentions to Use Condoms

The majority of AIDS interventions concentrate on the delivery of AIDS information in an effort to increase the individual's knowledge of AIDS. The underlying assumption is that increases in AIDS knowledge will result in risk-avoiding attitudes and behaviors. In order to examine the extent to which the data supported the hypothesis: There will be a positive relationship between AIDS knowledge and intentions to use condoms, a correlational analysis was conducted. This was done by correlating the adolescents' degree of AIDS knowledge (as determined by their scores on the AIDS Information Survey) with their intention to use condoms. First, a composite score was computed on the AIDS Knowledge Scale for each of the adolescents. The correlational analysis revealed that there were no significant correlations ($r=.23$) between the adolescents' degree of AIDS knowledge and their intentions to use condoms. According to these findings the data does not support the hypothesis.

An examination of the association between AIDS knowledge and self-reported condom use was then conducted, yielding no significant correlations between the adolescents' AIDS knowledge and their use of condoms ($r=.19$). These findings suggest that knowledge alone is insufficient for risk-reduction behavior to occur. These findings are consistent with previous research findings (Hingson and Strunin, 1992).

Attitudes and subjective norms
predict intentions

This section will discuss the extent to which the findings were in support of the second and third hypotheses: attitudes and subjective norms will predict intentions and for behaviors believed to be nonvolitional, adding perceived behavioral control to subjective norms and attitudes will increase the accuracy in predicting intentions. The findings show the degree to which the theory of reasoned action (TRA) was accurate in predicting the adolescents' intentions to have sex, use condoms, and smoke marijuana.

As previously discussed, the theory of reasoned action asserts that the constructs which are fundamentally motivational in nature are able to predict intentions to engage in a particular behavior. Intention to behave is thought to be the immediate antecedent of any behavior. The findings center around the theoretical assumption that attitude (a personal factor) and subjective norm (a social factor), each weighted for its independent and relative importance, jointly determine behavioral intention.

Additionally, this research set out to examine the theory of planned behavior. Since the theory of reasoned action was developed to predict only those behaviors which are believed to be volitional, the theory of planned behavior was formulated in an effort to predict the behaviors believed to be nonvolitional. The theory of planned behavior asserts that

the addition of perceived behavioral control to attitude and subjective norm will increase the predictive validity of intentions to behave for behaviors not believed to be under one's volitional control.

A forced entry method was employed in order to construct a prediction/regression model for the prediction of intention, with three independent variables: attitude, subjective norm, and perceived control. The reason that the forced entry method was used was theory-driven. The number and type of variables to be entered into the model was predetermined by Fishbein and Ajzen (1973) in accordance with the theory of reasoned action. Based on extensive research, attitude and subjective norm should predict intention. First attitudes and subjective norm were entered in step number one. Perceived behavioral control was entered next to determine whether this variable would increase the explained variance beyond the theory of reasoned action. Finally, on the last step, three control variables were entered - sex, age, and ethnicity. - A stepwise regression analysis was also conducted in order to verify that the lack of significance of any of the variables was due to empirical reasoning and not because of the predetermined ordering of the forced entry method. The stepwise regression revealed similar results as the forced entry method. No dramatic changes in the regression coefficients were detected when independent variables were dropped or added to the equation and no changes in significance were found.

The analysis examined each behavior-- having sex, using condoms and smoking marijuana--separately. Regression models were run using the independent variables as assessed by the direct measures, and a set of separate models were used, examining the independent variables as assessed by the indirect measures.

Prior to conducting the regression analysis, a correlational matrix² was analyzed in order to determine whether the direct measures for each of the behaviors-- having sex, using condoms, and smoking marijuana--might be multicollinear³. This was done for the indirect measures, as well.

With only a few exceptions, the variables are independent of each other. The indirect measure of subjective norm for marijuana has a negative correlation coefficient of ($r = -.44$) with the indirect measure of perceived control for marijuana. It was noted in the matrix that there was a moderate ($r = .40$) relationship between the following variables: the indirect measure of attitude toward marijuana with the indirect measure of perceived control for marijuana, and the indirect measure

²One of the first steps in calculating regression equations with several/multiple independent variables is to calculate a correlational matrix for all variables (Norusis, 1988).

³Multicollinearity exists when the independent variables are correlated strongly with each other. It does not exist when the independent variables correlate strongly with the dependent variables. The main reason for checking multicollinearity is to obtain an accurate and precise statistical prediction when using the multiple regression method.

of the subjective norm for sex with the indirect measure of perceived control for sex. This degree of multicollinearity is not uncommon as with the majority of nonexperimental social science data, the independent variables are virtually always intercorrelated. (Lewis-Beck, 1976). Each of the remaining regression assumptions such as linearity and homoskedastidity, were met. Visual inspection of the shape of the scatterplots, along with the coefficient of determination, indicated that the assumptions had not been violated.

Direct Measures

Table 22.

Regression model using **direct** measures of attitude, subjective norm and perceived behavioral control in the prediction of having sex.

Variables	B	Beta
Attitude	.235***	.554
Subjective Norm	.011	.041
Perceived Control	.041	.078
age	.039	.077
sex	.437	.093
ethnicity	.480**	.203
Constant	.715	---
		R2 = .38
Significant t value	**p<.01	***p<.001
B = regression coefficient Beta = weight		

Table 23.

Regression model using **direct** measures of attitude, subjective norm and perceived behavioral control in the prediction of smoking marijuana

Variables	B	Beta
Attitude	.262***	.578
Subjective Norm	.075**	.228
Perceived Control	.033	.064
age	.022	.050
sex	.052	.101
ethnicity	.480	.025
Constant	.153	---
		R2 = .48
Significant t value **p<.01 ***p<.001		
B= regression coefficient Beta= weight		

Table 24.

Regression model using **direct** measures of attitude, subjective norm and perceived behavioral control in the prediction of using condoms

Variables	B	Beta
Attitude	.233***	.431
Subjective Norm	9.385	.069
Perceived Control	.084	.161
age	6.406	.013
sex	.131	.027
ethnicity	.014	5.967
Constant	.864	---
		R2 .27
Significant t value ***p<.001		
B = regression coefficient Beta = weight		

Tables 22, 23, and 24 present the results of the multiple regression analyses for the prediction of intention to have sex, use condoms, and smoke marijuana using the direct measures of attitude, subjective norm and perceived control.

It can be seen that for having sex and using condoms, only attitude significantly contributed to the prediction of intention to behave. Contrary to expectations, subjective norm was not a significant predictor. This finding demonstrates that the adolescents' personal beliefs are more influential on their intentions to have sex and use condoms than their perceptions of social pressures. For smoking marijuana, both the adolescents' personal attitudes and perceived social pressures were significant contributors. The direct measures of perceived behavioral control had no significant impact on the prediction of intention to have sex, use condoms and smoke marijuana.

In summary, the findings using the direct measures of attitude and subjective norm for having sex and using condoms, partially supported the hypothesis: attitudes and subjective norms will predict intentions. This is true since, only the attitude component was found to be a significant contributor to the prediction of intention to have sex and use condoms. However, the direct measures of attitude and subjective norm for smoking marijuana were in agreement with the above mentioned hypothesis.

The findings, that perceived behavioral control was not a significant contributor to the prediction of intention to have sex, use condoms, and smoke marijuana, were in support of the hypothesis which states that: for behaviors believed to be nonvolitional, adding perceived behavioral control to subjective norms and attitudes will increase the accuracy in predicting intentions. The theory of planned behavior states that perceived behavioral control should only have an impact on intentions to behave when the behaviors are nonvolitional. Since each of the behaviors were perceived by the adolescents, to be volitional, (when using the direct measures of perceived behavioral control) perceived behavioral control should not have been significant and that is what was found.

Indirect Measures

Table 25.

Regression model using **indirect** measures of attitude, subjective norm and perceived behavioral control in the prediction for having sex.

Variables	B	Beta
Attitude	.016**	.363
Subjective Norm	.016**	.290
Perceived Control	.022	.049
age	.021	.042
sex	.402	.085
ethnicity	.352	.150
Constant	.902	---
		R2 = .33
Significant t value		**p<.01
B = regression coefficient		Beta= weight

Table 26.

Regression model using **indirect** measures of attitude, subjective norm and perceived behavioral control in the prediction for smoking marijuana

Variables	B	Beta
Attitude	.019**	.286
Subjective Norm	.031**	.250
Perceived Control	.048	.079
age	.031	.071
sex	.192	.046
ethnicity	.112	.053
Constant	1.39	---
		R2 = .25
Significant t value		**p<.01
B= regression coefficient Beta= weight		

Table 27.

Regression model using **indirect** measures of attitude, subjective norm and perceived behavioral control in the prediction for using condoms

Variables	B	Beta
Attitude	.012**	.216
Subjective Norm	.015**	.368
Theory of planned behavior		
Perceived Control	.019	.037
age	42.2	.000.
sex	.088	.018
ethnicity	.100	.041
Constant	1.68	---
		R2 = .24
Significant t value		**p<.01
B = regression coefficient Beta= weight		

As can be seen in Tables 25, 26, and 27, the indirect measures of both, attitude and subjective norm significantly contributed to the prediction of intention to have sex, use condoms and smoke marijuana. These findings support the hypothesis: attitudes and subjective norms predict intentions. Adding perceived behavioral control to attitude and subjective norm failed to raise the correlation with intention. Unlike the findings using the direct measures of perceived behavioral control, these findings are inconsistent with the theory of planned behavior. They are inconsistent because the indirect measures of perceived behavioral control indicated that the adolescents believed that they had low control over whether or not to engage in the behaviors (nonvolitional). Therefore the findings do not support the hypothesis (for behaviors believed to be nonvolitional, adding perceived behavioral control to subjective norms and attitudes will increase the accuracy in predicting intentions) since, perceived behavioral control should have had a significant impact on the prediction of each of the behaviors and did not. The problem may lie in the validity of the perceived control variable.

Intention Predicts Behavior

According to the theory of reasoned action, intention to behave predicts (self-reported) behavior. The following section will review the extent to which the findings are in support of the following two hypotheses: intentions will predict self-reported behavior and for nonvolitional

behaviors, adding perceived behavioral control to intentions will increase accuracy of predicting behaviors (beyond the theory of reasoned action).

A forced entry logistic regression procedure was used to examine the predictive validity of the theory of reasoned action. The logistic regression was the appropriate regression procedure since the dependent variables- having sex, using condoms and smoking marijuana- were dichotomous. (Norusis, 1990). The forced entry method was employed in order to test the theory of reasoned actions' assertion that intention and perceived behavioral control, predicts self-reported behavior. The logistic regression procedure permitted an analysis of the extent to which the theory of reasoned action was able to correctly predict those adolescents who reported --using condoms, having sex and smoking marijuana-- as well as the extent to which the theory was able to predict those adolescents who reported that they did not-- use condoms, have sex, and smoke marijuana-- . Intention to behave was entered on the first step followed by perceived behavioral control. Both the direct and indirect measures of perceived control were entered into the analysis separately.

As can be seen in Tables 28, 29, 30, and 31, support was found for the hypothesis with regard to the prediction of intention to have sex ($p < .001$) and use condoms ($p < .01$). In each case, intention to behave significantly predicted self-

reported behavior. Neither the direct nor the indirect measure of perceived behavioral control was significant in the prediction of intention to have sex.

As can be seen in Tables 32 and 33, intention to smoke marijuana ($p < .09$) did not significantly contribute to the prediction of the self-reported behavior of smoking marijuana and therefore did not support the hypothesis. Nor did the direct measure of perceived behavioral control significantly contribute to the prediction of smoking marijuana. However, the indirect measure of perceived control was significant ($p < .05$) in the prediction of smoking marijuana.

Table 28.

Logistic regression model using intention and perceived behavioral control to predict self-reports of had sex
Analytic step one: Intention to have sex entered on step 1.

Classification Table for Having sex				
Observed	Predicted		Percent Correct	
	had sex	no sex		
Had sex	29	11	72.5%	
No sex	14	30	68.2%	
			Overall	70.24%
Variables in the equation				
Variable	B	S	R	Exp (B)
Intend to have sex	-1.06	.0007	-.2845	.3462
Constant	1.0227	.0052		

Table 29.

Analytic step two: Direct measure of perceived control entered on step 2

Classification Table for Having sex				
Observed	Predicted		Percent Correct	
	had sex	no sex		
Had sex	28	12		70.0%
No sex	12	32		72.7%
			Overall	71.43%
Variables in the equation				
Variable	B	S	R	Exp(B)
Intend to have sex	-1.09	.0007	-.3040	.3364
Per. control	-.05	.3990	.0000	.9550
Constant	1.7504	.0651		

Table 30.

Logistic regression model using intention and perceived behavioral control to predict self-reports of condom use
 Analytic step one: Intention to use condoms entered on step 1.

Classification Table for Using condoms				
Observed use condoms	Predicted		Percent Correct	
	use condoms	don't use condoms		
use condoms	57	05	91.9%	
don't use condoms	12	07	36.8%	
			Overall	79.0%
Variables in the equation				
Variable	B	S	R	Exp(B)
Intend to have sex	-.999	.0049	-.2589	.3680
Constant	.1857	.7278		

Table 31.

Analytic step two: Direct measure of perceived control entered on step 2

Classification Table for Using condoms				
Observed use condoms	Predicted		Percent Correct	
	use condoms	don't use condoms		
use condoms	60	02	96.7%	
don't use condoms	15	04	21.0%	
			Overall	79.0%
Variables in the equation				
Variable	B	S	R	Exp (B)
Intend to have sex	- .893	.0157	-.2188	.4091
Per.control	- .064	.2403	.0000	.9378
Constant	1.0824	.2521		

Table 32.

Logistic regression model using intention and perceived behavioral control to predict self-reported marijuana use
Analytic step one: Intention to smoke marijuana entered on step 1.

Classification Table for smoking marijuana				
Observed	Predicted		Percent Correct	
	smoke pot	don't smoke pot		
smoke pot	00	11	00%	
don't smoke pot	74		100%	
Overall			87.0%	
Variables in the equation				
Variable	B	S	R	Exp(B)
Intend to smoke pot	-.675	.0963	-.1082	.5088
Constant	2.2513	.0000		

Table 33.

Analytic step two: Direct measures of perceived control entered on step two

Classification Table for smoking marijuana				
Observed	Predicted		Percent Correct	
	smoke pot	don't smoke pot		
smoke pot	00	11	00%	
don't smoke pot	00	74	100%	
Overall			87.6%	
Variables in the equation				
Variable	B	S	R	Exp (B)
Intend to smoke pot	- .679	.0960	-.1107	.5069
Per control	- .009	.9230	.0000	.9910
Constant	2.418	.1749		

Discussion

The theory of reasoned action, an expectancy-value theory, based on the assumption that individuals are rational beings, was successful in predicting intentions-- to have sex, use condoms, and smoke marijuana-- in a sample of inner-city adolescents. This finding invites a rethinking about adolescent risk-taking behavior, and the methods in which these behaviors are studied. This issue will be discussed in the following section. First, a summary of the findings will be presented, then the perceived behavioral control variable will be discussed; and, finally, implications drawn for interventions will be discussed.

Summary of Findings

Table 34.

Regression Results: Significant contributors to the prediction of intention to have sex, to use condoms and to smoke marijuana. Significance of intention in the prediction of self-reported behavior

INTENTION TO BEHAVE			
Predictor Variables	Sex	Condoms	Pot
ATTITUDES			
Direct measure	***	***	**
Indirect measure	**	**	**
SUBJECTIVE NORMS			
Direct measure			**
Indirect measure	**	**	**
SELF-REPORTED BEHAVIOR			
INTENTION TO BEHAVE	***	**	
**p<.01 **p<.001			

As can be seen in Table 34, a direct measure of attitude and subjective norm and an indirect measure of attitude and subjective norm were used to predict intention. For the sake of clarity, the discussion will center on the findings using the direct measures and then the indirect measures.

In contrast to common beliefs, results showed that when using direct measures of attitude and subjective norm, the adolescents' personal attitudes were more important to the prediction of intention to have sex and use condoms than were the social pressures (subjective norm). Intention to smoke marijuana, on the other hand, was found to be significantly influenced by both the adolescents' perceived social pressures and personal attitudes toward smoking marijuana, with the attitude component being more heavily weighted than the subjective norm component.

Findings, using the indirect measures, showed that both the adolescents' personal attitudes and perceived social pressures were significant contributors to the prediction of intention-- to have sex, use condoms and smoke marijuana -- with the attitude component being more heavily weighted than the subjective norm.

Importance of the Attitudinal Component

Overall, the findings show that these behaviors can be predicted with the use of a rational-based theory. The findings also show, that in nearly every case, the attitudinal component played the major role in predicting intention to

behave. This is in contrast to the notion that adolescent behavior is attributable primarily to peer influence. This research has shown the adolescents in this study base their decision of intent to have sex, on their individually held beliefs about the consequences of having sex and their evaluations of these consequences. London (1989), who found the subjective norm to be less important than attitudinal considerations in the prediction of alcohol use, states, "...this may be a result of the adolescents development; an age for autonomy, a desire to rebel against authority and an attempt at obtaining positive reinforcement from parental figures by demonstrating a lack of motivation to comply with the wishes of important others relative to alcohol use" (p. 247). This is not to say that adolescents' decisions to behave are made in social isolation. It can be argued that peer and parental influences (social pressures) were responsible for the development of the adolescents' personal beliefs regarding their intentions to engage in each of the behaviors in the first place. Additionally, it should be noted that the subjective norm variable is reflective of the adolescents' perceptions of the extent to which they are motivated to comply with peers, and are not objective indicators. Peer/parental influences may be greater than the adolescents are willing or able to admit. Nevertheless, according to the present findings, the adolescents' personal beliefs about each of the behaviors should be taken very seriously when trying to

understand and/or modify risky behaviors.

According to the findings for the adolescents in this research, influence attempts aimed at preventing pregnancy, thereby reducing STDs and HIV transmission, should be directed at the adolescents personal beliefs about having sex. For smoking marijuana, both, the measures of attitude and subjective norm were significant contributors to the prediction of intention to smoke marijuana, with the attitude component being more heavily weighted than the subjective norm. These findings are consistent with previous research, where Beardon et al (1973) found that "marijuana appears to be significantly affected by both the beliefs of 'significant others' and individually held attitudes" (Beardon et.al. 1973, p.65) and Cook et.al. (1980) who found that "the attitude toward the act was the best predictor of marijuana and beer use" (p.199). In addition to past research (Kandel et. al., 1985) which has shown that peer pressure is the most critical influence on drug use. One of the most widely used prevention models used to prepare young people to deal with the attractions of substance abuse is the social learning and psychological inoculation approach developed by Richard I. Evans. This research suggests that the adolescents' personal attitudes should also be given considerable attention when designing interventions to prevent smoking marijuana.

For the prediction of intention to use condoms, there were inconsistencies in the role of the attitudinal component

dependent on whether direct or indirect measures of attitude and subjective norm were used; When using the indirect measures, the subjective norm component ($B=.368$) was more heavily weighted than the attitude ($B=.216$) component, as opposed to the direct measures, where attitude ($B=.431$) was more heavily weighted than subjective norm ($B=.069$). Jaccard and Davidson (1972) found that, although both attitude and subjective norm were significant in the prediction of intention to use birth control pills, intention was largely mediated by attitudinal considerations. On the other hand, DiClemente, (1989) found that "perceived referent-group normative behavior" was identified as the only factor that significantly differentiated adolescents who used condoms from those who did not. Perhaps this is an area where more research is needed to determine whether the attitudinal or normative influences play a greater role in the adolescents' intention to use condoms.

Direct and Indirect Measures of Subjective Norm

It is interesting to notice the discrepancy between the contribution of the direct and indirect measures of the subjective norm component in the prediction of intention to have sex and use condoms. The reason that the direct measure of subjective norm did not significantly contribute to the prediction of intention to have sex and use condoms may be due to the manner in which it was assessed. The direct measure of

subjective norm is the product of the responses to two items for each behavior; "the people who are most important to you think you should have sex" multiplied by the response to the item "when it comes to having sex, how much do you want to do what the most important people to you think you should do?" This measure of subjective norm is vague and somewhat confusing. It does not assist the adolescent in considering all the referents who influence their decisions -- to have sex, use condoms, and smoke marijuana. The direct measure of subjective norm as it stands might more accurately be referred to as the "general measure" of subjective norm. The indirect measure of subjective norm is more specific in regard to assessing who is important to the adolescent as well as how much the adolescent wants to comply with the referents wishes in relation to that behavior. Future research should explore alternative ways of assessing the subjective norm variable in a direct manner, while maintaining clarity and a greater degree of specificity.

Intention Predicts Behavior

In terms of predicting self-reported behavior, the findings revealed that intention to have sex and use condoms significantly contributed to the prediction of the self-reported behavior of having sex and using condoms, respectively. However, intention to smoke marijuana did not predict marijuana smoking. One explanation for this may be due to the large number of adolescents (87%) who reported that

they did NOT smoke marijuana. The restricted range of variation could have attenuated the correlational findings which is a limitation to the study. However, the self-reported marijuana use is consistent with current marijuana use trends. According to Johnston (1991)

we are seeing declines in marijuana and cocaine use across the different levels of social class, among different racial groups, in large cities as well as more rural areas, in all regions of the country, among youngsters who do poorly in school as well as among those who do well, and even among those who are frequently truant from school.

The small number of adolescents who reported marijuana use is encouraging, however, this finding should not give a false security since recent research has shown that for those adolescents who do smoke marijuana, even moderate amounts have been associated with unsafe sex (Keller, 1991).

An alternative explanation for why intention did not predict self-reported marijuana use, may be due to the characteristics of the behaviors. In the current milieu, having sex and using condoms are considered socially acceptable behaviors for adolescents, whereas smoking marijuana is not legal and is regarded as a deviant behavior. It is possible that when using the theory of reasoned action within a sample of adolescents, intention may be less able to predict deviant behaviors.

Perceived Behavioral Control

According to the theory of planned behavior, the addition of the perceived behavioral control variable to the attitude

and subjective norm variables should increase the prediction of intention and self-reported behavior for those behaviors which are believed, by the subjects, to be nonvolitional.

The findings using the direct measures of perceived behavioral control indicated that the majority of the subjects in this study believed they were in control of whether they had sex, used condoms or smoked marijuana; that is, each behavior was perceived to be volitional. Therefore, the findings that the direct measures of perceived behavioral control were not significant in the prediction of intention or self-reported behaviors, is consistent with the tenets of the theory of planned behavior. On the contrary, when using the indirect measures of perceived behavioral control¹, the findings indicated that the adolescents believed they had little control over whether to engage in the behaviors (therefore the behaviors were perceived as nonvolitional). Based on the finding that the behaviors were believed to be nonvolitional, it was expected that the addition of the variable, perceived behavioral control, to the variables, attitude and subjective norm would increase the prediction of behavior beyond what attitude and subjective norm were able to predict. This was not the case, since the indirect measures of perceived behavioral control did not significantly contribute to the prediction of intention to have sex, use condoms, and smoke marijuana. The inconsistency in the findings when using direct and indirect measures of perceptions of control is

reflected in the low correlations between the two types of measures of perceived behavioral control.

There are several possible explanations for these findings. It is possible that the indirect measure of perceived control lacked validity. Although it seemed to be tapping an important aspect of the adolescents' beliefs, it may not, in fact, have been a valid measure of perceived control. On the other hand, it is possible that the indirect measure was a more subtle measure and therefore a more valid indicator of belief about control. The direct measure may have elicited defenses, making the adolescents assert their independence and identity by claiming their sense of control in all behavioral arenas. Problems with the perceived behavioral control variable are not isolated to this study. Previous research has shown that while perceived control contributed to predictions of goals or outcomes (e.g., weight loss, Shifter and Ajzen, 1986) it was relatively ineffective in the prediction of actual behavior (attending a training session, Fishbein and Stasson, 1990). Ajzen and Maddens (1985) results showed a similar pattern. Perceived control predicted an outcome (grades in a college course) but did not assist in predicting a voluntary behavior (class attendance). These results indicate that measures of perceived control are most important in predicting behavioral outcomes and goals, and less useful in predicting behaviors such as having sex, using condoms, and smoking marijuana.

The perceived behavioral control variable, as it is now defined, is a broad, multifaceted variable. It is possible that the variable would be more useful in predicting intentions and behavior if the definition of the variable was narrowed, the measurements were more specific, or it were thought of as a multiple level construct which would require assessing each factor separately. Future research should explore alternative ways of assessing perceived behavioral control in order to ascertain the robustness of the theory of planned behavior.

AIDS Knowledge

The adolescents in this study were knowledgeable about AIDS. Similar to subjects in other studies (Slonim-Nevo et.al., 1991), the subjects in this study were least knowledgeable about areas which involved medical aspects of HIV. In the study conducted by Slonim-Nevo (1991), 44% of their sample thought that AIDS was caused by the same virus that causes V.D. In the present study, 45% of the sample were unsure, and 13% thought this statement to be true. It appears that there needs to be a greater effort to educate adolescents on the medical aspects of HIV and AIDS, i.e., how HIV is currently treated, specific information on the biology of the virus, and currently understood modes of transmission.

The insignificant correlation between AIDS knowledge and intention to use condoms is not surprising, since social scientists have long been aware that knowledge does not always

translate into appropriate behavior (Strunin et. al., 1987; Goodman et. al., 1989). It is essential that we continue to educate our children, however information alone will not encourage risk-avoiding behaviors.

Intervention Implications

Adolescents engage in risk-taking behaviors. Frustrating as this may be to parents, teachers and health educators, this behavior should not be solely attributed to their hormonal upheavals and daily developmental dilemmas in their metamorphosis from adolescent to "mature adult". It should not be assumed that they are behaving solely out of irrational processes such as passion and impulse. Rather, their behaviors, as demonstrated by this study should be thought of as a product of their underlying personal beliefs, attitudes and perceived social pressures toward engaging in a behavior. Intentions to have sex, use condoms or smoke marijuana are reflective of a rational thought process which takes into account; how much they believe the behavior will put them at risk, how important that is to them, who would approve or disapprove of their behavior and how much they want to conform with those people.

Recognizing that adolescents do not act haphazardly has important implications. First it removes a blame-the-victim stance from the adolescent. It denies the sentiment that no matter what is done the adolescent will continue to engage in high-risk behaviors. As expressed by Gardener

First we wish to contest the uncritical acceptance of the view that adolescents -particularly, poor or minority adolescents - take risks because they are irrational decision makers. This runs close to blaming the victims (p.30).

Second, it empowers researchers and health educator with a systematic rationally-based framework for collecting information and translating that information into effective intervention strategies that will result in decreases in risk-taking behavior.

...Risk taking may be intrinsic to adolescence and youth, but we are not obliged to accept all reckless adolescent behavior as if it were an unchangeable fact of nature (p.30).

According to the theory of reasoned action, changing behavior requires that the underlying beliefs motivating that behavior be changed.

Understanding the determinants of a behavior is an essential first step in the development of successful educational interventions to change that behavior (Fishbein and Middlestadt, 1987).

Once the intention to behave is identified it is quite easy to determine the degree to which it is under attitudinal and/or normative control. "By influencing beliefs about the consequences of performing the behavior we can produce change in the attitude toward the behavior and by influencing beliefs about the expectations of specific referents we can affect the subjective norm." (Fishbein et.al., 1987, p.363) Interventions can then be appropriately designed by emphasizing influence attempts at the set of beliefs underlying attitude toward the behavior or toward the set of beliefs underlying the

subjective norm. Too often interventions focus on the presentation of information and ignore the adolescents' personal attitudes and social pressures regarding the recommended actions they are prescribing. For example, exposing the adolescent to information on condom use may result in little more than an increased sophistication in AIDS prevention knowledge. However, achieving a grasp of how adolescents perceive the use of condoms and their perceptions of how significant others might respond to their use of condoms taps into deeper motivational aspects of behavior.

For the sample in this study, interventions with goals to reduce unsafe sex should direct the influence attempts at the set of beliefs underlying attitudes toward having sex and using condoms with less influence on the social pressures. One possibility is to design interventions that aim to enhance ones' self-esteem and self-respect. Interventions designed to reduce marijuana use should direct the influence attempts at attitudes and social pressures. Demonstrating negotiating skills to ward off peer pressure should be incorporated.

The call for theory based research on adolescents and HIV transmission is loud and clear. The theory of reasoned action has shown to be a useful vehicle to study adolescent risk-taking behaviors and provides a natural follow-through with interventions.

APPENDIX I

MEANS AND STANDARD DEVIATIONS OF THE INDEPENDENT VARIABLES
USING INDIRECT MEASURES

INDIRECT MEASURES

Table 34. The mean and standard deviation for each behavioral belief item and evaluative item on the survey comprising the indirect measure of attitude for sex.

Behavioral Belief items for having sex	mean	sd
1. Having sex relieves stress	3.8	2.2
2. Because I love my partner	3.1	2.1
3. Could get me/my partner pregnant	2.9	2.1
4. Sex feels good	4.7	2.1
5. I'm not old enough	4.0	2.3
6. Sex is fun	4.3	2.3
Evaluative items for having sex	mean	sd
1. Relieving my stress is	5.7	1.7
2. Showing my partner how much I love him/her is	5.6	1.7
3. Getting pregnant now is	2.0	1.7
4. Feeling good is	6.0	1.6
5. Waiting till I'm older to have sex is	3.7	2.2
6. Having fun is	6.0	1.6

Indirect measure of attitude toward sex (The sum of all of the products of behavioral beliefs by their corresponding evaluative item)

MEAN 113.0
SD 49.5

Table 35. The mean and standard deviation for each normative belief item and motivation to comply item on the survey comprising the indirect measure of subjective norm for sex.

Normative Belief items for having sex	mean	sd
1. My mother/father thinks I should have sex	2.0	1.6
2. My boy/girlfriend thinks I should have sex	3.5	2.2
3. My friends think I should have sex	4.1	2.3
4. My best friend thinks I should have sex	3.7	2.3
5. My bro/sis thinks I should have sex	2.6	2.2
Motivation to Comply items for having sex	mean	sd
1. Regarding sex how much do you want to do what your mother/father thinks you should do?	3.9	2.1
2. Regarding sex...boy/girlfriend thinks you should do?	3.6	2.0
3. Regarding sex...friends think you should do?	3.2	2.2
4. Regarding sex...best friend thinks you should do?	3.4	2.1
5. Regarding sex...bro/sis thinks you should do?	3.3	2.3
Indirect measure of Subjective Norm (the sum of all the products of the normative beliefs multiplied by their corresponding motivation to comply items)		

MEAN 59.2
SD 40.5

Table 36. Mean and standard deviation for each perceived control item comprising the indirect measure of perceived behavioral control for having sex.

Perceived control items for having sex	mean	sd
1. Not having sex would ruin my relationship	5.2	2.2
2. You're not part of the group if you don't have sex	5.1	2.2
3. You're treated like a grown-up if you have sex	5.3	2.0

Indirect measure of perceived behavioral control for having sex (the summation of each of the perceived control items)

MEAN 15.7
SD 5.2

Table 37. The mean and standard deviation for each behavioral belief item and evaluative item on the survey comprising the indirect measure of attitude for using condoms.

Behavioral belief items for using condoms	mean	sd
1. Stops me/my partner from getting pregnant	5.4	2.1
2. Protects me from getting a disease	5.7	1.9
3. Protects me from getting AIDS	5.6	2.0
4. Makes sex feel different/uncomfortable	3.8	2.2
Evaluative items for using condoms	mean	sd
1. Preventing myself from getting pregnant at this time of my life is	6.2	1.7
2. Protecting myself from getting a disease is	5.1	2.3
3. Preventing myself from getting AIDS is	5.2	2.3
4. Feeling uncomfortable during sex is	5.6	2.1

Indirect measure of attitude toward using condoms
(The sum of all of the products of behavioral belief items multiplied by their corresponding evaluative items)

MEAN	110.0
SD	43.9

Table 38. The mean and standard deviation for each normative belief item and motivation to comply item on the survey comprising the indirect measure of subjective norm for using condoms.

Normative Belief items for using condoms	mean	sd
1. My mother/father thinks I should use condoms	6.1	1.7
2. My boy/girlfriend thinks I should use condoms	5.1	2.3
3. My friends think I should use condoms	5.2	2.3
4. My best friend thinks I should use condoms	5.6	2.1
Motivation to Comply items for using condoms	mean	sd
1. Regarding condoms how much do you want to do what your mother/father thinks you should do?	5.1	2.3
2. Regarding...boy/girlfriend thinks you should do?	4.3	2.3
3. Regarding ...friends think you should do?	3.7	2.4
4. Regarding ...best friend thinks you should do?	3.9	2.4

Indirect measure of Subjective Norm (the sum of all the products of the normative beliefs by their corresponding motivation to comply items)

MEAN 99.1
SD 57.8

Table 39. Mean and standard deviation for each perceived behavioral control item comprising the indirect measure of perceived behavioral control for using condoms.

Perceived control items for using condoms	mean	sd
1. Spoils the mood	4.3	2.3
2. Buying them is embarrassing	4.7	2.4
3. Would upset my partner	5.5	1.9

Indirect measure of perceived behavioral control for using condoms (the summation of each of the perceived control items)

MEAN 14.5
SD 4.6

Table 40. The mean and standard deviation for each behavioral belief item and evaluative item on the survey comprising the indirect measure of attitude for smoking marijuana.

Behavioral beliefs items for smoking marijuana	mean	sd
1. Ruins my health	2.6	2.4
2. Can get brain damage	3.0	2.4
3. Would hurt my family	2.7	2.4
4. Makes me feel relaxed	2.5	2.1
5. Helps me fit in	1.8	1.6
6. Is fun	2.2	2.0
Evaluative items for smoking marijuana	mean	sd
1. Ruining my health is	1.4	1.2
2. Having brain damage is	1.2	1.0
3. Hurting my family is	1.8	1.7
4. Feeling relaxed is	5.4	2.3
5. Fitting in is	4.5	2.1
6. Having fun is	5.1	2.2

Indirect measure of attitude toward smoking marijuana (the sum of all of the products of behavioral beliefs by their corresponding evaluative item)

MEAN	35.1
SD	26.4

Table 41. The mean and standard deviation for each normative belief item and motivation to comply item on the survey comprising the indirect measure of subjective norm for smoking marijuana Scales ranged from 1 to 7. (Numbers in the parenthesis indicate the item number on the survey).

Normative Belief items for smoking marijuana	mean	sd
1. My mother/father think it's O.K. if I smoke pot (21p)	1.2	.92
2. My boy/girlfriend thinks I should smoke pot (22p)	1.5	1.4
3. My friends thinks I should smoke pot (23p)	2.2	2.0
4. My best friend thinks I should smoke pot (24p)	1.7	1.7
Motivation to Comply items for for smoking marijuana	mean	sd
1. Regarding smoking pot how much do you want to do what your mother/ father thinks you should do? (27p)	3.8	2.7
2. Regarding...boy/girlfriend thinks you should do? (28p)	2.6	2.3
3. Regarding ...friends think you should do? (29p)	2.4	2.1
4. Regarding ...best friend thinks you should do? (30p)	2.4	2.1

Indirect measure of Subjective Norm for smoking marijuana (the sum of all the products of the normative beliefs by their corresponding motivation to comply items)

MEAN 19.0
SD 19.9

Table 42. Mean and standard deviation for each perceived control item comprising the indirect measure of perceived behavioral control for smoking marijuana.

Items comprising the indirect measure of perceived control for smoking marijuana	mean	sd
1. When I have serious problems	5.7	2.2
2. When I hang with the wrong crowd	6.0	1.9

Indirect measure of perceived behavioral control for smoking marijuana (the summation of each of the perceived control items)

MEAN 11.7
SD 3.4

APPENDIX II
ASSESSMENT INSTRUMENTS

PLEASE NOTE

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

Pages 119-120

University Microfilms International

Attitude and Belief Scale

REMEMBER THAT ALL INFORMATION IS CONFIDENTIAL. NONE OF THE INFORMATION CAN BE IDENTIFIED TO YOU. PLEASE ANSWER HONESTLY.

1. READ EACH QUESTION CAREFULLY.
2. YOU WILL NEED TO LOOK AT THE WHOLE QUESTION BEFORE ANSWERING.
3. CIRCLE THE NUMBER THAT COMES CLOSEST TO HOW YOU FEEL.

Make sure you circle only one number
Do not circle between the numbers

EXAMPLE

1. Listening to BBD makes me feel good

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

2. For me, feeling good is

-----1-----2-----3-----4-----5-----6-----7-----
not very
important important

3. My friends think that I should listen to BBD

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

4. When it comes to music, I want to do what my friends think I should do.

-----1-----2-----3-----4-----5-----6-----7-----
very much not at all
Condoms

1. Using condoms (rubbers, trojans) every time I have sexual intercourse will prevent me (my girlfriend) from getting pregnant.

-----1-----2-----3-----4-----5-----6-----7---

very unlikely

very likely

2. Using a condom (rubbers, trojan) every time I have sexual intercourse will protect me from getting a disease.

-----1-----2-----3-----4-----5-----6-----7---

very unlikely

very likely

3. Using a condom (rubber, trojan) every time I have sexual intercourse will protect me from getting AIDS.

-----1-----2-----3-----4-----5-----6-----7---

very unlikely

very likely

4. When I have sexual intercourse, using a condom (rubber, trojan) makes sex feel uncomfortable.

-----1-----2-----3-----4-----5-----6-----7---

very unlikely

very likely

5. I will use a condom (rubber,trojan) when I have sex in the next 30 days.

-----1-----2-----3-----4-----5-----6-----7--

not true
at all

very true

6. Preventing myself (my girlfriend) from getting pregnant at this time in my life is

-----1-----2-----3-----4-----5-----6-----7---

not important
at all

very
important

7. Protecting myself from getting a disease is

-----1-----2-----3-----4-----5-----6-----7---

not important
at all

very
important

8. Preventing myself from getting AIDS is

-----1-----2-----3-----4-----5-----6-----7---

not important
at all

very
important

9. For me, feeling uncomfortable during sex is

-----1-----2-----3-----4-----5-----6-----7---

not important
at all

very
important

10. For me, to tell my boyfriend/girlfriend that I want to
use a condom (rubber, trojan) is

-----1-----2-----3-----4-----5-----6-----7---

difficult

easy

11. My, using a condom (rubber, trojan) is

-----1-----2-----3-----4-----5-----6-----7---

useless

useful

12. My, using a condom (rubber, trojan) is

-----1-----2-----3-----4-----5-----6-----7---

bad

good

13. My, using a condom (rubber, trojan) is

-----1-----2-----3-----4-----5-----6-----7---
foolish wise

14. I will use a condom (rubber, trojan) when I have sex in the next 30 days.

-----1-----2-----3-----4-----5-----6-----7--
very unlikely very likely

15. My parents think that if I am having sex I should use condoms (rubbers, condoms).

-----1-----2-----3-----4-----5-----6-----7--
very unlikely very likely

16. My boy/girlfriend thinks we should use a condom (rubber, trojan).

-----1-----2-----3-----4-----5-----6-----7--
very unlikely very likely

17. My friends think I should use a condom (rubber, trojan).

-----1-----2-----3-----4-----5-----6-----7--
very unlikely very likely

18. My best friend thinks I should use a condom (rubber, trojan).

-----1-----2-----3-----4-----5-----6-----7--
very unlikely very likely

19. If I wanted to I could easily get my boyfriend/girlfriend to use a condom (rubber, trojan).

-----1-----2-----3-----4-----5-----6-----7--
 very unlikely very likely

20. When it comes to using condoms (rubbers, trojans) how much do you want to do what your mother/father thinks you should do?

-----1-----2-----3-----4-----5-----6-----7--
 not at all very much

21. When it comes to using condoms (rubbers, trojans) how much do you want to do what your boy/girlfriend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7--
 not at all very much

22. When it comes to using condoms (rubbers, trojans) how much do you want to do what your friends think you should do?

-----1-----2-----3-----4-----5-----6-----7--
 not at all very much

23. When it comes to using condoms (rubbers, trojans) how much do you want to do what your best friend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7--
 not at all very much

24. Most people who are important to me think I should use condoms (rubbers, trojans).

-----1-----2-----3-----4-----5-----6-----7--
 not at all very much

25. When it comes to using condoms (rubbers, trojans), how much do you want to do, what the people who are important to you think you should do?

-----1-----2-----3-----4-----5-----6-----7--

not at all

very much

26. How much control do you have over whether you do or do not use a condom (rubber, trojan)?

-----1-----2-----3-----4-----5-----6-----7--

very little
control

complete
control

27. For me, using condoms (rubbers, trojans) spoils the mood.

-----1-----2-----3-----4-----5-----6-----7-----

not at all
true

very much
true

28. For me, buying condoms (rubbers, trojans) is embarrassing.

-----1-----2-----3-----4-----5-----6-----7-----

not at all
true

very much
true

29. Using a condom (rubber, trojan) would upset my boyfriend/girlfriend

-----1-----2-----3-----4-----5-----6-----7-----

not at all
true

very much
true

Marijuana

1. Smoking pot a couple of times a week will ruin my health.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

2. Smoking pot a couple of times a week will cause me to get brain damage.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

3. My smoking pot would hurt my family.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

4. When I smoke pot it makes me feel relaxed.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

5. Smoking pot helps me to fit in.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

6. For me, smoking pot is fun.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

7. Hurting my family is

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

8. For me, having fun is

-----1-----2-----3-----4-----5-----6-----7-----
 not important very important

9. Smoking pot let's me enjoy sex more.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

10. For me, to say "no" to smoking pot is

-----1-----2-----3-----4-----5-----6-----7-----
 difficult easy

11. For me smoking pot is

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

12. For me, smoking pot is

-----1-----2-----3-----4-----5-----6-----7-----
 useful useless

13. For me, smoking pot is

-----1-----2-----3-----4-----5-----6-----7-----
 foolish wise

14. I will smoke pot in the next 30 days.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

15. For me, ruining my health would be

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

16. For me, doing something that might hurt my brain is

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

17. For me, feeling relaxed is

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

18. For me, fitting in is

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

19. For me to get pot is

-----1-----2-----3-----4-----5-----6-----7-----
 difficult easy

20. My parents think it's O.K. if I smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

21. My boy/girlfriend thinks I should smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

22. My friends think I should smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

23. My best friend thinks I should smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

24. If I wanted to I could easily say "No" to my friends about smoking pot.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

25. When it comes to smoking pot how much do you want to do what your parents thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

26. When it comes to smoking pot how much do you want to do what your boy/girlfriend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

27. When it comes to smoking pot how much do you want to do what your friends think you should do ?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

28. When it comes to smoking pot how much do you want to do what your best friend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

29. When it comes to smoking pot how much do you want to do what your sister/brother thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

30. Most of the important people to me think I should smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

31. When it comes to smoking pot, how much do you want to do what the most important people to you, think you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

32. How much control do you have over whether you do or do not smoke pot?

-----1-----2-----3-----4-----5-----6-----7-----
very little control complete control

33. I will smoke pot in the next 30 days

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

34. When I have problems (school problems, family problems, breaking up with boy/girlfriend) I smoke pot.

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

35. Being down with the wrong crowd can make you smoke pot

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

Sexual Intercourse

1. Having sex (sexual intercourse) relieves my stress.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

2. Having sex (sexual intercourse) with my boy\girlfriend is a good way to show him/her how much I care for him/her.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

3. Having sex (sexual intercourse) with my boy\girlfriend will lead to serious consequences like getting (her) pregnant

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

4. For me, having sex (sexual intercourse) feels good.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

5. I want to wait until I'm older to have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

6. For me, having sex (sexual intercourse) is fun.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

7. Showing my boyfriend\girlfriend how much I love him/her
is

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

8. Getting (my girlfriend) pregnant now is

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

9. For me, having fun is

-----1-----2-----3-----4-----5-----6-----7-----
not important very important

10. For me, feeling good is

-----1-----2-----3-----4-----5-----6-----7-----
bad good

11. Waiting until I'm older to have sex (sexual intercourse)
is

-----1-----2-----3-----4-----5-----6-----7-----
not important very important

12. For me, telling my boyfriend that I don't want to have
sex (sexual intercourse) is

-----1-----2-----3-----4-----5-----6-----7-----
difficult easy

13. For me, having sex (sexual intercourse) now is

-----1-----2-----3-----4-----5-----6-----7-----
foolish wise

14. For me, having sex (sexual intercourse) now is

-----1-----2-----3-----4-----5-----6-----7-----
 immoral moral
 (wrong) (right)

15. For me, having sex (sexual intercourse) now is

-----1-----2-----3-----4-----5-----6-----7-----
 bad good

16. I will have sex (sexual intercourse) in the next 30 days.

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

17. My mother/father thinks I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

18. My boy/girlfriend thinks I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

19. My friends think I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

20. My best friend thinks I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

21. My brother/sister thinks I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

22. Most people who are important to me think I should have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

23. If I wanted to I could easily tell my boy/girlfriend that I did not want to have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
 very unlikely very likely

24. When it comes to having sex (sexual intercourse) how much do you want to do what your mother/father thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

25. When it comes to having sex (sexual intercourse) how much do you want to do what your boy/girlfriend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

26. When it comes to having sex (sexual intercourse) how much do you want to do what your friends think you should do?

-----1-----2-----3-----4-----5-----6-----7-----
 not at all very much

27. When it comes to having sex (sexual intercourse) how much do you want to do what your best friend thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

28. When it comes to having sex (sexual intercourse) how much do you want to do what your brother/sister thinks you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

29. When it comes to having sex (sexual intercourse) how much do you want to do, what the people who are important to you think you should do?

-----1-----2-----3-----4-----5-----6-----7-----
not at all very much

30. How much control do you have over whether or not you have sex?

-----1-----2-----3-----4-----5-----6-----7-----
very little control complete control

31. Not having sex (sexual intercourse) would ruin my relationship with my boy/girlfriend.

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

32. If I don't have sex (sexual intercourse) it will make me feel as if I am different than everyone else.

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

33. People treat me more grown up because I have sex (sexual intercourse)

-----1-----2-----3-----4-----5-----6-----7-----
very unlikely very likely

Elicitation Questionnaire

Sexual Intercourse

1. List the reasons why YOU WOULD have sex (sexual intercourse) in the next 30 days.

1.

2.

3.

4.

2. List the reasons why YOU WOULD NOT have sex (sexual intercourse) in the next 30 days.

1.

2.

3.

4.

3. List the people who you think would APPROVE of you having sex (sexual intercourse) in the next 30 days.

1.

2.

3.

4.

4. List the people who you think would DISAPPROVE of you having sex (sexual intercourse) in the next 30 days.

1.

2.

3.

4.

5. Looking at the people that you listed for question 3 and question 4, whose advise would you follow regarding having sex (sexual intercourse).

1.

2.

3.

4.

6. Let's say you really did not want to have sexual intercourse. What are some things that would encourage you to do so anyway.

1.

2.

3.

4.

Elicitation Questionnaire

Condoms

1. List the reasons why YOU WOULD use condoms in the next 30 days.

1.

2.

3.

4.

2. List the reasons why YOU WOULD NOT use condoms in the next 30 days.

1.

2.

3.

4.

3. List the people who you think would APPROVE of you using condoms in the next 30 days.

1.

2.

3.

4.

4. List the people who you think would DISAPPROVE of you using condoms in the next 30 days.

1.

2.

3.

4.

5. Looking at the people that you listed for question 3 and question 4, whose advise would you follow regarding using condoms

1.

2.

3.

4.

6. Let's say you really did wanted to use condoms. What are some things that would encourage you not to do so.

1.

2.

3.

4.

Elicitation Questionnaire

Smoking Marijuana

1. List the reasons why YOU WOULD smoke marijuana in the next 30 days.

1.

2.

3.

4.

2. List the reasons why YOU WOULD NOT smoke marijuana in the next 30 days.

1.

2.

3.

4.

3. List the people who you think would APPROVE of you smoking marijuana in the next 30 days.

1.

2.

3.

4.

4. List the people who you think would DISAPPROVE of you smoking marijuana in the next 30 days.

1.

2.

3.

4.

5. Looking at the people that you listed for question 3 and question 4, whose advise would you follow regarding smoking marijuana

1.

2.

3.

4.

6. Let's say you really did not want to smoke marijuana. What are some things that would encourage you to do so anyway.

1.

2.

3.

4.

References

- Adler, N., Kegeles, S., & Irwin, C. (1987). Understanding adolescent contraceptive choice: An empirical test. Paper presented at the meeting of the American Psychological Association, New York City.
- Ajzen, I., & Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. Journal of Personality and Social Psychology, 21, 1-9.
- Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviors. Journal of Personality and Social Psychology, 27, 41-57.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. Psychological Bulletin, 84, 888-918.
- Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Englewoods, N.J.: Prentice-Hall.
- Ajzen, I., Timko, C., & White, J. (1982). Self-monitoring and the attitude-behavior relation. Journal of Personality and Social Psychology, 42, 426-435.
- Ajzen, I., & Fishbein, M. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhn & J. Beckman (Eds.), Action-Control: From cognition to behavior (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Bechmann (Eds.), Action Control: From Cognition to Behavior. New York: Springer
- Ajzen, I., & Madden, T. (1985). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. Journal of Experimental Social Psychology, 22, 453-474.
- Bachman, J.G., Johnston, L.D., O'Malley, P.M. (1988) Explaining the recent decline in marijuana use: Differentiating the effects of perceived risk, disapproval and general lifestyle factors. Journal of Health and Social Behavior, 29(1) 92-112
- Barling, N.R. & Moore, S.M. (1990). Adolescents' attitudes towards AIDS precautions and intentions to use condoms. Psychological Reports, 67, 883-890.

- Bauman, K.E., & Udry, R.J. (1986). A panel study of subjective expected utility for adolescent sexual behavior. Journal of Applied Social Psychology, 16(8), 745-756.
- Beardon, W., & Woodside, A. (1978). Situational and extended attitude models as predictors of marijuana intentions and reported behavior. Journal of Social Psychology, 106, 57-67.
- Bell, T., & Holmes, K. (1984). Age-specific risks of syphilis, gonorrhoea, and hospitalized pelvic inflammatory disease in sexually experienced U.S. women. Sexually Transmitted Diseases, 11, 291-295.
- Brower, K.J. & Anglin, M.D. (1987). Adolescent cocaine use: Epidemiology, risk factors and prevention. Journal of Drug Education, 17(21), 163-180.
- Burkett, S.R. & Jensen, E.L. (1975) Conventional ties, peer influence and the fear of apprehension: A study of adolescent marijuana use. Sociological Quarterly, 16(4), 522-533.
- Centers for Disease Control (1991, December). Weekly Surveillance Report.
- Chitwood, D. (1985). Patterns and consequences of cocaine use. In N.J. Kozel & E.H. Adams (Eds.), Cocaine Use in America: Epidemiologic and Clinical Perspectives (pp. 111-129). Rockville, MD: National Institute on Drug Abuse.
- Clayton, R. (1985). Cocaine use in the United States: In a blizzard or just being snowed? In N.J. Kozel & E.H. Adams (Eds.), Cocaine use in America: Epidemiologic and clinical perspectives (pp. 8-34). Rockville, MD: National Institute on Drug Abuse.
- Cook, M., Lounsbury, J., & Fontenelle, G. (1980). An application of Fishbein and Ajzen's attitudes-subjective norms model to the study of drug use. Journal of Social Psychology, 110, 193-201.
- Davidson, A., & Jaccard, J. (1975). Population psychology: A new look at an old problem. Journal of Personality and Social Psychology, 31, 1073-1082.
- Dembo, R., Schmeidler, J., & Burgos, W. (1980). The International Journal of Addictions, 15, 171-188.

- DesJarlais, D., Friedman, S., & Hopkins, W. (1985). Risk reduction for the Acquired Immunodeficiency Syndrome among intravenous drug users. Annals of Internal Medicine, 103, 755.
- DiClemente, R., Zorn, J., & Temoshok, L. (1986). Adolescents and AIDS: A survey of knowledge, attitudes and beliefs about AIDS in San Francisco. Journal of Public Health, 76, 1443-1445.
- DiClemente, R. (1989). Prevention of human immunodeficiency virus infection among adolescents : the interplay of health education and public policy in the development and implementation of school-based AIDS education programs. Journal of Public Health, 89, 1001-1027.
- Eakind, D. (1978). Understanding the young adolescent. Adolescence, 8, 127-134.
- Fazio, R., & Zanna, M. (1978). Attitudinal qualities relating to the strength of the attitude-behavior relationship. Journal of Experimental Social Psychology, 14, 398-408.
- Fishbein, M., & Jaccard, J. (1973). Theoretical and methodological considerations in the prediction of family planning intentions and behavior. Representative Research in Social Psychology, 4, 37-51.
- Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention and Behavior: An introduction to Theory and Research. Reading:MASS: Addison-Wesley.
- Fishbein, M., & Middlestadt, S. (1987). Using the theory of reasoned action to develop educational interventions: Applications to illicit drug use. Health Education Research: Theory and Practice, 2(4), 361-371.
- Fishbein, M. & Stasson, M. (1990). The role of desires, self-predictions and perceived control in the prediction of training session attendance. Journal of Applied Social Psychology, 20(3), 173-198.
- Fisher, W. (1984). Predicting contraceptive behavior among university men: The role of emotions and behavioral intentions. Journal of Applied Social Psychology, 14, 104-123.
- Box, G., & Inazu, J. (1980). Patterns and outcomes of mother-daughter communication about sexuality. Journal of Social Issues, 36, 7-29.

- Gardner, W., Millstein, S., & Wilcox, B. (1990). Adolescents in the AIDS Epidemic. San Francisco: Jossey-Bass Inc.
- Glynn, T. (1984). Drugs and the Family. Research Issue 19. Rockville, MD: National Institute on Drug Abuse.
- Goodman, E., & Cohall, A. (1989). Acquired immunodeficiency syndrome and adolescents: Knowledge, attitudes, beliefs and behaviors in a New York City adolescent minority population. Pediatrics, 84, 36-42.
- Goodman, E., & Cohall, A. (1989). Adolescents: Knowledge, attitudes, beliefs and behaviors in a New York City minority population. Pediatrics, 84, 36-42.
- Hein, K., Cohen, M., & Marks, A. (1978). Age at first intercourse among homeless adolescent females. Pediatrics, 93, 147-148.
- Hein, K. (1987). AIDS in adolescents: A rationale for concern. New York State Journal of Medicine, 88, 290-295.
- Hein, K. (1989). AIDS in adolescence: Exploring the challenge. Journal of Adolescent Health Care, 10, 10-35.
- Hingson, R. Strunin, L. (1992). Intentions to use condoms. Journal of Addictions, 27(2), 129-146.
- Jaccard, J. J., & Davidson, A. (1972). Toward an understanding of family planning behaviors: An initial investigation. Journal of Applied Social Psychology, 2, 228-235.
- Jemmot, L., & Jemmott, J., III (1990). Sexual knowledge, attitudes, and risky sexual behavior among inner-city Black male adolescents. Journal of Adolescent Research, 5, 346-369.
- Jessor, R., & Jessor, S. (1977). Problem Behavior and Psychological Development: A Longitudinal Study of Youth. San Diego: CA: Academic Press.
- Johnston, L., O'Malley, P., & Bachman, J. (1992). Senior High School Survey. Ann Arbor:MI: University of Michigan Institute of Social Research.
- Kadushin, L. (1972). Drug attitudes, parental childbearing attitudes, and youth's perceptions of parental attitude agreement. Dissertation Abstracts, 32, 6050.

- Kandel, D., Kessler, R., & Margulies, R. (1978). Antecedents of adolescent initiation into stages of drug use: A developmental analysis. Journal of Youth and Adolescence, 7(1), 13-40.
- Kandel, D. (1985). On processes of peer influence in adolescent drug use: A developmental perspective. Journal of American Academic Clinical Psychiatry, 4, 139-163.
- Kandel, D. (1992). Epidemiological and psychosocial perspectives on adolescent drug use. Journal of the American Academy of Child Psychiatry, 21, 328-344.
- Kandel, D.B. (1984). Marijuana users in young adulthood. Archives of General Psychiatry, 41, 200-209.
- Keller, S.E., Bartlett, J.A., Schelifer, S.J., Letal, J.R. (1991). HIV-relevant sexual behavior among a healthy inner-city heterosexual adolescent population in an endemic area of HIV. Journal of Adolescent Health, 12(1), 44-48.
- Lewis-Beck, M.S. (1984). Applied Regression: An Introduction. Beverly Hills: Sage
- Manning, D., Barenber, N., Galese, L., & Rice, J.C. (1989). College students; knowledge and health beliefs about AIDS: Implications for education and prevention. Special Issue: sex on campus. Journal of American College Health, 37(6), 254-259.
- Martin, D. (1987). The impact of AIDS on gay male sexual behavior in New York City. American Journal of Public Health, 77, 104.
- Melton, G. (1988). Adolescents and prevention of AIDS. Professional Psychology Research and Practice, 19, 403-408.
- Miniard, P., & Cohen, J. (1981). an examination of the Fishbein-Ajzen behavioral intentions model's concepts and measures. Journal of Experimental Social Psychology, 17, 309-339.
- Morrison, D. (1985). Adolescent contraceptive behavior: A review. Psychological Bulletin, 98, 538-568.
- Nathanson, C., & Becker, M. (1985). The influence of client-provider relationships on teenage women's subsequent use of contraception. American Journal of Public Health, 75, 33-38.

- Nathanson, C., & Becker, M. (1986). Family and peer influence on obtaining a method of contraception. Journal of Marriage and the Family, 48, 513-525.
- Newcomb, M., & Bentler, P. (1986). Cocaine use among adolescents: Longitudinal associations with social context, psychopathology, and use of other substances. Addictive Behaviors, 11, 263-273.
- Norris, A., & Ford, K. (1990). Condom beliefs, AIDS susceptibility and accessibility of condom intentions and AIDS susceptibility in African American and Hispanic young adults: Implications for AIDS prevention. Paper presented at the American Psychological Association, August, 1990, Boston, Mass.
- Norusis, M.J. (1990). SPSS/PC+4.0 Base Manual. Chicago:SPSS, Inc
- Nurco, D. (1988). A discussion of validity. In R. B. & L. R. N.J. Kozel (Eds.), Self-Report Methods of Estimating Drug Use. Research Monographs, 57 (pp. 121-145). Washington D.C.: National Institute on Drug Abuse.
- Office of Technology Assessment. U.S. Congress (1990). Adolescent Health. Washington, D.C.: Government Printing Office.
- Pleck, J., Sonenstein, F., & Ku, L. (1990). Adolescent males' contraceptive attitudes and consistency of condom use. Paper presented at the 98th Annual Convention of the American Psychological Association, Boston.
- Pomazal, E., & Brown, J. (1977). Understanding drug use motivation: A new look at a current problem. Journal of Health and Social Behavior, 18, 212-222.
- Price, J., Desmond, S., & Kukulka, G. (1985). High school students' perceptions and misperceptions of AIDS. Journal of School Health, 55, 107-109.
- Quinn, T.C.; Glasser, D.; Cannon, R.O.; Matuszak, D.L.; Dunning R.W.; Kline, R.L. Cambell, C.H.; Israel, E.; Fausi, A.S.; Hook E. W. (1988). Human immunodeficiency virus infection among patients attending clinics for sexually transmitted diseases. New England Journal of Medicine, 318, 197-203.
- Ringwalt, C.L., Palmer, J.H. (1989). Cocaine and crack users compared. Adolescence, 24, 851-859.

- Sarvela, P., & McClendon, E. (1988). Indicators of rural youth drug use. Journal of Youth and Adolescence, 17(4), 335-348.
- Scifter, D.E. & Ajzen, I. (1985). Intention, perceived control and weight loss: An application of the theory of planned behavior. Journal of Personality and Social Psychology, 49(3), 843-857.
- Seefrin, J.R., Seehafer, R.W. (1976). A survey of drug use beliefs, opinions and behaviors among junior and senior high school students: I Group data. Journal of School Health, 46,(5), 263- 268.
- Seligman, F. (1977) The psychology of chance. Journal for the Theory of Social Behavior, 77, 185-207
- Sherif, M., & Sherif, C. (1964). Reference Groups: An exploration into conformity and deviation in adolescent groups. New York: Harper and Row.
- Siegel, K. (1988). Public education to prevent the spread of HIV infection. New York State Journal of Medicine, 88, 642-646.
- Slomin-Nevo, V., Ozawa, M., & Auslander, W. (1991). Knowledge attitudes and behaviors related t AIDS among youth in residential centers: Results form an exploratory study. Journal of Adolescence, 14, 17-33.
- Smart, R. G., & Fejer, D. (1972). Drug use among adolescents and their parents: Closing the gap in mood modification. Journal of Abnormal Social Psychology, 79, 153-160.
- Sorenson, R. (1973). Adolescent Sexuality in Contemporary America. New York: World.
- Strunin, L, & Hingson, R. (1987). Acquired Immune Deficiency Syndrome and adolescents: Knowledge, beliefs, attitudes, and behaviors. Pediatrics, 79, 825-828.
- Thompson L., & Spanier, G. (1978). Influence of parents, peers and partners on the contraceptive use of college men and women. Journal of Marriage and Family, 39, 481-492.
- White, H. (1988). Longitudinal patterns of cocaine use among adolescents. American Journal of Drug and Alcohol Abuse, 14, 1-15.

Wicker, A. (1969). Attitudes vs. actions: The relationship of verbal and overt behavioral responses to attitude objects. Journal of Social Issues, 25, 41-78.

Zelnik, M., & Kantner, J. (1980). Sexual activity, contraceptive use and pregnancy among metropolitan-area teenagers: 1971-1979. Family Planning Perspectives, 12, 230-238.