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Understanding and Promoting AIDS-Preventive Behavior: Insights From the Theory of Reasoned Action

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Psychological determinants of AIDS-preventive behaviors were examined from the perspective of the theory of reasoned action in prospective studies of gay men, heterosexual university students, and heterosexual high school students. Across samples, preventive behaviors, and prospective intervals of 1 and 2 months' duration, AIDS-preventive behaviors were predicted by behavioral intentions; behavioral intentions were a function of attitudes and norms; and attitudes and norms were a function of their theorized basic underpinnings. Discussion focuses on the development of AIDS-prevention interventions that modify intentions, attitudes, and norms concerning performance of AIDS-preventive behaviors by targeting the empirically identified underpinnings of attitudes and norms related to specific preventive behaviors in specific populations of interest.

Key words: AIDS-preventive behavior, theory of reasoned action

AIDS has rapidly become a major global health threat. Worldwide, 2.7 million persons have been diagnosed with AIDS, and 12.9 million have been infected with human immunodeficiency virus, or HIV (Mann, Tarantola, & Netter, 1992), the pathogen that causes AIDS (Lifson, 1990). In the United States, 402,000 persons have been diagnosed with AIDS (Centers for Disease Control, 1994), an estimated 1.5 million have been infected with HIV (Mann et al., 1992), and up to 535,000 AIDS cases are expected to have occurred by the end of 1994 (Centers for Disease Control, 1993).

HIV is transmitted by the exchange of infected blood and bodily fluids and affects individuals or groups whose behavior poses risk of infection (Winkelstein & Johnson, 1990). By reason of risky behavior, gay men, minority group members, and intravenous drug users in the United States have been heavily affected by HIV and AIDS (Centers for Disease Control, 1993). Also by reason of risky behavior, heterosexually active young people in the United States are thought to be at considerable risk of HIV and AIDS as well (Burke et al., 1990; Gayle et al., 1990; Gordin, Gibert, Hawley, & Willoughby, 1990; Ickovics & Rodin, 1992; Miller, Turner, & Moses, 1990). Moreover, despite widespread awareness of the risks involved, risky behavior (such as unprotected intercourse) remains common, and preventive behavior (such as condom use) remains inconsistent among U.S. gay men (Hays, Kegeles, & Coates, 1990; Kelly et al., 1990; McCusker, Stoddard, McDonald, Zapka, & Mayer, 1992), minorities (Catania et al., 1992a, 1992b), intravenous drug users (Vanichseni et al., 1993; Watkins, Metzger, Woody, & McLellan, 1993), and heterosexually active young people in general (Caron, Davis, Wynn, & Roberts, 1992; Catania et al., 1992a, 1992b; DiClemente, Forrest, Mickler, & principal site investigators, 1990).

Psychologists have been seeking to understand AIDS risk and AIDS-preventive behavior since the beginning of the AIDS epidemic, but psychological research on these topics has often relied on informal and ad hoc conceptualizations, and the systematic application of formal psychological theory in this area has been relatively rare (Coates, 1990; J. Fisher & Fisher, 1992; Kelly, Murphy, Sikkema, & Kalichman, 1993). This unsystematic approach to studying AIDS risk and AIDS prevention has resulted in the accumulation of relatively unintegrated findings concerning factors that sometimes influence AIDS risk and AIDS-preventive behavior (and which sometimes do not), and the potential for theory-driven research to illuminate this area has been largely unrealized (Coates, 1990; J. Fisher & Fisher, 1992).

To advance AIDS-prevention theory and practice, the current research utilized the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) to guide prospective investigations of the psychological determinants of AIDS-preventive behavior in three populations at risk. In conducting theory-driven research in this area, we hope to identify psychological constructs that are highly general determinants

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of AIDS-preventive acts across behaviors and populations of interest and that may be modified in applied interventions to promote such preventive behavior.

The Theory of Reasoned Action: Basic Propositions and Research Support

The theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Fishbein & Middlestadt, 1989) proposes that an individual's AIDS-preventive behavior is a function of his or her behavioral intention to perform a particular preventive act. Behavioral intentions, in turn, are assumed to be a function of the individual's attitude toward performance of a particular preventive behavior, the individual's subjective norm or perception of what significant others wish the individual to do with respect to the behavior in question, or both.

The theory of reasoned action specifies the basic psychological underpinnings of the attitudinal and normative determinants of AIDS prevention as well. According to the theory, an individual's attitude toward performance of a particular AIDS-preventive behavior is a function of the individual's beliefs about the consequences of performing the behavior, multiplied by his or her evaluations of these consequences. In parallel fashion, the theory holds that an individual's subjective norm is a function of his or her perception of social support from specific reference others for performance of a preventive behavior, multiplied by his or her motivation to comply with these referents' wishes. The theory proposes that it is essential to conduct elicitation research to empirically identify beliefs about the consequences of preventive behaviors, and sources of referent influence for preventive behaviors, that are salient for particular populations and preventive behaviors of interest, rather than arrive at these beliefs and referents intuitively (Ajzen & Fishbein, 1980).

The propositions of the theory of reasoned action concerning the relationships of behavior, intention, attitudes, norms, and their theorized underpinnings have received consistent empirical support in two decades of research on the prediction and understanding of a number of types of behavior (e.g., Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; W. Fisher, 1984; Sheppard, Hartwick, & Warshaw, 1988). The behavior change implications of the theory have received less research attention, but evidence adduced has been supportive of the theory's implications concerning the modification of behavior by way of the modification of attitudes, norms, and intentions (e.g., Ajzen & Fishbein, 1980; Brubaker & Fowler, 1990; Hoogstraten, De Hann, & Ter Horst, 1985; L. Jemmott & Jemmott, 1991; McCarty, 1981).

Although the theory of reasoned action has considerable relevance for understanding and promoting AIDS-preventive behavior (Fishbein & Middlestadt, 1989), a review of the psychological and medical literatures reveals that few if any published studies have comprehensively tested the central propositions of the theory in prospective research in this important area. Of the theory-based or theory-inspired studies on this subject that have been located, four used the theory of reasoned action to explore behavioral intentions to perform AIDS-preventive acts (Fishbein, 1990; L. Jemmott & Jemmott, 1991; J. Jemmott, Jemmott, & Hacker, 1992; Ross & McLaws, 1992), two used the theory to explain past AIDS-preventive behavior (Cochran, Mays, Ciarletta, Caruso, & Mallon, 1992; Ross & McLaws, 1992), and one (Boldero, Moore, & Rosenthal, 1992) provided evidence that behavioral intentions, among many other factors, predicted a single safer sex behavior criterion but failed to test most of the other propositions of the theory. In addition, published studies have often reported either no formal elicitation research to identify beliefs and referents that are salient for the populations and behaviors under study (Boldero et al., 1992; Cochran et al., 1992; L. Jemmott & Jemmott, 1991) or relatively limited elicitation research (Fishbein, 1990; Ross & McLaws, 1992) that may not be sufficient to provide valid tests of the theorized determinants of attitudes and norms or to guide applications of the theory that require knowledge of the underpinnings of attitudes and norms within each population under study.

In the present research we applied the theory of reasoned action to explore psychological factors that influence AIDS-preventive behavior in three populations at risk. The first population under study involves gay men, who have been at considerable risk of AIDS since this syndrome was first identified (Centers for Disease Control, 1993) and who remain at considerable risk at present (Catania et al., 1992a; Hays et al., 1990; Kelly et al., 1990). The second population under study involves heterosexual university men and women. These individuals engage in exceedingly high levels of risky sexual behavior (Baldwin, Whiteley, & Baldwin, 1990; Bishop & Lipsitz, 1991; J. Fisher & Misovich, 1990; Reinisch, Sanders, Hill, & Ziemba-Davis, 1992), and HIV has been reported in this group (Gayle et al., 1990). The third population under study involves heterosexual high school boys and girls. Nationally representative studies show that most U.S. high school students become sexually active by the time they graduate and that most of these sexually active individuals engage in unprotected intercourse (Centers for Disease Control, 1992; see also Sonenstein, Pleck, & Ku, 1989; Walter et al., 1992), and evidence shows that HIV infection is present in the high school age population as well (Burke et al., 1990). The present investigation involves elicitation research (to identify salient beliefs and referents that underlie AIDS-preventive behavior) and prospective research (to examine AIDS-preventive behavior as a function of intentions, attitudes, norms, and their underpinnings) in samples drawn from these populations at risk for HIV and AIDS.

Method

Elicitation Research

We carried out elicitation research to empirically identify salient beliefs about consequences of AIDS-preventive behaviors, and salient referents for these behaviors, that are relevant for the preventive behaviors and populations under study. Elicitation research participants (19 gay men, 71 heterosexual university men and women, and 87 heterosexual high school boys and girls) completed open-ended questionnaires that were designed in accord with standard procedures (Ajzen & Fishbein, 1980) to elicit salient beliefs and referents for the

range of AIDS-preventive behaviors under study in each sample. Frequently mentioned beliefs and referents were identified for each behavior within each population under study and were used as a basis for constructing measures of the theorized underpinnings of attitudes and norms concerning the range of preventive behaviors in the prospective phase of this research.

Prospective Research

Participants. A gay male convenience sample involving self-identified, primarily White gay men was recruited from local gay organizations in two mid-sized cities in the northeastern United States from June to October 1990. A total of 167 gay men completed the initial phase of this research. Of these 167 participants, 159 could be recontacted and were asked to complete a 2-month follow-up measure, and 126 consented to do so, for a completion rate of those who could be recontacted of 79%.

A heterosexual university student convenience sample was recruited from two introductory psychology classes at the University of Connecticut during March of 1990. A total of 290 undergraduates (142 men and 148 women) participated in the initial phase of this research, and 259 of these participants (123 men and 136 women) completed the 2-month follow-up measure, for a completion rate of 89%. University student participants were primarily White, and self-reported sexual orientation was exclusively heterosexual for 98.5% of the male and female participants in this sample.

A heterosexual high school student convenience sample consisting of ninth-grade boys and girls was recruited, with parental consent, from three high schools in a mid-sized city in the northeastern United States during April of 1991. A total of 355 ninth-grade students (124 boys and 231 girls) completed the initial phase of this research, and 265 of these students (87 boys, 169 girls, and 9 students whose sex was unspecified because of missing data) responded to the 1-month follow-up measure, for a completion rate of 75%. Of students participating in the initial phase of this research, 64% were self-identified as Caucasian, 14% as Hispanic, 9% as African American, 3% as Asian American, and 10% as "other," and self-reported sexual orientation was exclusively heterosexual for 99% of the male and female participants in this sample.

Procedures. After they were presented with a description of research procedures, participants provided informed consent for participation. They then completed initial questionnaire measures of each of the components of the theory of reasoned action—intentions, attitudes, norms, and their underpinnings—concerning a range of AIDS-preventive behaviors relevant to the sample under study. Participants completed brief follow-up measures of their performance of these AIDS-preventive behaviors 1 month (for heterosexual high school students) or 2 months (for gay men and heterosexual university students) after completion of the initial questionnaire. Anonymity of responses and the importance of the topic under study were stressed. Participants appeared to respond to their questionnaires candidly and admitted a considerable amount of socially undesirable sexual risk behavior, and they consistently consented to complete their follow-up measures. Although it was not possible to validate participants' self-reports of sexual behavior externally, patterns of intercorrelations among measures were coherent and provided a measure of validating evidence, and an independent body of research suggests that the validity of self-reports of AIDS-related behavior is reasonable (see Catania, Gibson, Chitwood, & Coates, 1990, for a review of validity issues in AIDS research).

Measures. Participants' initial questionnaires contained measures of each component of the theory of reasoned action, concerning AIDS-preventive behaviors relevant to the population under study, and were constructed in accord with standard procedures (Ajzen & Fishbein, 1980). For each AIDS-preventive behavior under study, participants completed a measure of behavioral intention (e.g., "If I have insertive anal sex during the next two months, I intend to always use latex condoms," followed by a 5-point *very likely/very unlikely* response scale); a measure of attitude toward the act (e.g., "Always using latex condoms during insertive anal sex during the next two months would be . . . ," followed by three 5-point evaluative response scales anchored by *very good/very bad, very awful/very nice,* and *very pleasant/very unpleasant*); and a measure of subjective norm (e.g., "Most people who are important to me think I should always use latex condoms during insertive anal sex during the next two months," followed by a 5-point *very true/very untrue* response scale). For each AIDS-preventive behavior under study, participants also completed measures of salient beliefs about consequences of the act (e.g., "Always using latex condoms during insertive anal sex during the next two months would reduce my fear of getting AIDS," followed by a 5-point *very true/very untrue* response scale) and evaluations of these consequences ("Reducing my fear of getting AIDS would be . . . ," followed by a 5-point *very good/very bad* response scale). Measures of perceptions of salient referent support for these behaviors (e.g., "My partner[s] think I should always use latex condoms during insertive anal sex during the next two months," followed by a 5-point *very true/very untrue* response scale) and motivation to comply with salient referents' wishes (e.g., "Concerning safer sex, in general, I want to do what my partner[s] think I should do," followed by a 5-point *very true/very untrue* response scale) were assessed as well.

For the gay male sample, behavioral intentions, attitudes, norms, and the underpinnings of attitudes and norms were assessed with respect to eight AIDS-preventive behaviors relevant to this population, including talking about safer sex with new partners, abstaining from insertive anal and receptive anal intercourse; using condoms during insertive anal and receptive anal intercourse; and getting an HIV antibody blood test, and asking a partner to get an HIV antibody blood test, during the coming 2 months. For one additional AIDS-preventive behavior—doing everything I need to do to avoid getting or transmitting HIV—measures of intentions, attitudes, and norms (but not of the underpinnings of attitudes and norms) were assessed as well. For the heterosexual university student sample, each of the components of the theory of reasoned action was assessed with respect to nine AIDS-preventive behaviors relevant to this population, including talking about safer sex with new partners, abstaining from intercourse, buying condoms, carrying condoms or keeping them accessible, using condoms during intercourse, and having an HIV blood test and asking a partner to get an HIV blood test during the coming 2 months. For the heterosexual high school sample, the components of the theory of reasoned action were assessed for two focal AIDS-preventive behaviors, not having sexual intercourse at all, and always using condoms during sexual intercourse, during the coming month. For two additional AIDS-preventive behaviors—trying to persuade a partner to practice safer sex and refusing to have unsafe sex—measures of intentions, attitudes, and norms (but not of the underpinnings of attitudes and norms) were assessed in this sample as well.

Follow-up questionnaires for the gay male and heterosexual university student samples were completed 2 months after the initial assessment and included brief measures of behavioral performance of each AIDS-preventive act under study (e.g., "If I had insertive anal sex during the past two months, I used latex condoms . . . ," followed by a response scale that included the choices "always"; "sometimes"; "never"; "not applicable: I have not had insertive anal sex in the past two months"; and "not applicable, both I and my partner[s] were HIV negative"). Follow-up questionnaires for the heterosexual high school sample were completed 1 month after the initial assessment (in order to accommodate the follow-up within the time remaining in the high

Table 1
Correlations of Intention and Behavior Across the Prospective Intervals[a] Under Study

Intention	Behavior					
	Males			Females		
	r	*N*[b]	*p* <	*r*	*N*	*p* <
	Gay men					
Not having any insertive sex	.4553	105	.0001			
Not having any insertive anal sex	.5387	103	.0001			
Not having any receptive anal sex	.5382	103	.0001			
Talking with each new partner about safer sex	.2743	39	.05			
Using condoms during insertive anal sex	.5829	29	.0001			
Using condoms during receptive anal sex	.5498	23	.01			
Getting an HIV blood test	.2765	77	.005			
Asking a partner to have an HIV blood test	−.0745	51	*ns*			
Doing everything I need to do to avoid getting or transmitting HIV	.4226	102	.0001			
	Heterosexual university men and women					
Not having sexual intercourse	.5411	119	.0001	.6467	134	.0001
Talking about safer sex with partner	.4208	62	.0001	.3160	50	.014
Buying condoms	.4793	112	.0001	.3476	129	.001
Carrying condoms	.5148	113	.0001	.4803	129	.0001
Using condoms during intercourse	.5870	70	.0001	.6483	84	.0001
Practicing only safer sex	.3826	69	.001	.4728	82	.0001
Refusing to have unsafe sex	.2884	68	.01	.4511	84	.0001
Getting an HIV blood test	.3832	111	.0001	.2223	129	.007
Asking a partner to have an HIV blood test	.0986	68	*ns*	.2916	80	.005
	Heterosexual high school boys and girls					
Not having sex at all	.3734	87	.0001	.4315	167	.0001
Always using latex condoms	.1120	29	*ns*	.2307	34	*ns*
Trying to convince a partner to practice only safer sex	.2436	25	*ns*	.3751	33	.04
Refusing to have sex without a condom	.0295	24	*ns*	−.0603	33	*ns*

[a]A 2-month prospective interval for gay men and heterosexual university students and a 1-month prospective interval for heterosexual high school students. [b]*N*s vary because of missing data and subject "eligibility" to perform behaviors (e.g., only those who had had insertive anal sex, and who were unsure of their own or of their partner's HIV antibody status, were considered "eligible" to report condom use for this behavior and were entered into the behavior–intention analysis).

school year) and assessed performance of each of the AIDS-preventive behaviors under study in this population.

Results

Behavior as a Function of Intention

According to the theory of reasoned action, behavior is a function of behavioral intention, and the present research provides prospective tests of this hypothesis for multiple AIDS-preventive behaviors in diverse samples and over 1 to 2 months' time. As can be seen in Table 1, and strongly confirming the theorized relationship of behavior and intention, AIDS-preventive behaviors were predicted by behavioral intentions in the vast majority of the prospective tests of this relationship. Correlations between behavior and measures of intention taken 1 to 2 months earlier were often in the .40–.60 range, and behaviors as diverse as abstaining from intercourse, buying condoms, and using condoms during anal and vaginal intercourse were predicted across the diverse samples under study.[1]

Intention as a Function of Attitudes and Norms

According to the theory of reasoned action, behavioral intentions are a function of attitudes and/or subjective norms concerning performance of the behavior in question. As can be seen in Table 2, and strongly confirming the theorized relationship, regression analyses indicated (a) that intentions to engage in nearly every AIDS-preventive behavior under study were a function of both attitudes toward the act and subjective norms and (b) that attitudes and norms accounted for a considerable proportion of the variance in intentions across

[1] The measures involved in these analyses are not always distributed normally, but these departures from normality are generally such as to attenuate observed correlations and thus introduce a conservative bias into some of the present results.

Table 2
Attitude and Subjective Norm Regressed on Intention

Intention	Attitude (β)	Subjective norm (β)	R	R^2
Gay men				
Not having any insertive sex	.4340	.2779	.6116	.3741
Not having any insertive anal sex	.5850	.1418	.6409	.4108
Not having any receptive anal sex	.6212	.1232	.6720	.4516
Talking with each new partner about safer sex	.2893	.2484	.4210	.1772
Using condoms during insertive anal sex	.2895	.2842	.4765	.2270
Using condoms during receptive anal sex	.3392	.3118	.5520	.3047
Getting an HIV blood test	.2081	.4517	.5578	.3111
Asking a partner to have an HIV blood test	.1992	.4729	.5567	.3100
Doing everything I need to do to avoid getting or transmitting HIV	.2364	.3709	.4873	.2375
Heterosexual university men				
Not having sexual intercourse	.4336	.2759	.5769	.3328
Talking about safer sex with a partner	.3831	*ns*	.3831	.1468
Buying condoms	.3580	.3583	.5891	.3470
Carrying condoms	.3460	.3500	.5866	.3441
Using condoms	.5443	*ns*	.5443	.2962
Practicing only safer sex	.4233	*ns*	.4233	.1792
Refusing to have unsafe sex	.2643	.2127	.4067	.1654
Have an HIV blood test	.2600	.3188	.4629	.2143
Asking a partner to have an HIV blood test	.1890	.3659	.4714	.2222
Heterosexual university women				
Not having sexual intercourse	.5332	.1900	.6275	.3938
Talking about safer sex with a partner	.2197	.2758	.4046	.1637
Buying condoms	.3106	.3665	.5556	.3087
Carrying condoms	.3850	.3479	.6127	.3754
Using condoms	.4233	.3634	.6756	.4564
Practicing only safer sex	.2828	.2815	.4445	.1976
Refusing to have unsafe sex	.2516	.5183	.6313	.3985
Have an HIV blood test	.1924	.4113	.5036	.2536
Asking a partner to have an HIV blood test	.2150	.4686	.5728	.3281
Heterosexual high school boys				
Not have sex at all	.3704	.4138	.6320	.3994
Use condoms every time I have sex	.3979	*ns*	.3979	.1583
Try to convince partner to practice safer sex	−.2252	.4223	.4850	.2352
Refuse to have sex without a condom	*ns*	.3222	.3222	.1038
Heterosexual high school girls				
Not have sex at all	.2941	.3570	.5373	.2887
Use condoms every time I have sex	.4145	.2399	.5414	.2931
Try to convince partner to practice safer sex	−.2257	.4595	.5520	.3047
Refuse to have sex without a condom	−.2008	.5802	.6646	.4417

Note. All betas are significant at the .05 level or beyond, unless otherwise indicated. All multiple Rs are significant at the .05 level or beyond.

the behaviors and populations under study. Departures from the dual attitudinal and normative control of intentions occurred only for heterosexual university men, for whom intentions were sometimes solely under the control of personal attitudes, and for heterosexual high school boys, for whom intentions were in one instance solely under the control of personal attitudes and in one instance solely under the control of social norms. These findings concerning the attitudinal or normative control of intentions to engage in AIDS-preventive behaviors have important implications for the design of interventions targeted at particular populations, sexes, and preventive behaviors. In most cases, interventions should focus on both attitudinal and normative change, but in a few cases, intentions to practice preventive behavior appear to be under the control of only one of these factors, and special intervention focusing on this factor alone might prove most efficient.

Attitudes and Norms and Their Theorized Psychological Underpinnings

According to the theory of reasoned action, attitudes toward a behavioral act are a function of salient beliefs about the consequences of this act multiplied by evaluations of these consequences. Similarly, subjective norms concerning a behav-

ioral act are presumed to be a function of perceptions of salient referent others' support for performing the act, multiplied by the individual's motivation to comply with these referents' wishes. As can be seen in Table 3, and strongly confirming the theorized relationships, attitudes toward the AIDS-preventive behaviors under study are significantly correlated with beliefs about the consequences of these acts multiplied by evaluations of these consequences. As can also be seen in Table 3, subjective norms concerning each preventive act under study are significantly correlated with perceptions of salient referents' wishes and motivation to comply with these referents' wishes. These findings suggest that interventions directed at modifying intentions, attitudes, and norms concerning AIDS-preventive behavior in the populations under study may benefit by targeting for change the specific salient beliefs, evaluations, perceptions of referent wishes, and motivation to comply elicited in this research.

Implications for Intervention

The theory of reasoned action holds that changes in AIDS-preventive behavior will follow from changes in behavioral

Table 3
Correlations of Attitudes Toward AIDS-Preventive Acts and Subjective Norms Regarding AIDS-Preventive Acts With Theorized Underpinnings

Behavior	Attitude toward act with Beliefs × Evaluation			Subjective norm with Perceived Referent Wish × Motivation to Comply		
	r	*N*	*p* <	*r*	*N*	*p* <
Gay men						
Not having any insertive sex	.4301	156	.0001	.5821	157	.0001
Not having any insertive anal sex	.3463	156	.0001	.6681	158	.0001
Not having any receptive anal sex	.4590	152	.0001	.6939	157	.0001
Talking with each new partner about safer sex	.3344	159	.0001	.6566	160	.0001
Using condoms during insertive anal sex	.4403	150	.0001	.5565	154	.0001
Using condoms during receptive anal sex	.4034	142	.0001	.6107	148	.0001
Getting an HIV blood test	.2579	154	.0001	.5211	158	.0001
Asking a partner to have an HIV blood test	.1296	152	$p = .056$	.6800	158	.0001
Heterosexual university men						
Not having sexual intercourse	.4748	137	.0001	.4046	139	.0001
Talking about safer sex with partner	.5499	133	.0001	.3116	133	.0001
Buying condoms	.4179	129	.0001	.4324	129	.0001
Carrying condoms	.5165	130	.0001	.3927	128	.0001
Using condoms	.3505	110	.0001	.5728	129	.0001
Practicing only safer sex	.3840	132	.0001	.4231	130	.0001
Refusing to have unsafe sex	.4347	129	.0001	.3748	128	.0001
Have an HIV blood test	.1039	127	*ns*	.4875	129	.0001
Asking a partner to have an HIV blood test	.2410	126	.005	.6129	130	.0001
Heterosexual university women						
Not having sexual intercourse	.5683	139	.0001	.5208	144	.0001
Talking about safer sex with partner	.5027	136	.0001	.4580	138	.0001
Buying condoms	.3706	136	.0001	.4877	137	.0001
Carrying condoms	.4064	137	.0001	.4513	140	.0001
Using condoms	.5440	131	.0001	.6937	133	.0001
Practicing only safer sex	.4786	137	.0001	.5753	137	.0001
Refusing to have unsafe sex	.5051	134	.0001	.4895	140	.0001
Have an HIV blood test	.3783	134	.0001	.4901	138	.0001
Asking a partner to have an HIV blood test	.3211	130	.0001	.6475	133	.0001
Heterosexual high school boys						
Not having sex at all in the next month	−.0527	104	*ns*	.4815	121	.0001
Always using latex condoms	.0912	104	*ns*	.3624	119	.0001
Heterosexual high school girls						
Not having sex at all in the next month	.0920	196	*ns*	.4674	228	.0001
Always using latex condoms	.3022	196	.0001	.4075	229	.0001

Note. *Ns* vary because of missing data.

intentions and that changes in behavioral intentions may be induced by means of changes in attitudes toward preventive acts and subjective norms regarding these acts, or by changes in the basic psychological underpinnings of these attitudes and norms. Guided by the theory, we can illustrate how the current findings may be used to provide guidance for the systematic construction of an empirically targeted AIDS-prevention intervention.

Consider the critical preventive behavior of always using condoms during insertive anal intercourse, as studied within the gay male sample in the current research. As may be recalled, gay men's condom use during insertive anal intercourse over the prospective interval was correlated with their intentions to perform this behavior; intentions were a function of both attitudes and subjective norms; and attitudes toward this act and subjective norms were correlated with their basic underpinnings (beliefs, evaluations, perceptions of referent support, motivation to comply with referents' wishes). In accord with the theory and on the basis of these findings, it seems useful to attempt to modify gay men's intentions to always use condoms in insertive anal intercourse by modifying both their attitudes and their norms regarding this behavior. Furthermore, it may prove effective to modify gay men's attitudes and norms regarding condom use during insertive anal intercourse by targeting for change the specific salient beliefs, evaluations, perceptions of referent support, and motivation to comply with referent wishes that were correlated with their intentions to engage in this behavior.

To identify the salient beliefs, evaluations, perceptions of referent support, and motivation to comply that underlie intentions to engage in condom use during insertive anal intercourse for the gay men in the current research, we separated, on the basis of intentions expressed at the initial assessment, gay males who intended and who did not intend to always use condoms during insertive anal intercourse during the next 2 months. We then conducted analyses to compare intenders' versus nonintenders' beliefs, evaluations, perceptions of referent support, and motivation to comply with referent wishes regarding always using condoms during insertive anal intercourse.[2]

As can be seen in Table 4, intenders' and nonintenders' beliefs and evaluations about the consequences of always using condoms during insertive anal intercourse differ significantly. For example, intenders to use condoms believe more strongly that practicing this behavior will reduce their and their partners' risk of AIDS and of other sexually transmitted diseases and that practicing this behavior will reduce their and their partners' fears of getting AIDS. Intenders to use condoms during insertive anal intercourse also have significantly more positive evaluations of several of these consequences.

As can be seen in Table 5, intenders to use condoms during insertive anal intercourse are more likely than nonintenders to perceive that friends, family, partners, most people, AIDS organizations, and doctors favor their performance of this behavior. By the same token, intenders to use condoms during insertive anal intercourse are more motivated to comply with the perceived wishes of two of these six referents.

These intender–nonintender contrasts empirically identify specific salient beliefs, evaluations, referent perceptions, and motivation to comply that comprise targets for change in efforts to modify AIDS-prevention attitudes, norms, intentions, and behavior for the gay men represented in our sample. In terms of the illustration provided, it seems useful to attempt to strengthen these men's beliefs that condom use during insertive anal intercourse reduces AIDS risk and AIDS fear, for both the self and the partner, that these outcomes are valuable, that condom use during insertive anal intercourse is supported by gay men's friends, families, and others, and that one might want to consider and to act in accord with several of these referents' views, among other intervention foci (see W. Fisher & Fisher, 1993, for a discussion of intervention tactics for influencing AIDS-prevention attitudes, norms, beliefs, evaluations, referents, and motivation to comply).

Discussion

The current research has important implications for AIDS-prevention intervention efforts and provides strong support for the utility of the theory of reasoned action as a conceptual approach to understanding and promoting AIDS-preventive behavior.

From an AIDS-prevention perspective, the current results have straightforward applications for the creation of conceptually based, empirically targeted interventions to promote particular AIDS-preventive behaviors in particular populations at risk. In the current research, we used elicitation studies and prospective investigations in populations at risk to empirically determine whether AIDS-preventive behaviors were a function of personal attitudes, social norms, or both, and we identified the salient beliefs, evaluations, perceived referent wishes, and motives to comply that underlie these attitudinal and normative determinants of preventive behaviors. The attitudinal and normative determinants of AIDS-preventive behaviors, and the beliefs, evaluations, perceived referent wishes, and motives to comply that underlie them, comprise empirically specified foci for change attempts in targeted interventions to promote particular AIDS-preventive behaviors within particular populations at risk. Moreover, it should be emphasized that specification of the significance of attitudinal or normative influences on particular preventive

[2] For these analyses, *intenders* were coded as those who indicated that it was *very* or *somewhat* likely that they would use condoms during insertive anal intercourse during the next 2 months; *nonintenders* were coded as those who indicated that it was *very* or *somewhat* unlikely that they would do so; and those with neutral intentions were dropped from these analyses. The *N*s for intenders and nonintenders in these analyses are quite unequal. However, analyses of homogeneity of variance reveal that the variances of the two conditions are similar; that the larger *N* cell variance is greater and introduces a conservative bias into the analysis; or that the larger *N* cell variance is smaller but that the alpha level is sufficiently low to provide an acceptably conservative test of the hypothesis. It should be noted, however, that the number of tests calculated in these exploratory analyses is relatively great and therefore that caution in their interpretation is warranted. Results of intender–nonintender contrasts of beliefs, evaluations, perceptions of referent support, and motivation to comply for the other AIDS-preventive behaviors and samples under study are available from William A. Fisher.

Table 4
Gay Men's Beliefs and Evaluations Concerning Consequences of Always Using Condoms During Insertive Anal Intercourse: Intender–Nonintender Differences

	Beliefs[a]			Evaluations[b]		
Consequence	Intenders (n = 120)	Nonintenders (n = 18)	Univariate F test (df = 1, 136; $p < .0001$)	Intenders (n = 119)	Nonintenders (n = 18)	Univariate F test (df = 1, 135; $p < .005$)
Reduce my risk of AIDS	1.68	.78	14.11	1.98	1.61	18.36
Reduce partner risk of AIDS	1.29	.67	3.73*	1.89	1.78	*ns*
Reduce my risk of sexually transmitted diseases	1.73	.44	31.06	1.98	1.72	10.74
Reduce partner risk of sexually transmitted diseases	1.36	.67	5.10**	1.94	1.83	*ns*
Reduce my fear of getting AIDS	1.50	.22	26.51	1.95	1.78	5.76**
Reduce partner fear of getting AIDS	1.34	.22	15.87	1.88	1.94	*ns*
Would make sex cleaner	1.12	1.00	*ns*	1.30	.67	8.79
Would reduce intensity of sex	−.40	.89	18.17	−.84	−.78	*ns*
Condom could break	.93	.78	*ns*	−1.79	−1.39	10.60

[a]Scores range from +2 (*very true*) to −2 (*very untrue*). [b]Scores range from +2 (*very good*) to −2 (*very bad*).
*$p < .06$. **$p < .05$.

behaviors in particular populations at risk, and identification of salient beliefs, evaluations, perceived referent wishes, and motives to comply that underlie these determinants of preventive behaviors in populations at risk, required the systematic conduct of theory-based elicitation and prospective research. These gains could not have been achieved through the informal intuitive approaches that have often been used to study AIDS risk and AIDS-preventive behavior (Coates, 1990; J. Fisher & Fisher, 1992; Kelly et al., 1993).

There were few failures to confirm expected relationships in the present research, but although infrequent, they merit comment. Over all the predictions examined in the present investigations, those that involved asking a partner to seek HIV antibody testing and those that involved the high school sample fared least well.

With respect to asking a partner to seek HIV antibody testing, intentions generally did not predict behavior, with the intention–behavior link in this regard significant only for

Table 5
Gay Men's Perception of Referents' Support and Motivation to Comply Concerning Always Using Condoms During Insertive Anal Intercourse: Intender–Nonintender Differences

	Perception of referents' support[a]			Motivation to comply[b]		
Referent	Intenders (n = 121)	Nonintenders (n = 18)	Univariate F test (df = 1, 137; $p < .0001$)	Intenders (n = 120)	Nonintenders (n = 19)	Univariate F test (df = 1, 137; $p < .0001$)
Friends	1.37	.00	30.55	2.76	3.16	*ns*
Family	.87	.22	5.29**	3.15	3.21	*ns*
Partner(s)	1.22	−1.17	100.70	2.29	2.05	*ns*
Most people	1.38	.50	14.46	1.74	2.68	19.36
AIDS organizations	1.98	1.72	19.33	1.58	2.47	19.71
Doctors	1.91	.94	46.52	2.88	3.26	*ns*

[a]Scores range from +2 (*very true*, i.e., referent is perceived by subject as favoring behavioral performance) to −2 (*very untrue*, i.e., referent is perceived by subject as not favoring behavioral performance). [b]Scores range from 1 (*very true*, i.e., highly motivated to comply with referent) to 5 (*very untrue*, i.e., not motivated to comply with referent).
**$p < .05$.

heterosexual university women. At the same time, however, intentions did predict the behavior of personally getting an HIV blood test in every case in which this relationship was studied. We failed to observe the intention–behavior relationship only for men asking their partners to get an HIV antibody blood test, and it must be speculated that there is something unique about this behavior for the homosexual and heterosexual men in the present samples. Possibly, despite the fact that attitudes, norms, and intentions incline one to request that a partner get an HIV antibody test, the fear of overtly bringing up this sensitive and symbolically lethal subject with a partner provokes relationship maintenance concerns (Misovich, Fisher, & Fisher, 1994) that interfere with the intention–behavior relation for men. Asking one's partner to get an HIV antibody test is clearly an important AIDS-preventive act, but it remains one that is poorly predicted by the theory of reasoned action, for men, and that requires further conceptualization and study.

With respect to the high school sample of ninth-grade students, relationships among behavior, intention, attitudes, norms, and their underpinnings were considerably less consistent than those observed in the other two samples under study. Methodological considerations—including the smaller N of the high school sample and differences between the elicitation research and prospective research samples—may help to explain these inconsistent results for the high school sample. It is also possible that patterns of sexual behavior that are just emerging in ninth graders are more situationally than attitudinally and normatively determined and therefore more difficult to predict on the basis of measures of these factors taken earlier in time. If an opportunity to have sexual intercourse presents itself to these young people, they may engage in this behavior with or without a condom and irrespective of their attitudes and norms regarding condom use.

From a theory-testing perspective, it is important to emphasize that the present results provide consistent empirical support for each of the relationships proposed by the theory of reasoned action in the context of prospective research on AIDS-preventive behavior. As theorized, behavior proved to be under the control of intention across a diversity of acts and subject samples and across significant intervals of time, and correlations of behavior and intention across these intervals were typically substantial. Also as theorized, behavioral intentions proved to be a function of attitudes toward acts and subjective norms, and these factors typically accounted for a considerable proportion of the variance in behavioral intentions. Finally, as theorized, attitudes toward acts proved to be generally related to their salient belief and evaluation underpinnings, and subjective norms proved to be consistently related to salient normative beliefs and motivation to comply. The consistency and strength of support for the theorized predictions over behaviors, over time, and over samples provide considerable support for the basic propositions of the theory of reasoned action and provide one of the only broad prospective tests of the theory, grounded in elicitation research, in the AIDS-prevention literature.

In closing this discussion, we note that the present research has clear implications for the creation of conceptually based, empirically targeted AIDS-prevention interventions. It should be possible to move from the present findings to the construction, delivery, and evaluation of interventions to promote a range of AIDS-preventive behaviors in target groups that resemble those under study. These interventions could be based on the present findings for the attitudinal and normative control of AIDS-preventive behavior in these samples and on the findings for the basic underpinnings of these factors illustrated in the present research and available in more detail from the authors. Moreover, similar research tactics could be applied to additional target groups with the aim of constructing conceptually and empirically based AIDS-prevention interventions. The urgent need for AIDS-prevention interventions that are effective and the theoretical need for rigorous testing of the behavior change implications of the theory of reasoned action obligate us to pursue such research with all possible haste.

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