

Predictors of Adolescent Sexual Risk Taking Behaviors Which Put Them at Risk for Contracting HIV

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Received June 4, 1995; accepted October 26, 1996

This article reports results of a study exploring predictors of adolescents' behavior that could reduce their risk of contracting HIV. The theory of reasoned action is employed as a framework. Participants included eighth-grade students (n = 230), eleventh- and twelfth-grade students (n = 106), and first- and second-year college students (n = 156). Results of regression analyses suggest the best predictor of some risky behavior (e.g., condom use) is attitude toward risky behavior while predictors of other behaviors (e.g., number of sexual partners) varies by sample group. Implications for community educators, teachers, and HIV/AIDS message designers are discussed.

REVIEW OF LITERATURE

Adolescents currently account for a very small percentage of the diagnosed AIDS cases in the United States, yet according to the Centers for Disease Control (CDC), young men and women between the age of 13 and 24 are at increasing risk for HIV infection (CDC, 1995; Rosenberg, 1995; see Table I). As of June 1995, less than 2% of cases were adolescents age 13-19; however, 14% of the total cases were in persons age 20-24, reflecting infection that probably occurred during adolescence (CDC, 1995). The number of adolescents infected in junior high, high school, and

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Table I. Cumulative AIDS Cases According to Age at Diagnosis as of December 1995^a

Males		Females	
Under 5	2763	Under 5	2763
5-12	812	5-12	610
13-19	1534	13-19	820
20-24	14,396	20-24	4559
25-29	61,674	25-29	12,299

^aCenters for Disease Control and Prevention (1995).

college is probably far greater than these figures indicate considering the virus may remain dormant an average of five to ten years.

In order to reduce the spread of HIV among adolescents, enhancing knowledge and positive beliefs about preventing the spread of HIV/AIDS have been the primary goals of most intervention programs (DiClemente *et al.*, 1987; Koopman *et al.*, 1990). If the goal of these programs has been to increase knowledge about HIV/AIDS and reduce stigma, then some have been successful (Snyder, 1991). If the goal has been to reduce risk-related behavior in adolescents, however, then many of these studies provide no assessment of their effectiveness (Sunenblick, 1988). Therefore, the purpose of this article is to report results of an exploration of the relation between knowledge, attitudes, and behavior in the context of HIV/AIDS, within the framework of the theory of reasoned action.

The Theory of Reasoned Action

The theory of reasoned action is a general model of predictors of behavior with the goal of determining what influences voluntary behavior. Changing behavior is viewed as a matter of changing the cognitive structure underlying the behavior in question (Fishbein and Middlestadt, 1989). According to the theory of reasoned action, the best predictor of whether or not a person will engage in a behavior is their intention. If this is true, it will be possible to modify behavior by influencing a person's intent to act in a certain way. For example, in order to change adolescents' behavior that puts them at risk for contracting HIV, it would be possible to persuade them to *intend* to use condoms or to *intend* to abstain from sexual intercourse.

A person's behavioral intent is hypothesized to be determined by two factors: an individual's attitudes about a behavior and perceptions that others think they should/should not engage in the behavior (subjective norm). In the case of HIV/AIDS, there is good reason to believe

that an individual's attitude toward risky behaviors as well as social factors should be important because of what is known about the influence of others, including peers, on sex-related behavior (see Gayle *et al.*, 1990; Rotheram-Borus and Koopman, 1991a, 1991b). The theory of reasoned action is employed as an explanatory framework in the present study to examine adolescent risk behaviors; therefore relevant theoretical constructs, as they relate to HIV/AIDS and adolescents, will be briefly reviewed below.

Attitude Toward Avoiding Risk Behavior

The behavioral options offered for protection against sexual transmission of HIV are generally to promote abstinence, reduce sexual activity, reduce specific sexual activities, screen partners, and increase use of condoms. It is critical, therefore, to understand adolescents' attitudes toward these behaviors to target interventions. Condom use, the most widely promoted means for reducing risk of HIV infection, has not been as widely studied as frequency of sexual activity. Between one third and one half of all teenagers do not use contraception during sexual intercourse (Crawford, 1990; Gehorsam, 1992; Haffner, 1987; Zelnik and Shah, 1983), and adolescents are less likely than adults to use condoms consistently (Rotheram-Borus and Koopman, 1991a). It is not sufficient, however, to use condoms even *most* of the time to eliminate risk of HIV infection, as condoms should be used *every* time. Most adolescents additionally feel unable to discuss condom use with their partner (see Cline *et al.*, 1989; Cline *et al.*, 1991). This could be especially problematic for women (Rotheram-Borus and Koopman, 1991b) because condom use is a behavior for men but a behavioral goal for women, one requiring communication about an awkward topic.

Subjective Norm

Besides attitude toward behavior, the other predictor of behavioral intention in the theory of reasoned action is subjective norm, or perceived attitudes of significant others about the behavior. The influence of perceived referent group behavior is very important (Fisher, 1988; Reardon, 1989), as are perceived norms and social supports for behavior especially for delayed sexual onset (Irwin and Millstein, 1991; Zabin, 1991) and drug use (Kim *et al.*, 1989). Perceived norms and social supports for behavior change are critical for HIV/AIDS campaigns (Ross and Rossner, 1989). It would be very difficult to change adolescent's behavior if they do not view

significant others as supporting this behavior. In fact, DiClemente (1990) reported perceived referent-group behavior was the only factor to differentiate adolescents who used condoms from those who did not.

Adolescents' Knowledge of HIV/AIDS

Although attitudes toward risk behaviors are important components of the theory of reasoned action, knowledge is considered an important prerequisite for behavior change (DiClemente, 1989). Several studies have reported widespread misconceptions in adolescents' knowledge of HIV/AIDS (Andre and Bormann, 1988; Kurth and Champoux, 1988; Malavaud *et al.*, 1990). Shayne and Kaplan (1988) reported general high knowledge about HIV transmission among American adolescents but low knowledge about general aspects of the disease and prevention. Several researchers have reported that students lack factual knowledge about HIV/AIDS with some misunderstandings (Caron *et al.*, 1987; Kurth and Champoux, 1988; Price *et al.*, 1985; Wilson *et al.*, 1989).

Researchers attempting to link knowledge of HIV/AIDS and behavioral change have found contradictory results. Several researchers have reported no relation between knowledge and practice of risk-reduction behaviors (Gray and Saracino, 1989; Ross and Rossner, 1989; Skurnick *et al.*, 1991; Sunenblick, 1988), although others report only a minority of students have translated their knowledge into behavior change (Baldwin and Baldwin, 1988; Edgar *et al.*, 1988; Simkins and Eberhage, 1984). Only one study (Carroll, 1988) reported that a sample of college students indicated concern about HIV/AIDS, and this had affected their selectivity of sexual partners.

Salience

To further understand risk behavior, it is important to understand how adolescents interpret their risk of contracting HIV. Most adolescents are not personally concerned about contracting HIV. For adolescents to change their high-risk behaviors, they must perceive HIV/AIDS to be a personal threat, understand the reasons for preventive measures, and have a sense of personal efficacy (Rotheram-Borus and Koopman, 1991a; Witte, 1992). The effects of engaging in risky activities may seem far removed (Boyer and Hein, 1991); thus, some adolescents may understand their risk but not be motivated to change their behavior.

Adolescents simply do not identify themselves with high-risk groups, although they have clearly been identified as such. Studies reveal college students engage in few activities that would protect them from contracting

HIV, with most believing they have little risk of contracting HIV (Baldwin and Baldwin, 1988; Caron *et al.*, 1987; DiClemente *et al.*, 1987; Gray and Saracino, 1989; Kurth and Champoux, 1988; Strunin and Hingson, 1987; Sunenblick, 1988). This "not me" phenomenon may be more closely linked with adolescent developmental traits such as egocentrism. Thus, there is little salience for adolescents in risk behavior for contracting HIV.

Adolescent Egocentrism

Process of normal development may lead to activities which place adolescents at high risk for contracting HIV (Sunenblick, 1988). Egocentrism, in particular, may be critical in processing health messages (Orr and Ingersoll, 1991) as it is a cognitive phenomenon. Egocentrism refers to a lack of differentiation in some area of subject-object interaction (Piaget, 1962). Elkind (1967) proposed the emergence of two egocentric phenomena in adolescence, personal fable, and imaginary audience.

Personal fable is the tendency for adolescents to believe they are so unique no one else can understand their problems or ever have their experiences (Elkind, 1967, 1978). Personal fable has been used to explain reckless behavior such as drug use and failure to use contraceptives (Cvetkovich *et al.*, 1975; Irwin and Millstein, 1986). Personal fable may affect contraceptive use if adolescents fail to apply laws of probability to themselves (Cvetkovich, *et al.*, 1975). Adolescents high in personal fable feel invincible and believe that natural laws relating to mortality and fertility do not apply to them (Gershenson and Handler, 1985). In fact, Greene *et al.* (1995, 1996) reported personal fable predicted adolescent's attitudes toward risk behavior.

Imaginary audience rests on an adolescent's false assumption that others are thinking about him/her (Elkind, 1967) and are preoccupied with thoughts about her/him. Adolescents believe others are paying more attention to them than is actually the case (Enright *et al.*, 1980). Adolescents who are overly concerned with themselves extend this preoccupation and assume others are just as preoccupied with them. In relation to sexuality, imaginary audience might function like this: the adolescent focuses on the reactions of others to her/his sexual behavior (e.g., condom use) and modifies behavior based on these anticipations. Greene *et al.* (1995, 1996) reported adolescents high in imaginary audience were more sensitive to other's norms about sexual behavior.

Research Question:

Based on the theory of reasoned action and the review of literature, the following research question is proposed: Which indicator of behavioral

intention (knowledge of HIV/AIDS, salience, subjective norm, attitude toward risky behavior, imaginary audience, and personal fable) is the strongest predictor of reduced sexual risk taking behavior for adolescents?

METHOD

Participants

To enable cross-sectional comparison across adolescence, three grade levels were sampled ($N = 492$): eighth-grade students ($n = 230$), eleventh- and twelfth-grade students ($n = 106$), and first- and second-year college students ($n = 156$). The junior high students ranged in age from 13 to 15 ($M = 14.5$), high school from 17-19 ($M = 17.7$), and college from 19 to 21 ($M = 20.3$). Schools in and around a mid-sized community in the Southeast were contacted to recruit junior high and high school participants. College students were recruited from introductory communication courses at a large southeastern university. The three groups were not significantly different on demographic variables such as race (junior high = 76% Caucasian, high school = 81% Caucasian, college = 86% Caucasian) and gender (junior high = 52% female, high school = 58% female, college = 69% female). Other than expected age differences, which were planned for in this study, the groups were comparable.

Procedure

Data were collected in the spring of 1992 and took place in classrooms during regular school hours for junior and senior high school students, and college students participated outside of class time. For the junior and high school students, the questionnaire was administered to classes in each school during the same school day to minimize contamination from potential discussion among participants. The instructions for the questionnaire were simplified for the junior and high school samples.

Measurement Instruments

Dependent Variables

Intention to Use Condoms. Intention to use condoms was measured with a single item. Respondents were asked "I am likely to use (have my partner use) condoms every time I have sex in the future." Responses ranged from *Strongly Agree* to *Strongly Disagree*, with a high score indicating more intention to use condoms in the future.

Number of Sexual Partners. This dependent variable was measured by asking respondents how many different sexual partners they had in the past six months. For this sample the mean number of sexual partners was approximately one ($M = 1.25$; $SD = 1.33$; $R = 0-12$) but varied by sample (college students: $M = 1.38$; $SD = 1.53$; $R = 0-12$, high school students: $M = 1$; $SD = 1.53$; $R = 0-3$, junior high students: $M = 1.08$; $SD = 1.07$; $R = 0-6$).

Independent Variables

Attitude Toward Risk Behavior. The measure of attitude toward avoiding risk behavior was constructed by the authors and consisted of 5 Likert items. Each of the items was presented with five responses ranging from *Strongly Agree* to *Strongly Disagree*. Examples of items include: "Avoiding sexual intercourse with people who may be at risk for AIDS is good"; and "Limiting a person's number of sexual partners to a few is good." The reliability of this scale was moderate ($\alpha = .68$). The items were summed and averaged to form a composite scale with a higher score indicating more positive attitudes toward behavior that could reduce risk of contracting HIV.

Subjective Norm. Subjective norm is ultimately calculated as a function of two components: (1) expectations of significant others and (2) motivation to comply (Ajzen and Fishbein, 1980). Expectations are what a person anticipates others' attitudes to be, and motivation indicates how likely a person is to comply with others' attitudes. The measure of expectations of significant others was developed to be specific for the context of adolescents and risk behavior for HIV/AIDS, and it directly paralleled the measure of attitude change toward avoiding risk behavior. It contained five, 5-point Likert items with responses ranging from *Strongly Agree* to *Strongly Disagree*. Examples of items include "My friends think that using (having partners use) a condom every time someone has sex is good" and "My friends think that limiting one's number of sexual partners to a few is good." The reliability of this scale was acceptable ($\alpha = .77$).

Knowledge of AIDS. The measure of knowledge of HIV/AIDS was derived from scales used by DiClemente *et al.* (1987) and is the most widely known measure of HIV/AIDS knowledge. The instrument was modified and shortened based on pretest results for use in the present study. These modifications yield an 8-item measure with responses of *True*, *False*, and *Don't Know*. Participants who responded "Don't Know" were scored as responding incorrectly to that item. Examples of items include "AIDS is caused by a virus" and "If you kiss someone with AIDS, you can get AIDS."

Items were summed to form a composite scale with a high score indicating more accurate knowledge. The item difficulties ranged from .25 to .98 ($M = .73$). All of the discriminating scores were positive ($M = .30$), indicating that the high knowledge group scored better on each of the items than did the low knowledge group.

Saliency. The degree to which respondents felt personally concerned about contracting HIV/AIDS was measured with three, 5-point Likert type questions. The items included "AIDS is not as big a problem as the media suggests," and "I worry that I might catch AIDS." Responses ranged from *Strongly Agree* to *Strongly Disagree*. Items were summed and averaged to form a composite with a higher score reflecting higher perceived risk for HIV infection. The reliability was good ($\alpha = .72$).

Personal Fable. The personal fable scale used in the present research was developed by Lapsley (1991). The scale contains 46 Likert-type items with responses ranging from *Strongly Agree* to *Strongly Disagree*. Examples of items include "No one has the same thoughts and feelings that I have" and "I believe I can do anything I set my mind to." The items were summed and averaged to form three composite scales with moderate reliabilities (α : uniqueness = .69, omnipotence = .82, and invulnerability = .76). Higher scores on the composite scales indicated more personal fable characteristics.

Imaginary Audience. Imaginary audience was measured with ten Likert-type items developed by Walters *et al.* (1991) with 4-point responses ranging from *Always* to *Never*. Examples of items included "Feel nervous because you worry about whether people like you" and "Feel embarrassed because when you arrived you found that you were dressed wrong for a party." The items were summed and averaged to form a composite scale with a higher score indicating more imaginary audience characteristics ($\alpha = .83$).

RESULTS

Data were analyzed with stepwise multiple regressions and correlations. The level of significance for all tests was set at $p < .05$. Models were run separately for each dependent variable, one for each of the age groups. Correlations are presented in Table II.

Intention to Use Condoms

The regression model for college students examining intention to use condoms showed two variables entering significantly. On the first step, at-

Table II. Partial Correlation Matrices for Groups by Dependent Variables

	Condom Use	Number of Past Sexual Partners
College sample		
Knowledge	.10	-.04
Saliency	.22 ^a	.24 ^a
Subjective norm	.20	.01
Attitude	.34 ^b	-.05
Imaginary audience	.09	-.12
Personal fable	.01	.27 ^a
High school sample		
Knowledge	-.16	.17
Saliency	.28	.08
Subjective norm	.14	-.02
Attitude	.05	.26
Imaginary audience	.33	-.03
Personal fable	.27	.30
Junior high school sample		
Knowledge	-.11	-.20
Saliency	-.00	.11
Subjective norm	.10	-.24
Attitude	.37 ^b	.07
Imaginary audience	-.07	-.16
Personal fable	.06	.01

^a $p < .01$.

^b $p < .001$.

titude toward avoiding risk taking behavior entered ($B = .347$; $t = 4.625$, $p < .001$) accounting for 14% of the variance in intention to use condoms. Saliency entered on the second step ($B = .152$; $t = 2.02$, $p < .05$) accounting for an additional 2% of the variance ($F[2,153] = 15.10$, $p < .001$). Thus, college students who are more likely to intend to use condoms have more positive attitudes toward behavior that could reduce risk of contracting HIV and higher perceived risk for HIV infection.

The regression model for high school students examining intention to use condoms revealed two variables entering significantly. Attitude entered ($B = .354$; $t = 4.03$, $p < .001$) and accounted for 14% of the variance. Omnipotence entered next ($B = .263$; $t = 3.00$, $p < .01$) accounting for an additional 6% of the variance ($F[2,103] = 13.38$, $p < .001$). High school students, therefore, are more likely to intend to use condoms if they possess more positive attitudes toward behavior that could reduce risk of contracting HIV and have more omnipotent feelings.

The regression model for junior high school students examining intention to use condoms revealed two variables entering significantly. Attitude toward avoiding risk taking behavior ($B = .203$, $t = 2.72$, $p < .01$) entered

the model and accounted for 9% of the variance in intention to use condoms. Subjective norm entered on the second step ($B = .194$, $t = 2.61$, $p < .01$) and accounted for an additional 3% of the variance ($F[2,227] = 15.89$, $p < .001$). Therefore, junior high students were more likely to intend to use condoms if they held more positive attitudes toward behavior that could reduce risk of contracting HIV and believed important others held these same beliefs.

Number of Sexual Partners

The regression model for college students predicting number of sexual partners showed 4 variables entering significantly ($F = [1,154] = 11.16$; $p < .001$). Salience entered first ($B = .304$; $t = 3.58$, $p < .001$) accounting for 6% of the variance. Uniqueness entered second ($B = .288$; $t = 3.32$, $p < .001$) and accounted for an additional 5% of the variance. The third variable to enter the model was omnipotence ($B = -.333$; $t = -3.32$, $p < .001$) and accounted for an additional 3% of the variance. The final variable was invulnerability ($B = .282$; $t = 2.93$, $p < .001$), which accounted for an additional 6% of the variance totaling 20% being accounted for. Therefore, as the number of sexual partners in the past six months increased, college students felt more personally concerned about contracting HIV. In addition, college students high on personal fable (all three components) also had more sexual partners.

None of the independent variables entered significantly to predict number of sexual partners for the high school sample or for the junior high school sample. Therefore, knowledge of HIV/AIDS, salience, subjective norm, attitude toward risky behavior, imaginary audience and personal fable were not significant predictors of number of sexual partners.

DISCUSSION

A number of issues arise as a result of this study. First, it is interesting to note that knowledge of HIV/AIDS was not a predictor of either intention to use condoms or frequency of intercourse for any of the three adolescent groups. One explanation for this is the persistent problem with the measurement of knowledge of HIV/AIDS. A second has to do with the question about the relationship between knowledge and behavior in regards to HIV/AIDS.

Measures of HIV/AIDS available tend to be author derived and inconsistent. Moreover, these researchers have provided little to no psychometric information for these measures (e.g., Baldwin and Baldwin, 1988;

Brown, 1992; DiClemente *et al.*, 1987; Gray and Saracino, 1989; Johnson and Cline, 1991; Roscoe and Kruger, 1990). Other problems include reporting Cronbach's alpha rather than KR-20s for categorical level data (e.g., Koopman *et al.*, 1990; Skurnick *et al.*, 1991), not reporting previous measurement information (Crawford *et al.*, 1990), or reporting pilot information (Petosa and Wessinger, 1990). Furthermore, populations used in these studies are varied, leaving little normed data for adolescents. Clearly, the level of measurement of this construct needs more work. Interested readers are directed to Koopman *et al.* (1990) and Sandberg *et al.* (1988) who have elaborated on measurement problems for adolescents other than college students.

Just as importantly, the debate remains concerning the relation between knowledge and behavior (see Hornik, 1989), as well as some question about the usefulness of knowledge to predict behavior, and this may be especially true in the area of sexual behavior. Results of this study supports other researchers who have reported no relation between knowledge and behavior. Rather, this study suggests researchers may need to pay attention to the role of attitude toward risky behavior as a way of better understanding this phenomenon. Attitude toward risky behavior was the predominant predictor of adolescents' intention to use condoms in this study. This suggests that perhaps instead of being concerned with what adolescents *know*, interested professionals might look at their attitude toward what they do, and in some cases what adolescents think important others think about these risk behaviors.

A number of variables such as imaginary audience and subjective norm also showed limited predictive value in this study. For the junior high sample subjective norm was predictive of condom use, however, for the overall sample what others thought about risky behavior was not important beyond the eighth-grade level. Although this result is understandable for the college sample, given normal developmental trajectories, it remains perplexing for the high school sample and deserves additional attention by researchers. The context in which risk-taking occurs, often a social phenomenon, should be considered.

Salience, or the degree to which respondents felt personally concerned about contracting HIV/AIDS, was a significant predictor for both condom usage and number of sexual partners for college students. Reasons why this variable was not a predictor for high school or junior high students are uncertain. It is possible high school and junior high students perceive themselves as more invincible than do college students and thus are not personally concerned about contracting HIV/AIDS. Unquestioningly, some other variable such as the availability of birth control devices or frequency of other risk taking behaviors (e.g., use of mind altering substances or al-

cohol) may be better predictors of the number of sexual partners for high school students.

Of the components of egocentrism, personal fable was the most predictive but only for college students sexual behavior and these findings are consistent with that reported by Greene and her colleagues (Greene *et al.*, 1995; Greene *et al.*, 1996). Personal fable has been conceptualized as a developmental phenomenon that should decrease through adolescence; it looks very similar to a personality trait, risk-taking. These data show personal fable is a good way of predicting adolescents sexual risk-taking behavior. The thought process might function like this: adolescents hear AIDS messages and understand the information but do not feel these messages apply to them; thus they fail to take measures to protect themselves. This "not me" problem deserves more attention as it has not often been considered in message or program development (for exceptions see Greene, *et al.*, 1995, 1996).

Gender of the adolescent was not a variable under consideration in this study. *Post hoc* analyses suggested, however, that gender differences did exist among some of the independent variables such as imaginary audience, personal fable, attitude toward risky behavior, and subjective norm, but not in the dependent variables of intent to use condoms or number of different sexual partners. Given this, clearly there is evidence for creating different messages for males and females; therefore, future researchers might seek to incorporate gender into their theoretical models of understanding behaviors relevant to the transmission of HIV.

Implications

Implications for this research are particularly important for community educators, teachers, therapists, HIV/AIDS message designers, and other professionals who work with adolescents. Overall, these results suggest that messages or educational programs should be designed and directed to specific populations of adolescents rather than generalized to all adolescents. For example, what might be incorporated into messages directed toward college students might not be effective for junior high students.

These results also support the efforts of HIV/AIDS campaign designers, and educators who create not only knowledge-based advertisements and programs aimed at adolescents but those who address attitude toward behaviors that put adolescents at risk. Such programs need to address not only factual information but information about how closely held attitudes affect behavior. For example, educators might seek to balance their presentation to adolescents by combining an educational approach with discus-

sion about attitudes, not behaviors, that put them at risk. Educating adolescents about symptomology, etiology and transmission of HIV/AIDS is important but may be only half of what is necessary.

This research suggests it would be important for educators who seek to reduce the transmission of HIV to develop programs that seek to reduce overall positive attitudes toward risky behavior and increase the salience of HIV. Thus, education efforts might need to take a different, more personal form. For example, HIV/AIDS prevention program designers might look to incorporate guest speakers that could stimulate discussions around how risky behaviors have affected their lives. Such speakers might include individuals who are HIV positive, prostitutes, pregnant, addicted to substances, or those jailed for criminal activity.

What is crucial, considering these results, would be for these discussions to revolve not around the behavior the speakers engaged in, or even the consequences of the behavior, but rather what the particular person's attitude was when s/he engaged in the activity. For example, it would seem that having a pregnant woman talk about how she might have felt invincible when she was engaging in sexual relationships might be more effective than talking about what her life is like in the present or will be in the future. Therefore, the goal of these interventions should be to connect with the thoughts and feelings of adolescents in the present day and not necessarily focus on an elusive future.

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