Identifying Precursors of Safer-Sex Practices in Mexican Adolescents With and Without Sexual Experience: An Exploratory Model[1]

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Theoretical variables were examined for their empirical relevance as precursors of safer-sex behavior in 2,011 Mexican adolescents, most of whom were not sexually experienced. Using structural equation modeling, a good fit was found for a path model with (a) partner communication and intention to use condoms as outcome variables; (b) self-esteem, self-efficacy, and decision making as antecedent variables; and (c) perceived norms about sexual practices, attitudes toward condom use, and knowledge of HIV as mediating variables. A good fit also was found for a slightly elaborated model involving condom use as outcome variable that was fitted in a subsample with 319 adolescents who reported sexual experience. Gender differences are discussed, as well as implications for intervention programs promoting safer-sex behaviors.

In the year 2000, Mexico had 96.3 million inhabitants, 40 million of whom were younger than 19 years. The annual growth rate was 1.88%. The absolute number of young people will continue to grow and is estimated to reach a maximum of 21.2 million adolescents between the ages of 15 and 19 in 2010. Today, the number of adolescents is the highest in the history of the country and represents more than twice the adolescent population that existed in 1970 (Consejo Nacional de Población, CONAPO, 2000).

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No reliable data exist regarding the age of sexual debut among adolescents or about their use of health and reproductive services (Santos-Preciado, Villa-Barragan, García-Avilés, Zuezada-Bolaños, & Tapia-Conyer, 2003). The average age for first sexual activity as reported by the National Council of Population (CONAPO, 2000) is 15.4 years: 13.8 years for rural areas, and 16.7 years for urban areas. The National Council reports a direct correlation between the average level of schooling and the age of first sexual activity without reporting specific rates by age, level of urbanization, and schooling level. In a study carried out with high school students in Mexico City, Fleiz-Bautista, Villatoro-Velázquez, and Medina-Mora (1999) reported that 81.6% have not had sexual experiences.

Aguilar (1998) reported that the first sexual encounter is normally unplanned and unpredicted. Mexican adolescents are often uninformed about safer-sex practices and do not use any form of contraception. In general, only one adolescent out of every three uses a contraceptive method during his or her first sexual relationship, and 17% of the births per year are to adolescents under 19 years. A small percentage of the boys (6%) had their first sexual experience with a prostitute. With respect to AIDS rates, the group between 25 and 34 years of age is the most affected, constituting 41.6% of Mexico's registered cases. The ratio of AIDS cases for men and women is 6:1, with 90% of the accumulated cases a result of sexual transmission (Centro Nacional para la Prevención y Control del VIH/SIDA, CENSIDA, 2002).

Cultural Context of Sexual Education in Mexico

In Mexico, even though information regarding sexual and reproductive health is available to the general public, society and culture often limit discussion, implementation, and transmission of educational materials. This monitoring and limitation of access to information about sexuality is an important factor in widespread misunderstanding and misconceptions. Myths that encourage socially accepted practices continue to spread, even though they promote high-risk behavior.

Rodriguez, Amuchastegui, Rivas, and Bronfman (1995) reported that school, the Roman Catholic Church, and the family greatly influence adolescents' perceptions of sexuality. The lack of information or values embedded in these institutions often provides mixed messages about sexuality and methods of prevention, leading to misunderstanding or confusion regarding methods of prevention and the desirability of using them. Pleasure and eroticism are only considered acceptable when sex is performed for reproduction, as opposed to enjoyment. In addition, the use of contraception frequently is considered sinful and unnatural.

Using a condom may even be a sign of degradation to the woman, denying her the opportunity of maternal confirmation, and promoting an orientation to

physical pleasure that is frowned upon. By no means would it be acceptable for women to propose the use of a condom, for that would diminish their passive seductive role and the seductive power of men. Bringing a condom to an engagement implies loss of prestige for a girl and promiscuity; for a man, it implies that he considers the relationship "casual." Young Mexican men often see the responsibility for pregnancy and its prevention as a matter for the woman. The condom symbolizes a threat to male virility and fertility. The male identity is linked to bravery, strength, and security. Not using a condom is proof that he is not afraid; risking his life is a sign of virility.

Taboos and beliefs concerning sexuality make it a difficult topic to explore. There is a lack of reliable information regarding the age at which sexual activity is started and regarding risky sexual behavior, especially among single adolescents. Adolescents in rural and urban areas vary in age distributions for sexual debut, and there are also differences among urban adolescents associated with level of schooling. Despite a lack of precise information, it is evident that there is a need for interventions promoting safer-sex behaviors. The question is how to structure intervention programs through which this need is addressed.

Theoretical Framework

The development of effective interventions requires an understanding of the variables that underlie the performance of any risky behavior (Kelly, Murphy, Sikkema, & Kalishman, 1993). The scientific literature on the prevention of HIV and other sexually transmitted infections (STIs) suggests that there are several factors that determine high-risk sexual behavior in adolescents (Basen-Engquist et al., 1999). Experts have recommended the inclusion of multiple-model components from different theories to understand health-related behaviors (e.g., Wulfert & Wan, 1995).

The present study derives its theoretical basis from the theory of reasoned action (Ajzen & Fishbein, 1980), the theory of planned behavior (Ajzen, 1991; Ajzen & Driver, 1991; Ajzen & Madden, 1986), and Bandura's (1991, 1997) concept of self-efficacy. The theory of reasoned action states that the primary determinant of any behavior is the person's intention to perform that behavior. The theory of planned behavior also postulates that behavior reflects behavioral intention and includes an additional concept named perceived behavioral control, which reflects past experiences and anticipated obstacles. Social cognitive theory assumes that behavior is determined by expectations about one's own ability to perform the behavior (self-efficacy) and incentives that are the perceived value of the outcome (Bandura, 1991). Several authors have added this variable to the theory of reasoned action (De Vries & Backbier, 1994; Schwarzer, 1992).

Kasprzyk, Montaño, and Fishbein (1998) presented a model of condom use that includes elements from various theories. Their proposal includes three main

constructs as determinants of behavioral intention: attitude toward performing the behavior, social norms associated with the behavior, and self-efficacy or perceived control with regard to the behavior. They also had two additional constructs; namely, alternative strategies to protection and critical events. Empirical research has indicated that perceived behavioral control—which is equivalent to Bandura's concept of self-efficacy (Ajzen, 1998; Finlay, Trafimow, & Moroi, 1999)—and attitudes and subjective norms about the use of condoms are reliable predictors of intentions to perform healthy behavior in adolescents (DiClemente, 1992; Romer et al., 1994; Schaalma, Kok, & Peters, 1993). Variables categorized as personal resources (e.g., self-esteem, self-efficacy, perceived control/decision making) have been shown to promote health-related behavior, coping behavior, and physiological and emotional responses to stress (DeLongis, Folkman, & Lazarus, 1988; Hobfoll, 1985).

Gender-related social norms and their effect on sexual behavior have been particularly prominent topics in the literature on HIV/AIDS among adolescents (Whitaker, Miller, & Clark, 2000). Differences have been noted in communication style, proactive versus passive attitudes toward safer sex, lifetime alcohol use, self-esteem, social pressure, and perceived control (Feeney, Kelly, Gallois, Peterson, & Terry, 1999; Lock, Ferguson, & Wise, 1996; Whitaker et al., 2000). Partner communication has been included in predictive studies since it is considered as an antecedent to safer-sex behavior (Thompson, Geher, Stevens, Stern, & Lintz, 2001; Zamboni, Crawford, & Williams, 2000). The association between communication and self-esteem, particularly among children and adolescents, is well documented (Desselle, 1994; Enger, Howerton, & Cobbs, 1994; Friedman, 1989), and there is positive correlation between two-way communication abilities and self-esteem (September, 2001).

Most theories and studies in the field of safer sexual behavior have been tested with adults or with adolescents who have had sex. However, there is a paucity of studies involving youngsters who have not had previous sexual experience. Nevertheless, in the ideal case, determinants of safer-sex practices ought to be in place before adolescents become sexually active. Thus, information on precursors is directly relevant to the promotion of future safer-sex behaviors.

The present study is meant to address the following questions:

> Are there variables that can be considered precursors of safer-sex behavior for adolescents who have not yet had sexual intercourse, and what are the interrelationships between these variables?
>
> How can the variables be modeled with a view to explain differences between four different subgroups (i.e., girls who have never had sex, girls who have had sex, boys who have never had sex, and boys who have had sex)?

How does the model relate to theoretical variables described in the literature on health behavior?

How can the results guide the development of educational interventions?

Method

Participants

The sample consisted of 2,064 Mexican students from Toluca, the capital city of the State of Mexico in central Mexico. The main analyses reported in this article are based on four subgroups of students according to gender and sexual experience. The average age was 15.97 years (*SD* = 11 months). All students were in Grade 10 of public high schools (middle–low socioeconomic level) in the city that were affiliated with the Autonomous University of the State of Mexico (UAEM). Four of the five public schools in Toluca, Mexico, were invited to participate in the study. One school was excluded from the study because it was larger in size and, being the first and largest high school in the state, had somewhat more resources than the four remaining schools.

Reporting of sexual experience is a sensitive issue. When questionnaires are used in the evaluation of HIV/AIDS and sexuality education programs, guaranteeing the confidentiality of the respondents' answers is a prerequisite to obtaining valid results. Therefore, the distinction between groups with and without sexual experience was based on four items. The primary question was at what age the respondent had the first sexual experience. Other responses were checked for compatibility (e.g., "I have not had sexual relations"; "Did you use a condom last time you had sexual relations?"). A missing score was given in case of noncompatibility of responses; this was found in 2.5% of the protocols. Because of missing values on items related to sexual experience and gender, we are reporting the data of 2,011 students (1,029 female, 982 male).

Instruments

The questionnaire consists partly of items written for this study and partly of questions from Planeando tu vida (Pick et al., 1988) and the Centers for Disease Control (CDC) HIV Index Questionnaire (CDC, 2000). The instrument has 10 scales. Self-esteem and decision making do not have sexuality related content, whereas the remaining scales are domain-specific (related to sexual relations and use of condoms). All of the questions, except those that were included in the behavior scale, were applicable for all of the respondents regardless of whether or not they had previous sexual experience.

We explored adolescents' perceptions of their own skills and reactions toward sexuality-related situations independent of the different levels of sexual experience. We asked students to answer sexually specific questions related, for example, to partner communication or to use of condoms by thinking of similar or hypothetical situations with their actual boyfriend/girlfriend (or a future one) and evaluating their perceived self-efficacy to deal with the sexual situation. Our aim was to assess perceptions, opinions, and attitudes, rather than real behavior. As recommended by Kalishman et al. (2002), most variables included in the model were based on responses to multi-item scales that reflected key constructs of health behavior models.

Self-esteem. Self-esteem refers to a person's self-evaluation, particularly regarding responsibility for and self-image in executing an action, and can be used as a predictor of future behavior. To assess self-evaluation, particularly with regard to self-image, 9 items were used (e.g., "I like myself," "I feel confident about myself"). Respondents answered on a 4-point Likert scale ranging from 0 (*almost never*) to 3 (*all the time*). The index for internal consistency was acceptable (Cronbach's $\alpha = .78$).

Decision making. Decision making refers to the degree to which individuals perceive events in their lives as being a consequence of their own actions, and thereby controllable by their own decisions (internal control); or as being unrelated to their own behavior, and therefore beyond personal control (external control). The seven items in this scale were mainly related to perceived personal control (e.g., "I have control over what happens in my life," "I think about things carefully before I make a decision"). Participants answered on a 4-point scale ranging from 1 (*almost never*) to 4 (*all the time*). Cronbach's alpha was .79.

Self-efficacy. Self-efficacy refers to the individual's ability to carry out necessary behaviors and to control his or her own motivations, actions, and the social environment. The present scale consists of three items that focus on the person's belief that he or she has the elements to cope with risk in a sexual encounter (i.e., "I can interrupt a sexual relation to wear a condom"; "I consider myself able to tell my partner that I will only have sexual relations if we use a condom"; "I am certain I can get a condom if I want to"). Responses were scored on a 5-point scale ranging from 1 (*disagree completely*) to 5 (*agree completely*). The scale had an adequate internal consistency ($\alpha = .71$).

Knowledge. Knowledge refers to information that increases the range of alternative courses of action that can be considered by a person in a particular situation. In the case at hand, knowledge ensures that individuals have information about safer sex, modes of HIV transmission, ways of preventing HIV transmission, and condom use.

A scale assessing knowledge included a total of 19 items: 16 items were related to the transmission of HIV (e.g., "It is possible to become infected with HIV through the sting of mosquitoes"), and there were 3 items concerning

HIV testing (e.g., "The ELISA test is used to find out whether a person is infected with HIV/AIDS"). Items were answered on a 5-point scale with the following responses: *I am certain this is true*; *I think this is true*; *I don't know*; *I think this is false*, and *I am certain this is false*. In 9 of the 19 items, the correct response was "false." Items were reverse-scored when necessary, and the answer reflecting the highest degree of certainty regarding the knowledge obtained the highest score (5); followed by the next degree of certainty, which received a 4. The category *I don't know* was scored 3, and the final two categories reflecting incorrect answers obtained the lowest scores on the scale (2 and 1). Cronbach's alpha was .71.

In Mexico, there is a large amount of contradictory information provided both by groups who are in favor and groups who are against providing HIV/AIDS information to adolescents (Pick, Givaudan, & Brown, 2000). Thus, knowledge as well as the degree of certainty were assessed, which appeared to be especially important in a sociocultural group in which the pressure to comply with saying or doing what is socially expected is strong.

Norms about the use of condoms. Norms refer to individuals' standards and the perception whether their significant others think that they should or should not perform a specific behavior. Theoretically, the notion of norms is based on the perception that normative referents support or justify one's behavior (Ajzen & Fishbein, 1980). To assess norms about the use of condoms, 3 items were used ("My significant others think I should use condoms"; "My family thinks that if I am to have sexual relations, I should use a condom"; "It is right to ask the partner to wear a condom"). Respondents answered on a 5-point scale ranging from 1 (*disagree completely*) to 5 (*agree completely*). Cronbach's alpha was .68.

Attitudes toward the use of condoms. These attitudes are seen as dispositions of the person that either facilitate or impede the adequate handling of situations. There were 10 items related to ideas about the advantages and disadvantages of condom use (e.g., "It takes fun out of sex if you use a condom every single time"; "People who use condoms sleep around"; "Using a condom every time I have sexual relations is a protection for me"). Answers were given on a 5-point scale ranging from 1 (*disagree completely*) to 5 (*agree completely*). The internal consistency was acceptable ($\alpha = .74$).

Partner communication. Partner communication refers to difficulties in talking and negotiating about sexual relationships in social contexts that are relevant to young adults, including the management of affect under difficult or emotionally high-pressure situations. The 11 items in this scale reflect behaviors that usually cause shame and could be an obstacle to communication and negotiation with the partner (e.g., "I am ashamed to talk about HIV/AIDS with my partner"; "Just to please my partner, I concede to everything"). That is to say, the person is not able to demonstrate the skills and abilities necessary to resist pressure and to negotiate the use of condoms. Responses were provided on a 4-point scale

ranging from 1 (*almost never*) to 4 (*all the time*), which later was reverse scored in order to ensure that higher scores reflect higher communication skills. The scale had an internal consistency of .64.

Intentions. The intentions variable was assessed by a single item with five response options: "Which of the following answers best describes your plans about the use of the condom for you and your partner during your next sexual encounter?" The item was scored on a 5-point scale with the following options: 1 = *I am planning not to use a condom*; 2 = *I am planning to use a condom, as long as my partner does not oppose it*; 3 = *I am planning to use a condom only if we both agree*; 4 = *I am planning to use a condom even if my partner opposes it*; or 5 = *I am planning to use a condom*.

Behavior. In order to assess actual behavior, we developed a 10-item scale that included safety and risk practices (e.g., "Sometimes I have had sexual relations with penetration and without protection"; "I always use a condom"; "I have had sexual relations with only one partner"). Safe practices were given a score of 1, and risky behavior a score of 0. Cronbach's alpha reached a value of .87.

Procedure

Authorities at the schools reviewed the questionnaire before its administration and gave their support for the study, considering it unnecessary to send an additional consent letter to parents. This was in line with current standard practices in Mexico. Informed consent of the students was obtained. The consent form explained the objective of the study, the topics included in the questionnaire, and the time necessary to complete it.

The same version of the instrument was administered to male and female participants. Students were told that their participation was voluntary and that they could choose not to participate or not to answer questions they were not comfortable answering. The instrument was administered during a regular class. The questionnaire was applied at the same time in all groups at each of the four schools by teachers who were instructed on how to administer the questionnaire. Students were not asked to reveal their names or other information through which they could be identified personally.

Results

Descriptive Statistics

At the time of the study, 32.9% (660) of the participants reported having a boyfriend or girlfriend. Most of the students (97%) lived with their parents. Adolescents in Mexico commonly do not leave their parents' home until they get married. Regarding marital status, most of the students were single (1,974;

Table 1

Descriptive Statistics for the Scales

Scale	Range	*M*	*SD*
Self-esteem	0-3	2.17	0.44
Self-efficacy	1-5	3.22	0.87
Decision making	1-4	2.26	0.49
Subjective norms about the use of condoms	1-5	3.32	0.67
Attitude	1-5	3.30	0.50
Knowledge	1-5	3.06	0.42
Communication	1-4	2.25	0.35
Intention	1-5	4.04	1.10
Behavior	0-1	0.53	0.21

98.2%), while 26 (1.2%) reported being married or living in a free union, and 3 (0.1%) reported being widowed. We are not certain whether the last data are correct, but we wish to note that even if these answers are all false, the level of inaccuracy remains low. Of the students, 15.9% (319/2,011) reported having had sexual intercourse (female = 6.9%, 71/1,029; male = 25.3%, 248/982). Mean age at first intercourse for this subsample was 14.2 years.

Table 1 presents descriptive statistics for the scales. A high score on each scale is associated with safer behavior. For most of the scales, the mean score is above the midpoint of the response scale but remains well below the maximum. For decision making and partner communication, the means are somewhat below the midpoint. A behavior score is only available for respondents who reported having had sex.

Although the mean of the knowledge scale was above the midpoint, it is interesting to note which items showed a high percentage of correct scores and which reflected a relative lack of knowledge. For example, 98% thought (*I think this is true* or *I am certain this is true*) that you could become infected with HIV by receiving a blood transfusion from an infected individual, 94% thought that sharing a syringe with an infected individual could infect you, and 88% thought that a person could acquire HIV infection from vaginal or anal intercourse without protection (which means that as many of 12% of these adolescents apparently did not know this). As many as 29.8% thought that it was possible to become infected through the sting of mosquitoes, and 26.8% did not know whether the latter was true. A relatively low percentage (80%) agreed that you could protect yourself from HIV by using a condom correctly every time you have sexual

relations; 78.3% agreed that a person who is HIV positive and who has no symptoms of AIDS can infect other people; 78.3% agreed that a person who looks healthy can have HIV; and only 69.4% knew that a person can carry the virus for several years without developing symptoms. The results show that some basic facts about HIV and AIDS are widely known in this group of Mexican adolescents, but that their knowledge is far from complete.

Structural Equation Model

We split the data in four different subgroups on the basis of sexual experience and gender. We conducted structural equation modeling using AMOS 4 (Arbuckle, 1999) to evaluate interrelationships between the variables. The analysis was based on 2,011 participants; 4 records were excluded because of missing information on gender, and 49 cases had missing information on sexual experience. Of the cases, 2% contained missing values for communication, self-esteem, or self-efficacy. These missing values were estimated before the analysis using a regression technique.

Two models were tested. The first included all respondents and left out safer-sex behavior as a dependent variable, since most of the participants reported no prior sexual intercourse. The second model included only the respondents (both boys and girls) who reported sexual experience. Here, practicing safer-sex behavior was the output variable.

To test the fit of the structural equation model, we considered various model statistics. In addition to the chi-square test of fit, various statistics were examined that did not have a known sampling distribution. Rules of thumb have been developed about which values are admissible for adequately fitting models (e.g., Carmines & McIver, 1981; Tabachnick & Fidell, 1996). We employed the ratio of chi square to degrees of freedom of the model (this should not be larger than 3); the comparative fit index (CFI), which should be .90 or higher; an adjusted goodness of fit index (AGFI), which should be larger than .90; the Tucker-Lewis Index (TLI), which should be larger than .90; and the root mean square error of approximation (RMSEA), which should not be larger than .05.

The model has three levels of variables (Figure 1). The first level refers to personal resources. These resources include self-esteem, a person's belief that she or he has the elements to cope with sexuality-related risk situation (self-efficacy), and perceived ability to control important outcomes (decision making). Two of these scales contained items that were not limited to sexuality-related situations, suggesting that this level reflected general characteristics of the individual. The second level of the model included mediating variables. The constructs at this level reflected attitudes toward and knowledge about (the use of) condoms. The last level referred to outcome variables. Communication and intentions to use condoms were the final outcomes in the model.

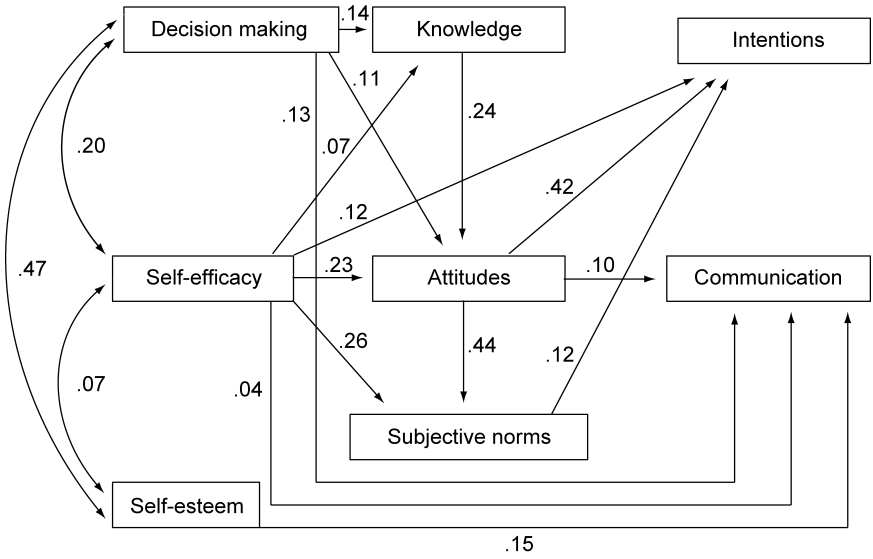

Figure 1. Structural model for male and female adolescents with and without sexual experience ($N = 2{,}011$). Arrows indicate significant effects ($p < .01$).

Our model assumes that when actual behavior is not included, factors affecting the outcome variables (intention to use condoms and partner communication) are identical in groups of adolescents with and without sexual experience. The model had a very good fit, $\chi^2(94, N = 2011) = 268.31$, $p < .01$; $\chi^2/df = 2.85$; CFI = .97; AGFI = .95; NNFI = .93; RMSEA = .03. The two general (i.e., not sexuality-related) scales of decision making and self-esteem showed a fairly strong relationship ($r = .47$). Correlations between (sexuality-specific) self-efficacy and the two general scales at the first level of Figure 1 were much lower (for decision making and self-efficacy, $r = .20$; for self-efficacy and self-esteem, $r = .07$). Five paths from self-efficacy were significant, giving this variable a central position in the model: attitudes, $\beta = .23$, $p < .01$; personal norms about the use of condoms, $\beta = .26$, $p < .01$; knowledge, $\beta = .07$, $p < .01$; communication, $\beta = .04$, $p < .01$; and intentions, $\beta = .12$, $p < .01$. The strongest influences were from self-efficacy to attitudes and from self-efficacy to norms. Self-esteem had a positive influence on communication regarding use of condoms ($\beta = .15$, $p < .01$). Three paths from decision making were significant; namely, knowledge ($\beta = .14$, $p < .01$), attitudes toward condoms ($\beta = .11$, $p < .01$), and communication ($\beta = .13$, $p < .01$).

Attitude toward condom use was the variable with the highest significant relationships with other variables in the model. There were effects on norms

($\beta = .44$, $p < .01$) and on intention to use condoms ($\beta = .42$, $p < .01$). A significant influence of subjective norms about the use of condoms on intention also was found ($\beta = .12$, $p < .01$). Knowledge was positively related to attitudes ($\beta = .24$, $p < .01$), but the path from knowledge to intentions was not significant ($\beta = -.09$, *ns*). The model explained 50% of the variance in partner communication about the use of condoms. Partner communication and intention to use condoms were the outcome variables when behavior was not included in the model.

The results of the AMOS model (Arbuckle, 1999) shows a good fit for a structure in which the paths leading to intentions and to partner communication are identical across the four groups (girls without sexual experience, girls with sexual experience, boys without sexual experience, and boys with sexual experience). This means by implication that sexual experience as such does not affect intention to use condoms and communication with the partner about the use of condoms. This argument was supported by the results of a second structural equation model to which we now turn.

Figure 2 shows the second model that was derived for the subgroups of adolescents (boys and girls) who reported having had a sexual relationship ($N = 319$). Actual safer-sex practices were the final outcome. This model also had a good fit, $\chi^2(50, N = 319) = 80.62$, $p < .01$; CFI = .94; $\chi^2/df = 1.61$; AGFI = .89; NNFI = .84; RMSEA = .04. Not surprisingly, correlations between decision making and self-esteem ($r = .51$), decision making and self-efficacy ($r = .11$), and self-efficacy and self-esteem ($r = .10$) showed the same pattern as in the previous model. In this model, five significant paths from self-efficacy can be observed. Contrary to the previous model, there was no significant relationship with knowledge ($\beta = .04$, *ns*). Self-efficacy again had a central role. Paths from self-efficacy to the following variables were significant: attitudes ($\beta = .23$, $p < .01$), norms about the use of condoms ($\beta = .14$, $p < .01$), communication ($\beta = .04$, $p < .01$), intentions ($\beta = .16$, $p < 01$), and actual safer-sex behavior ($\beta = .04$, $p < .01$). Thus, the strongest influence was found for the effect of self-efficacy on attitudes. Self-esteem influenced communication regarding use of condoms ($\beta = .17$, $p < .01$). The paths from decision making to knowledge ($\beta = .28$, $p < .01$), to attitudes ($\beta = .16$, $p < .01$), and to communication ($\beta = .09$, $p < .01$) were significant.

Attitudes had an effect on norms about the use of condoms ($\beta = .28$, $p < .01$), and particularly on intention to use condoms ($\beta = .50$, $p < .01$). There was a positive regression effect from knowledge to attitudes ($\beta = .22$, $p < .01$). Again, there was no significant path from knowledge to intentions ($\beta = -.05$, *ns*). In this model, the influence of norms about the use of condoms on intentions was not significant ($\beta = .01$, *ns*).

Norms had a direct influence on behavior ($\beta = .05$, $p < .01$). There were also significant paths from communication about the use of condoms ($\beta = .03$, $p < .01$) and from intentions of condom use ($\beta = .03$, $p < .01$) to sex behavior. The second model explained 42% of the variance in communication about use of

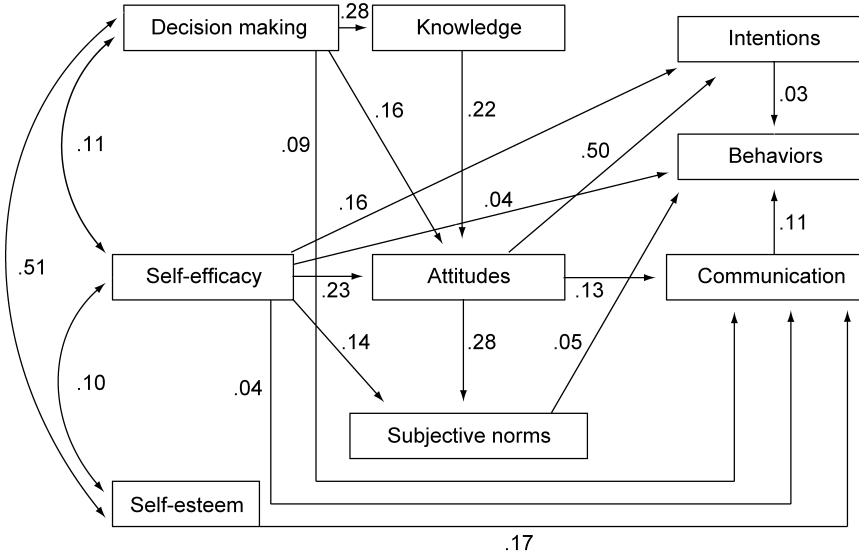

Figure 2. Structural model for boys and girls who have had sexual experience ($N = 319$). Arrows indicate significant effects ($p < .01$).

condoms and 12% in safer-sex behavior. The explained variance in behavior came about through direct effects from communication to use condoms, intention to use them, self-efficacy and personal norms about the use of condoms, and through indirect effects from the other variables of the model of Figure 2.

In summary, the structural equation modeling of the complete group and the subgroup with sexual experiences yielded largely similar results. Contrary to expectation, we found a good fit for a model in which identical relationships have been found in the subgroups. If the modeled variables were significantly related, the influence was always positive. There were a few very small differences between the models depicted in the two figures and between boys and girls in each model. However, these differences were so small that even with our fairly large sample sizes the fit of a single, overall model was not challenged. It can be concluded that these differences are negligible to all practical ends and purposes. Future research will tell us whether these differences are replicable or whether they are context-bound and a result of mere sampling fluctuations.

MANOVA

For reasons of parsimony, we prefer a single model with identical parameters in all four subgroups. This allows a MANOVA on the continuous dependent

Table 2

Effect Sizes (Proportion of Variance Accounted for) and Significance Levels of MANOVA

	Effects		
Dependent variable	Gender	Sexual experience	Gender × Sexual Experience
Self-esteem	.002**	.000	.000
Self-efficacy	.024**	.000	.004*
Decision making	.001	.001	.002*
Norms	.002*	.006**	.000
Attitudes	.006**	.004**	.002*
Knowledge	.000	.007**	.002*
Communication	.058**	.006**	.000
Intention	.004**	.001	.000

*$p < .05$. **$p < .01$.

variables to test for effects of gender differences as well as sexual experience. Effect sizes (proportion of variance accounted for by an effect) are presented in Table 2. The subgroup of 319 adolescents who reported having had sexual experience was older (M = 16 years, 7 months; SD = 1 year, 5 months) than the subgroup who had not had sex (M= 15 years, 10 months; SD = 9 months). Some statistically significant differences were found between girls and boys, and also between adolescents who reported having had sex and those who never had sex.

The largest differences in means between genders were found for communication, in which girls scored higher than boys (d = .73, which is a substantial effect; Cohen, 1988). The second largest effect was for self-efficacy (d = .38), with girls again scoring higher than boys. This likely reflects cultural aspects that reinforce girls' ability to carry out their duties and to control their motivations and the social environment, particularly in situations related to sexuality. On the other hand, boys scored slightly higher than girls in self-esteem, which is culturally reinforced in boys from infancy. Boys also scored slightly higher in norms about the use of condoms, perhaps because they received more messages of acceptance from friends and family to use condoms than did girls. We also found that respondents with sexual experience scored significantly higher in knowledge, attitudes, subjective norms about the use of condoms, and partner communication than did the group without sexual experience. However, effect sizes were small (Tables 2 and 3).

Table 3

Differences Between Boys and Girls and Between Youngsters Reporting Having Had Sex and Those Reporting Not Having Had Sex

Dependent variable	Gender	Sexual experience
Self-esteem	Girls < Boys $d = .16$	
Self-efficacy	Girls > Boys $d = .38$	
Decision making	Girls > Boys $d = .04$	
Subjective norms	Girls < Boys $d = .08$	Sex > No sex $d = .28$
Attitudes	Girls > Boys $d = .10$	Sex > No sex $d = .10$
Knowledge		Sex > No sex $d = .21$
Communication	Girls > Boys $d = .73$	Sex < No sex $d = .02$
Intention	Girls > Boys $d = .20$	
Behavior	Girls < Boys $d = .09$	

Note. Sex = participants reporting having had sex; No sex = participants reporting not having had sex. Only significant differences ($p < .05$) are mentioned; d = Cohen's (1988) effect sizes.

The MANOVA also showed some significant interaction effects between gender and sexual experience (Table 2). The most substantial effect was in terms of self-efficacy scores, where girls without prior experience had the highest mean score ($M = 3.54$), while boys who reported sexual experience had the lowest mean score ($M = 2.93$).

The second largest effect was for attitudes, where girls with sexual experience ($M = 3.49$) had significantly more positive attitudes toward condoms than did boys without sexual experience ($M = 3.26$). Furthermore, girls who had never had sex showed slightly higher levels of self-efficacy and decision making.

Discussion

Most studies in the field of safer sexual behavior have been conducted with adults or with sexually active adolescents. However, there is a lack of information about adolescents who are not sexually active. The focus of this exploratory study was on the precursors of protective sex behavior.

In Mexico, as in other strict and traditional societies, it is difficult to acquire information about sexual behavior, especially when it refers to premarital relationships. Hence, a questionnaire was used with no personal identification. Most of the participating adolescents (84.7%) reported no prior sexual intercourse, a figure similar to data reported by Fleiz-Bautista et al. (1999) for Mexico City. Two models were derived from the data by means of a path model. The first analysis included all respondents with and without reported sexual experience. Partner communication and the intention to use condoms were outcome variables. The second model, based on respondents who reported having sexual experience, had actual safer-sex behavior as its final outcome. A largely similar structural equation model was found to fit the data in the group with and the group without sexual experience.

Three levels of variables were distinguished in the models. The first level included self-esteem, self-efficacy, and decision making that were conceived as individual disposition variables (resources). In the model, self-esteem and decision making were the only variables that did not refer to sexually related content. We considered attitudes, norms about the use of condoms, and knowledge as variables at an intermediate level.

It is interesting that norms did not emerge as an exogenous variable that impacts all sexuality-related variables. In our model, norms were influenced by attitudes and self-efficacy, thereby emphasizing that they refer to perceptions of the adolescents, rather than to an externally imposed source (e.g., norms from the Roman Catholic Church). Our interpretation of the outcome variables is that in a group of adolescents who are not sexually active, open partner communication and the intention to use condoms are proximal precursors that contribute to safer-sex practices.

Personal disposition variables were found to have direct effects on partner communication. In this exploratory model, self-esteem and decision making were assessed as domain-independent constructs; the items in these scales did not refer directly to situations dealing with sexuality. Still, self-esteem and decision making turned out to be predictors of communication about sexuality-related matters. The finding that self-efficacy, although formulated with items pertaining directly to sexuality-oriented situations, emerged as a first-level variable in the models reflects the dispositional character of this concept. Self-efficacy showed significant direct effects on most of the variables in the analysis, including norms, attitudes, partner communication, intentions, and safer-sex behavior.

The relationship between self-efficacy, HIV risk index, and condom use also has been demonstrated previously (Basen-Engquist & Parcel, 1992; Kasen, Vaughan, & Walter, 1992; Walter et al., 1992). The relationship between self-efficacy about the use of condoms and partner communication about condom use has been reported by Basen-Engquist et al. (1999). Personal perceptions (self-esteem, self-efficacy, and perceived control/decision making) have been shown previously to promote health-related behavior, coping behaviors, and physiological and emotional responses to stressors (e.g., DeLongis et al., 1988; Hobfoll, 1985). In the present study, we confirm that such variables also can be seen as precursors to future safer-sex behaviors among Mexican adolescents.

The second-level variables in the model, including attitudes and norms, functioned both as consequents of broader person dispositions and as antecedents to actual behavior, constraining or facilitating available alternatives. Attitudes emerged as the most central variable in the two models, influencing norms as well as outcome variables. These findings correspond to the theory of reasoned action and its derivatives (Fishbein & Ajzen, 1975; Fishbein et al., 1995; Sheeran & Taylor, 1999).

Knowledge did not contribute directly to outcome variables. There was only a direct and fairly substantial effect on attitudes, which in turn had a significant effect on norms and intention to use condoms. One factor likely to have influenced correlations with other variables is the high proportion of respondents with at least a fair knowledge on crucial items. Such a ceiling effect limits the extent of correlations with other variables. Another factor may have been the use of a response scale asking for ratings of certainty, rather than for a true–false dichotomy. The expression of certainty can be a personality variable as well as a reflection of cognition. This interpretation is supported by the relationship between decision making and knowledge. In short, the data do not allow us to conclude that knowledge has only limited relevance. Knowledge is perhaps best seen as a necessary but insufficient condition for safer-sex behavior.

We found that the model was applicable to the four groups (girls without sexual experience, girls with sexual experience, boys without sexual experience, and boys with sexual experience). Therefore, sexual experience as such appears to have limited influence on the intention to use condoms and partner communication about the use of condoms. Taken as a whole, the findings suggest that effective adolescents' protective sex behavior is the outcome of a multifaceted process that involves personal dispositions and critical skills in the form of partner communication about the use of condoms.

Results from the MANOVA suggest that adolescents who perceive themselves as capable of carrying out the necessary behavior and of controlling own motivations, actions, and social environment are at a lower risk to start sexual relations at an early age or to have unsafe sexual relations. Girls who have never had sex perceived that they have the skills to cope with a risk situation (e.g., "I

can interrupt a sexual relation to wear a condom," "I consider myself able to tell my partner that I will only have sexual relations if we use a condom"). In contrast, boys who have had sex had the lowest scores on these variables. It is important to note that boys are frequently encouraged by social norms to be brave and impulsive and to expose themselves to risk situations in order to demonstrate power and control. Girls need to be more conscious and usually are judged negatively and blamed for any impulsive actions. Girls with sexual experience had more positive attitudes toward the use of condoms than did boys who had had sex. Having positive attitudes toward condoms reflects being in opposition to the traditional norms that assert that girls should not have sex before marriage.

Finally, the results of this study should be useful in guiding the designs of preventive interventions that can help prepare young adolescents to adequately handle their early sexual encounters. Self-efficacy (negotiating condom use) and partner communication were far more important precursor variables to safer-sex behavior among this adolescent population than had been assumed originally. Both of these variables can be considered proximal precursors of safer-sex behavior among adolescents who are not yet sexually active. Therefore, revising preventive interventions to improve self-efficacy and partner communication could have an important effect on future behavior.

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