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Predictors of Condom Use Among Mexican Adolescents

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Abstract

Mexican adolescents continue to be at increased risk for HIV infection due to inconsistent condom use. The purpose of this study was to identify predictors of condom use intentions and condom use among Mexican adolescents who participated in a randomized control trial designed to test a sexual-risk reduction intervention. Data from sexually active adolescents 17 to 21 years (n = 157) of age who were assigned to the control group were analyzed 48 months post intervention. Regression analysis showed that positive attitudes toward condoms, subjective norms, and control beliefs significantly explained intention to use condoms (R^2 = .75, p < .001). Attitudes toward condoms (β = .67, p < .001), technical skills (β = .13, p = .01), and condom use self-efficacy (β = .24, p < .001) were significant predictors of condom use intention. Compared to those who inconsistently used condoms, adolescents who used condoms consistently had greater intention to use condoms and greater impulse control. Findings suggest that attitudes and control beliefs should be further explored with Mexican adolescents in order to support consistent condom use.

Keywords

Mexican adolescents; condom use; predictors; sexual-risk behavior

Mexican adolescents are at increased risk for HIV infection and other consequences of unprotected sex. In 2005, adolescents and young adults (ages 15–24) worldwide accounted for 50% of the newly infected with HIV (World Health Organization, 2006). Despite the efficacy of consistent condom use in the prevention of some sexually transmitted infections (STIs) and HIV, the rate of unplanned adolescent pregnancy (17%; Instituto Mexicano de la Juventud, 2006) and STIs suggest that Mexican adolescents are not consistently using condoms. Adolescents now comprise almost 20% of the Mexican population, the highest proportion of adolescents in Mexico since the 1970s (Juarez & Gayet, 2005). Hence, there is increased need to understand sexual behavior among adolescents.

Findings from condom use studies (e.g., Antrop, Walker, Gutierrez, & Bertozzi, 2006; Caballero Hoyos & Villasenor Sierra, 2001; Givaudan, Van de Vijver, Poortinga, Leenen, & Pick, 2007; Martinez-Donate et al., 2004) consistently demonstrate that condom use among

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Mexican adolescents is inconsistent. In a sample of high school students 15 to 19 years old, less than one-third of the sample reported always using condoms (Caballero Hoyos & Villasenor Sierra, 2001). Within the same age group, consistent condom use was as low as 15.3% among females (Villasenor-Sierra, Caballero Hoyos, San Martin, & Santos-Preciado, 2002). More studies are needed to evaluate influencers of consistent condom use among Mexican adolescents.

THEORETICAL FRAMEWORK

The objective of this study was to examine the predictors of condom use among sexually active Mexican adolescents. The predictors selected for the study are based on the theory of reasoned action and planned behavior (TRA/PB; Ajzen & Fishbien, 1980; Fishbein & Ajzen, 1975). The TRA/PB suggests that behavior is motivated by intention. Attitudes, subjective norms, and control beliefs are postulated to be predictors of intention to conduct a behavior.

Attitudes represent an individual's perception of a behavior as positive or negative. A study that used TRA/PB to evaluate precursors to safe sex behavior among sexually active Mexican adolescents found that attitudes positively predicted condom use intention ($\beta = .50$, $p < .01$) (Givaudan, Van de Vijver, & Poortinga, 2005). Conversely, among sexually active adolescents in Morelos, Mexico, even though males reported less positive attitudes toward condoms in comparison to females (OR = .53, $p < .05$), they were more likely to report recent condom use (OR = 1.43, $p < .05$; Walker, Gutierrez, Torres, & Bertozzi, 2006). There were no analyses to evaluate the relationship between attitude toward condoms and condom use at last sex.

Subjective norms describe how an individual perceives significant others to evaluate a behavior. Among non-sexually active adolescents, subjective norms were a weak, but positive predictor of condom use intention ($\beta = .12$, $p < .01$); however, subjective norms did not predict condom use among the sexually active adolescents (Givaudan et al., 2005).

Control beliefs represent whether one believes that he or she has the ability to complete a behavior. Access to condoms could influence one's belief in his or her ability to use condoms consistently. Studies with Mexican adolescents have not shown a clear relationship between control beliefs and condom use behavior. Acquisition of condoms by adolescents in Morelos was high (women 82.8%, men 93.6%); however, fewer adolescents reported recent condom use (women 46%, men 58%; Antrop et al., 2006). Similarly, 50% of adolescents who participated in a randomized control trial (RCT) that evaluated the effects of a school-based HIV prevention program reported high confidence in their ability to interrupt sex to put on a condom (males 92%, females 93%) and the ability to refuse sex if condoms were not available (males 92% and females 98%; Walker et al., 2006). However, reported condom use in this sample was only 50%. This study did not evaluate the relationships of control beliefs about condom use and condom use behavior. None of the studies that explored condom use in Mexican adolescents evaluated the influence of condom use intention on condom use behavior.

In summary, findings on the influence of attitudes, subjective norms, and control beliefs on condom use are equivocal. The purpose of this study was to identify whether attitudes, subjective norms, or control beliefs predict condom use intentions and condom use behaviors among a group of sexually active adolescents.

METHODS

This is a secondary data analysis from an RCT designed to test a sexual risk reduction intervention, *¡Cuídate! Promueve tu Salud*, "Take care of yourself"! (Gallegos, Villarruel, Loveland-Cherry, Ronis, & Zhou, 2008). Adolescents randomized into the intervention group attended six sessions focused on HIV risk reduction; adolescents in the control group attended six sessions focused on general health behaviors, such as diet, exercise, and sleep. Questionnaires were administered pre- and post intervention, and at 3-month, 6-month, 12-month, and 48-month follow-up. These analyses are based on the 48-month post-intervention follow-up data from the control group. This subset of adolescents was selected for two reasons. Initially, at the pre-intervention time point, few adolescents reported sexual activity (n = 79, 9.5% of the total sample, n = 829) (Gallegos et al., 2008). In order to explore sexual behaviors among a larger sample size, data from the 48-month postintervention were selected in anticipation of an older adolescent population being more sexually active. Secondly, the control group was chosen because of interest in sexual behaviors among adolescents that had not participated in an HIV prevention intervention.

Procedures

¡Cuídate! Promueve tu Salud was conducted at four high schools in Monterrey, Mexico. In order to evaluate the long-term effects of the intervention, adolescents in the intervention and control groups were asked to complete questionnaires at 48 months post-intervention. Adolescents who participated in the study were invited by the staff to complete the 48-month questionnaire at the selected high school location. Adolescent assent and consent was attained prior to completing the questionnaires. The study was approved by the Institutional Review Boards of both the University of Michigan and the Universidad Autónoma de Nuevo Leon (UANL).

Sample

Adolescents who participated in the 48-month follow-up included 423 adolescents—227 females (53.7%), 196 males (46.3%)—who reported being sexually active. A small percentage of participants 10.6% (n = 45) reported being married and were excluded from the analysis. Adolescents who were in the HIV risk reduction intervention group were also excluded from the analysis (n = 221). The remaining 157 participants who were in the control group were used for analysis.

Sexually active adolescents from the control group (n = 157) ranged in age from 17 to 21 years (m = 19.2 years; SD = 0.70). The sample was composed of 78 females (49.7%) and 79 males. Most of the adolescents were still in school (72.6%, n = 114). The mean age for sexual debut was 17.0 years (SD = 1.71). A small percent of participants had been pregnant once before (8.3%, n = 13), nine girls had been pregnant and four males had gotten someone pregnant. The majority of participants (72%, n = 113) reported having a steady partner and had been with their partner for an average of 18.63 months (SD = 13.9). Condom use at first intercourse was reported by 66.2% (n = 104) of the adolescents, and condom use at last sexual encounter was high at 71.3% (n = 112). Among those who had reported sex within the last 3 months (n = 120), 68.3% (n = 82) reported condom use at last intercourse, and 44.2% (n = 53) reported consistent condom use. Recent anal sex was reported by 32.5% (n = 51) of the participants, 47.1% (n = 24) of who reported using condoms with last anal sex.

Measures

Condom Use Behavior—There were two main outcome measures for this study, condom use intention and past condom use behavior. Condom use intention was an interval level variable that was measured using a scale of three items that inquired about intention to use

condoms in the next 3 months (α = 0.88). The items contained questions such as "I plan to use condoms if I have sex in the next 3 months." Four variables were used to measure past condom use behaviors: frequency of unprotected sex, proportion of protected sex, consistent condom use in the last 3 months, and condom use at the last sexual intercourse. Frequency of unprotected sex was measured by self-report number of days of sex without using condoms in the past 3 months. Proportion of protected sex was calculated as the ratio of self-report number of days using condoms in the past 3 months with the number of days of sexual intercourse in the past 3 months. To evaluate consistent condom use, adolescents were asked how often they had used condoms in the last 3 months. Response options were measured on a 5-point Likert scale. For analysis, responses were collapsed into two categories. Respondents who reported always using condoms were coded as *consistent* (1); respondents who reported *never*, *sometimes*, *once in a while*, or *almost always* were coded as *inconsistent* (0). Condom use at last sex was a dichotomous variable (*no* = 0, *yes* = 1).

Theoretical Variables—The items used to measure the independent variables of attitudes, subjective norms, and control beliefs were all measured by 5-point Likert scales. Attitudes toward condoms and subjective norms were both measured by single items, each with a 5-point response option (1 = *strongly disapprove*, 5 = *strongly approve*). Five control beliefs regarding condom use were measured: (a) *impulse*, the belief that one can refuse to have sex if no condom is available; (b) *condom negotiation*, the belief that one can convince a partner to use a condom as well as talk about condoms prior to sexual activity; (c) *condom availability*, the belief that one may easily obtain a condom and always has one available; (d) *technical skills*, the belief that one can skillfully use a condom; and (e) *condom use self-efficacy*, the confidence that one has to use a condom with sexual activity even with an unwilling partner. As seen in Table 1, scale means were calculated, with higher scores indicating a higher degree of positive attitudes toward condoms, more perceived approval from family and friends, and greater control beliefs. The reliability of the measures is also shown in Table 1.

Statistical Analysis

Statistical analyses were done with the SPSS 16.0 statistical package. Descriptive statistics and frequencies were computed for demographic variables and reports of sexual behaviors. For all regression analysis independent variables measuring attitudes, subjective norms and control beliefs were simultaneously entered as part of the model. In accordance with the TRA/PB, multiple regression was first used to predict the relationship between intention to use condoms and attitudes, subjective norms, control beliefs, and intention to use condoms. Multiple linear regressions were used to examine if attitudes, subjective norms, control beliefs, and condom use intention predicted frequency of unprotected sex and proportion of recent protected sex. Multiple logistic regression was used to test whether attitudes, subjective norms, control beliefs, and condom use intention predicted consistent condom use in the last 3 months and condom use at the last sexual encounter.

Post hoc power analysis was calculated using G*Power 3.0.10 statistical package to determine the power of the regression analyses for condom use intention and condom use behaviors. Using an alpha of .05, we had excellent power (.96) to predict a medium effect size.

RESULTS

Predictors of Condom Use Intention

As seen in Table 2, results of multiple regression analyses indicate that attitudes toward condoms (β = .67, $p < .001$), technical skills (β = .13, $p = .01$), and condom use self-efficacy

(β = .24, $p < .001$) were significant predictors of condom use intention in the next 3 months. Subjective norms, impulse control, condom negotiation, and condom availability were not significant predictors of intention to use condoms. Together, these variables explained 75.5% of the variance in intention to use condoms (R^2 =.755, F[7, 149] = 69.69, $p < .001$). In other words, adolescents who had positive attitudes toward condoms believed they had the technical skills for condom use, and had greater confidence in their ability to use condoms and reported greater intention to use condoms in the next 3 months.

Predicting Condom Use Behaviors

Multiple linear and multiple logistic regression analyses were conducted to evaluate effects of attitudes, subjective norms, control beliefs (impulse control, condom negotiation, technical skills, condom availability, self-efficacy), and intention to use condoms on the four condom use behaviors—frequency of unprotected sex, proportion of recent protected sex, consistent condom use, and condom use at last sex (see Table 3). Intention to use condoms (β = 1.57, $p = .05$), impulse control (β = 1.37, $p = .002$), and condom use negotiation (β = −1.15, $p = .03$) were significant predictors of consistent condom use (see Table 3). Compared to adolescents who practiced inconsistent condom use, adolescents with greater impulse control (OR = 3.92, 95% CI [1.62–9.49]) and greater intentions to use condoms (OR = 4.79, 95% CI [1.0–22.8]) were three and four times more likely to consistently use condoms. Participants who reported greater belief in their condom negotiation skills were less likely to consistently use condoms (OR =.32, 95% CI [.11–.91]). Condom use at last sex, frequency of unprotected sex, and proportion of recent protected sex were not predicted by attitudes toward condoms, subjective norms, control beliefs, or intention to use condoms.

DISCUSSION

The purpose of this study was to identify predictors of Mexican adolescents' intention to use condoms and actual condom use. Findings from this study demonstrate the significance of intrapersonal factors on intention to use condoms among Mexican adolescents. Attitude toward condoms, subjective norms, and control beliefs all explained a significant amount of the variation for intention to use condoms. More specifically, adolescents with positive attitudes toward condoms, greater belief in their ability to use a condom, and higher confidence in their ability to use a condom in various situations had greater intentions to use condoms in the next 3 months. These findings were consistent with results from another study. Among a sample of sexually active Mexican adolescents, attitudes towards condoms and self-efficacy for condom use were significant predictors of condom use intention; however, subjective norms showed no effect on condom use intention (Givaudan et al., 2008).

As suggested by the TRA/PB, intention to use condoms was a significant predictor of consistent condom use. Compared to those who used condoms inconsistently, adolescents with greater intention to use condoms were almost five times more likely to use condoms consistently, and those with greater impulse control were almost four times more likely to consistently use condoms. These findings also illustrate the importance of technical skill development; in this case, confidence in one's ability to use condoms was as important as attitudes toward condoms and intention to use condoms. Promoting positive attitudes toward condom use and increasing self-efficacy to use condoms in sexually active adolescents is critical for improving condom use intention and subsequent condom use.

The type of relationships the participants were in may explain the lack of findings for some of the condom use behaviors. Relationship status and length of time in relationship were not included as predictors of condom use behaviors, as they are external components of the TRA/TPB. The majority of the adolescents (72%) reported being in steady relationships and,

on average, had been with their partners for 18 months. It may be that actual condom use among adolescents is more influenced by relationship factors such as length of time in the relationship, trust, and comfort with each other. These stable relationships may have also contributed to an unexpected finding, where adolescents with greater confidence in their ability to negotiate condom use were less likely to consistently use condoms. Adolescents may have had the confidence to negotiate condom use with their partners but did not perceive the need to use condoms because of the perceived stability of their relationships. Future research in this area should consider variables that address sexual risk behaviors and condom use within the context of steady relationships.

In regards to self-reported condom use behaviors, while the majority of adolescents reported inconsistent condom use, consistent condom use among this sample is higher compared to that of other studies conducted on Mexican adolescents (Caballero Hoyos & Villasenor Sierra, 2001; Villasenor-Sierra et al., 2002). In addition, unlike other studies, our sample reported higher use of condoms at first intercourse (Antrop et al., 2006; Gayet, Juarez, Pedrosa, & Magis, 2003; Tapia-Aguirre et al., 2004; Walker, Torres, Gutierrez, Flemming, & Bertozzi, 2004). The results also show that while the majority of adolescents used a condom at sexual debut, consistent condom use was not maintained. The fact that the majority of this older adolescent population uses condoms inconsistently, or not at all, highlights their risk for HIV infection. Given that consistent condom use is paramount to prevention of HIV infection, there should be more exploration about the control beliefs that facilitate consistent condom use. A qualitative study that explores factors that motivate consistent condom use as well as condom-less sex may offer more insight about the context in which control beliefs are relevant or most influential.

Results of this study are important for several reasons. First, results contribute to the sparse theoretically based literature on older Mexican adolescents attending and not attending school. Second, this study demonstrates the usefulness of the Theory of Planned Behavior in explaining condom use behavior. The findings illustrate the significant influence of intrapersonal constructs (attitudes and control beliefs) compared to interpersonal constructs (subjective norms) on condom use behavior. Finally, unlike the majority of studies that explored condom use in Mexican adolescents, our sample focuses on an older adolescent population. Similarly, older adolescents also use condoms inconsistently and are in need of targeted interventions to promote condom use.

In summary, findings from this study demonstrate that inconsistent condom use among older adolescents remains a prevalent issue and therefore validates the need to support promoting positive attitudes toward condoms and increasing control beliefs in HIV prevention intervention programs. Further studies among Mexican adolescents are needed to identify and understand predictors of attitudes toward condoms and control beliefs for condom use, especially in the context of steady relationships. Only by understanding the nuances and complexities of close relationships can HIV prevention programs deliver messages that are relevant and resonate with adolescents.

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TABLE 1

Reliability Coefficients for Scales Measuring Theory of Planned Behavior Variables

Variable	Mean	*SD*	Number of Items	Reliability
Condom use intention[a]	4.60	.64	3	.88
Control beliefs[a]				
Impulse control	4.16	.77	3	.71
Condom negotiation	4.42	.57	3	.72
Condom availability	4.00	.71	5	.72
Technical skills	4.39	.56	3	.68
Self-efficacy for condom use	4.39	.58	3	.71

[a]Response options: 1 = completely disagree; 5 = completely agree.

TABLE 2

Multiple Regression Results of Intention to Use Condoms and Theory of Planned Behavior Variables

	B	Standard Error *B*	β
Attitudes	.63	.05	.67**
Subjective norms	−.02	.04	−.03
Control beliefs			
Impulse control	.01	.04	.01
Condom negotiation	.03	.05	.02
Technical skills	.15	.06	.13*
Condom availability	.01	.04	.01
Condom self-efficacy	.27	.06	.24**
Overall model			
R^2		.766	
Adjusted R^2		.755	
F statistic		69.69**	

Note. *B* = unstandardized coefficient; β = regression coefficient.

* $p < .05$.

** $p < .001$.

TABLE 3

Logistic Regression Results of Consistent Condom Use and Theory of Planned Behavior Variables

	Logistic Regression Coefficient	*SE*	OR
Consistent condom use			
Attitudes	0.50	.62	1.66
Subjective norms	−0.42	.36	0.66
Control beliefs			
Impulse control	1.37	.45	3.92*
Condom negotiation	−1.14	.54	0.32*
Technical skills	−0.28	.50	0.76
Condom availability	0.09	.34	1.10
Condom use self-efficacy	−0.44	.64	0.64
Condom use intention	1.57	.80	4.79*

* $p < .05$.