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A PARENT–ADOLESCENT INTERVENTION TO INCREASE SEXUAL RISK COMMUNICATION: RESULTS OF A RANDOMIZED CONTROLLED TRIAL

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Abstract

This article reports results of a randomized controlled trial designed to test an intervention to increase parent–adolescent sexual risk communication among Mexican parents. Data were analyzed from parents ($n = 791$) randomly assigned to an HTV risk reduction or health promotion intervention. Measures were administered at pretest, posttest, and 6– and 12–month follow–ups. Generalized estimation equation (GEE) analysis indicates parents in the HIV risk reduction intervention reported significantly more general communication ($p < .005$), more sexual risk communication ($p < .001$) and more comfort with communication ($p < .001$) than parents in the control intervention. Behavioral, normative, and control beliefs significantly mediated the effect of the intervention on all communication outcomes. This study demonstrates the efficacy of an intervention to increase the quality and quantity of parent–adolescent communication related to general and sex–specific communication.

The development of successful interventions to prevent sexually transmitted HIV/AIDS among adolescents is an important public health endeavor for Mexico. Among Latin American countries, Mexico ranks third in the total number of HIV cases reported (Secretaría de Salud, 2004). Young people are significantly affected by the HIV epidemic, with more than 78% of reported HIV cases in Mexico occurring in the 15-to 44-year-old age group (Secretaría de Salud, 2007). Adolescents are particularly at risk, with almost 50% of new HIV cases being diagnosed in youths aged 15–24 years (Rodríguez, Bravo–García, & Zúñiga, 2002). For Mexican adolescents, unprotected sexual activity is the major mode of HIV transmission (UNAIDS/WHO, 2000). Further, studies show that the age at which adolescents become sexually active is decreasing ($M = 12$ years) (Consejo Estatal para la Prevención y Control del SIDA, Nuevo León, 2004).

PARENT INTERVENTIONS

In Mexico, as in other countries, the majority of HIV prevention efforts for youth have focused on adolescents rather than parents. Yet studies have found parents play a fundamental role in the prevention of risky sexual behavior in their adolescent children (Blake, Smikin, Ledsky, Perkins, & Calabrese, 2001; Lehr, Demi, Dilorio & Facticeau, 2005). Parent-adolescent communication in particular has been shown to decrease adolescent sexual risk behaviors (Aspy et al., 2007; Benavides, Bonazzo, & Torres, 2006; Dilorio et al., 2006; Guzman, et al., 2003; Hutchinson, 2002; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003; Kirby et al., 2004; McBride et al, 2005; Wu et al., 2003; Zambrana, Cornelius, Boykin, & Lopez, 2004). There is wide-spread support for the inclusion of parent-adolescent communication skills in prevention and intervention programs around adolescent risk behaviors (Guilamo-Ramos, Jaccard, Dittus, Bouris, & Holloway, 2007; Kirby et al., 2004; McBride et al, 2005). Adolescent expectancies, parent-adolescent communication, and intentions to have sexual (Hutchinson, 2002; Hutchinson et al., 2003; Whitaker & Miller, 2000; Wu et al., 2003). Elements of parent-adolescent communication that need to be considered include frequency and timing (Hutchinson, 2002; Miller, Levin, Whitaker, & Xu, 1998), parents' comfort level with sex-related content, and the content of the communication (Kaiser Family Foundation, 2006; O'Donnell et al., 2005; Whitaker, Miller, May, & Levin, 1999).

Results from parent-adolescent interventions are promising, indicating that such approaches improve the content and context of HIV-related communication and generally help adolescents become less disposed toward sexual risk taking (Baptiste, et al., 2006; Dilorio et al., 2006; Lederman, Chan, & Roberts-Gray, 2004; O'Donnell, et al., 2005, Prado, 2007). However, few sexual communication interventions have been conducted with Latino or Mexican adolescents and parents. In an extensive search of electronic literature published from 1995 through 2006 in the United States and Mexico, we found no parent-adolescent communication intervention studies targeting Mexican parents and few that targeted Latino parents. In the United States only two completed intervention reports were identified that included sizable proportions (25 % or more) of Latino parents and adolescents (Kirby et al., 2004; O'Donnell et al., 2005). In one study (Kirby et al., 2004), newsletters were sent to parents three times a year, and students were encouraged to discuss them with their parents. Although Latino students in this intervention were more likely to delay sex and increase condom and contraceptive use, the effects of the parent component on adolescent behavior were not delineated. In another study, O'Donnell et al. (2005) implemented an intervention for Latinos and African Americans using three audio CDs designed for parents to facilitate parent-adolescent communication. While only 68% of parents completed both the pre-intervention and 3-month follow-up surveys, there was an increase in general parent-adolescent communication and increased adolescent perceptions of family support (O'Donnell et al., 2005).

Despite the promise of parent-adolescent communication interventions in decreasing adolescent HIV sexual risk behavior, there is sparse evidence related to their effectiveness in facilitating parent-adolescent communication among Mexican parents. In this article, we report results of a randomized controlled trial designed to test an intervention for Mexican parents to increase parent-adolescent communication related to sexual risk behavior.

THEORETICAL FRAMEWORK

Parent communication interventions that are both theory based and culture specific have the greatest likelihood of success (Hutchinson et al., 2003). The organizing framework for the parent intervention reported here was the theory of reasoned action and planned behavior (Ajzen, 1985,1991; Ajzen & Fishbein, 1980). The theory implies that parents who intend to communicate with their adolescents do so because they have favorable attitudes toward talking

with their adolescents about sexual issues, believe that significant referents would approve of them doing so, and believe they have the ability to communicate effectively with their adolescents. Although the theory maintains that behavioral, normative, and control beliefs are the major determinants of intentions, other factors may act to influence these beliefs.

In this study, we considered individual factors, such as parent and adolescent gender, and Mexican cultural influences including familism and religiosity on parent–adolescent sexual risk communication. Familism involves strong identification with the family, attachment to the family, and feelings of loyalty, reciprocity, and solidarity with family members (Sabogal, Marín, Ortero–Sabogal, Marín, & Perez–Stable, 1987). A means to motivate parents to talk with their adolescents about sexual matters may be to frame the importance of communication within the context of familism. Similarly, religiosity, conceptualized as religious practice and belief, church attendance, and valuing religion, may influence beliefs about the consequences of parental communication, such as whether to promote condom use or abstinence. Although familism and religiosity have been associated with sexual risk and protective behavior, the extent and how these values influence parental communication (quality, comfort, quantity) with adolescents has not been widely examined.

Results of the current study are part of a randomized controlled intervention study designed to reduce sexual risk behavior among Mexican adolescents (Villarruel, Gallegos, & Loveland–Cherry, 2001). The intervention included both a parent and an adolescent component. A major aim of the study was to determine whether parental participation in a sexual risk communication intervention for parents would increase general communication, parent–adolescent sexual risk communication, and comfort with communication. We also examined the effects of moderators (familism, religiosity, parent and adolescent gender, and social desirability) on intervention effects in addition to examining the effects of theoretical mediators (behavioral, normative, and control beliefs) on the effects of the intervention outcomes.

METHOD

PARTICIPANTS

Only parent data were included in analyses for this article. The sample for this study included 791 parents (660 women and 131 men). Parents ranged in age from 23 to 64 years with a mean age of 43.0 years ($SD = 5.62$). The majority (87%) reported they were married. About 40% reported middle school education or less, 16% completed high school, 23% completed technical/secretarial school, and 22% completed college or graduate school. Socioeconomic status was measured through parent–reported zip codes, which were then used to identify the AGEB (*Área Geoestadística Básica*) or census tracts in which families lived (Gallegos, Villarruel, Gomez, Onofre, & Zhou, 2007). AGEB classification consists of five levels: poor, medium low, medium, medium–high, and high income. In this study, the majority of families were at the medium income level (72%), with 23% of families at the medium low level. There were no significant differences in demographic characteristics between parents in the HIV risk reduction intervention and those in the general health promotion control intervention.

PROCEDURE

The Human Subjects Committees of the University of Michigan and the Universidad Autonoma de Nuevo León (UANL) in Monterrey, Mexico, approved the study. From September 2002 through March 2004, participants were recruited through parent and adolescent presentations at four local *preparatorias*, or high schools, associated with the UANL. Adolescents and their parents were invited to participate in “*¡Cuidáte!*” *Promueve tu Salud* (Take care of yourself! Promote your health), a 6–hour program conducted over two

consecutive Saturdays. To participate, parents had to attend the program with one of their adolescents who met the inclusion criteria (14–17 years of age).

Parental consent and adolescent written assent were required. On the day of the intervention, trained project assistants provided a brief overview of the program. Parents and adolescents were separated, adolescent assent was assured, and questionnaires were administered. On the day of the intervention, families were stratified by number of adolescents in the family and then, using computer-generated random number sequences, were randomly assigned by the project director to the HIV risk reduction condition or the health promotion control condition. Parents were further stratified by gender and assigned to intervention condition rooms. Parents and their adolescents were assigned to the same intervention condition. No adverse events were reported during the study period.

Parents completed questionnaires at preintervention and immediately postintervention and at 6- and 12-month follow-up intervals. Parents were paid up to \$35 for participating, receiving \$15 after completing the 2-day intervention and \$10 for each completed 6- and 12-month follow-up.

INTERVENTIONS

All parents received an intervention. Although the focus of the HIV risk reduction and general health control interventions were different, there were important similarities. Both interventions consisted of six 60-minute modules implemented on two consecutive Saturdays by specially trained adult facilitators. Both interventions included components for parents and adolescents including small-group discussions, videos, interactive exercises such as role-plays, and skills-building activities. Both interventions also addressed the importance of family in supporting health and emphasized the principal role of parents in promoting the health of their adolescents. Both interventions contained the theme ¡Cuidaté! which is a term of endearment used frequently between parents and their adolescents.

The HIV risk reduction intervention for parents focused on parent-adolescent communication. Parents assigned to this intervention received content about pregnancy and HIV prevention similar to that provided to their adolescents. Parents also received content to support sexual-specific communication (e.g., parental values and standards about sex, how to avoid risky situations, dealing with discomfort about communication) and parent-adolescent communication in general (e.g., aspirations for their children, creating opportunities for communication). Parents were provided with “homework” that was to be completed with their adolescent in between sessions as a means of practicing some of the communication strategies presented in the program.

Content for the health promotion control intervention was similar for both adolescents and parents. The health promotion control intervention was designed to provide participants with information regarding health problems related to behaviors other than sexual behaviors such as heart disease, certain cancers, and diabetes. The health promotion control intervention emphasized that prevention of health problems could occur through changes in personal behaviors, including exercise, diet, cigarette smoking, and alcohol and drug use. A major theme was that parents played a major role in promoting positive health behaviors. However, parent-adolescent communication was not a focus of the health promotion control intervention. Parents in the health promotion control intervention were also provided with “homework” to be completed with their adolescent as an exercise to support curricular content.

FACILITATORS AND FACILITATOR TRAINING

Facilitators were recruited from the UANL. Facilitators were stratified by age and gender and randomly assigned to implement the parent–adolescent sexual risk communication intervention or the health promotion control intervention. All facilitators had some college education with 97% having a bachelor’s degree or higher. All facilitators received 2.5 days of training designed to provide information and skills related to their specific intervention, to encourage and ensure implementation fidelity, and to generate high motivation and enthusiasm among all facilitators irrespective of their assigned intervention. Thirteen facilitators were trained to implement the parent interventions for this study. Facilitators (females = 11, males = 2) ranged in age from 24 to 44 years with a mean age of 35.2 years ($SD = 6.45$).

QUALITY ASSURANCE

We took several measures to ensure the fidelity of implementation of the intervention. We had a detailed curriculum, indicating procedures, time frame, suggested dialogue, and project staff who facilitated adherence to time of the activities during the interventions. There was a high degree of fidelity to the intervention curriculum as determined by results of self–report debriefing questionnaires after each intervention session. Facilitators in both intervention conditions reported implementing all activities in each module 89.7% of the time. There were no significant differences between conditions in relation to the number of modules completed by facilitators.

MEASURES

We used measures that had previously been translated and used in a prior study with Spanish-dominant Latino youth (Villarruel, Jemmott, Jemmott, & Ronis, 2004). Bilingual researchers translated additional measures into Spanish. The study team, which included bilingual researchers from the United States and Mexico evaluated the Spanish version of the measures to reconcile the intent of the original English version. Prior to the intervention, we conducted two pilot tests of the instrument with Mexican parents to test procedures, identify and clarify ambiguous terms, and gauge reactions to the questionnaire. The first pilot test with parents ($n = 12$) revealed issues with the phrasing and order of questions and in reading level. Revisions were made in the questionnaires and a second pilot conducted with a new sample ($n = 10$), revealed only minor issues. Scales and reliability measures are shown in Table 1.

Outcome Measures—The primary outcome measures for this study were general parent–adolescent communication, parent–adolescent sexual risk communication, and comfort with communication. Similar scales were used with parents and adolescents to measure both general communication and sexual risk communication. There were 10 questions regarding general communication between parents and adolescents (Hutchinson, 1999), 8 related to parent–adolescent communication on sexual topics (Hutchinson, 1999; Hutchinson & Cooney, 1998), and 9 about how comfortable parents or adolescents feel when talking about sexual topics (Dilorio, Kelley, & Hockenberry–Eaton, 1999). All items were measured with 5–point Likert–type scales, with higher scores indicating more communication or comfort when talking about sexual topics.

Mediator Variables—Behavioral and control beliefs related to parent–adolescent sexual communication were assessed consistent with the theory of planned behavior (Ajzen, 1985, 1991), and based on elicitation research with Mexican parents and results of earlier studies (Jemmott, Villarruel, & Jemmott, 2000). All items were measured with 5–point Likert–type scales. Several of these scales have levels of reliability below the usual standard of 0.7. However, the slightly low reliability of these scales is acceptable because salient beliefs are not assumed to be internally consistent (Ajzen, 2006).

Two behavioral beliefs were measured: (a) prevention—the belief that discussions about sex would help prevent pregnancy and STD/HFV in their adolescents and (b) communication reaction—the belief that parents would be embarrassed or their adolescent would react negatively to discussions related to sex. Four normative beliefs were measured: adolescent approval, family approval, church approval regarding communication with adolescents about abstinence and sexual intercourse, and church approval regarding communication with adolescents about condom use. Two 2-item scales were used to measure adolescent and family approval of communication about sexual intercourse and condom use. Single items were used to measure church approval regarding communication with adolescents about abstinence and sexual intercourse, and church approval regarding communication with adolescents about condom use. One control belief, sexual communication self-efficacy, was also measured. This refers to the belief that parents would be able to talk about abstinence, sexual intercourse, and condom use with their adolescents.

Other Scales—A 13-item scale was used as an attitudinal measure of familialism (Sabogal et al., 1987). This scale measures three conceptual components of familialism: familial obligations, perceived support from the family, and family as referents. Religiosity was measured by five questions (e.g., “How often do you go to church?”). The 13-item Marlowe-Crowne Social Desirability Scale was also used to measure the tendency of participants to describe themselves in favorable, socially desirable terms to gain the approval of others (Crowne & Marlowe, 1964).

SAMPLE SIZE AND ANALYSIS

Power analysis was conducted using the methods and effect size definitions of Cohen (1988). Results indicated a power of 91% to detect a medium small effect ($d = .25$) of the intervention on outcomes even at the 12-month follow-up with a two-tailed alpha of .05.

In all the analyses, generalized estimating equation (GEE) methodology (Liang & Zeger, 1986) was used to fit generalized linear models to various types of outcome data (continuous and categorical). This methodology allows for modeling of the marginal distribution of each outcome variable as a function of the covariates at each follow-up time point, and accounts for the likely correlations of the repeated outcome measures for each participant. GEE multivariate linear regression models (Liang & Zeger, 1986) were fitted to compare the HIV risk reduction and general health control intervention groups on outcomes over time, controlling for preintervention scores on outcome measures, time, and parents' gender. Interactions between intervention group and covariates considered as potential moderators of the intervention (parent and adolescent gender, familialism, religiosity, and social desirability) were tested hierarchically, that is, controlling for the main effects of all variables involved in the interaction. Tests of intervention effects used an intention-to-treat approach.

Mediation analyses were performed according to procedures outlined by Baron and Kenny (1986). Statistical significance of the effect of the putative mediator on the outcome measures and the effect of the intervention on the putative mediator provides evidence of mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Analyses to determine the extent of mediation of the intervention were done by testing the effect of the intervention on the outcome variable while controlling for the mediator. All mediation analyses were conducted with the total sample because a comparison between groups (experimental and control) is needed to determine the effect of the intervention on each outcome.

RESULTS

ATTRITION

As shown in Figure 1, there was little attrition. For parents, participation rates at postintervention, 6-month follow-up, and 12-month follow-up were 97%, 96%, 91%, and 88% respectively. The GEE logistic regression analyses of parent participants indicated there were no significant differences in attrition between the two intervention groups. Furthermore, no differences were found in demographic characteristics between those who remained in the study and those who dropped out.

EFFECT OF THE INTERVENTION ON COMMUNICATION OUTCOMES

Results of GEE analysis indicated that parents who participated in the HIV risk reduction intervention group reported more general communication (mean difference = 0.07, 95% CI = (.02, 0.12), $p < .005$), more sexual risk communication (mean difference = 0.30, 95% CI = (.21, 0.39), $p < .001$) and more comfort with communication (mean difference = 0.21, 95% CI = (.15, 0.28), $p < .001$) than parents in the control group.

Hierarchical linear regression analyses indicated there were no significant interactions between any of the moderators (i.e., parent and adolescent gender, familialism, religiosity, and social desirability) on general communication, sexual risk communication or comfort with communication. As an example, the intervention was equally effective for male and female parents.

MEDIATION OF INTERVENTION EFFECTS ON COMMUNICATION

Mediation analyses were performed to determine mediators of the intervention effect on general communication, sexual risk communication and comfort with communication. As seen in Table 2, the behavioral beliefs (prevention and reaction); the normative beliefs (adolescent and family approval); and communication efficacy significantly mediated the effect of the intervention on general communication (all p values $< .001$). Prevention; adolescent, family, and church approval; and communication efficacy beliefs mediated the intervention effect on sexual risk communication (Table 3). Finally, prevention, reaction, and communication efficacy beliefs mediated the intervention effect on parent comfort with sexual communication (Table 4). Adolescent, family, and church approval also mediated the intervention effect.

The reduction of the intervention effects by mediators was strongest for general communication outcomes (32–73%). Communication self-efficacy had strong mediation effects for all communication outcomes (32%–73%), whereas prevention beliefs had strong mediation effects (63%) for comfort with communication outcomes. Adolescent approval had the strongest mediation effect of all normative beliefs across all communication outcomes (18–45%). In contrast, church approval of abstinence or condom use communication was low (7–10%).

DISCUSSION

Results of this randomized control trial provide evidence of the efficacy of a cultural and theory-based intervention designed to increase the quality and quantity of parent-adolescent communication related to general and sexual-specific communication in Mexico. In particular, participation in the parental HIV risk reduction intervention resulted in increases in the frequency of general communication, sexual risk communication, and comfort with communication as compared with participation in the health promotion control intervention. These results were significant at immediate posttest as well as at 6-month and 12-month postintervention.

In addition, results provide guidance for the inclusion of specific content in parent interventions to facilitate parent–adolescent communication. Specifically, supporting beliefs that talking to one’s son/daughter will help to prevent HIV; that adolescents will have favorable reactions to sexual specific communication from their parents; that adolescents, family, and the church approve of such communication; and building parental skills to promote self–efficacy around communication are effective means to support both the quality and quantity of parent–adolescent communication. Interestingly, the intervention was effective for both fathers and mothers—regardless whether they had sons or daughters.

Results of this study are important for several reasons. First, this study is the first randomized controlled trial of a parent–adolescent curriculum developed specifically for Mexican parents to demonstrate long–term effects on the quality and quantity of general and sexual risk communication. Second, the potential for applicability of this curriculum to parents of Mexican descent living in the United States is high, specifically for those parents who are recent immigrants or first generation. Only one study conducted with U.S. Latinos (O’Donnell et al, 2005) demonstrated increased general communication as a result of an intervention. However, only a short-term follow–up was conducted. Further testing of this intervention with Latino groups in the United States as well as other Mexican populations (e.g. those living in a rural setting, different socioeconomic status) is warranted. Finally, the significant mediation effects of behavioral, normative, and control beliefs on communication outcomes provide support for the theory of planned behavior as a useful guide in improving parent–adolescent communication.

Results of this study should be considered in light of several limitations. First, the outcome measures used in this study were based on self–report. However, the measure of social desirability used here did not interact with intervention results to affect self–reported outcomes, suggesting that parents’ responses were not motivated by the desire to please others. Second, the majority of parents who participated were from two parent homes, which affects the generalizability of findings to other types of families. Finally, additional analyses are needed to determine the impact of parent–adolescent communication on adolescent sexual risk behavior.

Despite these limitations, this study is an important contribution in assisting Mexican parents in supporting adolescents to decrease their risk of sexually transmitted HFV infection. It is an important effort in providing an evidence base for practitioners from which to guide and support parents in efforts to address the rising threat of HIV/AIDS. In addition, it provides us with a base from which to test and develop similar interventions for Latino parents in the United States.

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REFERENCES

- Ajzen, I. From intentions to actions: A theory of planned behavior. In: Kuhl, J.; Beckmann, J., editors. Action–control: From cognition to behavior. Heidelberg: Springer; 1985. p. 11-39.

- Ajzen I. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 1991;50:179–211.
- Ajzen, I. Constructing a TpB questionnaire: Conceptual and methodological considerations. 2006. Retrieved October 1, 2007, from <http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf>.
- Ajzen, I.; Fishbein, M. *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice–Hall; 1980.
- Aspy CB, Vesely SV, Oman RF, Rodine S, Marshall L, McLeroy K. Parental communication and youth sexual behavior. *Journal of Adolescence* 2007;30:449–466. [PubMed: 16750265]
- Baptiste DR, Bhana A, Peterson I, McKay M, Voisin D, Bell C, Martinez DD. Community Collaborative Youth-Focused HIV/AIDS Prevention in South Africa and Trinidad: Preliminary Findings. *Journal of Pediatric Psychology* 2006;31(9):905–916. [PubMed: 16452646]
- Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research. *Journal of Personality and Social Psychology* 1986;51:1173–1182. [PubMed: 3806354]
- Benavides R, Bonazzo C, Torres R. Parent–Child Communication: A model for His-panics on HIV prevention. *Journal of Community Health Nursing* 2006;23(2):81–94. [PubMed: 16643098]
- Blake SM, Simkin L, Ledsky R, Perkins C, Calabrese JM. Effects of a parent–child communications intervention on young adolescents’ risk for early onset of sexual intercourse. *Family Planning Perspectives* 2001;33(2):52–61. [PubMed: 11330851]
- Consejo Estatal para la Prevención y Control del SIDA, Nuevo León. 2004. Retrieved June 4, 2007, from <http://www.uanl.mx/publicaciones/respyn/especiales/adolescencia/PROUNISEV%20Dr.%20Jose%20Manuel%20R.pdf>
- Cohen, J. *Statistical power analysis for the behavioral sciences*. 2nd ed.. Hillsdale, NJ: Erlbaum; 1988.
- Crowne, D.; Marlowe, D. *The approval motive*. New York: Wiley; 1964.
- Dilorio C, Kelley M, Hockenberry Eaton M. Communication about sexual issues: Mothers, fathers, and friends. *Journal of Adolescent Health* 1999;24:181–189. [PubMed: 10195801]
- Dilorio C, Resnicow K, McCarty F, De AK, Dudley WN, Wang DT, et al. Keepin’ It R.E.A.L.! Results of a mother–adolescent HIV prevention program. *Nursing Research* 2006;55(1):43–51. [PubMed: 16439928]
- Gallegos EC, Villarruel AM, Gomez V, Onofre DJ, Zhou Y. Sexual communication and knowledge among mexican parents and their adolescent children. *Journal of the Association of Nurses in AIDS Care* 2007;18(2):28–34. [PubMed: 17403494]
- Guilamo–Ramos V, Jaccard J, Dittus P, Bouris A, Holloway I. Adolescent expectancies, parent–adolescent communication, and intentions to have sexual intercourse among inner city middle school youth. *Annals of Behavioral Medicine* 2007;34(1):56–66. [PubMed: 17688397]
- Guzman BL, Schlehofer–Sutton MM, Villanueva CM, Stritto MED, Casad BJ, Feria A. Let’s talk about sex: How comfortable discussions about sex impact teen sexual behavior. *Journal of Health Communication* 2003;8:583–598. [PubMed: 14690890]
- Hutchinson MK. Individual, family, and relationship predictors of young women’s sexual risk perceptions. *JOGNN—Journal of Obstetric, Gynecologic, & Neonatal Nursing* 1999;28(1):60–67.
- Hutchinson MK. The influence of sexual risk communication between parents and daughters on sexual risk behaviors. *Family Relations* 2002;51(3):238–248.
- Hutchinson MK, Cooney TM. Patterns of parent–teen sexual risk communication: Implications for intervention. *Family Relations* 1998;47(2):185–194.
- Hutchinson MK, Jemmott JB III, Jemmott LS, Braverman P, Fong GT. The role of mother–daughter sexual risk communication in reducing sexual risk behaviors among urban adolescent females: A prospective study. *Journal of Adolescent Health* 2003;33:98–107. [PubMed: 12890601]
- Jemmott, LS.; Outlaw, FH.; Jemmott, JB.; Brown, EJ.; Howard, M.; Hopkins, BH. Strengthening the bond: The mother–son health promotion project. In: Pequegnat, W.; Szapocznik, J., editors. *Working with families in the era of HIV/AIDS*. Thousand Oaks, CA: Sage; 2000. p. 133–151.
- Jemmott LS, Villarruel AM, Jemmott JB III. Latino mother–son HIV risk reduction interventions. 2000 Unpublished data.
- Kaiser Family Foundation. Talking with kids about sex and relationships. 2000. Retrieved June 4, 2007, from <http://www.talkingwithkids.org/sex.html>.

- Kirby DB, Baumler E, Coyle K, Basen-Engquist K, Parcel GS, Harrist R, Banspach SW. The "Safer Choices" Intervention: Its impact on the sexual behaviors of different subgroups of high school students. *Journal of Adolescent Health* 2004;442-452. [PubMed: 15581523]
- Lederman RP, Chan W, Roberts-Gray C. Sexual risk attitudes and intentions of youth aged 12-14 years: Survey comparisons of parent-teen prevention and control groups. *Behavioral Medicine* 2004;29(4): 155-163. [PubMed: 15369196]
- Lehr ST, Demi AS, Dilorio C, Sc Facticeau J. Predictors of father-son communication about sexuality. *Journal Sexual Research* 2005;42(2):119-129.
- Liang K-Y, Zeger SL. Longitudinal analysis using generalized linear models. *Biometrika* 1986;73:13-22.
- McBride DC, Freier MC, Hopkins GL, Babikian T, Richardson L, Helm H, et al. Quality of Parent-child relationship and adolescent HIV risk behavior in St. Maarten. *AIDS Care* 2005;17(1):S45-S54. [PubMed: 16096117]
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods* 2002;7:83-104. [PubMed: 11928892]
- Miller KS, Levin ML, Whitaker DJ, Xu X. Patterns of condom use among adolescents: The impact of mother-adolescent communication. *American Journal of Public Health* 1998;88:1542-1544. [PubMed: 9772860]
- O'Donnell L, Stueve A, Agronick G, Wilson-Simmons R, Duran R, Jeanbaptiste V. Saving Sex for Later: An evaluation of a parent education intervention. *Perspectives on Sexual and Reproductive Health* 2005;37(4):166-173. [PubMed: 16380361]
- Prado G, Pantin H, Briones E, Schwartz SJ, Feaster D, Huang S, et al. A randomized controlled trial of a parent-centered intervention in preventing substance use and HIV risk behaviors in Hispanic adolescents. *Journal of Consulting and Clinical Psychology* 2007;75(6):914-926. [PubMed: 18085908]
- Rodríguez, CM.; Bravo-García, E.; Zúñiga, PU. Dos décadas de la epidemia del SIDA en México. 2002. Retrieved June 4, 2007, from <http://www.salud.gob.mx/conasida/pdf/dosdecadas.pdf>
- Sabogal F, Marín G, Ortero-Sabogal R, Marín B, Perez-Stable E. Hispanic familialism and acculturation: What changes and what doesn't? *Hispanic Journal of Behavioral Sciences* 1987;9:397-412.
- de Salud, Secretaría. Casos acumulados de SIDA por edad y sexo Panorama epidemiológico del VIH/ SIDA e ITS en México. SIDA en cifras 2006. 2007. Retrieved April 4, 2008, from <http://www.salud.gob.mx/conasida/estadis/2007/porexoyedadnoviembre.pdf>
- UNAIDS/WHO Working Group on Global HIV/AIDS & STI Surveillance. Epidemiological fact sheet on HIV/AIDS and sexually transmitted infections: 2000 Update. Author: Geneva, Switzerland; 2000.
- Villarruel, AM.; Gallegos, E.; Loveland-Cherry, C. (Grant proposal NR048S5 funded by National Institutes of Nursing Research). Washington, DC: Author; 2001. HIV Risk Among Mexican Youth.
- Villarruel AM, Jemmott JB III, Jemmott LS, Ronis DL. Predictors of sexual intercourse intentions and condom use among Spanish dominant youth: A test of the theory of planned behavior. *Nursing Research* 2004;53(3):172-181. [PubMed: 15167505]
- Whitaker DJ, Miller KS. Parent-adolescent discussions about sex and condoms: Impact on peer influences of sexual risk behavior. *Journal of Adolescent Research* 2000;15(2):251-273.
- Whitaker DJ, Miller KS, May DC, Levin ML. Teenage partners' communication about sexual risk and condom use: the importance of parent-teenager discussions. *Family Planning Perspectives* 1999;31(3):117-121. [PubMed: 10379427]
- Wu Y, Stanton BF, Galbraith J, Kajlee L, Cottrell L, Li X, et al. Sustaining and broadening intervention impact: A longitudinal randomized trial of 3 adolescent risk reduction approaches. *Pediatrics* 2003;111(1):32-38.
- Zambrana RE, Cornelius LJ, Boykin SS, Lopez DS. Latinas and HIV/AIDS risk factors: Implications for harm reduction strategies. *Research and Practice* 2004;94(7):1152-1158.

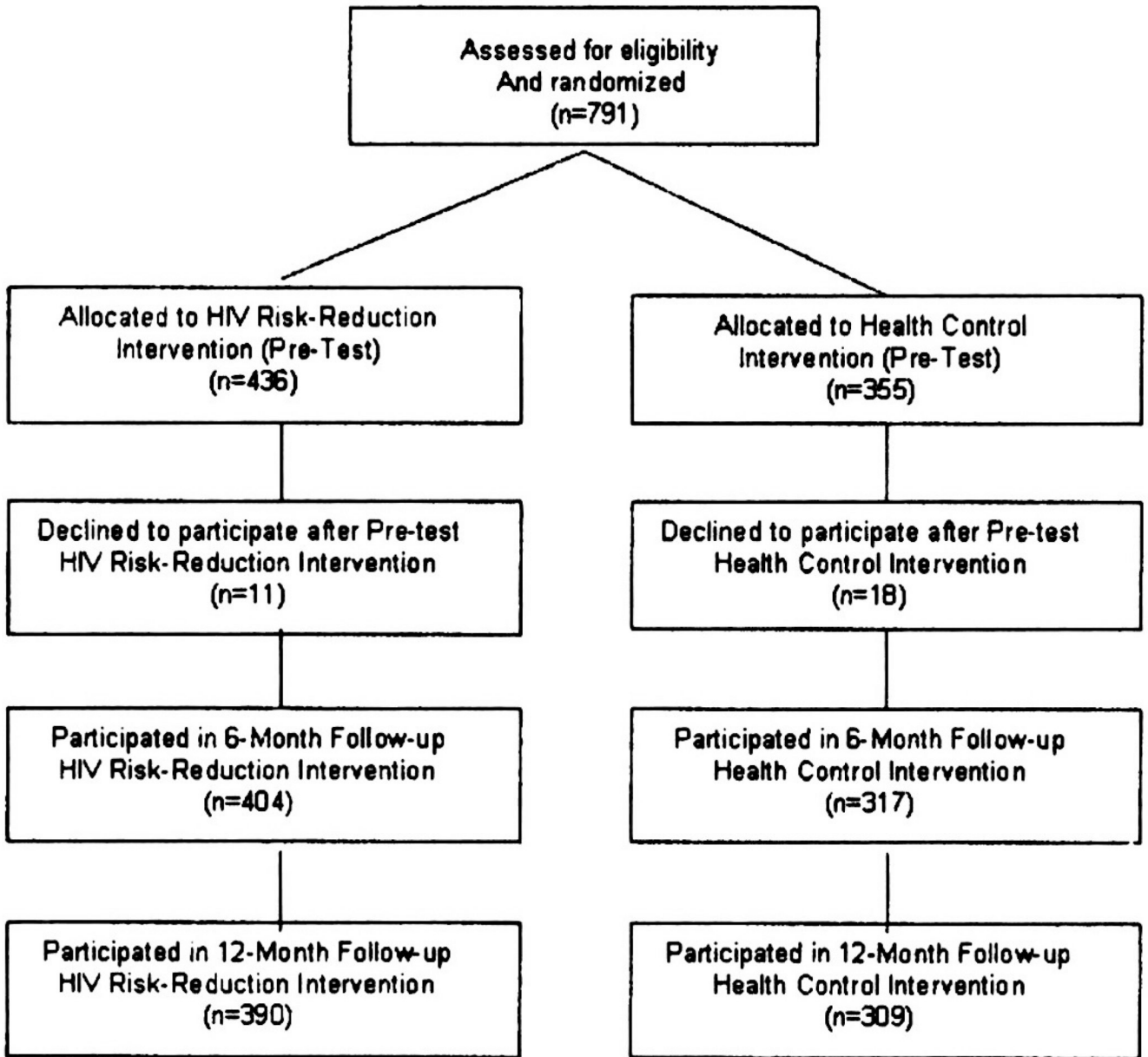


FIGURE 1.
Progress of participants through the trial.

TABLE 1

Description and Reliability Coefficients for Instruments Measuring Mediation Components of the Theory of Planned Behavior.

Instrument	Number of Items	Reliability (Alpha)
Communication		
General Communication	10	0.78
Sexual Risk Communication	8	0.94
Comfort with Communication	9	0.91
Sexual and Condom Use Communication Beliefs		
Behavioral Beliefs		
Prevention	4	0.66
Communication reaction	11	0.88
Control beliefs		
Communication Self-Efficacy	5	0.89
Normative beliefs		
Adolescent approval	2	0.62
Family approval	2	0.59
Moderator Variables		
Familialism	13	0.79
Religiosity	5	0.71
Social desirability	13	0.69

Note. All instruments have a 5–point[comma here] Likert–type response scale.

TABLE 2

Mediators of the Effect of the Intervention on General Communication

Mediator	Evidence of Mediator		Role of Mediator		
	Effect of Intervention on Mediator <i>p</i> Value	Effect of Mediator on Communication <i>p</i> Value	Without Controlling for mediator	With Controlling for mediator	Reduction of Intervention Effect on Communication (%)
Prevention	<.001	<.001	.074**	.040*	.034(46%)
Reaction	.001	<.001	.074**	.040*	.034(46%)
Communication Efficacy	<.001	<.001	.074**	.020*	.054(73%)
Adolescent Approval	<.001	<.001	.074**	.041*	.033(45%)
Family Approval	<.001	<.001	.074**	.050**	.024(32%)

Note. Table covers all time points.

* *p* > .05.

** *p* < .05.

TABLE 3

Mediators of the Effect of the Intervention on Sexual Risk Communication

Mediator	Evidence of Mediator		Role of Mediator		
	Effect of Intervention on Mediator <i>p</i> Value	Effect of Mediator on Communication <i>p</i> Value	Without Controlling for mediator	With Controlling for mediator	Reduction of Intervention Effect on Communication (%)
Prevention	<.001	<.001	.294***	.266***	.028(10%)
Communication efficacy	<.001	<.001	.294***	.200***	.094(32%)
Adolescent approval	<.001	<.001	.294***	.232***	.062(21%)
Family approval	<.001	<.001	.294***	.255***	.039(13%)
Church approval abstinence	<.001	<.001	.294***	.264***	.030(10%)
Church approval condom use	<.001	<.001	.294***	.269***	.025(9%)

Note. Table covers all time points.

p < .001.

TABLE 4

Mediators of the Effect of the Intervention on Comfort with Communication

Mediator	Evidence of Mediator		Role of Mediator		
	Effect of Intervention on Mediator <i>p</i> Value	Effect of Mediator on Comfort with Communication <i>p</i> Value	Without Controlling for Mediator	With Controlling for Mediator	Reduction of Intervention Effect on Comfort with Communication (%)
Prevention	<.001	<.001	.203***	.075***	.128(63%)
Reaction	.002	<.001	.203***	.186***	.017(8%)
Communication efficacy	<.001	<.001	.203***	.128***	.075(37%)
Adolescent approval	<.001	<.001	.203***	.166***	.037(18%)
Family approval	<.001	<.001	.203***	.175***	.028(14%)
Church approval abstinence	<.001	<.001	.203***	.183***	.020(10%)
Church approval condom use	.002	<.001	.203***	.189***	.014(7%)

Table covers all time points.

p < .001.