

## PARENTAL PROTECTIVENESS AND UNPROTECTED SEXUAL ACTIVITY AMONG LATINO ADOLESCENT MOTHERS AND FATHERS

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Latino pregnant and parenting adolescents living in inner cities are one of the populations at risk for acquiring HIV. Although teen parenthood has been predominantly looked at with a focus on potential adverse physical, emotional, and socioeconomic outcomes for the mother and child; a growing body of literature has documented the strengths and resiliency of young parents. *Respeto/Proteger: Respecting and Protecting Our Relationships* is a culturally rooted couple-focused and asset-based HIV prevention program developed for young Latino parents. In this program, parental protectiveness (defined as the parent-child emotional attachment that positively influences parental behavior) is viewed as an intrinsic and developing critical factor that supports resiliency and motivates behavioral change. The primary purpose of this article is to describe the longitudinal randomized study evaluating the effect of this intervention on unprotected vaginal sex 6 months post intervention and to determine whether parental protectiveness had a moderating effect on the intervention. The unique features of our database allow for examination of both individual and couple outcomes.

Ethnic minority teens, including Latinos, are disproportionately affected by HIV/AIDS (Centers for Disease Control and Prevention [CDC], 2006; Kaiser Family Foundation, 2008). Most young people are infected through unprotected sex. HIV transmission patterns in the United States have shifted; heterosexual transmission now accounts for a rising proportion of newly diagnosed AIDS cases (Kaiser Family Foundation, 2008). The rapidly increasing size of the Latino population in the United States has created an urgent need for better understanding of the development and prevention of HIV in areas where a growing number of communities are predominantly Latino.

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Pregnant and parenting adolescents living in inner cities comprise one population of youth at risk for acquiring HIV. In Los Angeles, where the birth rate to teens remains higher than much of the rest of the nation, approximately 85% of the teen births are to Latinos (California Department of Public Health, 2007). In addition to belonging to a population group disproportionately affected by HIV/AIDS, many of these young parents, particularly the young men, have been engaging in activities that place them at risk for exposure to HIV long before pregnancy and early parenthood. These risky behaviors include unprotected sexual activity, multiple sexual partners, sex with high-risk partners, heavy substance use, needle sharing for tattoos and body piercing, gang involvement, and incarceration (Guagliardo, Huang, & D'Angelo, 1999; Lesser, Oakes, & Koniak-Griffin, 2003; Lesser, Tello, Koniak-Griffin, Kappos, & Rhys, 2001). In addition to individual risk behaviors, a lack of socioeconomic and other environmental resources creates risk environments that make certain communities vulnerable to both adolescent pregnancy and HIV/AIDS.

## BACKGROUND

*Respeto/Proteger*: Respecting and Protecting Our Relationships, a culturally rooted couple-focused HIV prevention program for young parents, was collaboratively developed by the UCLA School of Nursing and the Bienvenidos Family Services National Latino Fatherhood and Family Institute (Lesser, Verdugo, et al., 2005). In this HIV prevention program designed for Latino adolescent parents, parental (maternal and paternal) protectiveness (defined as the parent-child emotional attachment that positively influences parental behavior) is viewed as an intrinsic and developing critical factor that supports resiliency and motivates behavioral change. The primary purpose of this report is to evaluate the effect of this couple-focused HIV prevention program on unprotected sex 6 months post-intervention and to determine whether parental protectiveness had a moderating effect on the intervention.

### DEVELOPMENT OF THE CONSTRUCT OF PARENTAL PROTECTIVENESS AMONG TEEN PARENTS

Although teen parenthood has been predominantly looked at with a focus on potential adverse physical, emotional, and socioeconomic outcomes for the mother and child, a growing body of literature has documented the strengths and resiliency of young parents. Qualitative studies we conducted beginning in the mid-1990s led to the development of a construct of adolescent maternal protectiveness, suggesting that health promotion programs for teen mothers, including HIV prevention, could build on the strengths of inherent protective maternal tendencies to motivate health behaviors and thus facilitate an improvement in young mothers' lives and health (Lesser, Anderson, & Koniak-Griffin, 1998; Lesser, Koniak-Griffin, & Anderson, 1999; Lesser et al., 2003). Lesser and colleagues (1999), in a qualitative study of 15 young mothers, found that through the establishment of a maternal identity and the simultaneous development of a strong sense of maternal protectiveness, young mothers were making realistic, future-oriented decisions that motivated them to leave gang life, return to and finish high school, go to college, and get vocational training. For these women, the maternal role was healing in that it provided new possibilities of experiencing themselves as they gained access to previously untapped inner strengths (Lesser et al., 1999).

The results of Project CHARM (Children's Health and Responsible Mothering), one of the few HIV prevention programs specifically targeting pregnant teens and adolescent mothers of predominantly Latino and African American backgrounds, were favorable (Koniak-Griffin et al., 2003). This HIV prevention program was an adaptation of Jemmott, Jemmott, and McCaffree's (1996) social-cognitive theory-driven curriculum, "Be Proud! Be Responsible!," modified by our team for use with pregnant teens and adolescent mothers. In Project CHARM, we built upon the construct of maternal protectiveness in pregnant and parenting adolescent mothers as a motivator for decreasing sexual risk behavior. Following completion of a four-session intervention offered in pregnant minor and parenting programs in Los Angeles County, the experimental group participants ( $n = 347$ ) demonstrated decreased sexual risk-taking behaviors (i.e., number of sexual partners) and greater intentions to use condoms through 6-month follow-up in comparison to those ( $n = 150$ ) attending a comparable length health promotion intervention (Koniak-Griffin et al., 2003).

Promoting safer sexual practices among women involved in steady relationships is particularly difficult. A qualitative evaluation of Project CHARM found that protective maternal tendencies did serve as motivation for healthy behavioral changes (Lesser et al., 2003). These changes included reducing alcohol and other drug use, and staying in school. However, mothers' intentions to decrease unprotected sexual activity with high risk partners were often overshadowed by the more immediate concerns of obtaining food, diapers, transportation, and maintaining safety for their children and themselves. Furthermore, the young mothers reported facing relationship issues of power and trust that made safer sexual choices difficult. They voiced fears surrounding their expectations of their partners' reactions if they suggested condom use (Lesser et al., 2003). These women recommended that male partners be included in HIV prevention programs for teen mothers. Strategies for including male partners were subsequently explored.

Including men as a health promotion strategy within women's sexual and reproductive health interventions, though not a completely novel idea, became more common in the mid-1990s. In 1994 the International Conference on Population and Development recognized men as vital targets for women's sexual and reproductive health interventions (Bustamente-Forest & Giaratano, 2004; Sternberg & Hubley, 2004). In 1995, the Male Involvement Program initiated by the California Department of Health Services Office of Family Planning (OFP) encouraged agencies providing services for women's sexual and reproductive health to develop programs aimed not only at community norms regarding contraception and teenage pregnancy prevention but at norms regarding gender roles (Brindis, Barenbaum, Sanchez-Flores, McCarte, & Chand, 2005).

In a growing body of qualitative research, adolescent fathers, like young mothers, describe having a child as a driving force that helps them to alter their life course from a previously self-destructive path to a more productive one (Foster, 2004; Lesser et al., 2001; Lesser, Oscos-Sanchez, Tello, & Cardenas, 2005). In a qualitative study leading up to the development of the curriculum *Respeto/Proteger: Respecting and Protecting Our Relationship*, we identified three major themes from narratives of 45 Latino adolescent fathers: (a) a childhood entrenched in poverty, social oppression, childhood abuse and neglect, and drug abuse; (b) the role of the gang; and (c) taking on the paternal role. Within the theme of taking on the paternal role, three subthemes reflective of positive behavioral and attitudinal changes were identified: leaving the gang, gaining empathy for others, and modifying one's per-

spective on male-female relationships (Lesser et al., 2001). Foster (2004) found, in an ethnographic study with 30 male partners of adolescent mothers, that the birth of their child provided them with an opportunity for self-reflection. These young fathers (aged 14-25 when their child was born) found that fatherhood afforded them “an affirming and valued component of self-identity.” Clearly, some young men, as do some young women, use their experience of young parenthood and the concomitant feelings of parental protectiveness as a source of renewed hope for their future and inspiration for behavior change. Findings from these studies suggest that when working with both teen mothers and fathers in health promotion programs, it is important to focus not only from a disease prevention orientation, but also from an asset model, or strengths-based perspective.

### COUPLE-FOCUSED HIV PREVENTION INTERVENTIONS AMONG LATINOS

A few couple-focused HIV prevention interventions have been tested among Latino populations. In their evaluation of a three-session, interactive, couple-based HIV prevention program for young Latina adults and their male partners, Harvey and colleagues (2004) found that in both the experimental and the control group (a one-session didactic program about preventing sexually transmitted diseases and pregnancy), the participating couples ( $N = 146$ ) reported an increase in consistency of condom use and a reduction in frequency of unprotected sex through the 6-month evaluation period. However, the two groups did not differ significantly on any risk-related outcomes. A clinical trial conducted by El-Bassell and colleagues (2005) compared effects on the probability of unprotected sexual episodes of women who attended, with their main partner, a social-cognitive prevention intervention tailored to low-income African American and Latina adult women ( $n = 81$ ) and women attending the intervention alone ( $n = 73$ ). They observed that both interventions significantly reduced the probability of unprotected sexual episodes in women through 12-month follow-up compared with a control group. However, no significant difference in outcomes was found between the women who received the intervention with their main partner and the women who received it alone. To our knowledge, the study described in this paper is the first randomized controlled trial to examine outcomes of a couple-focused HIV prevention program for Latino teen parents, as well as to study the effects of the intervention and possible moderating effects based upon couple characteristics.

### CONCEPTUAL FRAMEWORK

First developed and pilot-tested through a community and academic collaboration, Respecting and Protecting Our Relationships is an innovative HIV prevention program relevant to the needs of the population of inner-city Latino teen parenting couples (Lesser, Verdugo et al., 2005). Findings from the pilot study showed that at 6-month follow-up the probability of unprotected sex was significantly reduced over time in the experimental group as compared with the traditional HIV prevention comparison group (Koniak-Griffin et al., 2008). The community and academic partners integrated HIV prevention strategies based on dominant theoretical models used in Project CHARM (social cognitive theory and the theory of reasoned action) and concepts from the theory of gender and power (Connell, 1987) with strategies from *El Joven Noble* and *Con Los Padres* programs. The latter two programs, developed with principles of practice derived from experiences working with Latino youth (Tello, 1998) seek to modify the image of a stereotypical “macho” man to one

that has more depth and a variety of strategies to deal with the many challenges that exist in a Latino youth's world. The programs serve to create an opportunity for the youth to realize that they are in relationships, with interdependent responsibilities, and that they must learn to engage with each other in positive ways.

Based on a risk and resiliency framework, Tello's programs address the spirit-breaking cycle of internalized oppression reflected in self-injurious behaviors such as indiscriminate and unprotected sexual activity, relationship violence, and substance use. Their curricula include the examination of culture, identity development, male and female relationships, racism, oppression, substance abuse, violence, community involvement, and planning for the future, as a basis for character development. Activities are informed by traditional teachings based on culturally rooted concepts and on the values believed necessary to build and maintain harmonious and balanced relationships. These are found in the indigenous teachings and writings of the ancestors of many Latino people, including the relationship values of *respeto*, *dignidad*, *confianza*, y *carino* (respect, dignity, trust, and love) (Lesser, Verdugo, et al., 2005; Tello, 1998).

Tello's (1998) character development framework guided the HIV prevention curriculum by providing a structure in which healing experiences could be integrated with theory-based HIV prevention strategies. The theory of gender and power (Connell, 1987) added further to the curriculum by speaking to the social and cultural context in which behaviors occur, as well as addressing gender-specific norms, emotional attachments, and power dynamics within social relationships. The incorporation of constructs from the theory of gender and power; that is, gender-specific issues and the sexual division of power, extends the health promoting strategies by enlarging the theoretical perspective to include not only individuals at risk, but the specific social and environmental contexts in which heterosexual transmission of HIV may occur. Within this framework, parental protectiveness is viewed as an essential element of the emotional attachment in parent-child social relations. Parental protectiveness is viewed as both an intrinsic and developing critical factor that can support resiliency and motivate behavioral change.

## METHODS

### STUDY DESIGN

The randomized clinical trial was conducted in Los Angeles County. Using a blocked randomization scheme commonly employed in clinical trials, participants were randomly assigned by couple within recruitment site to either the intervention group, Respecting and Protecting Our Relationship ( $n = 164$  individuals, 84 couples) or a control group ( $n = 172$  individuals, 86 couples). The control group received a brief, 1½-hour didactic HIV prevention education program. Recruitment challenges included identifying teen fathers and mothers who were currently in a romantic relationship and willing to attend an HIV prevention program with their intimate partner. For this reason, constant recruitment efforts to young mothers were conducted at 28 Women Infant and Children (WIC) sites, eight alternative schools with pregnant minor/parenting programs, two community-based service organizations, and a community-based clinic.

Forty-one series of the intervention program and forty-one control series were held in a variety of settings, including community-based organizations and clinics. Based on language preference of the participating young parents, eight intervention

and three control series were conducted in Spanish, the remainder in English. Child care and transportation were provided when necessary. Each series was attended by 1 to 5 couples (average 2). All participating individuals received \$15 for each class attended.

### SAMPLE CRITERIA

To be eligible for participation in this study, a young mother needed to be 14-25 years of age, have been in a relationship with her current partner (also 14-25 years of age) for at least 3 months, have a child aged 3 months or older (could not be pregnant at time of enrollment), and speak English or Spanish. Pregnant teens were excluded from the study so that intervention effects would not be confounded by the influence of pregnancy and early postpartum status on sexual activity. If the young mother was found eligible and her male partner was agreeable to participating in the study, than he was screened next for eligibility.

### INTERVENTION

The 12-hour curriculum built on feelings of paternal protectiveness while integrating cultural teaching as motivation to reduce risky sexual behavior. The facilitation was based on the use of an *espejo* (mirror) process of teaching using strategies such as storytelling, reflection, and guidance. The role of the facilitators was to be not only teachers and guides but also role models and nurturers; they were trained to present material in light of personal experiences rather than dogmatic theory.

HIV-related content included HIV awareness, understanding vulnerability to HIV infection, attitudes and beliefs about HIV and “safer” sex, disease prevention, condom use skills, and sexual negotiation skills. The acquisition and practice of sexual negotiation skills in a context of high emotions (i.e., a romantic relationship) within the safe setting of a proficiently facilitated program was seen as necessary to initiate and maintain safer sex practices.

Parental protectiveness was fostered throughout the program by specially designed writing activities and discussions that integrated traditional or cultural teachings to enhance the positive aspects of relational norms and motivate reduction of risky sexual behavior. One such exercise occurred during the sixth and final session. In this session, the participants were encouraged to think about whether or not their goals had changed over the course of the program. They were asked to think about not only what would be a realistic path to reach their goals but also about what they needed to stop doing in order to achieve their goals. They were then asked to write a “letter to my baby,” in which they were to identify their hopes and dreams for their child, and to identify two things they could do now to provide a safe future life for their baby. After a period of writing independently, participants rejoined the group to read and discuss their letters. This group discussion served to help young parents to identify the origin of their hopes, the values they represented, and why these goals were important to each unique individual.

### DATA COLLECTION

All research protocols, recruitment procedures and forms used to obtain written informed consent from participants were approved by the university’s institutional review board (IRB). Parental consent for participants under age 18 was waived, as participation in the study entailed no more than minimal risk, and obtaining parental consent could have presented undue hardship to some of the young parents for a variety of reasons, including, lack of contact with parents or potential family



conflicts. Nevertheless, recruiters encouraged the young parents to inform their own parents whenever possible about their involvement in the project, and a parental information form (approved by the IRB) was made available to all potential participants. To further protect the participants, a Federal Certificate of Confidentiality was obtained.

Participants completed questionnaires, in English or Spanish, prior to and immediately after the intervention and at 3- and 6-month follow-ups. The baseline questionnaires were read aloud to small groups of women and men separately, by specially trained research assistants. The posttest and other follow-up evaluations were generally done in the home and were conducted through individual interviews by teams of evaluators; in most situations the partners were interviewed concurrently but in separate rooms. In the event a couple was no longer in a romantic relationship, each of the participating individuals was separately followed. Each participant received \$25 for completion of the baseline questionnaire and \$25 for completion of each follow-up survey.

### MEASURES

The instrument packet contained a combination of questionnaires and individual items designed to measure key outcomes (e.g., sexual risk behaviors), as well as selected sociodemographic characteristics of participants. Sociodemographic characteristics were measured by individual items such as age, race/ethnicity, number of children, number of lifetime sexual partners, history of detention/incarceration, lifetime and current gang activity, recent incidence of physical fighting, weapon carrying, and lifetime and current substance use (e.g., alcohol, marijuana, cocaine, and methamphetamines). Physical abuse history was measured by a yes/no response to "Have you ever been physically abused by an adult (that is, where an adult caused you to scar, black and blue mark, welt, bleeding, or a broken bone)?" Sexual abuse history was measured by a yes/no response to the item "Have you ever been sexually abused by someone (that is, someone in your family or someone else did sexual things to you that you did not want or forced you to touch them sexually)?" The CES-D eight-item scale was used to measure depressive symptoms (Cronbach's  $\alpha = .86$ ). A score of  $\geq 7$  suggests a clinically significant level of psychological distress (Huba, Melchior, Staff of the Measurement Group, & HRSA/HAB's SPNS Cooperative Agreement Steering Committee, 1995).

Unprotected sexual activity was calculated from reports of the number of times participants had vaginal sex with and without condoms during the past 3 months. Thus, at each time point, every participant effectively reported  $N$  dichotomous responses (Bernoulli random variables), one for each sexual episode, with responses limited to yes or no for condom use. These Bernoulli responses each have probability  $p$  of unprotected sex (no condom use) where  $p$  is allowed to vary from person to person, and from one time point to the next. The simple group proportions of unprotected sex episodes at each time point were calculated as weighted averages, equal to the total number of unprotected sex episodes, divided by the total number of episodes for each group.

Parental protectiveness was measured with an eight-item, 5-point Likert-type scale ranging from very unlikely (1) to very likely (5) ( $\alpha = .67$ ) developed with findings from a series of qualitative studies and pilot work we conducted with the target population (Lesser et al., 1998; Lesser et al., 1999). Examples of items include "Now that you are a parent, how likely are you to graduate from high school or get a GED?," "Now that you are a parent, how likely are you to have unprotected sex



with a partner even though he or she may inject drugs,?” “How likely are you to remove yourself and your child from an area if it appears as though there is about to be a conflict or a fight?” and “How likely are you to remove yourself and your child from an area if it appears as though people there are about to do drugs?”

### STATISTICAL ANALYSIS

All participants ( $N = 336$ ) completed baseline questionnaires, 228 (67.9 % of the sample) also completed the 3-month and 6-month evaluations. Fifty-one participants (15.2%) missed one evaluation and 57 (16.9 %) completed only the baseline questionnaire. Rather than drop participants who missed selected questionnaires, we used multiple imputation to provide complete data sets for analysis. This technique corrects for the underestimation of variances that occurs with a single imputation. Twenty imputed data sets were created and analyzed separately; the estimates, standard errors, and significance levels presented in the tables were obtained by combining the results of the twenty analyses (Little & Rubin, 2002). This number of imputations allowed for stable estimates of between-imputation variance.

Statistical analysis, using SAS, Version 9.1.3, focused on evaluating the effect of the intervention on unprotected vaginal sex and determining whether parental protectiveness had a moderating effect on this outcome from baseline to 6 months. The couple data in this study contained linked data on the dyads of women and men. With these kind of data it is possible to choose as a dependent variable the woman's outcome, and as an independent variable the man's attitude (or vice versa). Thus, using the couple as the unit of analysis, we were able to analyze both individual outcomes and outcomes in which the attitudes of one partner affected the behavior of the other.

Correlations among the repeated Bernoulli outcomes on individuals measured at the three time points required special care in the analysis. Hierarchical models with fixed and random effects were used to appropriately account for these correlations (Verbeke & Molenberghs, 2000). To model the probability  $p$  of engaging in unprotected sex, a nonlinear hierarchical model with a logistic link was implemented using PROC NLMIXED, by considering each sexual episode in the past 3 months as a Bernoulli random variable with probability  $p$  of no condom use. In this model, a person-level random effect was added to the logit. This implicitly allows each person's probability of unprotected sex to differ from the group mean level, and at the same time induces correlations among the repeated measures of unprotected sex on an individual. The fixed effects in the model allow the group mean to change over time (in months) and our significance tests are direct comparisons of the rates of change over time.

In our models, baseline parental protectiveness was included as a predictor, because we were interested in examining its potential as a moderating effect on the intervention. In a longitudinal study, this effect enters the model as an interaction with both time and group. Modeling a three-way interaction with time as a continuous variable, and parental protectiveness and group as dichotomized variables, greatly simplifies the analysis and facilitates the interpretation, in particular for policy implications. Hence, for our analyses, baseline measures of parental protectiveness were dichotomized into high and low protectiveness by summing the eight Likert scales and categorizing a score greater than 36 as high. Comparisons of the male and female proportions classified high on the parental protectiveness scale were done with McNemar's test for correlated data.

TABLE 2. Proportion of Unprotected Sex Episodes for High and Low Partner Protectiveness

Variable	Time period	Control		Intervention	
<b>Male</b>					
Partner protectiveness category		Female/High ( <i>n</i> = 51)	Female/Low ( <i>n</i> = 35)	Female/High ( <i>n</i> = 41)	Female/Low ( <i>n</i> = 41)
Proportion of unprotected sex episodes	Baseline	76.4%	73.9%	82.8%	66.5%
	3 month	70.5%	63.5%	63.2%	72.1%
	6 month	63.9%	63.8%	69.1%	59.8%
<b>Female</b>					
Partner protectiveness category		Male/High ( <i>n</i> = 26)	Male/Low ( <i>n</i> = 60)	Male/High ( <i>n</i> = 20)	Male/Low ( <i>n</i> = 62)
Proportion of unprotected sex episodes	Baseline	53.6%	74.4%	67.4%	72.7%
	3 month	49.9%	72.1%	30.3%	68.6%
	6 month	57.2%	72.7%	32.5%	58.4%

## RESULTS

The mean age of the male participants was 20 years (range 15-25); the female participants were on average younger (mean age = 18, range 14-23). Most participants had one child; 78% of the males and 86% of the females self-identified as Latino. In 11 of the couples (6.5%), the male reported he did not have a child with his female partner. Of these 11 males, 4 had children by other women. Ninety percent of the sample participated in at least 8 hours of the 12-hour intervention; 70% participated in the entire 12-hour curriculum.

As expected in a randomized trial, we saw no significant differences between the intervention and control groups in demographic and key variables at baseline such as age, length of relationship, years of education, Latino/nonLatino ethnicity, childhood abuse history, incarceration history, substance use, parental protectiveness, and sexual behavior. Baseline characteristics associated with HIV risk behavior are presented by gender in Table 1. Histories of childhood physical and sexual abuse were commonly reported. Both males and females reported a high lifetime use of alcohol (91.1% of males and 83.9% of females) as well as lifetime use of marijuana (84.5% of males, 69% of females). Lifetime use of cocaine was lower but still common (35.7% of males, 24.4% of females), as was lifetime methamphetamine use (32.7% of males, 26.8% of females). Over 44% of the young men and almost 8% of the young women reported having been detained in a juvenile facility or incarcerated in jail. Almost 30% of the young men had scores on the CES-D indicative of having depressive symptomatology, as did 23.2% of the young mothers.

Among baseline measures of the moderating variable, parental protectiveness, a greater number of females (*n* = 92, 55%) than males (*n* = 46, 27%) were classified within the high protective category. This difference between females and males was statistically significant ( $p < .00001$ ). The outcome measure, the Bernoulli responses of unprotected sexual episodes by the participants, reported at baseline, and at 3 and 6 months showed extreme variability. The responses on the number of sexual episodes in the past 3 months ranged from 2 to 1,000 episodes in males and 1 to 200

episodes in females. The proportion of these episodes that were reported as unprotected in both males and females ranged from 0 to 100%.

Table 2 presents the simple group proportions of unprotected sex episodes at each time point stratified by treatment group, parental protectiveness, and gender. A review of the proportion of unprotected sex in the table shows different patterns for the females compared with the males. For females, there is little change in unprotected sex over time in the control group, regardless of male protectiveness. The smaller average rate in the control group with high male protectiveness indicates a baseline difference that persists across the 6 months. In the intervention group, females showed a decline in unprotected sex over time, with a sharper fall among those where the male partners showed high protectiveness. This suggests a moderating effect of the intervention on females, in which the treatment is more effective in couples where the male has high levels of protectiveness.

When we reverse roles and examine the changes in unprotected sex among males by female protectiveness, a different pattern emerges. High versus low levels of female protectiveness do not show any appreciable effect on the males' behavior. Overall, the intervention group showed a moderate decline in unprotected sex compared with the control group.

To evaluate the implications of the patterns in the proportions displayed in Table 2, we separately fit for females and males, two nonlinear mixed-effects models for the logit of the probability of unprotected sex. Model 1 used three predictors: group, time (in months), and group  $\times$  time interaction. Model 2 used six predictors: Group, Time, Group  $\times$  Time, Protectiveness, Protectiveness  $\times$  Time, and Protectiveness  $\times$  Group  $\times$  Time. The estimates for the fixed effects of Model 1 are presented in Table 3 along with standard errors and  $p$  values. The estimates for the fixed effects of Model 2 are presented in Table 4. Each table includes two models, the first modeling the logit of the probability of unprotected sex for females, and the second for males.

The overall effect of the intervention was tested using the coefficient for the group  $\times$  time interaction in Model 1 (see Table 3). This was significant for both females ( $p=.002$ ) and males ( $p = .031$ ), indicating a significant overall effect of the intervention on reducing unprotected sex. The estimates for the interaction parameter for both females and males were negative, showing a reduction in unprotected sex over time in the treatment group compared with the control group, in accordance with what we saw in Table 2. The small  $p$  value for the females indicates a much stronger treatment effect for females than for males. The nearly zero, nonsignificant coefficients for time in Table 3, for both female and male models, confirms our earlier observation in Table 2 that the control groups show little change over time.

The moderating effect of parental protectiveness was tested using the Protectiveness  $\times$  Group  $\times$  Time interaction term in Model 2 (see Table 4). First, considering the model for female behavior, the  $p$  value for this interaction term was .036, indicating a significant moderating effect of the male partner's protectiveness on the intervention, again confirming our speculations from Table 2. The protectiveness parameter estimate (-1.438) in the female model was highly significant ( $p = .006$ ), showing that the level of unprotected sex at baseline was lower in females who had partners with high protectiveness. The second half of Table 4 presents the estimates for the male model. None of the coefficients in this model were significant, indicating model overfitting and suggesting that the model from Table 3 is a better fit. Thus there is no evidence of a moderating effect of female protectiveness on male behavior. This again adds support to our observations in Table 2.

TABLE 3. Female and Male Models 1 for Unprotected Sex Using Group and Time as Predictors<sup>a</sup>

	Estimate	SE	<i>p</i> Value
<b>Females</b>			
Group	.735	.489	.133
Time	-.005	.039	.893
Group × time	-.192	.056	.002
<b>Males</b>			
Group	.483	.484	.319
Time	-.034	.038	.385
Group × time	-.082	.037	.031

<sup>a</sup>Estimates are for the fixed effects in the nonlinear mixed model for logit (*p*), where *p* is the probability of unprotected sex.

## DISCUSSION

To our knowledge this is the first longitudinal study to examine outcomes of a culturally rooted, couple-focused HIV prevention program for an at-risk population of Latino young parents using both individual and dyadic data. This unique approach enabled us to evaluate both the efficacy of the intervention and the effects of baseline attitudes of one partner on the other partner's behaviors. Although findings indicate that the intervention was effective in reducing the proportion of unprotected sexual activity for both males and females at 6-month follow-up, a distinctive feature is that the data form a unique opportunity to study interactions among couples receiving a randomized controlled intervention to reduce HIV.

A major significance of the findings in this study is the moderating role of male parental protectiveness (i.e., the father-child emotional attachment that positively influences parental behavior) in improving the effectiveness of the intervention for his female partner, the young mother. Although there was little change in unprotected sex over time among females in the control group, regardless of male protectiveness at baseline, females in the intervention group showed a decline in unprotected sex over time, with a sharper fall observed among those where the male partners showed high protectiveness at baseline. These findings help to substantiate the growing body of knowledge indicating that health promotion programs for adolescent and young parents, including HIV prevention, can build on the strengths of inherent protective tendencies among these youth to motivate change from previous risky behaviors to more protective health behaviors.

Another interesting finding in this data was the asymmetric pattern of significant differences at baseline in female unprotected sex by male parental protectiveness scores but not in male unprotected sex by female parental protectiveness. Furthermore, females in the control group with male partner showing high protectiveness at baseline had less unprotected sex at each time period than those with low protectiveness partners. This, along with the gender differences in the moderating effect of parental protectiveness on partner behavior (female protectiveness did not moderate the effect of the intervention on male partner behavior) underscores how crucial the area of male involvement in women's sexual and reproductive health promotion is for adequately addressing the AIDS crisis. Although there is general consensus in the public health arena that it is necessary to deliver sexual and reproductive health care that includes heterosexual men as intimate partners, few interventions have been

TABLE 4. Female and Male Models 2 for Unprotected Sex Using Group, Time, and Protectiveness as Predictors<sup>a</sup>

	Estimate	SE	<i>p</i> Value
<b>Female behavior under high versus low male protectiveness</b>			
Group	.638	.472	.177
Time	.008	.052	.876
Group × time	-.148	.070	.044
Protectiveness	-1.438	.522	.006
Protectiveness × time	-.027	.053	.612
Protectiveness × group × time	-.162	.075	.036
<b>Male behavior under high vs. low female protectiveness</b>			
Group	.528	.490	.281
Time	-.074	.066	.273
Group × time	-.016	.084	.847
Protectiveness	.234	.492	.634
Protectiveness × time	.074	.109	.503
Protectiveness × group × time	-.137	.156	.389

<sup>a</sup>Estimates are for the fixed effects in the nonlinear mixed model for logit (*p*), where *p* is the probability of unprotected sex.

subject to the type of design and rigor of the study reported here (Bustamente-Forest & Giaratano, 2004; Sternberg & Hubley, 2004).

The findings of this study demonstrate the importance of considering dyadic influences using measures from both partners in data analysis. A few cross-sectional studies have looked at HIV risk behaviors in couples using dyadic analyses. In one of the first applications of a multilevel structural equation model (SEM) to HIV risk reduction, Stein and colleagues (Stein, Nyamathi, Ullman, & Bentler, 2007) found that couple-level effects among injection drug-using couples accounted for greater variance in behavior than did individual-level effects. In another such study, Harman and Amico (2008) used a SEM to perform both individual and dyadic level analyses of an informational-motivational-behavioral skills (IMB) theoretical model of HIV risk behavior. They found that IMB model provided a good fit to the data when analyzed at the dyadic level.

Other researchers have looked at the differential impact of efficacious HIV prevention and intervention programs on individuals. Lightfoot and colleagues (2007) used regression models to examine whether background contextual factors moderated the success of an intervention for youth living with AIDS. Their findings have important implications for deciding what kind of an intervention is appropriate and beneficial for an individual young person living with AIDS (Lightfoot, Tevendale, Comulada, & Rotheram-Borus, 2007). The present study adds to this body of literature by showing that intervention effects of a couple-focused HIV prevention program on one partner's behavior may be modified by the other partner's baseline attitudes.

This HIV prevention program for Latino child rearing youth has several specific strategies in common with other HIV prevention programs found to be efficacious among Latino youth, including cultural-specificity, strengthening the family system rather than targeting specific health risk behaviors, and inclusion of both genders.

Prado colleagues (2007) found that a focus on strengthening the family system rather than targeting specific health behaviors was both a culturally relevant and efficacious strategy in their HIV prevention program for Latino youth. In a randomized controlled trial testing a culturally based HIV prevention intervention for Latino youth, *Cuidate*, Villarruel and associates (2006) found that the inclusion of females and males together produced a positive impact.

The growth of a trusting and mutually respectful community-academic collaborative partnership was crucial to the successful development of this couple-focused HIV prevention program. The intervention was well accepted by the inner-city adolescent mothers and fathers and realistic for implementation in a community setting. However, the findings reported here must be considered in light of several limitations. First, the measure of parental protectiveness used in this study was developed originally with and for adolescent mothers and, though it has been piloted with young fathers in a previous study (Koniak-Griffin et al., 2008), it has not yet been validated for use with young men. Second, the sexual outcomes reported in this article were based solely on self-report data, known to be vulnerable to a variety of issues including social desirability effects and memory lapses. As the predominantly Latino sample of young parents in this study may not be representative of other groups of at-risk child rearing youth, caution is urged in generalizing the results to other populations. Finally, because the study design did not include a dose-equivalent control condition, the possibility of a Hawthorne effect exists. Nonetheless, data from this study allowed opportunity to study interactions among couples in the presence of a randomized controlled HIV prevention intervention. Furthermore, findings suggest that when working with teen parents in HIV prevention programs, a strengths-based perspective should be used along with a focus on relationships and culturally tailored strategies. This curriculum, developed through a community academic partnership, can serve as a model for community-based health promotion programs that can be developed with the invaluable input of community partners to expand on existing self-protective behaviors and individual, family, and community strengths.

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