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In the Heart or in the Head: Relationship and Cognitive Influences on Sexual Risk Among Young Couples

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Abstract

Few studies examine how relationship factors influence sexual risk. We investigated gender differences of the influence of relationship functioning on sexual risk behavior and sexually transmitted infections (STIs) among 296 young pregnant couples. Compared to women, men were twice as likely to have a concurrent partner, were less likely to intend to be monogamous in the future, had less HIV/STI knowledge and more perceived risk for HIV/STI, negative attitudes and efficacy toward condom use (all $P < 0.05$). For men, poor relationship functioning related to less intentions to be monogamous, more partner concurrency, worse sexual communication, and more condom use. For women, poor relationship functioning related to worse sexual communication and less condom use. In addition, women who had good relationship functioning and women who had *partners* with poor relationship functioning were more likely to have an STI. These results demonstrate the need to include heterosexual men and relationship factors in HIV prevention.

Keywords

Relationship functioning; Sexual risk; Couples; Pregnancy

Introduction

Unlike other health behaviors, sexual risk directly involves two people and most often occurs in the context of romantic relationships [1–3]. Despite this dynamic, most HIV prevention studies use an individual cognitive-behavioral framework [4]. Relationship factors have been neglected in HIV research among heterosexual men and women, but play an important role in understanding sexual risk [1–3, 5–7]. Relationship functioning is multifaceted and incorporates behavioral elements such as communication and conflict, attitudinal elements such as consensus of beliefs and principles, and emotional elements such as intimacy, affection, and cohesiveness. Strong relationships foster communication, making it easier to implement protective behavior and discuss sensitive issues such as past and current risk behavior. Poor relationship functioning can lead to engagement in concurrent relationships [8, 9] and relationship dissolution [10, 11]. Relationship dissolution leads to new partnerships, which increases HIV/sexually transmitted infection (STI) risk [6, 11, 12]. Therefore, stable, strong, and well-functioning relationships may be protective by limiting partner concurrency and number of partners, which is critical given the increased importance that both partner concurrency and number of sex partners play in HIV/STI risk [13–15].

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Relationship factors can also influence risk by the direct and indirect influence of romantic partners. In heterosexual relationships, it is often the behaviors of the male partner (e.g., unprotected sex with extra-relationship partners) that place a woman at risk [16–19]. Men have more lifetime partners and are more likely to have concurrent and extra-relationship partners than women [20–22]. Research suggests that approximately 85% of women's net HIV/STI risk comes from her male partner's current and past risk behavior; compared to only a small percentage of men's net HIV/STI risk coming from his primary female partner [16]. Studies have shown considerable influence of individuals on their romantic partners' health behaviors [23, 24]. However, little is known about the possible mechanisms of this indirect risk, and whether characteristics of the partner or aspects of the couple's relationship may contribute to these direct and indirect risks. Few couples studies have been conducted to show how each member of a couple may influence the sexual behavior and risk of their partner, and whether those influences may differ between men and women.

Pregnancy is a time of stress and transition that can strain individuals and relationships, which in turn may influence sexual risk [25–28]. Pregnancy among adolescents is often unplanned, and therefore may be particularly stressful. Young couples are still developing their romantic relationship when they need to focus on childbirth. This shift may lead to high stress and conflict [29]. Adolescents' and young adults' underdeveloped interpersonal and decision-making skills may make pregnancy a difficult time [26, 29]. Studies suggest that while 85% of adolescent mothers and their partners are together during pregnancy, less than 50% are together by 15 months postpartum [6]. Given the potential vulnerability of young pregnant couples, a better understanding of sexual risk behavior in this population is warranted.

Expecting adolescents are a high sexual risk group because the behaviors that put them at risk for pregnancy also put them at risk for HIV/STIs. This risk may be amplified among low-income minority populations where the burden of adolescent pregnancy contributes to disparities in sexual, reproductive, and maternal child health outcomes. Adolescent pregnancy is 2.5–3 times more likely among Hispanic and African-Americans than whites [30]. This disparity in adolescent pregnancy corresponds with disparities in HIV and STIs. While comprising only about one-third of the population, Hispanics and African-Americans make up 80% of HIV/AIDS cases among adolescents and young adults in the U.S. [31]. The HIV prevalence among African-Americans is eight times that of whites, and among Hispanics, the prevalence is three times that of whites [32]. The prevalence of HIV among heterosexuals in impoverished urban areas in the northeast U.S., which includes the location of this study, is 28 times that of the prevalence among heterosexuals in the general U.S. population [31]. Men still account for 74% of all AIDS cases among young adults under 26 and heterosexual sex remains the most common form of transmission among women (90%) [31]. Compared to other racial/ethnic and age groups, African-American and Hispanic adolescents and young adults are also at the greatest risk for STIs, which can facilitate HIV transmission during sexual contact and are associated with rapidly rising rates of AIDS among adolescents and young adults [33–38]. Among pregnant/parenting adolescents, 29% get an incident STI during pregnancy and the postpartum period, and adolescent mothers are twice as likely to get an incident STI compared to their non-pregnant and non-parenting sexually active peers [39, 40]. There is some evidence that relationship factors may impact this risk. Adolescent mothers who ended the relationship with the father of the baby during the postpartum period were three times more likely to get an STI than adolescent mothers who maintained the relationship with the father of the baby [6]. These data highlight the high levels of HIV/STI risk among young urban expecting mothers. Less is known about the sexual risk of young fathers; few studies about sexual risk during and after pregnancy have included men or couples.

Using the social-personal framework [41], which incorporates both individual and partner level influences on HIV risk, this study seeks to investigate the influence of relationship and individual cognitive factors on the sexual risk of young expecting couples. This study fills a gap in the literature by focusing on couples, young adults undergoing a stressful life transition, and young heterosexual men who are often neglected in sexual and reproductive health research. Furthermore we examined both relationship and cognitive predictors and a wide range of sexual risk outcomes including condom use, partner concurrency, communication, and STI. The specific aims of this study were to: [1] compare male and female partners on relationship functioning, individual cognitive psychosexual factors (e.g., condom attitudes, condom self-efficacy, perceived risk for HIV/STI, HIV/STI knowledge), and sexual risk behaviors, [2] assess whether relationship functioning of the person and their partner is associated with sexual risk behaviors (e.g., intention to be monogamous, concurrent partners, sexual communication, condom use) and STIs, and [3] assess whether the influence of relationship functioning and individual cognitive factors on sexual risk differs by gender.

Methods

Study Sample and Procedures

Data come from a longitudinal study of pregnant and postpartum adolescent females and their partners. Between July, 2007, and February, 2011, 296 pregnant adolescents and their male partners (592 total participants) were recruited from obstetrics and gynecology clinics in four university-affiliated hospitals in Connecticut. Potential participants were screened and, if eligible, research staff explained the study in detail and answered any questions. If the baby's father was not present at the time of screening, research staff asked for permission to contact their partner to explain the study. Research staff provided informational materials for their partner and asked them to talk to their partner about the study.

Inclusion criteria included: (a) pregnant or partner is pregnant in the second or third trimester of pregnancy at time of baseline interview; (b) women: age 14–21 years; men: age at least 14 years, at time of the interview; (c) both members of the couple report being in a romantic relationship with each other; (d) both report being the biological parents of the unborn baby; (e) both agree to participate in the study and (f) both are able to speak English or Spanish. Because this was a longitudinal study we used an initial run-in period as part of eligibility criteria where participants were deemed ineligible if they could not be re-contacted after screening and before their estimated due date.

Written informed consent was obtained by a research staff member at the baseline appointment. The couples separately completed structured interviews via audio computer-assisted self-interviews (ACASI). Participation was voluntary and confidential, and did not influence the provision of health care or social services. All procedures were approved by the Yale University Human Investigation Committee and by institutional review boards at study clinics. Participants were reimbursed $25 for their effort.

Of 413 eligible couples, 296 (72.2%) couples enrolled in the study. Those who agreed to participate were of greater gestational age ($P = 0.03$). Participation did not vary by any other pre-screened demographic characteristic (all $P > 0.05$). Data reported are from the baseline assessments of all participants.

Measures

Relationship functioning was measured using the 32-item dyadic adjustment scale which assesses shared interests, conflict, communication, intimacy, and consensus. Sample items include, “How often do you or your partner leave the house after a fight,” and “Do you kiss

your partner?" A total relationship functioning score was computed by summing responses to all items with higher scores indicating more positive relationship functioning [42]. Reliability for this measure was very good ($\alpha = 0.92$).

Individual Cognitive Factors

Condom attitudes was measured by 9 items adapted from the UCLA multidimensional condom attitude scale [43]. Sample items include "Condoms are an effective method of birth control," "Condoms ruin the sex act," and "Condoms are uncomfortable for both partners." Participants responded using a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. Higher scores represented more positive attitudes towards condoms. Reliability for this measure was adequate ($\alpha = 0.71$).

Condom self-efficacy was measured by a 17 item adaptation of the condom use self efficacy scale [44]. Sample items include "I feel confident in my ability to put a condom on myself or my partner," and "I feel confident in my ability to discuss condom usage with any partner I might have." Participants responded using a 5-point scale ranging from 1 = *strongly agree* to 5 = *strongly disagree*. Higher scores indicated more condom use self-efficacy. Reliability for this measure was very good ($\alpha = 0.90$). *Perceived HIV/STI risk* was measured by a 2-item scale that assessed their perceived risk for getting an STI or HIV in the next year, from 1 = *no chance* to 4 = *a good chance* [45]. Higher scores indicated more perceived risk for getting an STI or HIV. Reliability for this measure was very good ($\alpha = 0.83$).

HIV/STI risk knowledge was measured by 7 questions adapted from the HIV risk knowledge scale [46] concerning the cause, transmission, consequences, and methods of prevention of AIDS and STIs. The participants responded to each statement on a scale of 0 = *definitely false* to 4 = *definitely true*. Higher scores indicated greater knowledge about HIV and STIs. Reliability for this measure was adequate ($\alpha = 0.61$).

Sexual risk behavior—We assessed several aspects of sexual risk including intention to be monogamous in the future, sexual partner concurrency, sexual communication, condom use, and biological STI. *Intention to be monogamous* was measured by a single item that assessed intentions to have sex with only one person in the next year with whom they are in a committed relationship. Responses ranged from 1 = *disagree* to 4 = agree. Sexual partner concurrency in the past 6 months was measured by whether they had sex with another person in addition to their primary partner in the past 6 months. *Sexual communication* was measured by a 2-item scale that assessed the degree to which they talk to their partners about sex. Higher scores indicated better sexual communication. Reliability for this measure was very good ($\alpha = 0.88$). *Condom use in the past 6 months* was measured by having participants state the percentage of time in the past 6 months (from 0% to 100%) that they used condoms with the father/mother of the baby. *STI* was measured by laboratory testing for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Testing was conducted using urine-based nucleic-acid amplification tests. Urine samples were collected at all study visits and analyzed at Quest Diagnostics laboratory. Participants were tested using BD BeAware and APTIMA Combo 2 *Chlamydia*/GC RNA, TMA Assay. These tests have shown high rates of sensitivity (average = 95%) and specificity (average = 98%).

Demographics included gender, age (years), race (African–American, Hispanic, White/Other), relationship duration (months), and age difference between partners.

Data Analysis

Frequencies and means were conducted to describe the sample. To assess differences between male and female partners on relationship functioning, individual cognitive factors,

and sexual risk, we conducted a series of paired *t*-tests for continuous variables and McNemar tests for categorical variables. To assess the influence of relationship functioning and individual cognitive factors on sexual risk, we used multilevel modeling to assess the actor–partner independence model. The actor-partner independence model incorporates responses from both members of a dyad into a single analysis using multilevel modeling. Multilevel modeling treats members of a dyad as nested scores within the same group [47]. A detailed description on how to conduct the actor–partner Independence model analyses using multilevel modeling programs has been previously outlined (see [47]) and served as the guide for our analysis plan. Actor effects refer to whether a person's score on a predictor variable influences the person's own outcome (e.g., a woman's relationship functioning relates to her own STI). Partner effects refer to whether a partner's score on the predictor variable influences the person's outcome (e.g., the male partner's relationship functioning influences the woman's STI).

To assess whether any of the actor and partner relationships differed between men and women, a set of interactions between gender and all predictor variables were entered one at a time in the final model [47]. Significant interactions were added to the final model. It is important to understand potential differences in factors that relate to relationship functioning and sexual risk between men and women in order to develop effective couple based interventions that reduce sexual risk. In order to increase the interpretability of the regression coefficients and because interaction terms were modeled, all variables were centered using the mean from the combined data, which is the recommended approach when centering variables in the actor-partner independence model [47]. The actor and partner effects presented in the model are unstandardized regression coefficients (and their standard errors). Analyses for continuous variables (e.g., relationship functioning, intention to be monogamous, sexual communication, condom use) used standard multi-level modeling. Analyses for binary variables (e.g., partner concurrency in the past 6-months, incident STI) used multi-level modeling for binary outcomes [47].

Results

The majority of participants were African–American (44.1%) or Hispanic (38.0%), with only 13.7% white and 4.2% some other race/ethnicity. Average age was 18.7 (SD = 1.7) for women and 21.3 (SD = 4.1) for men. Mean partnership duration was just over 2 years. Only 8.8% of couples were married, and mean gestational age was 29.1 weeks. 5.2% of participants had a positive STI test (5.2% positive *Chlamydia*; 0.2% positive *Gonorrhea*). Differences between men and women on demographic characteristics are presented in Table 1.

Female and male partners did not differ on relationship functioning, condom use, or STIs. However, they differed on all of the individual cognitive psychosexual factors and several of the sexual risk behaviors. Males had less positive attitudes toward using condoms, lower condom use self-efficacy, more perceived risk for getting HIV or an STI, and lower HIV/STI knowledge than their female partners. Males also had lower intentions to be monogamous in the next year and were more likely to have had a concurrent partner in the previous 6 months compared to their female partner. However, males reported better sexual communication than their female partner (see Table 1).

We assessed the influence of relationship functioning and individual cognitive psychosexual factors on sexual risk behavior using multilevel modeling (see Table 2). Results showed that better relationship functioning was related to increased sexual communication and partner concurrency in the past 6 months, but did not significantly relate to intentions to be monogamous, condom use in the past 6 months, and STIs. Results for the individual

cognitive psychosexual variables showed that more positive condom attitudes related to increased condom use. Condom use self-efficacy related to greater intention to be monogamous, but to less condom use in the past 6 months. Greater perceived HIV/STI risk related to increased partner concurrency in the past 6 months and contracting an STI. There was also a significant relationship between *partner* perceived HIV/STI risk and *partner* condom use self-efficacy and contracting an STI. Finally, individuals with higher HIV/STI knowledge were more likely to intend to be monogamous in the next year, have higher sexual communication, and lower condom use.

Finally, we assessed whether these relationships differed by gender. Despite relationship functioning not having an overall relationship with many of the sexual risk outcomes, we did find significant gender by a person's relationship functioning interactions for intention to be monogamous ($t = -2.10$, $P < 0.05$), partner concurrency ($t = 4.30$, $P < 0.001$), condom use ($t = 4.29$, $P < 0.001$), and STIs ($t = -2.05$, $P < 0.05$). In addition, we found a significant gender by *partner's* relationship functioning interaction for STIs ($t = 2.03$, $P < 05$). Simple effects showed that for intentions to be monogamous, better personal relationship functioning related to a marginal increase in intention to be monogamous for men (B = 0.003, SE = 0.002, $t = 1.67$, $P = 0.09$), but did not relate for women (B = −0.001, SE = 0.001, $t = -0.96$, $P = 0.34$). For partner concurrency, results showed that for men, those with poor relationship functioning were more likely to have a concurrent partner (B = −0.019, SE = 0.004, $t = -4.55$, $P < 0.01$), whereas for women, there was no significant relationship between relationship functioning and partner concurrency (B = −0.008, SE = 0.006, $t = -1.35$, $P = 0.18$). For condom use, results showed that for men, better relationship functioning related to decreased condom use (B = −0.237, SE = 0.090, $t = -2.62$, $P < 0.01$). Whereas for women, better relationship functioning related to increased condom use (B = 0.240, SE = 0.086, $t = 2.80$, $P < 0.01$). Finally, for STIs, results showed that for men personal relationship functioning (B = −0.007, SE = 0.006, $t = -1.21$, $P = 0.22$) and their *partner's* relationship functioning (B = 0.013, SE = 0.009, $t = 1.41$, $P = 0.16$) did not relate to increased likelihood of a positive STI. However, women with better personal relationship functioning (B = 0.024, SE = 0.009, $t = 2.70$, $P < 0.05$) and *partner's* with poor relationship functioning (B = −0.015, SE = 0.005, $t = -298$, $P < 0.05$) were more likely to have a positive STI.

There were also significant interactions for gender and a *partner's* perceived risk and a *partner's* HIV knowledge (both P < 0.05) on STIs. Simple effects showed that for men, a *partner's* perceived risk (B = 0.057, SE = 0.194, $t = 0.29$, $P = 0.76$) and a *partner's* HIV knowledge (B = −0.021, SE = 0.024, $t = -0.89$, P = 0.37) did not relate to STIs. For women, more *partner's* perceived risk for HIV/STI (B = 0.293, SE = 0.080, $t = 3.66$, P < 0.01) and less *partner* HIV/STI knowledge (B = −0.060, SE = 0.022, $t = -2.78$, P < 0.05) related to increased likelihood of having a positive STI.

Discussion

This study shows that for expecting young couples, relationship factors influenced sexual risk behaviors and risk for STIs above and beyond individual cognitive psychosexual factors. Relationship functioning was predictive (either for the whole sample or for specific gender subgroups) for all five of the sexual risk behaviors including intention to be monogamous, partner concurrency, sexual communication, condom use, and STIs. These results support other research that highlights the importance of social relationships on healthy behaviors [48]. Strong relationships can provide resources that help individuals cope with stressors, build supportive social networks, and limit opportunities to engage in negative behaviors [48]. These characteristics may help to reduce sexual risk.

The strength of the association between relationship functioning and sexual risk may partially stem from the context of expecting a baby together. A poorly functioning relationship in conjunction with the stress of preparing for parenthood may amplify negative behaviors that occur in the context of a bad relationship. In 2009, there were approximately 410,000 babies born to adolescent mothers, representing a large and significant public health issue [49]. Understanding factors that may cause additional stress on adolescent parents is critical. Our results suggest that relationships are important for adolescents and that a strong relationship may be an important factor in improving sexual health for young expecting couples.

Poor relationship functioning was associated with more sexual risk behavior. This association was particularly striking for men. Among men, poor relationship functioning related to lower intentions to be monogamous, more relationship partner concurrency, and less sexual communication. Men also had poorer individual cognitive psychosexual characteristics and higher sexual risk behavior than women. Compared to women, men were twice as likely to have a concurrent partner, were less likely to intend to be monogamous in the future, had less HIV/STI knowledge, more perceived risk for HIV/STI, more negative condom attitudes, and lower efficacy toward condom use. These findings support other research indicating that heterosexual men engage in high levels of sexual and HIV risk that puts themselves and their partners at risk [16, 17]. Consistent with our findings, research has shown that heterosexual men have more partners and are more likely to engage in partner concurrency than heterosexual women [21, 22]. Men's lack of access to health care may limit their exposure to health promotion messages compared to women, resulting in poorer individual cognitive psychosexual characteristics such as knowledge and efficacy and higher rates of risk behavior. Another potential reason for the disparity in sexual risk between men and women may be due to gender and cultural norms around masculinity that reinforce ideas about sexual risk taking and romantic relationships [50].

These results reinforce the need to include heterosexual men in HIV prevention research.

Heterosexual men recently have been categorized as the “invisible” and “forgotten” group in HIV/STI prevention [51–53]. A meta analysis by Logan and colleagues showed that 90% of HIV/STI prevention interventions targeting heterosexual populations included women, whereas only 47% included men, and only 10% exclusively targeted men [54]. There is a need to create programs that are specifically targeted toward the factors that place heterosexual men and their partners at increased risk for HIV and STIs.

Our results suggest that one such factor that may place men at risk is poor relationship functioning. Good relationships were protective for young expecting fathers. Our results suggest that men who are in good relationships engage in less sexual risk behavior than men who are in poor relationships. Improving relationship functioning for young men might reduce partner concurrency and number of partners by improving communication between partners and helping facilitate long-lasting and strong relationships. This focus is critical given the increased importance that both partner concurrency and number of sex partners play in HIV/STI risk [13, 14]. Mathematical modeling shows that reducing number of sexual partners substantially reduces HIV and STI prevalence. The prevalence of HIV would be halved with a 30% reduction in sex partnerships [55, 56]. Meta-analyses show that although HIV prevention interventions have been successful in increasing condom use, they have had a non-significant effect on reducing number of partners [57, 58]. Interventions focusing on improving interpersonal/relational skills were more likely to reduce number of partners and partner concurrency [57]. Thus, there is a clear need for effective relationship-based interventions that may further reduce partner concurrency and number of partners.

Although men engaged in more sexual risk than women, and relationship functioning was a stronger predictor of sexual risk for men compared to women, relationship functioning still influenced women's sexual risk either directly or indirectly through her partner. Women with perceived good relationships and women who had partners with perceived poor relationships were more likely to have a positive STI. This suggests that women who feel their relationship is fine but who have partners who are unhappy may be most vulnerable to HIV/STI risk. These results show the influence that a partner can have on a person's sexual risk. The male partner's perception of the couple's relationship influenced the likelihood the woman was diagnosed with an STI. We also found that male partner's perceived HIV/STI risk and level of HIV/STI knowledge also was associated with women's likelihood of having an STI. Women with partners who perceived themselves at risk for HIV/STI and who had low HIV/STI knowledge were more likely to have a positive STI. This further suggests that women are often placed at risk for HIV and STIs from their male partner's behavior and characteristics. Most theoretical models and research have focused on individual influences on behavior and risk. Couple based approaches may be more successful in understanding risk characteristics in both members of a couple, including problems with relationship functioning [5, 59, 60].

In addition to the importance of relationship functioning on sexual risk, we found that individual cognitive psychosexual factors also related to sexual risk. Condom attitudes, efficacy, perceived risk, and HIV/STI knowledge all related to at least one sexual risk outcome, although they sometimes related in the opposite direction than expected. For example, more condom use self-efficacy and HIV/STI knowledge related to decreased condom use. This was likely due to our sample consisting of relatively stable young couples who were expecting a child together, and therefore those with high efficacy and knowledge may have felt they were at relatively low level of risk. However, most relationships were in the expected direction. Individuals with more positive condom attitudes had more condom use, HIV/STI knowledge related to more intentions to be monogamous in the future and better sexual communication, and more condom use self-efficacy related to more intentions to be monogamous in the future. Therefore, our results emphasize the importance of both cognitive and relationship influences on sexual risk. This finding is consistent with the social-personal framework [41], which states that both individual cognitive factors and partner-level relationship factors are important in understanding HIV risk. More theoretical models are needed that integrate cognitive and relationship components when trying to understand complex risk behaviors.

This study does have some limitations. Because our analysis is cross-sectional, we are unable to determine causality between relationship functioning and sexual risk. It is possible that sexual risk behaviors influence relationship functioning instead of relationship functioning influencing sexual risk. Longitudinal follow-up studies are needed to confirm these results. Another limitation is that most of the data was self-reported and therefore subject to measurement error and recall bias. However, we used several techniques to minimize possible bias, including the use of ACASI and calendar recall methods. We also had a biological STI test which showed similar relationship patterns as our self-reported behaviors. However, it should be noted that our rates of STI positive diagnoses were fairly low (5%) and given the possibility of inaccuracy of test results (high but less than 100% sensitivity and specificity); the STI results should be interpreted with caution.

Young men and women often encounter a difficult transition to parenthood rife with conflict and dissatisfaction. Expectant parents are in need of additional skills to help them adjust to this transition and build strong relationships and families. Prevention programs are needed that help young couples adjust to parenthood by providing relationship skills as well as HIV-prevention skills. Integrating these prevention needs within programs aimed at improving

prenatal and postnatal health and parental functioning may be beneficial in terms of lowering risk for HIV and other negative health and social outcomes (e.g., negative child behavior, poverty).

Not only do strong relationships have the ability to reduce HIV risk, but strong relationships have been associated with improved psychological functioning [61], parenting outcomes [62], better child development and adjustment [63], and reduced morbidity and mortality among both men and women [64−66]. These findings make the need to improve relationships among young expecting couples even more important. If we are able to help improve the relationships of young couples, we have the possibility of not only reducing HIV risk, but improving the health and well being of men, women, and children across a variety of health domains.

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Table 1

Sample characteristics, relationship functioning, and sexual risk behavior of young expecting couples

Demographics	Females	Males	*P*-value
Age M(SD)	18.7 (1.7)	21.3 (4.1)	<0.001**
Household income ($) M(SD)	13,399 (15,466)	17,271 (21,518)	0.013*
Race N (%)			
Black	116 (39.5)	142 (48.3)	
Hispanic	117 (40.0)	108 (36.7)	0.054
White/other	50 (20.5)	31 (15.0)	
Relationship functioning M(SD)	116.03 (20.28)	114.32 (21.19)	0.180
Individual cognitive factors			
Condom attitudes M(SD)	44.59 (8.53)	42.71 (8.89)	0.007**
Condom use self-efficacy M(SD)	4.04 (0.62)	3.94 (0.66)	0.038*
HIV/STI perceived risk M(SD)	2.35 (0.80)	2.57(1.13)	0.005**
HIV/STI knowledge M(SD)	30.43 (3.84)	29.29 (4.33)	<0.001**
Sexual risk behavior			
Intention to be monogamous M(SD)	3.91 (0.38)	3.72 (0.59)	<0.001**
Partner concurrency past 6 months N (%)	18 (6.1%)	36 (12.2%)	0.010**
Sexual communication M(SD)	3.24 (1.19)	3.60 (1.14)	<0.001**
Condom use past 6 months M(SD)	15.65 (26.80)	19.78 (31.65)	0.059
STI N (%)	14 (5.0%)	16 (5.7%)	0.791

Notes:

** $P < 0.01$,

* $P < 0.05$

Table 2

Influence of relationship functioning and sexual cognitive predictors on sexual risk behavior

	Intention to be monogamous		Partner concurrency past 6 months		Sexual communication		Condom use past 6 months		STI	
	B (SE)	***t*-test**	**B (SE)**	***t*-test**	**B (SE)**	***t*-test**	**B (SE)**	***t*-test**	**B (SE)**	***t*-test**
Relationship functioning										
Actor	0.001 (0.001)	0.07	−0.013 (0.003)	−3.75 **	0.009 (0.003)	3.15 **	0.014 (0.070)	0.21	0.007 (0.004)	1.65
Partner	0.001 (0.001)	0.08	−0.001 (0.004)	−0.21	0.001 (0.002)	0.32	−0.000 (0.001)	−0.07	−0.004 (0.004)	−0.96
Condom attitudes										
Actor	−0.001 (0.002)	−0.34	0.004 (0.007)	0.62	−0.002 (0.006)	−0.30	0.001 (0.001)	2.90 *	0.004 (0.008)	0.55
Partner	−0.002 (0.002)	−0.85	0.004 (0.010)	0.43	0.005 (0.006)	0.88	0.000 (0.001)	−0.61	0.004 (0.008)	0.55
Condom use self-efficacy										
Actor	0.120 (0.040)	3.36 **	0.134 (0.146)	0.92	0.169 (0.091)	1.85	−0.005 (0.002)	−2.32 *	0.165 (0.105)	1.57
Partner	−0.026 (0.040)	−0.83	−0.221 (0.138)	−1.60	−0.165 (0.091)	−1.80	−0.019 (0.020)	−0.38	0.241 (0.104)	2.33 *
HIV/STI perceived risk										
Actor	−0.031 (0.022)	−1.51	0.155 (0.050)	3.09 *	0.038 (0.050)	0.77	0.030 (0.012)	1.44	0.173 (0.068)	2.57 *
Partner	0.018 (0.021)	0.92	−0.038 (0.069)	−0.54	−0.053 (0.050)	−1.05	−0.001 (0.011)	−0.01	0.240 (0.065)	3.69 **
HIV/STI knowledge										
Actor	0.024 (0.005)	3.05 **	−0.034 (0.017)	−1.95	0.029 (0.013)	2.20 *	0.006 (0.003)	−2.79 **	−0.019 (0.023)	−0.80
Partner	−0.000 (0.005)	−0.06	−0.030 (0.020)	−1.47	−0.017 (0.013)	−1.32	−0.003 (0.003)	−1.10	−0.051 (0.049)	−1.16
Demographics										
Length of relationship	−0.001 (0.001)	−0.63	−0.001 (0.001)	−1.60	−0.001 (0.002)	−1.60	−0.001 (0.001)	−0.84	−0.010 (0.008)	−1.22
Gender										
Men	Referent		Referent		Referent		Referent		Referent	
Women	0.194 (0.051)	3.69 **	−0.320 (0.144)	−2.23 *	−0.353 (0.117)	−3.03 **	−0.013 (0.029)	−0.92	−0.019 (0.018)	−1.06
Age	−0.005 (0.009)	−0.62	0.041 (0.027)	1.50	0.008 (0.020)	0.38	0.006 (0.005)	−0.90	−0.055 (0.049)	−1.12
Race										
White/other	Referent		Referent		Referent		Referent		Referent	
African–American	0.056 (0.055)	1.02	0.056 (0.205)	0.27	−0.253 (0.141)	1.79	0.024 (0.032)	2.31 *	0.172 (0.249)	0.69
Hispanic	−0.033 (0.055)	−0.59	0.010 (0.205)	0.05	0.424 (0.143)	−2.96 **	0.000 (0.032)	1.54	0.089 (0.249)	0.36

Notes:

** $P < 0.01$,

* $P < 0.05$