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Partner Dependence and Sexual Risk Behavior Among STI Clinic Patients

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Abstract

Objectives—To investigate the relation between partner dependence and sexual risk behavior in the context of the information-motivation-behavioral skills (IMB) model.

Methods—STI clinic patients (n = 1432) completed a computerized interview assessing partner dependence, condom use, and IMB variables.

Results—Men had higher partner-dependence scores than women did. Patients reporting greater dependence reported less condom use. Gender did not moderate the partner dependence-condom-use relationship. Partner dependence did not moderate the relation between IMB constructs and condom use.

Conclusions—Further research is needed to determine how partner dependence can be incorporated into conceptual models of safer sex behaviors.

Keywords

power; partner dependence; HIV; sexually transmitted diseases; sexual risk behavior

Sexually transmitted infections (STIs), including HIV, are a major public health problem.^{1,2} The Centers for Disease Control and Prevention (CDC) estimate that there are 56,000 new HIV infections each year, as well as one million cases of chlamydia and 350,000 cases of gonorrhea reported annually.^{2,3} Although gonorrhea and chlamydia are the most common reportable STIs, they represent only a fraction of the annual cases of STIs.³ Some researchers estimate that there are 15 to 18.9 million new STIs each year in the United States.^{4,5} The consequences of STIs include pelvic inflammatory disease, ectopic pregnancy, infertility, epididymitis, and cancer.¹ Patients attending STI clinics report engaging in sexual practices that put them at high risk of infection (eg, numerous lifetime sexual partners, more than one recent sexual partner, frequent unprotected vaginal or anal intercourse), and high rates of STIs, including HIV, have been found in these patients.^{6,7}

To better design interventions to reduce HIV and STI rates, it is important to understand the determinants of sexual risk behavior. Numerous health behavior theories, such as the information-motivation-behavioral skills model (IMB), the Health Belief Model (HBM), and the theory of planned behavior (TPB), have been used to predict sexual risk behavior.^{8–10} The IMB model, for example, posits that information about HIV and STI transmission and prevention, motivation to engage in safer sexual behavior, and safer sex skills (eg, condom-use skills, sexual assertiveness skills, trigger management skills) will predict engagement in safer sex behaviors.⁸ Some research supports this model, with motivation and behavioral skills constructs appearing to be particularly important in predicting sexual behavior.^{11–13} Although constructs in all of these models of health behavior are related to sexual risk behavior, correlations with sexual risk behavior tend to be modest.¹⁴ The explanatory value of these models may be attenuated because the constructs in these models focus on individual determinants of sexual behavior whereas sexual behavior is determined by 2 members of a sexual partnership. Thus, it is important to consider dyadic as well as individual factors when predicting sexual behavior.¹⁵

Relationship power is a potentially important, but often neglected, dyadic determinant of sexual behavior.^{15,16} For women, greater power in a relationship is often, but not always, associated with more frequent condom use.^{17–20} Understanding of the determinants of sexual risk behavior can be enhanced by exploring the extent to which individual and dyadic factors work together to influence risk. For example, it is plausible that the individual determinants of sexual risk behavior predict sexual risk behavior only for individuals who have power in their relationships; that is, power may moderate the relation between individual determinants and sexual risk behavior.

Research on the role of relationship power has involved different methodological approaches and diverse approaches to defining relationship power. Often, power is defined as having control in the relationship, or making decisions in a relationship.^{18,20–23} Power may be defined generally, by asking who has more overall power in a relationship, or may be domain specific, for example, restricted to the sexual or financial domain.^{17,21,23–25} Power has also been measured as commitment to the relationship, perceived alternatives to the relationship, investment in the relationship, and resources brought to the relationship, such as income or education.^{22,23,26}

One aspect of power that has been investigated rarely in sexual behavior research is dependence on a partner. Emerson's adaptation of social exchange theory posits that power is inversely related to a person's dependence on the relationship; thus, dependence is positively related to a person's investment in the benefits offered by the relationship and negatively related to a person's ability to obtain those benefits elsewhere.²⁷ However, few studies of power in relationships have used a definition of power based on a person's perceived partner dependence.

A second important feature of the methods employed in previous studies is sampling. Most previous studies of the power-sexual-risk relationship have sampled only women.^{17,18,22,24,28} There are important reasons to focus on women in research on relationship power; namely, (1) women have historically had less social, economic, and political power than men; and (2) the act of putting on a (male) condom is controlled by the man.²⁹ However, women sometimes perceive themselves as having equal or more power in relationships, and men's behavior may be influenced by power as well.^{17,20,30} Therefore, it is important to investigate the power-sexual-risk relationship for both men and women.

In this study, we sought to answer 4 questions that have not been addressed previously: (1) Is partner dependence related to condom use among patients attending an STI clinic? (2) Do

men and women attending an STI clinic differ in partner dependence? (3) Does the relation between partner dependence and condom use differ for men and women attending an STI clinic? (4) Does partner dependence moderate the relation between individual-level constructs (suggested by the IMB model) and condom use?

METHODS

Design

For this study, we used data from the baseline assessments of a larger, randomized controlled trial investigating the efficacy of several behavioral interventions to reduce sexual risk.³¹ Thus, the design of the present study is cross-sectional. All procedures for the larger study were approved by the institutional review boards of the participating institutions.

Participants

Participants were heterosexual men (n=777) and women (n=655) attending a public STI clinic; 934 were African American (65%) and 333 were white (24%). The majority (62%; n=891) had a high school education or less, were unemployed (51%; n=729), earned less than \$15,000 per year (56%; n=806), and were single (78%; n=1110). The average age of participants was 29.1 years (SD=9.6, range = 18 to 62 years). Participants were more likely than decliners to be female, nonwhite race, and a returning clinic patient and to have completed at least some college and have a greater number of recent sexual partners.³²

Procedures

Participants were recruited as part of a larger trial investigating the efficacy of several behavioral interventions to reduce sexual risk.³¹ For the larger trial, patients were called from the waiting room, by clinic number, into a private examination room. They were asked if they would be willing to answer a few brief screening questions; those who were willing were screened by a trained research assistant (RA) to determine whether they were eligible to participate in the trial. Inclusion criteria included age 18 or older, engaged in sexual risk behavior in the past 3 months (ie, used condoms less than 100% of the time and had more than one sexual partner or had a partner who had more than one partner, who injected drugs, or who had been diagnosed with an STD or HIV), not HIV positive, willing to take an HIV test, and not mentally impaired.

The RA explained the study and obtained written, informed consent. Because survey items asked about behavior in the past 3 months, participants were given a 3-month calendar and asked to write down important or memorable events (eg, celebrating holidays/birthdays, starting or stopping a job or school, taking a trip out of town); we have used this strategy successfully in several studies to orient participants to the time frame and minimize the cognitive burden of the task.³³ Participants were left alone in the examination room while they completed a 45-minute audio computer-assisted self-interview (ACASI), which included questions about partner dependence, safer sex information, motivation, behavioral skills, and condom use. Participants received \$20 for their participation that day.

Measures

Demographics—Participants were asked to report their sex, race, ethnicity, age, education, income, and employment status.

Information—The brief HIV Knowledge Questionnaire (HIV-KQ) was used to assess HIV-related knowledge.³⁴ Previous studies have demonstrated the internal consistency, test-retest reliability, and validity of the HIV-KQ.³⁴ The 18-item HIV-KQ was supplemented

with 6 items assessing knowledge about STIs and 4 items assessing knowledge about HIV testing.^{35,36} Response options for all items were “yes,” “no,” and “don’t know.” The percentage of correct responses was calculated to derive a participant’s knowledge score; a greater score indicated greater knowledge about HIV, STIs, and HIV testing.

Motivation—Condom-use attitudes were included as a measure of motivation to use a condom. The 5 items included in the present study were adapted from existing condom attitudes scales.^{37,38} Participants were asked to rate on a 6-point scale how much they agreed or disagreed with a series of statements about condoms. Items were averaged to yield a condom-attitudes score, with higher scores indicating more favorable attitudes towards condom use ($\alpha = .70$).

Behavioral skills—We adapted Murphy et al.’s self-efficacy measure to assess behavioral skills.³⁹ Participants were presented with 2 scenarios, one involving a steady partner and one involving a nonsteady partner. For each scenario, participants rated their confidence (0 = not at all, 10 = completely) about enacting 6 safer sexual behaviors (eg, engaging in less risky sexual behavior). Greater scores indicated greater confidence in engaging in these risk-reduction behaviors. Internal consistency reliability was .72 for the steady partner, .74 for the nonsteady partner, and .83 for all items.

Partner dependence—Six items assessed participants’ safety, economic, or emotional dependence on a partner. Participants indicated on a 6-point scale how strongly they agreed or disagreed with each of the items (eg, “I need a partner to pay the bills”). Items were averaged to obtain a total score; a higher score indicated greater dependence on a partner ($\alpha = .76$). A principal axis factor analysis indicated (by eigenvalue and by scree criteria) that this scale comprised a single factor.

Condom use—Participants were asked how often in the past 3 months they (1) had vaginal sex with a condom, (2) had vaginal sex without a condom, (3) had anal sex with a condom, and (4) had anal sex without a condom. These questions were asked separately for steady partners and nonsteady partners. Responses were summed to determine the (1) total number of unprotected events, (2) the number of unprotected events with a steady partner, and (3) the number of unprotected events with nonsteady partners. Responses were also used to determine the proportion of episodes of unprotected sex for (1) all partners, (2) steady partners, and (3) nonsteady partners. If participants did not have a steady partner, they were excluded from the steady-partner analyses; if participants did not have a nonsteady partner, they were excluded from the nonsteady-partner analyses. In addition, participants with a steady partner were asked the duration of this relationship (less than 3 months, 3 months to one year, more than one year). These items were used successfully in many previous studies.^{40–42}

Data Analyses—All variables were inspected for outliers; scores that were more than 3 times the interquartile range (IQR) from the 75th percentile were changed to 3 times the IQR plus one. Variables that were nonnormally distributed were re-expressed using a log10 transformation. For analyses involving frequency or proportion of unprotected sex with a steady partner, only participants who had a steady partner were included ($n=1083$); for analyses involving frequency or proportion of unprotected sex episodes with a nonsteady partner, only participants who had a nonsteady partner were included ($n=1043$).

To determine whether partner dependence was related to condom use, multiple regression analyses were conducted with partner dependence as the predictor and condom use as the dependent variable. To determine whether men and women differed in partner dependence, an analysis of variance (ANOVA) was conducted with partner dependence as the dependent

variable and gender as the independent variable. To determine whether the relation between partner dependence and condom use differed by gender, multiple regressions were conducted with condom use as the dependent variable and partner dependence, gender, and the partner-by-gender interaction as predictors.

To determine whether partner dependence moderated the relation between IMB constructs and condom use, we first conducted multiple regressions to establish that the IMB constructs were related to condom use; in these analyses, condom use was the dependent variable, and knowledge, condom attitudes, and self-efficacy were the independent variables. Next, multiple regressions were conducted with condom use as the dependent variable, and with (1) knowledge, partner dependence, and the interaction between knowledge and partner dependence; (2) condom attitudes, partner dependence, and the interaction between condom attitudes and partner dependence; and (3) self-efficacy, partner dependence, and the interaction between self-efficacy and partner dependence as the independent variables. A significant interaction between knowledge, condom attitudes, or self-efficacy and partner dependence would indicate that partner dependence moderated the relation between the IMB constructs and condom use.⁴³ In these analyses, total self-efficacy scores were used to predict total number and proportion of unprotected sex episodes; self-efficacy scores for the steady-partner scenario were used to predict number and proportion of episodes of unprotected sex with a steady partner; and self-efficacy score for the nonsteady-partner scenario were used to predict number and proportion of episodes of unprotected sex with a nonsteady partner.

RESULTS

Participants reported, on average, 17.4 episodes of unprotected sex in the past 3 months total. On average, participants answered 67% of the knowledge items correctly. Participants had an average score of 4.5 on the condom-attitudes measure; and 7.8, 7.5, and 8.0, respectively, for the total, steady partner, and nonsteady partner self-efficacy scenarios. Participants had an average score of 3.3 on the 6-point partner-dependence measure.

Is Partner Dependence Related to Condom Use?

Partner dependence was related to several measures of condom use, including the total frequency of unprotected sex, $F(1, 1425) = 15.87, P < .0001$; the frequency of unprotected sex with a steady partner, $F(1, 1077) = 18.76, P < .0001$; and the proportion of episodes of unprotected sex with a steady partner, $F(1, 1077) = 5.72, P < .05$. Higher partner-dependence scores were associated with more unprotected sex ($r = .10$), more unprotected sex with a steady partner ($r = .13$), and a greater proportion of unprotected sex with a steady partner ($r = .07$). Partner dependence was unrelated to the frequency of unprotected sex with a nonsteady partner, $F(1, 1036) = 2.72, P < .05$; the proportion of episodes of unprotected sex across all partners, $F(1, 1425) = 0.09, P < .05$; and the proportion of episodes of unprotected sex with a nonsteady partner, $F(1, 1035) = 0.42, P < .05$.

Because the length of a steady relationship could influence both partner-dependence scores (ie, someone not in a committed relationship would be expected to score lower on partner dependence) and condom-use frequency or proportion (ie, those who are in longer-term relationships are less likely to use a condom), we tested whether the length of the relationship with a steady partner was related to partner dependence and to condom use with a steady partner.⁴⁴ Length of the relationship was related to condom-use frequency, $F(1, 1077) = 5.43, P < .05$, and proportion with a steady partner, $F(1, 1077) = 28.80, P < .0001$; participants who were in a steady relationship for more than one year reported more episodes of unprotected sex ($M_{\text{long-term}} = 19.7; M_{\text{short-term}} = 17.8$) and a greater proportion of episodes of unprotected sex ($M_{\text{long-term}} = 79\%; M_{\text{short-term}} = 68\%$). However, because

length of relationship was unrelated to partner dependence ($P < .10$), length of relationship was not included as a covariate in any analyses.

Do Men and Women Differ in Partner Dependence?

As displayed in Table 1, men's average partner-dependence scores ($M = 3.41$, $SD = 1.08$) were greater than women's ($M = 3.08$, $SD = 1.15$), $F(1, 1430) = 31.46$, $P < .0001$, Cohen's $d = 0.29$.⁴⁵

Analyses on the individual items indicated that women reported greater dependence on a partner to help pay the bills, whereas men reported greater dependence because a partner was important for their children's future and for their happiness, to help them feel special as a person, and to meet their sexual needs (all P s $< .001$). Men and women did not differ in their dependence on a partner to keep them physically safe.

Does the Relation Between Partner Dependence and Condom Use Differ by Gender?

For 5 of the 6 regressions predicting condom-use variables (frequency of episodes of unprotected sex total, with a steady partner, and with nonsteady partners; proportion of episodes of unprotected sex total and with nonsteady partners), the interaction between gender and partner dependence was nonsignificant, indicating that the relation between partner dependence and the condom-use variables did not differ by gender. For the proportion of episodes of unprotected sex with a steady partner, however, there was a significant gender-by-partner-dependence interaction, $F(1, 1075) = 6.49$, $P < .05$, indicating that the relation between partner dependence and the proportion of episodes of unprotected sex with a steady partner differed for men and women. Follow-up analyses showed that, for men, the relation between partner dependence and the proportion of episodes of unprotected sex with a steady partner was significant, $F(1, 564) = 12.69$, $P < .001$, $r = .15$; for women, this relation was nonsignificant ($P < .10$). As men's partner dependence increased, men reported a greater proportion of episodes of unprotected sex with a steady partner.

Does Partner Dependence Moderate the Relation Between IMB Constructs and Condom Use?

Initial analyses showed that knowledge, condom attitudes, and self-efficacy were generally related to the condom-use variables (for the relation between knowledge and the number of unprotected sex episodes total, with a steady partner, and with nonsteady partners, all P s $\leq .05$; for the relation between condom attitudes and the number and proportion of episodes of unprotected sex total, with a steady partner, and with nonsteady partners, all P s $\leq .001$; and for the relation between self-efficacy and the number of episodes of unprotected sex with a steady and with nonsteady partners, and the proportion of episodes of unprotected sex total, with steady, and with nonsteady partners, all P s $\leq .05$). The interaction between knowledge and partner dependence was unrelated to any of the condom-use outcome variables (all P s $> .05$). The interaction between condom attitudes and partner dependence was unrelated to any of the condom-use outcome variables (all P s $> .10$). The interaction between self-efficacy and partner dependence also was unrelated to any of the condom-use outcome variables (all P s $> .10$). Thus, partner dependence did not moderate the relation between IMB constructs and condom use.

DISCUSSION

This study addressed 4 novel questions about the partner-dependence-risky-sex relationship. Strengths of the study include use of a large sample of patients at high risk for infection with an STI, reliable and valid assessment of key theoretical constructs and behavioral variables

using ACASI (a method that usually, but not always, leads to higher reporting of sensitive behaviors), and strong data analytic methods.^{46–49}

First, similar to findings from other studies, partner dependence was positively associated with more episodes of unprotected sex and a greater proportion of episodes of unprotected sex, particularly with a steady partner.^{17–20} Neither the frequency nor the proportion of episodes of unprotected sex with a nonsteady partner was related to partner dependence. Thus, in the present sample, partner dependence appears to be related to risky sexual behaviors only for sex with a steady partner. Power in relationships is generally studied in the context of steady relationships.^{17–20} Findings from the present study suggest that, at least in terms of condom use, power may be more important in steady than in nonsteady relationships.

Second, men and women differed in their partner-dependence scores. Interestingly, men scored higher, on average, on the partner-dependence measure than did women. Much previous research has focused on power in relationships for women because women have historically had less power than men.^{17,18,21,22,24,26,28,29,50} However, that men reported greater partner dependence suggests that men may have less power in relationships than traditionally assumed, and this finding corroborates research that has found that women perceive themselves as having equal or more power in relationships.^{17,20,21,30} Men reported greater partner dependence because they were more emotionally dependent on a partner, more dependent on a partner for the care of their children, and more dependent on a partner for sex. It is not surprising that women reported more dependence on a partner to pay the bills because men typically earn higher mean and median incomes than those of women.⁵¹

It is interesting that women reported less dependence than men on a partner for emotional needs because men and women typically place similar importance on emotional support in relationships.⁵² Men have been shown to be less skilled than women at providing emotional support, so perhaps this finding indicates that, although women think emotional support is important, they are less able to obtain emotional support from their partners and therefore less likely to depend on a partner for emotional support.^{53,54} It is also not surprising that men were more dependent on a partner to take care of their children because women typically spend more time on child care than do men.⁵⁵ In addition, men are often viewed as biologically predisposed to want to engage in sexual activity and report more sexual activity than women do, facts that may help to explain why men reported being more dependent than women on having a partner to meet their sexual needs.^{56–58}

Third, although men and women differed in partner dependence, the relation between partner dependence and condom use did not differ for men and women for most condom-use variables. Because men physically control condom use, it might be assumed that men's partner dependence would be unrelated to condom use and that women's partner dependence would be very important for condom use. Even more unexpected was the finding that, for the proportion of episodes of unprotected sex with a steady partner, as partner dependence increased, men, but not women, reported a greater proportion of episodes of unprotected sex with a steady partner. Perhaps men, who reported more dependence on a partner for emotional support, associated unprotected sex with emotional closeness; our previous qualitative work with men supports this idea.⁵⁹ In general, the results indicate that partner dependence is related to condom use for both men and women.

Fourth, partner dependence did not moderate the relation between the IMB variables and condom use. This was unexpected because we had hypothesized that the IMB variables would predict condom use for individuals who had power (ie, were less dependent on their partners), but the IMB variables would be unrelated to condom use for individuals who had

less power; instead, similar to findings from other studies, IMB variables were related to condom use across participants.^{11–13} Additional aspects of partner dependence (eg, who is the more dependent partner in a relationship) may be needed to accurately determine whether partner dependence moderates the relation between IMB variables and condom use. In addition, partner dependence may be important only in relationships where partners disagree about condom use, a variable not assessed in the present study. Future research is needed to determine whether both power and IMB variables can be incorporated into a model predicting safer sex behavior.

These findings should be interpreted mindful of study limitations. First, as with any study that samples from one setting, these results may not generalize to other groups and should be replicated. Second, our data did not include information on who decided about condom use, an important variable that should be assessed in future research. Third, the study did not include couples. Future research on partner dependence should include both members of a couple. Fourth, we did not measure perceived alternatives to the relationship, which has been hypothesized to be an important factor in partner dependence.⁶⁰ There is a shortage of men relative to women in the African American community; although men may be particularly invested in the benefits offered by a partner, they also may be easily able to find an alternative partner if their current partner does not acquiesce to their wishes.^{61,62} Future research is needed to investigate how the combination of partner dependence and perceived alternatives to a relationship is associated with condom use. Finally, our measure of partner dependence did not ask about dependence on a specific partner; rather, participants were asked about dependence on having a partner in general. Thus, these items may not have reflected participants' dependence on their partners and may not have assessed power in participants' relationships. In addition, many participants in the present study reported more than one partner in the past 3 months; we cannot know whether participants were answering the partner-dependence questions based on their relationship with a particular partner (eg, a steady partner) or based on their relationships with all partners. Research on partner dependence should include a measure of dependence that refers to a specific sexual partner. Continued research is necessary to determine the validity of the measure used here.

Although further research on power in relationships and safer sex behavior is still needed, clinicians and interventionists should consider addressing power in relationships during counseling and interventions. Multiple types (eg, who makes decisions; who has more alternatives to the relationship) and domains (eg, general, sexual, economic) of power may be important. Power would perhaps best be addressed in a couples intervention. Also, researchers and clinicians should not assume that men have more power in relationships, but should recognize that either member of a couple may have more power. Further research is needed to determine how power operates in conjunction with other antecedents of sexual risk behavior, such as information, motivation, and behavioral skills, to predict sexual risk behavior.

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Table 1

Gender Differences in Partner-dependence Items

Partner-dependence Item	Men (n=777) M (SD)	Women (n=655) M (SD)	<i>F</i>	Cohen's <i>d</i>
I need a partner to pay the bills.	2.15 (1.45)	2.52 (1.71)	26.68 ^b	0.23
Having a partner keeps me physically safe.	2.58 (1.65)	2.49 (1.48)	0.62	--
Having a partner is important to my children's future.	3.23 (1.95)	2.84 (1.80)	12.08 ^a	0.21
Having a partner is important for my happiness.	4.00 (1.60)	3.37 (1.62)	59.08 ^b	0.38
Having a partner helps me feel special as a person.	3.93 (1.60)	3.34 (1.67)	50.26 ^b	0.36
Having a partner helps me to meet my need for sex.	4.53 (1.46)	3.92 (1.62)	60.89 ^b	0.39
Total partner-dependence score	3.41 (1.08)	3.08 (1.15)	29.45 ^b	0.29

Note.

^aP<.001^bP<.0001