Hugh Klein[1], **Kirk W. Elifson**[2], **Claire E. Sterk**[1]

[1] *Rollins School of Public Health, Emory University*

[2] *Department of Sociology, Georgia State University*

Partner communication and HIV risk behaviors among "at risk" women

Summary

Objectives: This research focused on communication with one's sexual and dating partners, and addressed two main research questions: First, what is the relationship between partner communication and involvement in HIV risk behaviors? Second, which factors predict women's level of partner communication about key issues salient in their lives?

Methods: Cross-sectional interviews were conducted with 250 adult women living in the Atlanta, Georgia metropolitan area between August 1997 and August 2000. Street outreach was used to identify potential study participants, with further expansion of the sample done via targeted sampling and ethnographic mapping procedures. Path analysis was used to examine the relationships between partner communication and HIV risk taking, and to identify predictors for the extent of women's partner communication.

Results: The data revealed an inverse relationship between partner communication and involvement in HIV risk taking. Eight statistically significant predictors of partner communication were identified: age, marital status, length of longest marital-type relationship, level of happiness in longest relationship, knowing anyone who had died from AIDS, number of financial problems experienced, having a sexually transmitted disease during the previous year, and self-esteem level.

Conclusions: Partner communication is an important variable to consider when understanding "at risk" women's HIV risk behavior practices. Finding ways to enhance women's communication with their sexual and dating partners appears to be one promising way of reducing their level of HIV risk.

Keywords: **Communication with partners – HIV risk behaviors – Predictors – Women.**

To date, most reported AIDS diagnoses have been attributable to some type of risky sexual contact, which accounts for approximately 63% of all cases to date (Centers for Disease Control and Prevention [CDC] 2002). This figure has been rising steadily in recent years, with incident AIDS diagnoses attributable to sexual contact increasing from 59.1% of all newly-diagnosed persons in 1994 to 70.7% in 2000 (CDC 2002; 1994).

Cognizant of this trend, many HIV educational campaigns and intervention efforts have targeted a variety of sex-related issues as they have tried to help at risk persons to reduce their risk for contracting HIV. Emphasizing the importance of consistently using condoms was one of the earliest approaches taken to help curtail the spread of HIV, and this remains both central and necessary today in ongoing prevention and intervention efforts. Over the years, researchers have learned that it is possible to convince people who were not engaging in protected sexual relations to use condoms with their sexual partners at least some of the time (Gielen et al. 2001; Malotte et al. 2000), and that it is also possible to increase the frequency of condom use among persons already engaging in at least some protected sex (Fishbein et al. 2001; Gollub et al. 2001; O'Leary et al. 2001). At the same time, though, scholars have been quick to point out that bringing about sustained changes in sexual protection has been very challenging and, in many instances, impossible (Cottler et al. 1998; El-Bassel & Schilling 1992; Rhodes et al. 1998).

Recognizing that, despite their successes in reducing overall rates of risky sex, many people continue to engage in unprotected sex all or some of the time, additional steps have been taken to help bolster rates of condom (and other barrier) use. For example, to provide couples with an additional way to protect themselves against HIV and other sexually transmitted diseases, the female condom was created and socially marketed during the 1990s. This device was promoted in the hope of giving women a female-controlled method of reducing risk, and to provide couples in which one partner objected to the use of traditional condoms with an alternative to the male condom. Thus far, most studies of the

Soz.- Präventivmed. 49 (2004) 363–374
0303-8408/04/060363–12
DOI 10.1007/s00038-004-3044-8

efficacy of the female condom have derived favorable results, reporting that people are willing to try the female condom and, fairly often, that they have had positive reactions to the device and good experiences with it (Klein et al. 1999; Macaluso et al. 2000; Van Devanter et al. 2002).

As another example, safer sex workshops have been designed to promote condom use and teach people about ways that condoms can be made less offensive, less obtrusive, more enjoyable, and perhaps even fun to use. Initially, these workshops proliferated among grassroots projects targeting risky behaviors among gay men. In recent years, however, their approach has been adopted more widely as a way to help heterosexual couples feel more comfortable with condom use and to encourage them to experiment with condoms. Formal evaluations of such programs and safer sex workshops oriented toward the promotion of condom use have been scarce, but preliminary evidence suggests that these approaches have been effective (American Foundation for AIDS Research 2001; DeZwart 2002).

As a third example, many community-based projects have incorporated role playing exercises into their HIV intervention efforts. These exercises have emphasized such skills as negotiating with reluctant partners to initiate condom use, convincing reluctant partners to use condoms more consistently, de-escalating interpersonal situations that may become violent when the idea of using condoms is introduced, and so forth. For example, many of the National Institute on Drug Abuse-funded grantees in the National AIDS Demonstration Research Program and its successor, the Cooperative Agreement for AIDS Community-Based Outreach/Intervention Research Program, implemented these types of modules as part of their intervention designs. Published research from these projects has shown that sexual risk-taking decreased after people were exposed to the interactive sessions (Hoffman et al. 1999; Stevens et al. 1998). Other researchers not involved with this particular program but conducting similar work with condom-related and safer sex negotiation-oriented behavioral training have also reported favorable results (Franzini et al. 1990; Weisse et al. 1995).

In light of these types of risk reduction efforts, it is somewhat surprising that little empirical evidence has been provided about the role that partner communication plays in the HIV risk-taking and HIV risk reduction processes. Intuitively, it makes sense to assume that people who are able to speak openly with their dating and sexual partners would be able to engage in constructive HIV risk-related conversations with their partners and capable of seeing to it that they and their partners engage in less risky behaviors. Indeed, the entire premise underlying condom negotiation interventions and role-playing exercises designed to bolster condom usage hinges on people's ability to establish clear communication with their partners. In an intervention targeting African American female crack users (Sterk et al. 2003a; 2003b), two of the present authors (KWE & CES) incorporated sexual risk reduction strategies by covering technical condom use skills and communication skills. In addition, conflict resolution and bargaining techniques were introduced in the intervention on the belief that risk reduction negotiations will succeed only if people learn to stand up for themselves and make health-related decisions that reflect their individual preferences and interests. Overall, though, the scientific literature has little to offer with regard to demonstrating the actual relationship between partner communication and HIV risk behavior practices.

The published scientific literature does, however, include some conceptual works addressing theoretical models for examining the relationship between partner communication and HIV risk practices. For example, Ahlemeyer and Ludwig (1997) have identified what they term a social systems or intimate communication approach to examining the relationship between these variables. In a social systems approach, "the interactive dynamics between two intimate partners [constitutes] a social system of intimate communication" (p. 25). The authors noted that "it usually takes at least a short verbal agreement or even negotiation about the integration of the preventive device into the situation. Without having talked about it at all, it is very difficult to bring the condom in. If it is introduced without any communicative preparation, disturbances and embarrassments have to be expected at a later stage. ... The ability to talk about the condom with a new partner [has] ... individual aspects ... and ... systemic aspects" (p. 36). Also speaking about a social systems approach to studying partner communication and HIV, Van Campenhoudt and Cohen (1997) noted that each system (that is, each couple) has its own rules for communication and reciprocal expectations that structure the partners' interactions with one another. Consistent with this theoretical approach, research has shown that condom use is less frequent when communication between the intimate partners is lacking or absent altogether (Bruhin 2003).

Another way of conceptualizing the relationship between partner communication and HIV risk behaviors is offered by social network theory. Ostensibly, this approach contends that how intimate partners communicate with one another will depend upon their social relationships with one another, their perceptions of the normative expectations that govern their behaviors, and the extent to which the partners feel bonded to the broader social contexts/networks in which they are involved. In discussing this theoretical model, Van

Campenhoudt and Cohen (1997) wisely pointed out that "each relationship is a singular reality in itself, a specific temporal process composed of bargaining and agreements that often change over time. ... Actions taken by social actors who are involved with others in social relationships constantly define and redefine the broader social context. From this point of view, systems and contexts are nothing more than the state of social relationships, at a given time" (p. 64). Another way in which scholars may wish to consider the interplay of HIV risk behaviors and partner communication would be to adopt what Van Campenhoudt and Cohen (1997) have termed a relational sociology approach. Here, partner communication must be understood in terms of the situational dimension of a relationship (i.e., its social contexts), the temporal dimension of the relationship (i.e., factors influencing partners' expectations, feelings, and behaviors at any specific point in time), the meaning of the relationship to the individuals involved (e.g., casual vs committed relationship), the relative power of the individuals involved, the emotional dimensions of the relationship for each of the partners, and the status of risk in the relationship (e.g., is risk perceived as adverse or as a manifestation of mutual trust?). Published studies focusing on condom use negotiation strategies and interpersonal power dynamics in intimate relationships have shown the value of this relational sociology approach to understanding the relationship between partner communication and HIV risk practices, since these studies usually have found that sexual protection rates increase as power is equalized and as negotiation-related sexual communication skills increase (Bruhin 2003). Lear (1995) also provides an interesting discussion of the applicability of several key concepts to the relational sociology approach to understanding sexual communication between intimate partners.

We would like to conclude this discussion by pointing out that despite these various conceptual approaches to studying the relationship between partner communication and HIV risk practices, research testing the actual relationship of these variables to one another has been lacking. This led Ingham and Van Zessen (1995) to comment "as a way [of moving scholarship in this area] forward, we suggest that much greater attention be paid to interactional processes than has hitherto been the case" (p. 16).

In the present study, we pursue Ingham and Van Zessen's suggestion, and provide an empirical examination of the relationship between partner communication and actual HIV-related behaviors. We address three principal research questions in this research. First, is there a relationship between communication with one's dating and sexual partners and involvement in HIV-related risk behaviors? Our hypothesis going into this research is that such a relationship exists and that it is an inverse one: People reporting poorer or lesser communication with their sexual and dating partners will engage in higher rates of sex-related risky behaviors. Second, if such a relationship exists, is it sustained when it is examined in a multivariate context? Third, assuming that there is a relationship between partner communication and risk behavior practices, what factors predict partner communication levels? We view these questions as having important implications for the HIV intervention field, as documenting a relationship between partner communication and HIV risk behaviors may provide suggestions for directions for fruitful HIV risk reduction intervention efforts. We consider the third question equally important because its answer can help us to develop an understanding of the predictors of partner communication and, thus, identify specific groups and/or behaviors that merit targeted outreach and intervention efforts.

Methods

Overview and sample

The data for this study came from Project FAST, which was conducted between August 1997 and August 2000 in the Atlanta, Georgia metropolitan area. One of the principal goals of this study was to examine life issues and challenges, substance use, psychological and psychosocial functioning, and a variety of HIV-related risk behaviors among adult "at risk" women. "At risk" was defined broadly and included, among others, the following seven characteristics: (1) living in areas known for high rates of drug abuse, (2) being either active users of illegal drugs and/or having an immediate family member who was a substance abuser, (3) being impoverished, (4) lacking adequate medical care and/or health insurance, (5) having a low education level, (6) being unemployed, and (7) having a criminal history. Table 1 shows the proportion of study participants meeting each of these criteria. All of the women met at least one criterion and most of them (67.2%) met at least four of the criteria.

In all, 250 women participated in this study. Most (86%) were racial minority group members, predominantly African American. The median age was 35 (mean = 35.3, s.d. = 13.2, range = 18–72). About half (53%) of the women were single and an additional 13% were married or living as married at the time of their interview.

Eligibility

In order to participate in the study, in addition to being considered an "at risk" woman, several other eligibility criteria also had to be met. Each woman had to live in one of the

Table 1 Description of the sample

	% of women
Race	
African American	86.4
All others	13.6
Age	
18–29	38.0
30–39	24.4
40–49	24.0
50 or older	13.6
Marital status	
single	52.6
married/living as married	13.4
separated/divorced	12.1
all others	21.9
Educational attainment	
less than high school	40.4
high school graduate	34.8
at least some college	24.8
"At risk" criteria	
living in drug-infested area	100.0
drug user or close relative who abuses drugs	68.0
income at/below poverty level	67.4
less than high school education	40.4
lacking needed medical care or having no medical insurance	42.4
unemployed or disabled	50.0
criminal history	49.2
Met 2–3 "at risk" criteria	26.4
Met 4–5 "at risk" criteria	42.4
Met 6–7 "at risk" criteria	24.8

study's catchment areas. She had to be aged 18 or older and be able to conduct her interview in English. In addition, in order to ensure that a non-institutionalized sample was obtained, women could not be enrolled in a substance abuse treatment program, incarcerated in a prison or jail, or be living in any other institutional setting at the time of their participation.

Recruitment

Women were recruited into the study by outreach workers, who conducted initial screening interviews "on the street" to confirm potential participants' eligibility for the study. The initial recruitment was based largely on targeted sampling, including ethnographic mapping (Sterk 1999a; Watters & Biernacki 1989). The targeted neighborhoods were chosen because of their concentration of "at risk" women. These communities were "hot spots" of local drug activity characterized by frequent drug sales and widespread drug use. Within these community "hot spots," the outreach workers targeted places where "at risk" women were known to gather (e.g., laundromats, stores, playgrounds, churches, and activity centers), so as to maximize their recruitment efforts. As the study progressed, a chain referral sampling technique was used to identify additional participants. After completion of the interview, each woman was asked to refer the research team to other women who might be interested in participating in the study. On average, interviews took two hours to complete. At the completion of the interview, each woman was paid $15 for her participation and offered referrals to local health/social service agencies, as appropriate. Approximately one woman in four who was approached to participate in the study actually did so. Most of the people who did not take part in Project FAST either cited a lack of time for completing the study interview or were deemed ineligible by the person who was conducting the initial screening interview once some preliminary information was collected.

The conceptual model

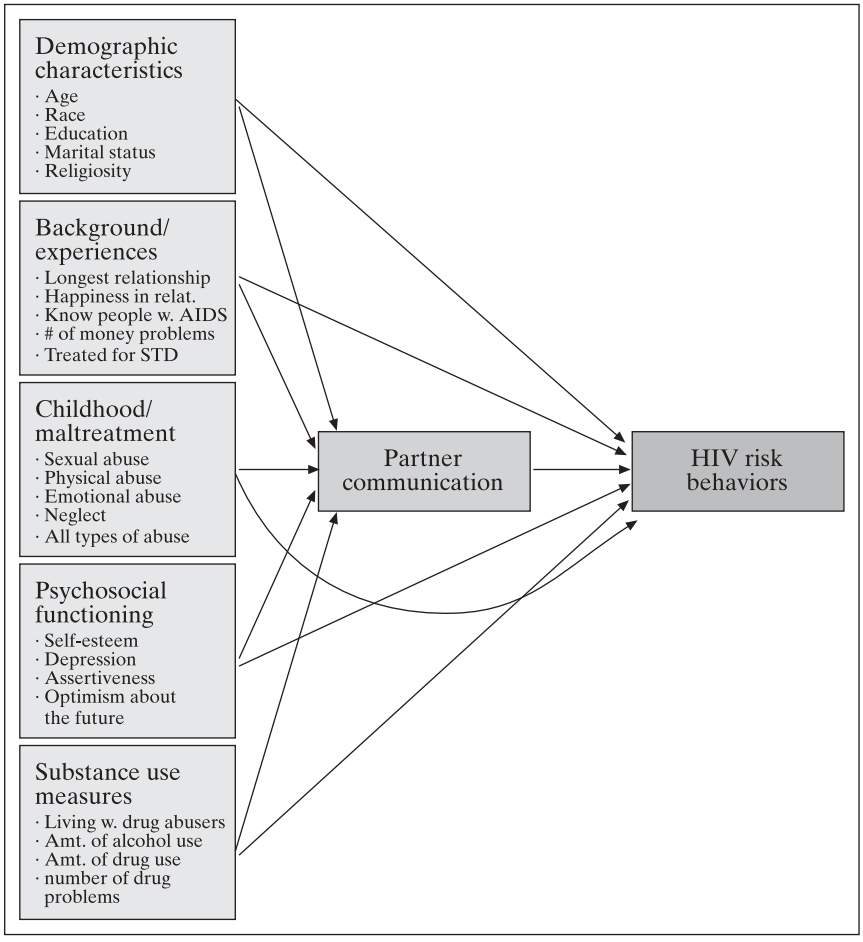
Figure 1 presents the conceptual model being examined and tested in this study. On the left side of the model, several categories of exogenous, or predictor, variables are shown. These include demographic characteristics, background and experiences measures, childhood maltreatment experiences, psychosocial functioning items, and a variety of substance use-related measures. In the middle, partner communication is presented as an endogenous, or mediating, variable. On the right, the outcome measure, HIV risk behaviors, is shown. All of the hypothesized relationships are based on previous research findings in the published literature, as well as the tenets of the theory of reasoned action/theory of planned behavior (Ajzen 1992; Brown 1999) and social cognitive theory (Bandura 1999; 1986). Some elements from the health belief model (Brown 1999; Fisher & Fisher 2000) are also evident in the model used to guide the present research (e.g., sociodemographic factors preceding belief and attitudinal measures, self-efficacy as one of the key predictors of behavior, actual behavior as the principal outcome measure).

By adopting this model, we hypothesize that women who have better/more communication with their sexual and dating partners will engage in fewer HIV risk behaviors than their counterparts who have less communication with their partners. In this model, partner communication is construed as one of several influences on HIV risk behaviors, with demographic variables, background and experiences measures, childhood maltreatment, psychosocial functioning, and substance use-related factors all hypothesized to affect outcomes as well. Each of these domains is also expected to influence women's levels of partner communication as well, as the arrows on Figure 1 portray.

Measures used

All of the data in Project FAST were based on self-reports. Partner communication was considered a mediating variable and was the principal variable of interest; HIV risk behaviors practiced during the preceding year was the dependent

Figure 1 Conceptual model being tested



variable. Partner communication was assessed using a composite, continuous measure based on responses to seven items. These items indicated how often women asked a person they were dating or with whom they were having sexual relations about drug use, sexually transmitted diseases, HIV/AIDS, previous sexual partners, financial matters, expectations for their relationship, and children. It is important to note that the referent person/target for these partner communication questions was "a person you are dating or having sex with" and, therefore, the partner communication scale used in these analyses refers to partner communication generally rather than with communication with one specific person.[1] Individual items were scored on a five-point ordinal scale with responses ranging from "never" to "almost always." The overall scale measure was reliable (Cronbach's alpha = 0.81).

Involvement in HIV risk behaviors during the past year was assessed using summative scale measure (Kuder-Richardson-20 = 0.61).[2] One point was added to the scale for each of

[1] Ideally, these analyses would have included covariates/variables or information such as different types of relationships women had with their partners (e.g., married vs dating vs purely casual relationships), relationship duration, overall quality of the relationship, and so forth. Had the partner communication data collected been keyed into these relationship-specific variables, we would have been provided with information that would help to illuminate the exact nature of partner communication patterns more incisively. These types of information were not collected as part of Project FAST, however, and for that reason were not included in these analyses. This would be a highly fruitful avenue for future research focusing on partner communication and its relationship with HIV risk behaviors.

[2] The use of this type of summative scale implies that each of the risk behaviors comprising the HIV risk behavior scale is of approximately-equal "weight" or consequence in determining the overall level of a person's risk. While some persons may contend that certain behaviors included in the scale pose a greater risk than others (e.g., having anal sex vs having sex while under the influence of alcohol or other drugs), it is impossible to know for any one person which behavior(s) included in the scale occurred more often or which behavior(s) involved greater actual risk. For example, someone reporting having engaged in anal sex may have done it one time during the preceding year (thereby adding one point to the scale) and another person may have had sex while high on a daily basis during the previous year (thereby adding one point to the scale). In such an instance, the assumption about which of these behaviors actually poses a greater level of risk to the study participant would be erroneous. Since the questions comprising our HIV risk behavior scale merely enumerate the behaviors in which people engaged during the preceding year and do not consider the frequency of practicing these particular practices, there is no way to give additional or lesser weight to items comprising the scale. Therefore, we believe that our decision to give equal weight to the various items comprising this scale is justified and that the scale provides a valid measure of the number of types of HIV risk in which women had engaged during the year prior to interview.

the following items: (1) had sex while high or while partner was high on alcohol or other drugs, (2) had sex with an injection drug user, (3) had anal intercourse, (4) had sex with a man who might have had sex with other men, (5) traded sex for drugs, gifts, or money, (6) purchased sex with drugs, gifts, or money, (7) had more than one sexual partner during the previous year, and (8) had unprotected sex of any kind.

As Figure 1 shows, a number of other variables were used in these analyses as well. *Demographic variables* used included age (coded as a continuous variable), race (coded as African American or other-than-African-American, since no racial/ethnic group other than African Americans was represented in large numbers in this sample), educational attainment (coded as less than high school graduate, high school graduate or equivalent, and at least some college education), marital status (coded as married or living as married versus other-than-married because, conceptually, this is the most meaningful distinction to be made when partner communication is the principal variable of interest), and religiosity (a continuous variable based on the interaction of frequency of religious service attendance and perceived importance of religion upon one's behaviors). *Background and experiences measures* examined included length of the longest lifetime romantic-type relationship (a continuous measure), level of happiness in the longest romantic relationship (a continuous measure), knowing someone who died from AIDS (coded yes/no), knowing anyone who is HIV-positive (coded yes/no), number of money problems experienced (a continuous measure), and having been treated for a sexually transmitted disease (coded yes/no). *Childhood maltreatment variables* included sexual abuse, physical abuse, emotional abuse, neglect, and one additional measure that indicated whether or not the person had been victimized in all four of these ways. All four of these measures were based on experiences prior to age 18 and were coded as "happened" or "did not happen." These constructs were assessed using Bernstein et al.'s (1994) *Childhood trauma questionnaire.* Four *psychosocial measures* were also examined, including assessments of self-esteem (a continuous scale measure based on Rosenberg's (1965) self-esteem scale) (Cronbach's alpha = 0.84), depression (a continuous scale measure based on *the Depression and anxiety stress scale 42 [DASS 42]* developed by Lovibond & Lovibond [1995]) (Cronbach's alpha = 0.86), optimism about the future (a continuous scale measure derived from five items) (Cronbach's alpha = 0.64), and assertiveness (a continuous scale measure derived from 13 items)(Cronbach's alpha = 0.78). Four *substance use or exposure to substance abusers* measures were also used in the analyses. These included measures examining living with any person(s) using illegal drugs (coded yes/no), amount of alcohol used during the past 30 days (a continuous measure based on the average number of drinks consumed per day and the number of days using alcohol during the preceding month), amount of illegal drug use during the previous 30 days (a continuous measure based on summing responses to average quantity and frequency of use of each of nine types of illegal drugs), and number of drug problems experienced (a continuous scale measure based on responses to 11 items indicating substance abuse and substance dependency, as specified in the DSM-IV [American Psychiatric Association 1994]) (Kuder-Richardson-20 = 0.91)[3].

Analysis

Path analysis was used as the analytical technique for this research. Initially, the bivariate relationships hypothesized were tested, and all variables found to be related significantly ($p < 0.05$) or marginally ($0.15 > p > 0.05$) to the dependent measure in question were chosen for entry into two separate multivariate equations. These multivariate equations entailed the use of multiple regression, since the mediating and dependent variables were a continuous scale measure. As Figure 1 depicts, level of partner communication and the number of HIV risk behaviors practiced served as the dependent measures for these analyses.

In the presentation of findings below, results are reported as significant whenever $p < 0.05$. On Figure 2, standardized coefficients (i.e., beta values) are presented so that relative effect sizes can be noted and compared.

Results

Predictors of HIV risk behaviors

As Figure 2 shows, partner communication was one of six variables found to predict women's involvement in HIV risk behaviors. The less women communicated with their sexual or dating partners, the greater their involvement in HIV risk behaviors tended to be ($p < 0.05$). In addition, greater religiosity was associated with less HIV risk ($p < 0.001$). The data revealed that younger women practiced more HIV risk behaviors than their older counterparts ($p < 0.05$). Two of the background and experiences measures were related to

[3] Due to potential confounding with the dependent variable (i.e., because one of the variables comprising the HIV risk behavior scale measure that we used was based on having sexual relations while high on alcohol or other drugs), only the "living with substance abusers" and "number of drug problems" measures were examined as predictors of HIV risk behaviors. All of these measures were examined as potential predictors of partner communication, though.

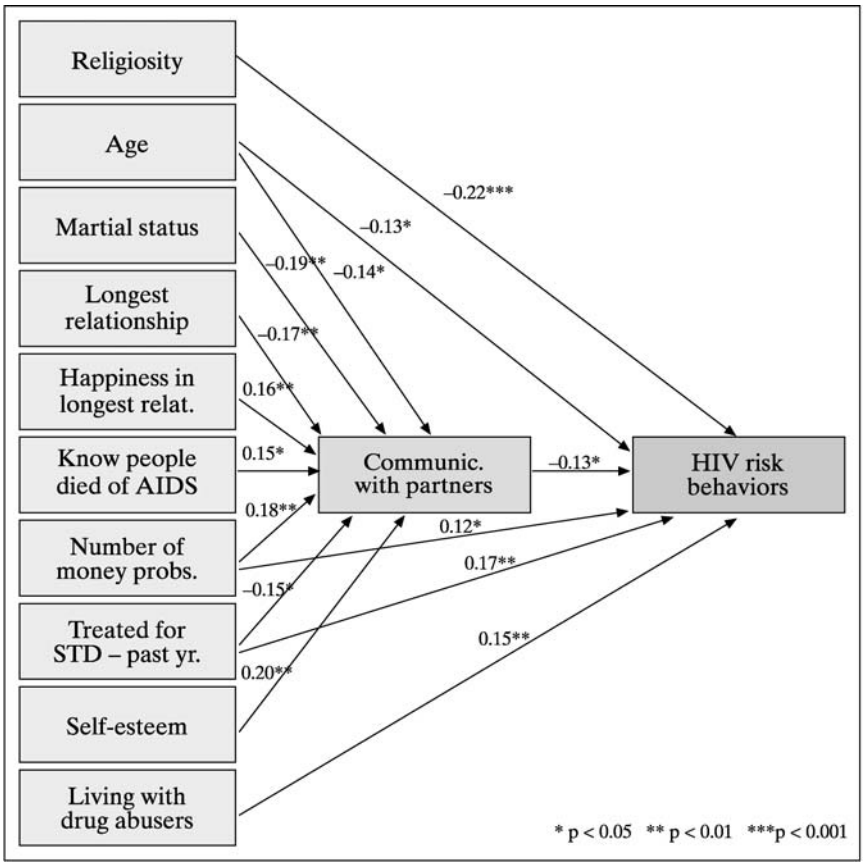


Figure 2 Partner communication and HIV risk behaviors

involvement in HIV risk practices. More risk was reported by women who had a larger number of money problems compared to their peers who had fewer financial difficulties ($p < 0.05$). Women who had been treated for a sexually transmitted disease (STD) during the previous year engaged in nearly twice as many HIV risk behaviors as their counterparts who had not had an STD ($p < 0.01$). Women who lived with a substance abuser had, on average, engaged in 50% more HIV risk behaviors than their counterparts who did not live with a substance abuser ($p < 0.01$). Together, these six variables explained 22.9% of the total variance in the outcome measure.

Predictors of partner communication level

Figure 2 also shows that a number of variables were associated with the extent to which women communicated with their sexual or dating partners. Younger women tended to communicate with their partners less than older women did ($p < 0.05$). Married women reported less partner communication than those who were single, separated, divorced, etc. ($p < 0.01$). More communication with partners was reported by women whose longest lifetime romantic relationship was shorter ($p < 0.01$) but whose happiness level in their longest-ever relationship was greater ($p < 0.01$). Knowing someone who had died from AIDS was associated with greater communication with one's sexual and dating partners ($p < 0.05$). Women experiencing more financial difficulties demonstrated higher levels of partner communication than their peers with fewer money-related problems ($p < 0.01$). Having been treated for a sexually transmitted disease during the preceding year was associated with lower levels of partner communication ($p < 0.05$). Partner communication was also found to be related to self-esteem, with higher self-esteem being predictive of greater communication ($p < 0.01$). Together, these variables explained 24.9% of the total variance in women's level of partner communication.

Discussion

Potential limitations of this research

Before discussing some of our main findings, we would like to acknowledge a few potential limitations of this research. First, the data collected as part of Project FAST were all based on uncorroborated self-reports. Therefore, the extent to which respondents underreported or overreported their

involvement in risky behaviors is unknown. In all likelihood, the self-reported data can be trusted, as numerous authors have noted that persons in their research studies (which, like the present study, have included fairly large numbers of substance abusers) have provided accurate information about their behaviors (Anglin et al. 1993; Higgins et al. 1995; Miller et al. 1990; Nurco 1985).

A second possible limitation pertains to recall bias. Respondents were asked to report about their beliefs, attitudes, and behaviors during the past 30 days, the past 90 days, and the past year, depending upon the measure in question. These time frames were chosen specifically (1) to incorporate a large enough amount of time in the risk behavior questions' time frames so as to facilitate meaningful variability from person to person, and (2) to minimize recall bias. The exact extent to which recall bias affected the data cannot be assessed although other researchers collecting data similar to that captured in Project FAST have reported that recall bias is sufficiently minimal that its impact upon study findings is likely to be small (Jaccard & Wan 1995).

A third possible limitation of these data comes from the sampling strategy used. All interviews were conducted in the Atlanta, Georgia metropolitan area. There may very well be local or regional influences or subcultural differences between these women and those residing elsewhere that could affect the generalizability of the data. Likewise, the women who participated in this study comprise a very specific "type" of women – that is, primarily African American, lower socio-economic status, urban, and so forth – that does not represent adult women broadly, but rather, represents a population of "at risk" women. Additionally, the chain referral sampling approach used to identify study participants is not a random sampling strategy, and there may be inherent biases in who was/not identified as potential study participants in Project FAST. A good discussion of the issues pertinent to this concern may be found in Heckathorn (1997), along with strategies that can be employed to minimize any bias that could result from the use of a chain-referral sampling approach.

Fourth, the use of a path model approach, such as the one we have adopted here, implies the existence of linear relationships and temporal causality. The very fact that certain variables are hypothesized to predict others, which is typical of all path models and path analyses, is premised upon an inherent assumption of the ordering of the variables in terms of which ones affect which others. In point of fact, however, the "real life" temporal ordering of these assumed relationships cannot be tested with a cross-sectional study such as this one, and the extent to which the ordering of the variables may be erroneous cannot be assessed concretely without using a prospective or longitudinal study design. We do contend, though, that the ordering that we have selected is both logical and justified, and it is also consistent with the theoretical models that underlie this research. For example, the theory of reasoned action and the health belief model both posit that beliefs and attitudes predate behaviors; our conceptual model and the analyses we have conducted to test it are consistent with that supposition. Both of these theoretical approaches also assume that numerous factors (such as background experiences or demographic differences) shape people's beliefs and attitudes; our conceptual model and the analyses we have conducted to test it are consistent with that premise as well.

Conclusions

Despite these potential limitations to the present research, we believe that a number of interesting and valuable things can be gleaned from this study. Our results reveal that aspects of each predictive domain in the guiding conceptual model were relevant in understanding the link between partner communication and involvement in HIV risk behaviors as well as in identifying predictors for partner communication. The analysis also shows partner communication to be an important mediating factor, thereby supporting the quest for increased attention to interactional processes and their impact on HIV risk-taking, including the potential for HIV risk reduction (Ingham & Van Zessen 1995). Communication with their sexual and dating partners does appear to be a consequential variable influencing "at risk" women's overall HIV risk behavior practices. Ostensibly, the more frequent women's discussions with their dating and sexual partners were regarding salient and important matters in their lives, the less they tended to be involved in HIV risk behaviors. These findings are consistent with others reported in the published literature, showing that good communication skills, including those focusing on conflict resolution and bargaining, can play a very powerful role in helping people – particularly women – to reduce their risk for HIV (Boyer et al. 1997; El-Bassel et al. 2001; Kalichman et al. 1996; Molitor et al. 1999; Ploem & Byers 1997; Somlai et al. 1998; Sterk et al. 2003a; 2003b). Several strategies for improving condom-related partner communication have been identified, such as individualized case management approaches (Andersen et al. 1993; Reif et al. 2001; Stevens & Hall 1998; Tenner et al. 1998) and role playing exercises (El-Bassel et al. 2001; Hoffman et al. 1999; Sikkema et al. 1995). The present study contributes to the existing literature by demonst rating the importance of partner communication among

"at risk" women – that is, women whose lives and life circumstances place them at great risk for contracting HIV and a variety of other health-related problems/diseases.

Having determined that partner communication is an important component of a model predicting "at risk" women's condom-related attitudes and their HIV risk behavior practices, we also wanted to learn more about the factors that determined women's levels of communication with their dating and sexual partners. We considered this to be an integral part of the analysis, as the identification of these antecedent variables can help to identify specific groups or behaviors to target in future intervention efforts. Based on a multivariate path analysis, we identified eight such variables: self-esteem level, knowing someone who died from AIDS, marital status, length of longest previous marital-type relationship, happiness level in longest previous relationship, age, number of financial problems experienced, and recent treatment for a sexually transmitted disease.

The finding that partner communication was greater among women with higher self-esteem underscores the importance of working with women whose self-esteem is less adequate. Recognizing that low levels of self-esteem often underlie greater involvement in HIV risk behaviors (Abel et al. 1996; Ferreira-Pinto & Ramos 1995; Nyamathi & Stein 1997; Somlai et al. 2000; St. Lawrence et al. 1997), many programs around the country have tried to enhance self-esteem as part of their HIV intervention approaches. As a general rule, HIV-related intervention components aimed at improving psychosocial functioning appear to work well, with many studies reporting associations between better psychosocial functioning and lower HIV risk, or between improved psychosocial functioning and reduced involvement in risky practices (Ferreira-Pinto & Ramos 1995; Nyamathi & Stein 1997; St. Lawrence et al. 1997).

The direct relationship between the length of the women's longest relationship (and their level of happiness in that relationship) and their level of communication with their partners indicates the value of providing women with specific strategies they can implement to enhance the quality of their relationships. In addition, since the happiest relationships tended to be shorter and since married women tended to report less partner communication than single, separated or divorced women, it is important for interventions to focus not only on the nature of the relationship but also its length of time. The present research as well as that of others suggests the importance of assisting those women who want to be in a relationship to develop more durable relationships with their partners (Ashery et al. 1997; Padian et al. 1993).

Our analysis also revealed that three other variables – age, the number of financial problems experienced, and recent treatment for a sexually transmitted disease – were found to have a direct as well as an indirect effect on HIV risk-taking. Younger women were less likely to communicate with their sexual and dating partners, but compared to older women, they were less likely to engage in HIV risk behaviors. Apparently, their relative lack of partner communication does not keep them from engaging in safe sex. Nevertheless, when taught how to communicate more effectively with their partners, younger women may be able to reduce their HIV risk-taking further. On the other hand, whereas older women were more likely than their younger peers to communicate with their sexual and dating partners, they were more likely to place themselves at risk for HIV infection. Other researchers have commented on the benefits of and the continued need for HIV intervention projects that target specific age groups (Donisi et al. 1998; Kennedy et al. 2000; Richard et al. 2000; Strombeck & Levy 1998). We concur with these scholars and believe that it would be wise for future HIV risk reduction endeavors to consider the age appropriateness of their educational messages and intervention components and to develop age-specific interventions. Those women who experienced financial problems reported higher levels of HIV risk behaviors than those who experienced fewer financial problems. The literature shows that it is not uncommon among "at risk" women to trade or barter sex as a survival strategy (Sterk 1999b). The third variable being discussed here because of its impact upon HIV risk-taking was having been treated for an STD, which confirms the fact that a sexually transmitted disease may serve as a proxy for HIV risk. It can be expected, based on our findings, that having had contracted such an STD was not associated with subsequent increases of partner communication. This finding, however, does highlight the importance of providing "at risk" women with HIV risk reduction interventions that can help them reduce their practice of sexual risk behaviors.

In summary, this study has shown that partner communication is an important variable to consider when examining the myriad factors that influence women's HIV risk behaviors. In multivariate analysis, partner communication was shown to be a statistically significant predictor of HIV risk practices, such that women who engaged in more communication with their dating and sexual partners reported fewer HIV risk behaviors. We also identified a number of variables that were predictive of women's partner communication levels. More partner communication was reported by women who: were younger in age, were not married, reported the shortest "longest ever" marital-type relationships, said that they were happier in their longest-ever relationships, knew

someone who had died from AIDS, had more financial difficulties, had not been treated for an STD during the preceding year, and had higher levels of self-esteem.

Acknowledgment
This research was supported by a grant from the National Institute on Drug Abuse (R01-DA09819). The authors wish to acknowledge, with gratitude, the contributions made by Katherine Theall to the development of this manuscript.

Zusammenfassung

Partnerkommunikation und HIV-Risikoverhalten bei Frauen
Fragestellung: Die Studie fokussiert die Kommunikation zwischen Sexualpartnern und Freunden: Welcher Zusammenhang besteht zwischen Partnerkommunikation und Beteiligung an Risikoverhalten bezüglich HIV? Und welche Faktoren sagen bei Frauen das Kommunikationsniveau mit ihrem Partner voraus bezüglich wichtiger Lebensthemen?
Methoden: 250 Interviews mit erwachsenen Frauen aus der Region Atlanta, Georgia wurden zwischen August 1997 und August 2000 für die Querschnittstudie durchgeführt. Potentielle Studienteilnehmerinnen wurden auf der Strasse angefragt, die Stichprobe wurde durch gezieltes Sampling und ethnographische Mappingmethoden vergrössert. Mit Pfadanalysen wurde der Zusammenhang zwischen Partnerkommunikation und HIV-Risikobereitschaft analysiert und die Prädiktoren für das Ausmass der Partnerkommunikation der Frauen identifiziert.
Ergebnisse: Die Daten lassen einen umgekehrten Zusammenhang zwischen Partnerkommunikation und Beteiligung an Risikoverhalten bezüglich HIV erkennen. Acht statistisch signifikante Prädiktoren für die Partnerkommunikation wurden identifiziert: Alter, Zivilstand, Länge des längsten Zivilstand-Typs, Grad des Glücks in der längsten Beziehung, jemanden kennen, der an AIDS gestorben ist, Anzahl erlebter finanzieller Probleme, Erkrankung an einer sexuell übertragbaren Krankheit im vergangenen Jahr, Höhe des Selbstwerts.
Schlussfolgerung: Partnerkommunikation ist eine wichtige Variable für das Verstehen von Frauen mit Risikoverhalten bezüglich HIV. Die Kommunikation zwischen Frauen und deren Partnern zu verbessern, scheint eine viel versprechende Methode, um das Niveau des Risikoverhaltens zu vermindern.

Résumé

Communication avec les partenaires et comportement à risque de VIH des femmes
Objectifs: Cette étude s'est centrée sur la communication entre partenaires sexuels et entre amis. Ses deux questions de recherches étaient les suivantes: 1. Quelle est la relation entre la communication avec les partenaires et leur adoption de comportement à risque de VIH? 2. Quels sont les facteurs qui prédisent, chez les femmes, les niveaux de communication avec leurs partenaires sur des thèmes très importants de leur vie?
Méthodes: Des entretiens ont été menés auprès d'un échantillon transversal de 250 femmes adultes vivant dans la région métropolitaine d'Atlanta (Géorgie), entre août 1997 et août 2000. Les participantes potentielles ont été identifiées dans la rue; l'échantillon a été élargi au moyen d'un échantillonnage ciblé et de procédures de cartographie éthnographiques. Une analyse de circuits a été utilisée pour examiner la communication entre partenaires et la prise de risque face au VIH, ainsi que pour identifier des prédicteurs du niveau de communication des femmes avec leur partenaire.
Résultats: Les données ont montré une relation inverse entre la communication avec le partenaire et l'adoption de comportement à risque de VIH. Huit prédicteurs de la communication avec le partenaire ont été identifiés de manière statistiquement significative: l'âge, l'état civil, la durée de la plus longue relation de type conjugal, le sentiment de bonheur dans la relation la plus longue, le fait de connaître quelqu'un mort du SIDA, le nombre de problèmes financiers, le fait d'avoir eu une maladie sexuelle transmissible durant l'année précédente, et le niveau d'estime de soi.
Conclusions: La communication avec le partenaire est une variable importante à considérer pour comprendre les pratiques à risque de VIH des femmes. Pour réduire le niveau de risque de VIH des femmes, il semble prometteur de rechercher des moyens d'améliorer la communication entre les femmes et leurs partenaires sexuels ou leurs amis.

References

Abel E, Hilton P, Miller I (1996). Sexual risk behavior among urban women of childbearing age: implications for clinical practice. J Am Acad Nurse Pract *8*: 115–24.

Ahlemeyer HW, Ludwig D (1997). Norms of communication and communication as a norm in the intimate social system In: Van Campenhoudt L, Cohen M, Guizzardi G, Hausser D, eds. Sexual interactions and HIV risk. Bristol, PA: Taylor and Francis: 22–43.

Ajzen I (1992). The theory of planned behavior. Organ Behav Hum Decis Process *50*: 179–211.

American Foundation for AIDS Research (2001). Politicizing prevention: safer sex messages under attack. http://www.amfar.org/cgi-bin/iowa/news/record.html?record=30.

American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Association.

Andersen MD, Smereck GA, Braunstein MS (1993). LIGHT model: an effective intervention model to change high-risk AIDS behaviors among hard-to-reach urban drug users. Am J Drug Alcohol Abuse *19*: 309–25.

Anglin MD, Hser Y, Chou C (1993). Reliability and validity of retrospective behavioral self-report by narcotics addicts. Eval Rev *17*: 91–103.

Ashery RS, Wild J, Zhao Z, Rosenshine N, Young P (1997). The WHEEL project: women helping to empower and enhance lives. J Subst Abuse Treat *14*: 113–21.

Bandura A (1986). Social foundations of thought and action: a social cognitive theory. Upper Saddle River, NJ: Prentice-Hall.

Bandura A (1999). Social cognitive theory of personality. In: Pervin LA, John OP, eds. Handbook of personality: theory and research. 2nd ed. New York: Guilford Press: 154–96.

Bernstein DP, Fink L, Handelsman L, et al. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. Am J Psychiatry *151*: 1132–6.

Boyer CB, Barrett DC, Peterman TA, Bolan G (1997). Sexually transmitted disease (STD) and HIV risk in heterosexual adults attending a public STD clinic: evaluation of a randomized controlled behavioral risk-reduction intervention trial. AIDS *11*: 359–67.

Brown KM (1999). Theory of reasoned action / Theory of planned behavior. http://hsc.usf.edu/~kmbrown/TRA_TPB.htm.

Bruhin E (2003). Power, communication and condom use: patterns of HIV-relevant sexual risk-management in heterosexual relationships. AIDS Care *15*: 389–401.

Centers for Disease Control and Prevention (2002). HIV AIDS Surveill Rep *13*(1): 1–41.

Centers for Disease Control and Prevention (1994). HIV AIDS Surveill Rep *6*(2): 1–39.

Cottler LB, Leukefeld C, Hoffman J, et al. (1998). Effectiveness of HIV risk reduction initiatives among out-of-treatment non-injection drug users. J Psychoactive Drugs *30*: 279–90.

DeZwart O (2002). Sexplain: peer education on sexual health for young people: best practice summary booklet. Rotterdam: UNAIDS.

Donisi A, Tomasoni D, Ripamonti D, et al. (1998). Changing patterns of HIV transmission and better targeting for intervention strategies. Int J STD AIDS *9*: 740–3.

El-Bassel N, Schilling RF (1992). 15-month follow-up of women methadone patients taught skills to reduce heterosexual HIV transmission. Public Health Rep *107*: 500–4.

El-Bassel N, Witte SS, Gilbert L, et al. (2001). HIV prevention for intimate couples: a relationship-based model. Fam Syst Health *19*: 379–95.

Ferreira-Pinto JB, Ramos R (1995). HIV/AIDS prevention among female sexual partners of injection drug users in Ciudad Juarez, Mexico. AIDS Care *7*: 477–88.

Fishbein M, Hennessy M, Kamb, Project RESPECT Study Group, et al. (2001). Using intervention theory to model factors influencing behavior change: project RESPECT. Eval Health Prof *24*: 363–84.

Fisher JD, Fisher WA (2000). Theoretical approaches to individual-level change in HIV risk behavior. In: Peterson JL, DiClemente RJ, eds. Handbook of HIV prevention: AIDS prevention and mental health. New York: Kluwer Academic/Plenum Publishers: 3–55.

Franzini LR, Sideman LM, Dexter KE, Elder JP (1990). Promoting AIDS risk reduction via behavioral training. AIDS Educ Prev *2*: 313–21.

Gielen AC, Fogarty LA, Armstrong K, et al. (2001). Promoting condom use with main partners: a behavioral intervention trial for women. AIDS Behav *5*: 193–204.

Heckathorn DD (1997). Respondent-driven sampling: a new approach to the study of hidden populations. Soc Probl *44*: 174–99.

Higgins ST, Budney AJ, Bickel WK, et al. (1995). Outpatient behavioral treatment for cocaine dependence: one-year outcome. Exp Clin Psychopharmacol *3*: 205–12.

Hoffman JA, Klein H, Crosby H, Clark D (1999). Project Neighborhoods in Action: an HIV-related intervention project targeting drug abusers in Washington, DC. J Urban Health *76*: 419–34.

Ingham R, Van Zessen G (1995). Towards an alternative model of sexual behaviour – from individual properties to interactional processes. In: Friedrich D, Heckmann W, eds. AIDS in Europe: the behavioural aspect. Berlin: Edition Sigma: 15–6.

Jaccard J, Wan CK (1995). A paradigm for studying the accuracy of self-reports of risk behavior relevant to AIDS: empirical perspectives on stability, recall bias, and transitory influences. J Appl Soc Psychol *25*: 1831–58.

Kalichman SC, Rompa D, Coley B (1996). Experimental component analysis of a behavioral HIV-AIDS prevention intervention for inner-city women. J Consult Clin Psychol *64*: 687–93.

Kennedy MG, Mizuno Y, Hoffman R, Baume C, Strand J (2000). The effect of tailoring a model HIV prevention program for local adolescent target audiences. AIDS Educ Prev *12*: 225–38.

Klein H, Eber M, Crosby H, Welka DA, Hoffman JA (1999). The acceptability of the female condom among substance-using women in Washington, DC. Women Health *29*: 97–114.

Lear D (1995). Sexual communication in the age of AIDS: the construction of risk and trust among young adults. Soc Sci Med *41*: 1311–23.

Lovibond SH, Lovibond PF (1995). Manual for the depression anxiety stress scales. 2nd ed. Sydney: Psychology Foundation.

Macaluso M, Demand M, Artz L, et al. (2000). Female condom use among women at high risk of sexually transmitted disease. Fam Plann Perspect *32*: 138–44.

Malotte CK, Jarvis B, Fishbein M, Project RESPECT Study Group, et al. (2000). Stage of change versus an integrated psychosocial theory as a basis for developing effective behaviour change interventions. AIDS Care *12*: 357–64.

Miller HG, Turner CF, Moses LE (1990). AIDS: the second decade. Washington, DC: Committee on AIDS Re-search and the Behavioral, Social, and Statistical Sciences, National Research Council. National Academy Press.

Molitor F, Facer M, Ruiz JD (1999). Safer sex communication and unsafe sexual behavior among young men who have sex with men in California. Arch Sex Behav *28*: 335–43.

Nurco DN (1985). A discussion of validity: self-report methods of estimating drug use. Washington, DC: U.S. Government Printing Office: 4–11. (NIDA research monograph; no. 57).

Nyamathi AM, Stein JA (1997). Assessing the impact of HIV risk reduction counseling in impoverished African American women: a structural equations approach. AIDS Educ Prev *9*: 253–73.

O'Leary A, The National Institute of Mental Health Multisite HIV Prevention Trial Group (2001). Social-cognitive theory mediators of behavior change in the National Institute of Mental Health Multisite HIV Prevention Trial. Health Psychol *20*: 369–76.

Padian NS, O'Brien TR, Chang Y, Glass S, Francis DP (1993). Prevention of heterosexual transmission of human immunodeficiency virus through couple counseling. J Acquir Immune Defic Syndr *6*: 1043–8.

Ploem C, Byers ES (1997). The effects of two AIDS risk-reduction interventions on heterosexual college women's AIDS-related knowledge, attitudes and condom use. J Psychol Human Sex *9*: 1–24.

Reif S, Wechsberg WM, Dennis ML (2001). Reduction of co-occurring distress and HIV risk behaviors among women substance abusers. J Prevent Intervent Commun *22*: 61–80.

Rhodes F, Wood MM, Booth RE (1998). Efficacy and effectiveness issues in the NIDA Cooperative Agreement: interventions for out-of-treatment drug users. J Psychoactive Drugs *30*: 261–8.

Richard AJ, Bell DC, Montoya ID (2000). Age and HIV risk in a national sample of injecting drug and crack cocaine users. Subst Use Misuse *35*: 1385–404.

Rosenberg M (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Sikkema KJ, Winett RA, Lombard DN (1995). Development and evaluation of an HIV-risk reduction program for female college students. AIDS Educ Prev *7*: 145–59.

Somlai AM, Kelly JA, Heckman TG, Hackl K, Runge L, Wright C (2000). Life optimism, substance use, and AIDS-specific attitudes associated with HIV risk behavior among disadvantaged innercity women. J Womens Health Gend Based Med *9*: 1101–11.

Somlai AM, Kelly JA, McAuliffe TL, et al. (1998). Role play assessments of sexual assertiveness skills: relationships with HIV/AIDS sexual risk behavior practices. AIDS Behav *2*: 319–28.

St. Lawrence J, Eldridge GD, Shelby MC, Little CE, Brasfield TL, O'Bannon III RE (1997). HIV risk reduction for incarcerated women: a comparison of brief interventions based on two theoretical models. J Consult Clin Psychol *65*: 504–9.

Sterk CE (1999a). Building bridges: community involvement in HIV and substance abuse research. Drugs Soc *14*: 107–21.

Sterk CE (1999b). Fast lives: women who use crack cocaine. Philadelphia: Temple University Press.

Sterk CE, Theall KP, Elifson KW (2003a). Effectiveness of an HIV risk reduction intervention for African American women who use crack cocaine. AIDS Educ Prev *15*: 15–32.

Sterk CE, Theall KP, Elifson KW, Kidder D (2003b). HIV risk reduction among African American female injection drug users: a randomized controlled trial. AIDS Behav *7*: 73–86.

Stevens PE, Hall JM (1998). Participatory action research for sustaining individual and community change: a model of HIV prevention education. AIDS Educ Prev *10*: 387–402.

Stevens SJ, Estrada AL, Estrada BD (1998). HIV sex and drug risk behavior and behavior change in a national sample of injection drug and crack cocaine using women. Women Health *27*: 25–48.

Strombeck R, Levy JA (1998). Educational strategies and interventions targeting adults age 50 and older for HIV/AIDS prevention. Res Aging *20*: 912–36.

Tenner AD, Trevithick LA, Wagner V, Burch R (1998). Seattle YouthCare's prevention, intervention, and education program: a model of care for HIV-positive, homeless, and at-risk youth. J Adolesc Health *23*: 96–106.

Van Campenhoudt L, Cohen M (1997). Interaction and risk-related behaviour: theoretical and heuristic landmarks. In: Van Campenhoudt L, Cohen M, Guizzardi G, Hausser D, eds. Sexual interactions and HIV risk. Bristol, PA: Taylor and Francis: 59–74.

*Van Devanter N, Gonzales V, Merzel C, Parikh NS, Celantano D, Greenberg J (*2002). Effects of an STD/HIV behavioral intervention on women's use of the female condom. Am J Public Health *92*: 109–15.

Watters J, Biernacki P (1989). Targeted sampling: options for the study of hidden populations. Soc Probl *36*: 416–30.

Weisse CS, Turbiasz AA, Whitney DJ (1995). Behavioral training and AIDS risk reduction: overcoming barriers to condom use. AIDS Educ Prev *7*: 50–9.

Address for correspondence

Hugh Klein, Ph.D.
401 Schuyler Road
Rollins School of Public Health
Emory University
Silver Spring, MD 20910, USA
Tel.: +1 301 588 8875
Fax: +1 301 588 8875
e-mail: hughk@aol.com