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Stages of Consistent Condom Use, Partner Intimacy, Condom Use Attitude, and Self-Efficacy in African-American Crack Cocaine Users

Unto E. Pallonen, **Sandra C. Timpson**, **Mark L. Williams**, and **Michael W. Ross**
Center for Health Promotion and Prevention Research, University of Texas Health Science Center at Houston, 7000 Fannin St., Suite 2516, Houston, TX 77030, USA, Mark.L.Williams@uth.tmc.edu

Abstract

This study examined how condom use attitude, self-efficacy, and partner intimacy related to five stages of consistent condom use. Interview data were collected from sexually active, heterosexual, African-American crack cocaine smokers (N = 366). Dependent measures assessed both the participants' own responses and their perceptions about their last sex partner's own personal condom use attitude and participants' condom use self-efficacy expectations. Partner intimacy was assessed both as a continuous attitudinal and as a discrete relationship measure. Less than 10% were classified as consistent condom users. Two thirds of inconsistent users were in the Precontemplation (PC) stage. The contemplation (C) and preparation (P) stages were equal among the remainder of the inconsistent condom users. Higher partner intimacy reduced modestly readiness for consistent condom use. The stage but not the intimacy group was related to the condom use attitudes and self-efficacy measures. Last partners' perceived own negative attitudes were significantly related to the stages of consistent condom use and was especially low in the action (A) and maintenance (M) stages. Participants' own negative attitudes were unrelated to the stages. Of the self-efficacy measures, both participants' performance and situational condom use self-efficacies increased significantly after the PC stage and were highest in the P, A, and M stages. However, situational self-efficacy accounted for most of performance self-efficacy variance. In sum, consistent condom use was rare. A partner's attitudes and the participants' own situational self-efficacy expectations, rather than intimacy, determined the readiness to adopt consistent condom use.

Keywords

Consistent condom use; Stages of change; Sexual intimacy; Attitude; Self-efficacy; Drug use; African-American

Introduction

Crack cocaine users are more likely to have higher rates of STDs and HIV infection than non-users. This is also the case with African-Americans whose STD- and HIV-risks are especially high (Brunswick & Flory, 1998; Edlin et al., 1992; Riehmann et al., 1998; Ross, Timpson, Williams, & Bowen, 2003b; Timpson et al., 2001; Wingood & DiClemente, 1998). African-American crack cocaine users exchange sex for drugs and/or money, have

Correspondence to: Mark L. Williams.

sex with multiple concurrent partners, use condoms inconsistently, and have more sex partners than non-crack cocaine users(Calsyn, Meinecke, Saxon, & Stanton, 1992; Desenclos, Papaevangelou, & Ancelle-Park, 1993; Hershberger, Wood, & Fisher, 2003; Ross, Kohler, Grimley, & Bellis, 2003a; Timpson, Williams, Bowen, & Keel, 2003; Williams et al., 2000). Several theoretical models of behavior change, such as the Theory of Planned Behavior (Ajzen, 1991), social cognitive theory (Bandura, 1986), the Health Belief Model (Becker & Joseph, 1988), an AIDS-risk model (Catania, Kegeles, & Coates, 1990), and the transtheoretical model (Prochaska & DiClemente, 1984, 1986) have been used to explain condom use behavior.

The Transtheoretical Model (TTM) integrates several theoretical concepts into an eclectic model. Five *stages of change* describe time-dependent behavioral qualities of participants and their sex partners. A continuum of stages describes a process from not wanting to make a change to an established adoption of a behavior change. Initially, individuals are in (1) the precontemplation stage (PC) or are unwilling to change or adopt a new behavior. When individuals start thinking about a change in the future, they are in (2) the contemplation (C) stage. Once they are ready for a change in the near future, they are considered to be in (3) the preparation stage (P). Those who have made a change recently are in (4) the action stage (A). If a change has been maintained for more than six months, individuals' behaviors are classified as (5) the maintenance stage (M) (DiClemente, 1993; Prochaska & DiClemente, 1984; Prochaska, DiClemente, & Norcross, 1992). The stages of change have been used to assess a variety of behaviors, including initiation of condom use in a general population (Galavotti et al., 1995; Grimley et al., 1992; Grimley, Prochaska, Velicer, & Prochaska, 1995; Noar, Morokoff, & Redding, 2002; Prochaska, Redding, Harlow, Rossi, & Velicer, 1994) and condom use among injection drug users and crack cocaine smokers (Anderson et al., 1996; Bowen & Trotter, 1995; Rhodes & Malotte, 1996; Sagrestano, Rogers, Kittleson, & Sarvela, 2005; Stark et al., 1998; Timpson et al., 2001).

Another component of the TTM is the *decisional balance* construct. The construct assesses individuals' positive and negative attitudes towards behavior change. Especially, in the PC stage, the negative attitudes towards behavior change are greater than the positive attitudes. Once people are ready for change, the positive/negative attitude ratio reverses (Prochaska, 1994). However, studies on condom use readiness have demonstrated that, even for people who were condom users, their negative attitudes towards using condoms did not decease as much as findings observed for other behaviors (Bowen & Trotter, 1995; Galavotti et al., 1995; Grimley et al., 1992).

The TTM also includes the concept of *self-efficacy* which, according to Bandura (1986), means that individuals believe that they can control aspects of their feelings, thoughts, motivations, and actions. Higher levels of self-efficacy have been associated with an increased likelihood to use condoms consistently (Galavotti et al., 1995; Sagrestano et al., 2005; Stark et al., 1998).

Across studies on condom use and the stages of change, a greater degree of intimacy with sex partners reduces condom use (Anderson et al., 1996; Bowen & Trotter, 1995; Rhodes & Malotte, 1996). Most of the studies have used partner type as a surrogate measure of intimacy instead of applying measures designed to assess the intimacy construct itself. According to earlier studies, the most intimate relationships exist between primary or main partners with whom a person feels very close to or loves. Sex trading partners form the least intimate partner category while, casual sex partners belong to the intermediate intimacy category.

The first aim of this study was to describe the distribution of the stages of consistent condom use among crack cocaine users. In previous findings (Pallonen, Williams, Timpson, Bowen, & Ross, 2008), most high risk drug users have been in the PC stage. The second aim was to study how intimacy levels with a sexual partner were related to the stages of consistent condom use. We hypothesized, based on the findings of Williams, Atkinson, Klovdahl, Ross, and Timpson (2005), that participants who had the most intimate relationships were the least likely to consider consistent condom use and that most of them would be in the PC stage.

Social cognitive theory (Bandura, 1986), the Theory of Planned Behavior (Ajzen, 1991), and the TTM share both attitude and self-efficacy expectation constructs. Therefore, this study on condom use extended the stage-intimacy relationship to include the two cognitive constructs. Hence, the third aim focused on *the stage-intimacy-attitude relationship*. Using previous empirical data and the TTM (Prochaska, 1994), we predicted that negative attitudes about condom use would be the lowest in the A and M stages and highest in the most intimate relationships. The fourth aim focused on *the stage-intimacy-self-efficacy relationship*. Since, according to social cognitive theory, increased self-efficacy led to goal attainment and the TTM predicted that self-efficacy was greatest in the A and M stages, we hypothesized that, self-efficacy to use condoms consistently, would have be most prevalent among consistent condom users or in the A or M stages. Consistent condom use is expected to be least prevalent in the PC stage, since increased sexual intimacy reduces consistent condom use.

Method

Participants

Data for this study were obtained from the baseline survey of a larger study concerning the efficacy of a psychosocial intervention designed to increase condom use by heterosexual crack cocaine users. The baseline data collection was implemented in Houston, Texas between February 2003 and August 2004. All procedures and data collection forms for the study were reviewed and approved by university committees for the protection of human subjects.

Participants were recruited from two inner-city neighborhoods, using a combination of targeted sampling and participant referral (Booth, Waters, & Chitwood, 1993; Watters & Biernacki, 1989). The neighborhoods were selected using both social indicator data on illicit drug use and by interviewing key informants who were knowledgeable about patterns of drug use in Houston. With the help of introductions from key informants, the outreach workers approached potentially eligible participants and provided them with information about the study. If individuals were interested, they were encouraged to visit a study office in the neighborhood. The office staff included trained graduate students who had previous interviewing experience with crack cocaine smokers. Prior to a verbal consent for screening, participants were informed of the purpose of the study, its voluntary nature, and that they had the right to refuse to answer any questions.

Inclusion criteria were: African-American ethnicity, 18 to 40 years of age, smoked crack cocaine in the past 48 hours, had vaginal sex in the past seven days, residing in one of the neighborhoods targeted for recruitment, and providing sufficient contact information for follow-up interviews. If an individual met these screening criteria, he or she was asked to read and sign a consent form and was asked to provide a urine sample at the screening center. Urine samples were screened for cocaine metabolites using OnTrack TesTsik® test kits (Varian, Inc., Lake Forest, CA). The office staff conducted a private baseline interview only with those who tested positive for cocaine metabolites. The computer-aided interview

in the same location lasted about 45 to 60 minutes. Participants received a $25 cash compensation for the interview.

Since a comprehensive description of the procedures followed in this study is already available (Ross et al., 2003b), only major features of the study population are summarized here. All 400 subjects were African-American, 63% were male, the average age was 33 years (*SD* = 5.7) and had a mean of 11 years education (*SD* = 1.7). A total of 63% were single, 18% were separated or widowed, 17% were married or lived with a partner of the opposite sex, and 2% lived with a partner of the same sex. Ten percent were employed in a full-time job; 40% were unemployed. The three most common major sources of income were a job (27%), trading sex for money (17%), and odd jobs (16%). The mean total income from all sources, in the last 30 days, was between $200 and $400. Although no more than 2% of the participants reported living on the street, 28% considered themselves homeless. Participants reported having used crack/cocaine an average of 66 times (*SD* = 92.3, median = 30) in the past 30 days. The majority (57%) had been in drug treatment at least once. The most common sexual relationships were those having both a main and a casual sex partner (45%), followed by those having a casual partner only (41%) or a main partner (12%). In the past seven days, participants reported having had an average of three partners (*SD* = 2.0) and having had sex seven times (*SD* = 4.5).

Measures

The baseline interview of the parent study assessed participants' sociodemographic characteristics, sexually transmitted diseases, and lifetime and current drug use. Type and number of sex partners and current as well as past sexual behaviors were recorded up to the last 60 days. Participants were asked about the prevalence of condom use, attitudes about condom use, and their self-efficacy to use condoms. Forty-eight hour test-retest data from a sample of 50 participants demonstrated that the interview instrument produced reliable data (results available from the corresponding author).

Stages of Consistent Condom Use with Last Partner—The stages of change assessment for consistent condom use was limited to male condom use, since only 9% in the sample reported ever having used a female condom and no more than two participants reported having used one the last time they had sex. Only stages of condom use, with the last sex partner, were recoded. Interviewers used identifiers, such as a first name of the last partner, to improve the interviewees' recall.

As in previous studies (Brown-Peterside, Redding, Ren, & Koblin, 2000; Noar et al., 2002; Ross et al., 2003b; Schnell, Galavotti, Fishbein, Chan, & AIDS Community Demonstration Projects, 1996), the stage algorithm was based on four close-ended questions about condom use to produce five stages of consistent condom use. The first question was about the length of time that condom users had engaged in consistent condom use (1 = less than 1 month, 2 = 1 to 3 months, 3 = 3 to 5 months, and 4 = 6 months or more). The question was coded either as "less than six months" or as "six months or more"). The second question assessed the frequency of current use among inconsistent users and had five categories (1 = never, 2 = less than half the time, 3 = half the time, 4 = more than half the time, and 5 = always). The "1 = never" response indicated non-use. Categories from "less than half the time" to "more than half the time" indicated inconsistent current use. The "always" response indicated current consistent condom use. The third and fourth questions related to the inconsistent users' intention to start using condoms consistently, in the next 30 days, or in the next six months. Intentions were measured on a 10-point Likert scale, ranging from 1 (strongly disagree) to 10 (strongly agree). Values of 1 to 5 were coded to show a lack of intention to

use condoms consistently; values of 6 to 10 indicated an intention to use condoms consistently.

According to the stage of change algorithm, the *precontemplation* (PC) stage included inconsistent condom users who had no intention to start using condoms consistently, in the next six months. Inconsistent condom users in the *contemplation* (C) stage intended to start using condoms consistently, in the next six months, but not in the next 30 days. The C stage also included those inconsistent condom users who intended to start using condoms regularly, in the next 30 days, but had never used male condoms previously, with the last partner. Participants in the *preparation* (P) stage reported that they intended to begin consistent condom use in the next 30 days and had used male condoms "less than half the time" to "more than half the time" but not "always." If participants reported to have used condoms "always" for six months or less, including the last sex act, they were included in the A stage. Participants in the M stage were similar to those in the A stage but participants had used condoms consistently for more than six months.

Psychosocial Concepts—Three psychosocial concepts: (1) intimacy in sexual relationships, (2) attitudes about condom use, and (3) condom use self-efficacies were examined. Each multiple-item concept included statements which were assessed on a 10-point Likert scale. A value of 1 indicated a strong rejection and a value of 10 a strong acceptance of a statement. Items of each concept were first examined using both principal axis factoring, with oblique direct oblimin rotation, and principal component analysis, with orthogonal varimax rotation, to observe if the items formed meaningful and psychometrically acceptable scales. In every case, the two exploratory factor analytical methods (i.e., principal axes and principal component) extracted an identical number of factors for each concept according to the scree test (Gorsuch, 1983). Acceptable scale items had to have factor loadings of ≥.40 on the factor and not load on other factors >.30. Internal consistency analyses were used to eliminate from each factor those items which reduced a factor's overall Cronbach's coefficient α. Its minimum acceptable value was set at .70. In the final sum scale, all unweighted and acceptable items of each factor were summed and divided by the number of items to maintain the scale's values between 1 and 10.

Partner Intimacy Scale and Partner Intimacy Groups—Participants' feelings of intimacy toward their most recent sex partner were assessed using two separate measures. The first attitudinal measure assessed nine qualities of the most recent partner with the following statements (e.g., "I trust my last partner," "I care if my last partner has had sex with someone else). Participants rated the statements from 1 (strongly disagree) to 10 (strongly agree). Both principal axis and principal component analyses extracted one strong nine-item factor (eigenvalue = 4.5). The mean of this last partner Intimacy scale (α = .87) was 7.3.

A second categorical measure of intimacy assessed the type of relationship participants had with their most recent partner. The eight relationship categories were: spouse, like a spouse, lover, close friend, friend, acquaintance, customer you like, and customer. The means of the last partner intimacy scale (see above) differed significantly in the eight relationship categories, $F(7, 358) = 20.7$, $p < .001$, and formed, based on Scheffé's a posteriori test ($p < .05$), three highly distinct and discrete partner Intimacy groups. Those in the lowest level of partner intimacy were customers or acquaintances ($M = 5.9$). This category contained 19% of all partners. A medium level of partner intimacy group ($M = 7.1$) included friends, close friends, or customers that they liked (39% of partners). The highest level of a partner intimacy group ($M = 8.6$) consisted of lovers, someone who was like a spouse, or a spouse (43% of partners). These three partner intimacy groups explained 25% of the variance in the partner intimacy scale.

Attitudes—Attitudes about male condom use were assessed using nine statements that measured negative aspects of condom use (e.g., “Condoms are a lot of trouble,” “Condoms interrupt the flow of sex,” and “Condoms makes sex less exciting”). The same nine statements were used to assess both (1) participants’ own rating and (2) their perception of how their last or most recent partner would have rated the statements. Only one factor emerged in both cases. Eigenvalue for the participants factor was 5.7 and for the partner factor 4.5. The mean of the participant’s Personal Negative Attitude scale (α = .93) was 6.2. The mean of the partner’s Perceived Negative Attitude scale (α = .97) was 6.3.

Self-efficacy—A total of 20 statements were used to assess participants’ confidence to use condoms. The statements produced two reliable factors (eigenvalues 11.2 and 2.5). The first factor consisted of 15 questions which assessed participants’ self-confidence to use a condom with their last partner in various situations. They included alcohol use (e.g., “When you have had a couple of drinks”), emotional involvement with the last partner (e.g., “When you feel really close to him/her”), and sexual arousal (e.g., “When you are really turned on”). This factor formed the Situational Self-Efficacy with Last Partner scale (α = .96) for which the mean was 4.7.

The second factor included five items related to participants’ efficacy expectations about their confidence in their ability to make sex with a condom intimate, exciting, enjoyable, fun, and romantic. This factor created the Performance Self-Efficacy scale (α = .91) with the mean of 6.7.

Data Analysis

Distributional properties of all variables were first examined in the entire sample of 400 participants. In open-ended statements, values departing more than two SDs from the mean were excluded from further analyses. Extreme cases tend to distort statistics, leading both to Type I and Type II errors (Tabachnick & Fidell, 2001). At most, 5% of cases per variable were excluded as out-of-range values. Distribution of the partner intimacy groups by stages of consistent condom use was analyzed using the chi-square test. The relationship between the stages and the continuous last partner intimacy scale was examined with analysis of variance (ANOVA). If the pooled within-group correlation coefficient exceeded .30, multivariate analyses of variance (MANOVA) was used to evaluate relationships between the stage and intimacy group and the participants’ attitude scale and the partner’s perceived attitude scales as dependent measures. In the second similar MANOVA, dependent measures were the participants’ performance self-efficacy scale and their situational self-efficacy scales. Subsequent Roy-Bargman step-down analyses determined the size of independent effects of each scale within the attitude and self-efficacy constructs (Tabachnick & Fidell, 2001). No analyses revealed any significant differences between the sexes.

Results

Stages of Consistent Male Condom Use with Last Partner

In the stages of change for consistent condom use with the last partner measure, 66% of the 366 participants were in the PC stage, 13% in the C stage, and 14% in the P stage. Consistent condom use among the participants was rare. Only 3% of the participants were in the A stage and 4% in the M stage. In the A stage (N = 11), one of these consistent condom users had taken action <1 month before the interview, six between 1–3 months, and four between 4–6 months before the interview. The stage distribution was similar for men and women.

Validation of the Staging Algorithm

Since a question about intention to use a condom "the next time" was not part of the staging algorithm, the question was used to validate the stage measure among inconsistent condom users (N = 341). Responses to the question ranged from 1 (strongly disagree) to 10 (strongly agree). The observed means were 1.9 in the PC stage, 7.7 in the C stage, and 8.5 in the P stage, $F(2, 338) = 316.3$, $p < .001$. The three stages explained 65% of the intention variance.

Intimacy and the Condom Use Stages

Table 1 shows the means of the continuous Partner Intimacy scale as a function of the stage of consistent condom use. A one-way ANOVA revealed a significant main effect of stage of condom use, $F(4, 361) = 6.1$, $p < .001$, which accounted for 5% of the intimacy variance. The means of the intimacy scale tended to be higher in the early stages, but only the difference between the PC and A stages was significant in Scheffé's test.

An intimacy-stage relationship was also examined in the low, medium, and high intimate sex partnership groups (Fig. 1). Due to small number of cases in the A and M stages, they were merged. The intimate partnership groups differed significantly across the stages, $\chi^2(6, N = 366) = 21.0$, $p < .01$. Overall, 37.7% were in the low intimacy group (e.g., an acquaintance), 36.1% were in the medium group (e.g., a close friend), and 26.2% were in the high intimacy group (e.g., a spouse). Low intimacy relationships were by far least prevalent in the PC stage (30.9%), χ^2 (3, N = 366) = 15.2, $p < .01$. There were no significant stage difference in the medium intimacy group, $\chi^2(3, N = 366)$ 2.0, $p > .10$, unlike in the high intimacy relationship group which was most common in the PC stage (32.1%), $\chi^2(3, N = 366) = 13.9$, $p < .01$.

Negative Attitude about Condom Use

The mean values of the *Personal Negative Attitude* and the *Last Partner's Perceived Negative Attitude* scales in the five stages of readiness for condom use are shown in Fig 2.

The stages explained 4% of personal attitude variance and 10% of partner's attitude variance. In Scheffé's test, the means of the Personal Attitude scale did not differ between the five stages. In the Partner's Attitude scale, the means of the A and M stages were significantly lower than in the PC stage.

Differences between the two negative attitude scales were examined simultaneously by stage and intimacy group with a MANOVA (the pooled within-group correlation coefficient .32).

As shown in Table 2, only the stage was significantly related to the attitude scales according to Wilks' criterion, $F(8, 702) = 3.64$, $p < .001$. P-values for the intimacy group and stage-intimacy interaction effects exceeded .50. Roy-Bergman step-down analyses conformed the importance of a partner's perceived negative attitude, $F(4, 352) = 7.24$, $p < .001$, over personal attitude, $F(4, 351) = .19$, $p > .10$.

Self-efficacy

Figure 3 depicts the means for the *Situational Self-Efficacy* and the *Performance Self-Efficacy* scales by the five stages of consistent condom use. The stages explained 11% of the *Performance Self-Efficacy* scale variance. In Scheffé's tests, the means of the C and P stages were significantly greater than in the PC stage. Though the means of the A and M stages were as great as in the P stage, they did not differ significantly from the mean of the PC due to a small N in the A and M stages. The stages explained 32% of the *Situational Self-Efficacy* scale variance. The means in the P, A, and M stages were significantly greater than in the PC stage according to Scheffé's tests. Table 3 shows that only the stage was

significantly related to the self-efficacy measures combination according to Wilks' criterion, $F(8, 702) = 16.1$, $p < .001$. The pooled within-group correlation between the two scales was .39. Univariate *F*-tests implied significant stage effects for the *Situational Self-Efficacy* and *Performance Self-Efficacy* scales but the intimacy effect and the stage-intimacy interaction were not significant. In step-down analyses, the Situational Self-Efficacy scale alone ($p < .001$) explained most of the univariate variance of the Performance Self-Efficacy scale ($p > .10$).

Discussion

The less than 10% consistent condom use rate in our sample of urban African-American crack cocaine smokers was about half the rates reported in the general population (Anderson, Wilson, Doll, Jones, & Baker, 1999). Our rate was similar to the rates Wang, Collins, Kohler, DiClemente, and Wingood (2000) reported among urban Black cocaine users (11%). The stages of change in this and other studies (Anderson et al., 1996; Rhodes & Malotte, 1996; Ross et al., 2003a; Schnell et al., 1996; Stark et al., 1998) also showed that the majority of current inconsistent users did not plan to begin consistent condom use. Two thirds of inconsistent users in our sample were not even thinking about consistent condom use (the PC stage) while the remaining one-third was divided equally between those who contemplated a change in the next six months (the C stage) or were ready to start consistent condom use in the next 30 days (the P stage).

Low consistent condom use rates among crack cocaine smokers demonstrated the enormous challenges for HIV prevention efforts. Employing even a brief and easy-to-use staging measure seems a useful tool both in identifying individuals' readiness for consistent condom use and tailoring the content of an intervention with special strengths and weaknesses of each individual to change. Tailored intervention efforts, targeted specifically for ready-to-change individuals, are likely to produce the most immediate adoption of regular condom use.

Stage and Intimacy

To furnish additional information for future interventions to increase consistent condom use, this study examined first whether the level of intimacy with the last sex partner modified the participants' readiness for consistent condom use. Condom use intention and actual use have been found to be the least common in the most intimate relationships (Bowen, 1996; Bowen & Trotter, 1995; Jamner, Wolitski, & Corby, 1997). Support for the claim that high intimacy leads to low condom use was strongest in a contrast between non-intending non-users (the PC stage) vs. current consistent users (the A or M stages). No apparent trend emerged among intenders but they resembled current consistent users.

Stage, Intimacy, and Self-efficacy

In an examination of the joint effects of the stage and intimacy on self-efficacy, the self-efficacy scales also fitted into a non-intenders vs. intenders and consistent condom users pattern. The situational self-efficacy measure was superior to the performance self-efficacy measure. Non-intenders reported the lowest situational confidence whereas condom use intenders, (those in the C and P stages who had not necessarily even made a commitment to becoming consistent condom users) already reported situational condom use confidence equal to that among consistent condom users in the A or M stages. Intimacy was unrelated to both self-efficacy scales. Therefore, teaching situational condom use confidence is likely to be a more effective treatment component than poorly discriminating generic performance self-efficacy.

Stage, Intimacy, and Attitudes

The two negative condom use attitude measures (participants' personal attitude and their perception of their last sex partner's personal attitude) made it possible to assess their effects on condom use in a dyad. Findings, that both participant and their partner's perceived attitude remained similarly negative among non-intenders and intenders (PC, C, and P stages), highlight a major difficulty for promoting consistent condom use. Furthermore, among recent consistent condom users (the A stage) and even among long-term consistent condom users (the M stage) participants' personal negative attitudes remained nearly at the same level as among inconsistent users. Only consistent condom users reported a significant reduction in their partner's negative attitudes. This observation parallels other findings (Ross et al., 2003b) suggesting that a partner's attitude, rather than an individual's attitude, is more important in adopting consistent condom use. If other studies confirm this conclusion, condom use promotion interventions should target sex partners' attitude.

Limitations

The accuracy of self-reports, as an indicator of consistent condom use, has been questioned (de Visser & Smith, 2000; Turner & Miller, 1997; Weir, Roddy, Zekeng, & Ryan, 1999) but others (Ajzen & Fishbein, 2004; Jaccard, McDonald, Wan, Dittus, & Quinlan, 2002; Morris, 1993) have found self-reported measures reasonably accurate. Furthermore, in most cases, self-report remains one of a few feasible data collection methods for intimate sexual behaviors barring direct observation.

A second potential limitation was the reliance on participants' perceptions of their last partner's responses rather than a direct assessment of partners' attitudes. Participants' perceptions were by no means a trivial determinant of behavior. An advantage of relying on participants' perceptions about their partners' attitude was that perceptions are based on both verbal and non-verbal communication even when communication about condom use decision processes between sex partners is limited.

The cross-sectional nature of our data prohibited any firm conclusions about causality associated with the stages of condom use or its other presumed antecedents. It is also uncertain how well these findings can be generalized to other drug users. The targeted sampling strategy precluded estimation of a possible sampling bias since most studies on hidden and elusive populations, such as in this study, do not have access to information needed to estimate the representativeness of the sample.

Because of the relatively small number of cases in the A and M stages, stage-to-stage comparisons among these consistent condom users need to be made with care. Finally, dropout analyses (not shown) revealed that the retained participants had more stable sexual relationships than those who were excluded. Since individuals in the most stable relationships are least likely to use condoms regularly, reported condom use rates may have been somewhat lower in the initial sample.

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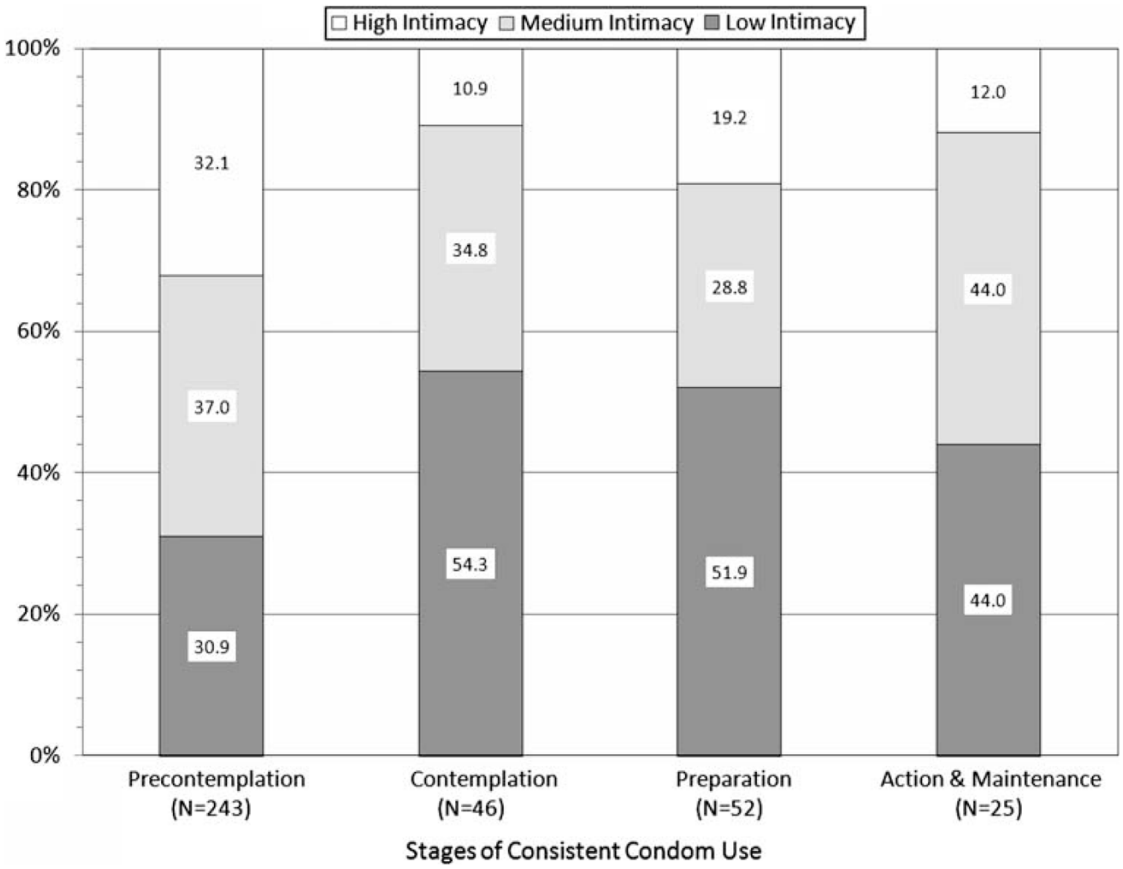

Fig. 1.
Distribution of the three intimate partnership groups by stages of condom use with last partner

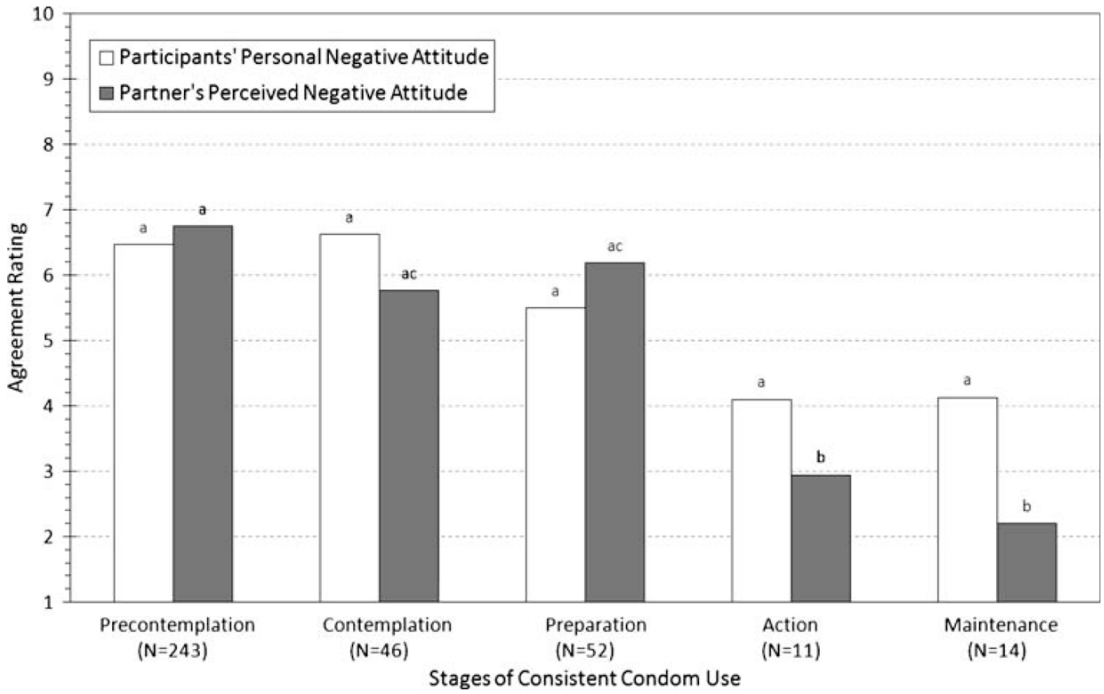

Fig. 2.

Means of participants' personal and their partner's perceived negative condom use attitudes by stages of condom use with last partner. *Note*: Non-shared letters indicate a significant ($p < .05$) difference between stage means in Scheffé's tests

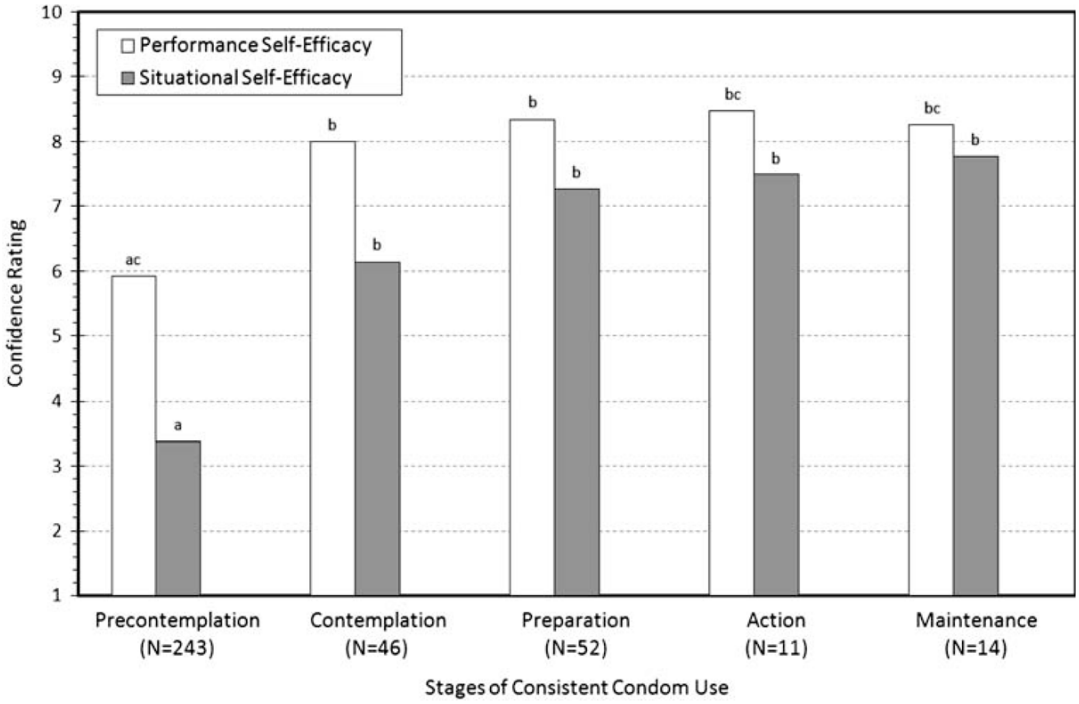

Fig. 3.

Means of participants' condom use performance self-efficacy and situational self-efficacy by stages of condom use with last partner. *Note*: Non-shared letters indicate a significant ($p < .05$) difference between stage means in Scheffé's tests

Table 1

Means and SD of the Partner Intimacy scale by stages of consistent condom use

Stage of consistent condom use	*M*	*SD*
Precontemplation (*N* = 243)	7.8	1.9[a]
Contemplation (*N* = 46)	7.0	2.4[a]
Preparation (*N* = 52)	7.0	1.8[a]
Action (*N* = 11)	5.8	2.4[b]
Maintenance (*N* = 14)	6.6	2.0[a]

Note: A non-shared letter indicates a significant ($p < .05$) difference between stage means in Scheffé's tests

Table 2

Omnibus ANOVAs and their Roy-Bargman stepdown analyses on a partner's perceived and personal attitudes about condom use by stage of consistent condom use, intimacy, and their interaction

	Dependent variable	Univariate *F*	df	Stepdown *F*	df	*α*
Stage	Partner's perceived attitude	7.24[a]	4,352	7.24**	4,352	< .001
	Personal attitude	1.42	4,352	.19	4,351	ns
Intimacy	Partner's perceived attitude	.79	2,352	.79	4,352	ns
	Personal attitude	.08	2,352	.22	2,351	ns
Stage by Intimacy	Partner's perceived attitude	.63	7,352	.63	7,352	ns
	Personal attitude	1.09	2,352	1.27	7,351	ns

Notes:

[a] Significance level cannot be evaluated but would reach $p < .01$ in univariate context

** $p < .01$

Table 3

Omnibus MANOVAs and their Roy-Bargman stepdown analyses on personal situational and performance self-efficacy measures about condom use by stage of consistent condom use, intimacy, and their interaction

	Dependent variable	Univariate *F*	df	Stepdown *F*	df	*α*
Stage	Situational self-efficacy	33.53[a]	4,352	33.53**	4,352	< .001
	Performance self-efficacy	11.36[a]	4,352	1.22	4,351	.30
Intimacy	Situational self-efficacy	.12	2,352	.12	4,352	.89
	Performance self-efficacy	.87	2,352	1.33	2,351	.27
Stage by Intimacy	Situational self-efficacy	.37	7,352	.37	7,352	.92
	Performance self-efficacy	.24	2,352	.41	7,351	.90

Notes:

[a] Significance level cannot be evaluated but would reach $p < .01$ in univariate context

** $p < .01$