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Condom Attitudes and Behaviors Among Injection Drug Users Participating in California Syringe Exchange Programs

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This study examined condom attitudes, preferences, barriers, and use among a sample of 550 injection drug using clients of syringe exchange programs in California. In multivariate analyses, positive attitudes toward condoms were significantly associated with consistent condom use for vaginal, anal, and oral sex in the past six months, beyond the effects of confounding socio-demographic and HIV risk variables. Participants commonly cited partner-related barriers to condom use, such as reluctance to use condoms with steady partners (34%). Almost a quarter of the sample cited dislike of condoms (e.g., because of pleasure reduction). In addition, a third of respondents stated specific preferences regarding condom brands, sensitivity, sizes, and textures. Interventions that increase awareness about positive aspects of condom use and sexual risk from steady partners may be successful in increasing condom use among injection drug users.

KEY WORDS: injection drug use; syringe exchange; condom use; condom attitudes.

INTRODUCTION

HIV prevention among injection drug users (IDUs) has tended to focus on the reduction of needle sharing. Fewer prevention efforts have targeted sexual risk among IDUs, although sexual risk is a major route of transmission of HIV even among IDUs (Kral *et al.*, 2001; Strathdee *et al.*, 2001). Prior research has found low levels of condom use among IDUs, especially with steady partners and among those who are also using crack cocaine. Further, fe-

male IDUs, in particular, are likely to engage in commercial sex work, which places them at increased sexual risk (Anderson *et al.*, 1996; Booth *et al.*, 1993, 2000; Corby *et al.*, 1996; Siegal *et al.*, 1996; White and Phillips, 1993). Given these high levels of sexual risk behaviors, there is a clear public health need to identify factors that influence patterns of condom use among male and female IDUs.

The results of prior research, conducted mainly with non-IDU samples, suggest that individuals' failure to use condoms can be understood within the context of condom-related attitudes. Condom use intentions and behaviors tend to be higher among individuals who like condoms and who perceive few barriers to condom use. In particular, two recent meta-analyses indicated that positive attitudes about condom use are strongly related to condom use intentions ($r = .45$) and moderately related to condom use behaviors ($r = .32$) (Sheeran *et al.*, 1999; Sheeran and Taylor, 1999). Studies investigating these relationships among IDUs have found positive attitudes toward condom use, and significant

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associations between attitudes about condoms and condom use intentions and behaviors, especially for casual partners (Belanger *et al.*, 2002; Corby *et al.*, 1996; Falck *et al.*, 1997; Fernandez *et al.*, 1997; Kasprzyk *et al.*, 1998; Peterson *et al.*, 1992; Schilling *et al.*, 1991). Moreover, qualitative and quantitative research has identified several barriers to condom use among IDUs, including general dislike of condoms, low perceived risk of HIV, and the beliefs that condoms are difficult or inconvenient to use, and are not necessary with monogamous or steady partners (Corby *et al.*, 1996; Weiss *et al.*, 1993; White and Phillips, 1993).

Although prior research has provided some insight regarding condom attitudes among IDUs, the majority of this work has not examined attitudes among samples consisting entirely of IDUs and has instead combined heterogeneous samples of IDUs and other individuals who engage in high-risk behaviors (e.g., men who have sex with men, or individuals who use non-injecting drugs) (Kramer *et al.*, 1991; Peterson *et al.*, 1992). Because unprotected sexual intercourse is a growing risk factor for HIV among IDUs and their sexual partners, it is important to study IDUs' attitudes and behaviors separately from those of other individuals, who may only be at risk through their sexual behavior.

Further understanding of the different facets of attitudes toward condom use among IDUs would aid in the development of interventions designed to increase positive attitudes about condoms and decrease sexual risk. In the present study, we conducted a comprehensive investigation of condom use attitudes and barriers among IDUs participating in California syringe exchange programs (SEPs). Because prior research has shown that IDUs are less likely to use condoms with their primary, versus their casual or sex work-related, partners (Falck *et al.*, 1997; Rhodes and Malotte, 1996; Vanichseni *et al.*, 1993; for a review see Misovich *et al.*, 1997), we examined condom attitudes separately for IDUs with only one recent sexual partner and IDUs with multiple recent sexual partners. In addition, to our knowledge no research has investigated the specific characteristics of condoms preferred by IDUs. Thus, we also examined the preferences that IDUs have for different types of condoms (e.g., in terms of different brands, sensitivity, sizes, and textures). Information about IDUs' condom preferences may be useful in planning programs for distributing condoms and disseminating prevention information.

METHODS

The present dataset is part of a larger study addressing the impact of California law Assembly Bill 136 (AB136) on SEPs and their clients. AB136 was enacted in January 2000 and grants local jurisdictions (cities and counties) in California the authority to legalize SEPs pursuant to a declaration of a local public health emergency. Although local jurisdictions may declare health emergencies, no state funding has been allocated to support operating SEPs.

Procedures

Convenience samples of an average of 23 clients (range = 7–25) from each of 23 participating SEPs (550 clients total) were interviewed in 2002. Although refusal rates were not systematically collected, anecdotal reports from research staff indicated that most refusals were due to a lack of time to complete the assessment, or fear that remaining in the SEP area to complete research procedures would increase the chances of arrest. The 23 SEPs represented 96% of the programs operating in California in 2000, when program recruitment occurred. SEPs from rural ($n = 200$, 37%; e.g., Native American reservation) and urban ($n = 347$, 63%; e.g., Los Angeles) areas in the state were involved, operating in 15 California Counties and all major cities in the state. Eligibility criteria included injection drug and syringe exchange utilization in past 30 days. After determination of eligibility and provision of informed consent, participants were interviewed with a structured survey by a trained interviewer/counselor in a private space. Private spaces varied by field location and included rooms in SEP offices, cars, park benches, temporary tents, sidewalks, and participants' homes. Participants' responses were entered into a software program by study interviewers on lap-top computers (computer assisted personal interview, NOVA Research, Bethesda, MD, USA). Participants also received HIV testing and pre- and post testing counseling.

Participants were paid \$10 United States for the interview and asked to return for HIV test results disclosure and counseling one to two weeks later.

Study Assessment

The assessment included items on HIV risk behaviors (i.e. drug injection and sexual practices),

HIV/AIDS/Hepatitis C virus knowledge, medical history, incarceration history, SEP utilization, and utilization of other social and medical services. The variables of interest in the present analysis are described in detail below.

Socio-Demographics

Standard questions were used to assess participants' age, gender, race/ethnicity, education level, income from all sources in the last 30 days, and sexual orientation (self-identified), and whether participants had received income from part-time, full-time, or odd jobs in the past 30 days. The reference group for race/ethnicity was White.

HIV Status and Sexual Risk Factors

Participants were tested for HIV with Orasure oral tests, and specimens were analyzed for HIV antibodies using enzyme immunoassay (EIA). EIA-positive specimens were confirmed using Western blot assay (Wb). Criteria for a seropositive Wb result were the presence of reactive bands at two of the following locations: p24, gp41, and gp120/160 as described by the Centers for Disease Control and Prevention (1989).

Partner-related HIV risk was assessed with several questions about partners in the past six months. Specifically, participants were asked the number of male and female partners that they had, whether they had a steady partner, and whether they had paid or been paid money or drugs for sex in the last six months. The number of male and female partners reported was combined and recoded as "one" or "more than one" partner in the last six months in the analyses.

Condom Preferences and Barriers

Participants were asked two open-ended questions regarding their condom preferences and reasons for not using condoms: "What brand of condom, if any, do you prefer?" and "When you have sex, what are the reasons why you do not always use condoms?" Two raters coded all of participants' responses to these questions. Consistency between raters was calculated for 100 of the responses to each question. Consistency was perfect for condom char-

acteristics and brands ($\kappa = 1.00, p < .01$) and excellent for barriers to condom use ($\kappa = .88, p < .01$).

Participants were also asked whether they had ever used a condom, whether they had ever used lubricant with condoms, and the extent to which they find condom use difficult or easy (with response options "very easy," "easy," "neutral," "hard," and "very hard"). In addition, they were asked four closed-ended questions assessing their preferences for different types of condoms, in terms of texture ("ribbed/dotted," "no texture," or "plain," "no preference"); size ("extra large/larger/extra headroom," "tight fitting/snugger," "no preference"); lubrication ("lubricated" or "not lubricated"), and thickness ("thin/extra-sensitive/heat sensitive," "thick/desensitizing/extended pleasure," "regular," "no preference").

Condom Attitudes

Condom attitudes were measured with an eight-item scale adapted from the Attitudes Toward Condom Scale (Brown, 1984). Sample items include, "In my opinion, condoms are too much trouble," and "I don't think condoms interfere with the enjoyment of sex." Each item was rated on a five-point Likert scale with response options "strongly disagree," "disagree," "undecided," "agree," and "strongly agree." After reverse-scoring negative attitudinal items, all items were summed for an overall measure, in which higher scores represented more positive attitudes toward condoms (possible range = 8–40). The scale was found to have satisfactory internal consistency ($\alpha = .73$).

Condom Use Behavior

Participants were asked the percentage of time that they used latex condoms for vaginal, anal, and oral sex in the past 6 months. Responses were dichotomized into 0% (never) 1% to 99% (sometimes) or 100% condom use ("always").

Statistical Analysis

Descriptive statistical information (e.g., means, frequencies, variability) was examined for all study variables. Bivariate associations were examined among socio-demographic factors, HIV risk variables, condom attitudes, and condom use

behavior. Pearson correlations were used to assess relationships between two continuous variables (e.g., condom attitudes and age), point-biserial correlations were used to examine relationships between continuous and categorical variables (e.g., condom attitudes and condom use), and Spearman-rho correlations were used to examine associations between two dichotomous variables (e.g., gender and condom use). Multivariate linear regression was used to predict condom attitudes, controlling for all variables that were significantly related to condom attitudes in bivariate analyses ($p < .05$). Multivariate logistic regression was used to predict condom use behavior (never or sometimes versus always) with condom attitudes for vaginal, anal, and oral sex separately, controlling for all variables that were significant across bivariate analyses for the three types of condom use behaviors.

Prior research suggests that IDUs with steady partners are less likely to use condoms (e.g., Misovich *et al.*, 1997), although no research to date has provided an in-depth analysis of condom attitudes among IDUs with different partnership patterns. Thus, in addition to conducting analyses for the overall sample, we also examined all relationships separately for those who reported one partner, versus multiple partners, in the past six months. Analyses regarding condom use were limited to those individuals who reported having at least one partner in the past six months; all other analyses included both sexually-active and non-sexually-active respondents. An alpha level of 0.05 was used as the cut-off for statistical significance.

RESULTS

Socio-Demographic Characteristics and HIV Status

Most of the sample (70%) was male; half were White, 23% Black/African American, 20% Latino, 4% Native American, less than 1% Asian/Pacific Islander, and 2% "other." Of those identifying as Latino, the majority were Mexican or Mexican American (88%). The majority (63%) had completed high school or greater. Almost a fifth had no job in the past month, about half had odd jobs only, 16% had part-time jobs, and 19% had full-time jobs. Income in the last month ranged from 0 to \$15,000 (Median = 774.50; Interquartile Range = 397.50–1200.00). The majority was heterosexual (85%), and 15% self-identified as gay/bisexual/lesbian. Almost

5% tested positive for HIV antibodies, which is comparable to other SEP and non-SEP IDU samples in California (Bluthenthal *et al.*, 2001; Hahn *et al.*, 1997; Longshore and Anglin, 1992; 1994; Longshore *et al.*, 1998).

Condom Preferences

The majority of participants (80%) had previously used condoms. Of these, most (67%) had no preference regarding condom texture, 16% preferred no texture, and 15% preferred ribbed or dotted condoms. In addition, 46% had no preference regarding condom size; smaller proportions preferred regular size (21%), tight or snug fitting (16%), or extra large (14%) condoms. The majority (62%) preferred lubricated condoms, almost 30% had no preference, and a minority (7%) preferred non-lubricated condoms. Although many (43%) had no preference regarding the sensitivity of their condoms, 29% preferred thin, extra sensitive, or heat sensitive condoms, 11% preferred thick, desensitizing, or extended pleasure condoms, and 13% preferred regular condoms.

The open-ended qualitative data regarding respondents' preference for different types of condom brands ($n = 413$) indicated that two-thirds of respondents had no preference regarding the type of condom they used, with some stating that they would use anything that was free and/or available. Trojan was the most commonly endorsed brand, preferred by 17% of respondents; fewer numbers of respondents (13%) preferred other brands (e.g., Durex, Lifestyle). Although respondents were asked about brand preferences, a handful of respondents (6%) did not list specific brands, but stated that they preferred condoms with certain characteristics, such as latex, flavored, or colored.

Barriers to Condom Use

Participants reported several reasons for not using condoms (See Table 1). Partner-related reasons were the most prevalent, with over a third stating that they did not use condoms because they were in a long-term, steady or marital relationship. Some of the partner-related reasons seemed to stem from a belief that partners were low in risk for HIV (e.g., partner was tested for HIV or other sexually transmitted infections, partner is "safe"). Several participants had misconceptions about HIV risk, with 4

Table I. Participant-Generated Barriers to Condom Use Among IDUs in California (*n* = 440)

Reason	%
Partner-related (total %)	57
Monogamy/long-term, steady partner	34
In love/trust/know partner/feel safe	8
Partner clean/not at risk (no diseases)	4
Partner does not want to use condoms	3
Oral sex only (not risky/do not like taste)	3
Cannot get pregnant/Trying to have children	3
Both partners HIV-positive	1
Female partner only - low risk	1
Dislike of Condoms (total %)	33
Do not like condoms/the way condoms feel	24
Break/do not work correctly/difficult to use	4
Uncomfortable/do not fit/lose erection	3
Break spontaneity/interfere with mood	2
Availability (not available, inconvenient to use)	12
Ignorant/apathetic about risk/careless	9
Alcohol/drug use interfered	2
No reason/don't know	3
Other	8

Note. Percentages add up to greater than 100% because some respondents stated more than barrier.

respondents believing condoms are not necessary if both partners are HIV-positive, and 4 respondents stating that condom use was not necessary with female partners.

The second most prevalent set of reasons were related to dislike of condoms, both in general, and because of specific aspects of condoms, such as discomfort (3%), difficulty of use (4%), and interference with spontaneity (2%). A quarter of participants did not use condoms because they did not like them, thought that intercourse was better without them, or felt that they reduced sensitivity and pleasure.

Other perceived barriers were related to condom availability, risk perception, and substance use. Over 10% of participants did not use condoms because they did not have one available or they found condom use inconvenient. Other participants (9%) did not think that they were at risk, were apathetic about the risks, or simply did not think about using condoms. Only 8 participants reported not using condoms because they were under the influence of alcohol or drugs.

Additional analyses indicated that barriers to condom use differed by gender and partner status. Women (53%) were more likely than men (26%) to state that they did not use condoms because they had a long-term, steady partner, $\chi^2(1) = 28.85, p < .001$, and men (26%) were more likely than women (11%)

Table II. Frequency Distributions of Condom Use for Vaginal, Anal, and Oral Sex among Sexually-Active IDUs in California

Condom Use (%)	Oral	Anal	Vaginal
Women with men			
0	72 (70%)	12 (52%)	78 (59%)
1-99	16 (16%)	3 (13%)	24 (18%)
100	15 (15%)	8 (35%)	31 (23%)
Men with women			
0	163 (91%)	34 (68%)	146 (57%)
1-99	6 (3%)	4 (8%)	53 (21%)
100	11 (6%)	12 (24%)	59 (23%)
Men with men			
0	15 (65%)	9 (23%)	—
1-99	4 (17%)	15 (38%)	—
100	4 (17%)	15 (38%)	—
One partner			
0	146 (93%)	29 (83%)	171 (76%)
1-99	6 (4%)	3 (9%)	19 (8%)
100	5 (3%)	3 (9%)	34 (15%)
Multiple partners			
0	121 (72%)	26 (34%)	53 (32%)
1-99	22 (13%)	19 (25%)	58 (35%)
100	56 (35%)	32 (42%)	56 (35%)

Note. Percentages may add up to greater than 100% due to rounding.

to report that they disliked condoms, $\chi^2(1) = 16.93, p < .001$. Not surprisingly, compared to those with multiple partners in the past six months (20%), individuals with only one partner (47%) were more likely to report that their lack of condom use was due to their monogamous status, 20% vs. 47%; $\chi^2(1) = 25.46, p < .001$.

Condom Use Behaviors

The complete frequency distributions of condom use in the past six months are provided in Table II. The majority of respondents reporting sexual intercourse in the past six months did not use condoms consistently. Of those reporting vaginal intercourse (*n* = 391), only 23% always used condoms. Of those reporting anal intercourse (*n* = 93), only 28% reported always using condoms; and of those reporting oral sex (*n* = 310), only 8% always used condoms.

Predictors of Condom Attitudes and Condom Use

In general, respondents reported positive attitudes toward condoms; the average sum of the condom attitude items was 28.80 (*SD* = 5.18) on a scale

Table III. Bivariate Relationships of Condom Attitudes and Sex Risk Behaviors among IDUs in California

	Condom Attitudes	Consistent Condom Use (Vaginal)	Consistent Condom Use (Anal)	Consistent Condom Use (Oral)
Age	-.09	-.05	-.11	.08
Female	.15**	.01	.09	.04
Years of education	.10*	.05	-.10	.05
Black	-.02	-.03	-.11	-.01
Latino	-.17**	-.02	-.03	.01
Other race	.01	-.01	.19	.04
Income (last 30 days)	-.00	-.02	-.10	-.11
Gay/bisexual	.21**	.30***	.19	.11*
Not currently employed	-.04	.04	.03	.06
HIV-positive	-.04	.01	-.02	.05
Multiple partners, last 6 mos	.16**	.22***	.31**	.19**
Steady partner, last 6 mos	-.14*	-.24***	-.23*	-.18**
Paid sex partner, last 6 mos	.11*	.16**	.07	.02
Paying sex partner, last 6 mos	.20***	.25***	.43***	.12*

* $p < .05$; ** $p < .01$; *** $p < .001$.

with a possible range of 8–40. Table III shows correlations of condom attitudes with socio-demographic factors, HIV status, and partner-related risk behaviors. Respondents who were female, better educated, White, and gay/bisexual/lesbian were more likely to report positive attitudes towards condoms. In addition, participants with more positive attitudes about condoms were more likely to have had more than one sex partner or to have traded sex for money or drugs, and less likely to have had a steady sex partner, in the past six months. In multivariate analyses that included variables with significant bivariate effects, White race/ethnicity, $\beta = -.11$, $p < .05$, gay/bisexual/lesbian orientation, $\beta = .21$, $p < .001$, and not having a steady partner, $\beta = -.17$, $p < .01$, continued to be significant predictors of more positive condom attitudes.

Additional analyses indicated different patterns of condom attitude relationships by partnership patterns (not shown in table). Among IDUs with only one partner in the past six months, bivariate analyses indicated that gay/bisexual/lesbian orientation and HIV status were related to more positive attitudes toward condoms in both bivariate, $r = .21$, $p < .01$ and $r = .15$, $p < .05$, respectively, and multivariate, $\beta = .22$, $p < .01$ and $\beta = .15$, $p < .05$, respectively, analyses. Among those with multiple sexual partners, in bivariate analyses gay/bisexual/lesbian orientation, $r = .23$, $p < .01$, and being paid for sex, $r = .27$, $p < .001$, were associated with more positive condom attitudes, and Latino ethnicity, $r = -.29$, $p < .001$, was associated with less positive attitudes. Latino ethnicity, $\beta = -.28$, $p < .001$, sexual orientation, $\beta = .18$, $p < .05$, and sex work, $\beta = .20$, $p < .01$,

continued to show significant associations in multivariate analyses.

In bivariate analysis predicting condom use (Table III), we found that having multiple partners, and engaging in exchanges of sex for money or drugs, were significantly related to consistent condom use for all sex acts. Having a steady partner in the past six months and self-identifying as heterosexuals was associated with using condoms inconsistently or never in the past six months. Thus, patterns of associations with condom use were similar across sexual behaviors overall, with the exception of sexual orientation, and sex work. Gay/bisexual/lesbian orientation was associated with consistent condom use for vaginal and oral sex, but not for anal sex. Having paid sex partners was related to consistent condom use for vaginal sex, but not for anal or oral sex.

We further explored these relationships by partnership patterns (not shown in table). In bivariate analyses, among IDUs with one sexual partner in the past six months, consistent condom use for vaginal sex was related to gay/bisexual orientation, $r = .16$, $p < .05$, and paying for sex in the past six months, $r = .20$, $p < .01$; consistent condom use for oral sex was related to having been paid for sex, $r = .20$, $p < .05$. Among IDUs with multiple partners, consistent condom use for vaginal sex was associated with gay/bisexual orientation, $r = .29$, $p < .001$, and having been paid for sex in the past six months, $r = .27$, $p < .01$; being paid for sex was similarly related to condom use for anal sex, $r = .41$, $p < .01$. None of the measured variables were significantly associated with using condoms for anal sex among those with one

Table IV. Unadjusted (Bivariate) and Adjusted (Multivariate) Associations Between Condom Attitudes and Condom Use Among Sexually-Active IDUs in California

Consistent condom use	Unadjusted (point biserial) Correlations with condom attitudes	Adjusted odds ratios and 95% confidence intervals with condom attitudes
Overall^a		
Vaginal sex (<i>n</i> = 314)	.36***	1.2 (1.1–1.3)***
Anal sex (<i>n</i> = 75)	.37**	1.3 (1.1–1.5)**
Oral sex (<i>n</i> = 256)	.21**	1.2 (1.0–1.3)**
One recent partner^b		
Vaginal sex (<i>n</i> = 169)	.23**	1.1 (1.0–1.2)**
Anal sex (<i>n</i> = 23)	.30	1.4 (0.9–2.3)
Oral sex (<i>n</i> = 121)	.10	1.1 (0.9–1.4)
Multiple recent partners^c		
Vaginal sex (<i>n</i> = 149)	.44***	1.2 (1.1–1.4)***
Anal sex (<i>n</i> = 54)	.33*	1.1 (1.0–1.3)
Oral sex (<i>n</i> = 139)	.25**	1.2 (1.1–1.4)**

Note. Sample sizes apply to adjusted models and are nearly identical for unadjusted models. Condom attitudes is the independent variable, and condom use (for vaginal, anal, or oral sex) is the outcome.

^aOverall regression models adjusted for gender, sexual orientation, steady partner status, education, and being paid for sex.

^bRegression models for participants with one recent partner adjusted for sexual orientation and having paid for sex.

^cRegression models for participants with multiple recent partners adjusted for sexual orientation and being paid for sex.

p* < .05; *p* < .01; ****p* < .001.

partner, or using condoms for oral sex, among those with multiple partners.

Relationship of Condom Attitudes to Condom Use

Positive attitudes toward condoms were significantly associated with consistent condom use for vaginal, anal, and oral sex in the past six months (see Table IV). In a multivariate logistic regression analysis, more positive attitudes toward condoms significantly predicted condom use behavior for vaginal, anal, and oral sex in the past six months among all participants, controlling for confounding variables.

Effect sizes were relatively similar by partnership patterns. However, some effects were not significant, most likely due to small samples sizes for some of the relationships. Condom attitudes were independently related to condom use for vaginal sex among IDUs who were monogamous in the past six months, whereas condom attitudes were independently related to condom use for both vaginal and oral sex for IDUs reporting multiple partners in the past six months.

DISCUSSION

In the present study, we found robust relationships between attitudes toward condom use and condom use behaviors for the overall sample, among those who were monogamous, and among those who had multiple sexual partners, beyond the effects of socio-demographic and risk characteristics. Moreover, the majority of relationships examined were consistent across sexual behaviors, with similar associations observed with condom use for vaginal, anal, and oral sex. These results, which are consistent with findings from IDU and non-IDU samples (Sheeran and Taylor, 1999), suggest that interventions that aim to change condom attitudes may have corresponding influences on condom use behaviors. Accordingly, positive changes in beliefs about condoms partially accounted for the reduction in participants’ risk behaviors in the NIMH Multisite HIV Prevention Trial, a large-scale intervention for men and women at high risk for HIV (The NIMH Multisite HIV Prevention Trial Group, 2001). It is important for prevention programs targeting IDUs to develop such interventions specific to the needs and lives of IDUs.

Partner-related concerns, such as reluctance to introduce condoms with steady partners, ranked first among the participant-generated barriers to condom use. In line with prior qualitative and quantitative research (Ames *et al.*, 1995; Carballo-Diequez and Dolezal, 1996; Choi *et al.*, 1994; Kenen and Armstrong, 1992; Misovich *et al.*, 1997; Weiss *et al.*, 1993), respondents were unwilling to use condoms with their steady partners, because they believed condom use connotes distrust and a lack of intimacy, because they did not feel that their partner was at risk, or because they felt that condom use with long-term partners was unnecessary. Interestingly, the quantitative analyses indicated that these beliefs may depend on sexual orientation and HIV status. Among IDUs who had one sexual partner in the past six months, those who were gay/bisexual/lesbian and those who were HIV-positive had more favorable attitudes toward condoms. In contrast, those with multiple partners had more positive attitudes, and were more likely to protect themselves in sexual encounters, especially if they engaged in sex work. These results are consistent with prior studies showing that female injection drug and/or crack users were more likely to use condoms if they were HIV-infected, but only with their main partners (Wood *et al.*, 1998), as well as research demonstrating a higher likelihood of condom use with riskier sexual partners (i.e.,

casual and sex work partners) among IDUs (Falek *et al.*, 1997; Rhodes and Malotte, 1996; Vanichseni *et al.*, 1993). Nevertheless, even if IDUs are not at risk for HIV from sexual behavior, they may still be at risk via injection-related behaviors. The design of couples-based interventions would be helpful in counseling IDUs about these issues, as an important and large sub-population of IDUs have steady sexual partners. Such interventions could, for instance, address misconceptions about sexual risk from steady partners, as well as integrate family planning components that inform participants about a range of birth control methods.

Consistent with prior research on both IDUs and non-IDUs (e.g., Corby *et al.*, 1996; Helweg-Larsen and Collins, 1994; Somlai *et al.*, 2003), respondents had only moderately positive attitudes toward condoms, possibly because condom attitudes are composed of beliefs with opposing valences [e.g., that condoms both are effective and reduce pleasure (Brown, 1984; Norton *et al.*, *in press*)]. Moreover, dislike of condoms was a major barrier to condom use, ranking second after partner-related concerns and expressed by nearly a quarter of the sample. These results are consistent with prior qualitative and quantitative research examining barriers to condom use among IDU and non-IDU samples. For example, dislike of condoms due to reduction in sexual pleasure is a commonly-cited reason for not using condoms (Carballo-Diequez and Dolezal, 1996; Carballo-Diequez *et al.*, 1997; Geringer *et al.*, 1993; Stall *et al.*, 1990); and dislike of condoms has been strongly related to condom use behavior (Helweg-Larsen and Collins, 1994; Monahan *et al.*, 1997; Norris and Ford, 1994; Wulfert *et al.*, 1996). Somewhat surprisingly, interference with spontaneity, which has been identified as a key barrier in prior quantitative research (Monahan *et al.*, 1997; Norris and Ford, 1992), was not cited as a reason for lack of condom use in our study. However, these results are consistent with those of a recent review of research on men's condom attitudes, which observed that dislike of condoms is a more prevalent barrier to condom use than is lack of spontaneity (Norton *et al.*, *in press*). We suspect that the discordance between our results and those of others is partially due to the qualitative methodology used, and that lack of spontaneity may have emerged as a stronger barrier had participants been directly asked to rate specific barriers such as spontaneity on a scale. In general, however, our results point to the need to consider negative affective responses to condoms when designing interventions to increase

condom use. Such interventions could focus on extolling the pleasurable aspects of condoms, as well as showing participants ways to eroticize condom use.

The majority of the sample stated that they had no preferences in terms of the types of condoms that they used. However, a third of participants expressed specific preferences regarding particular brands, sizes, lubrication, and textures. Although the observed preferences may be specific to our sample, they do suggest that SEPs and condom distribution programs could conduct brief surveys of client preferences in order to determine which condoms to offer. Clients may be more receptive to condom use when condoms that they prefer are made available. In addition, condom distribution programs that are tailored to the preferences of their clientele are likely to reduce condom inaccessibility as a barrier to condom use.

Despite the strengths of the study sample and results, several aspects of the methodology limit the conclusions that can be made. We surveyed a convenience sample of IDUs from SEPs in California, and we did not systematically obtain refusal rates. Therefore, our results may not generalize to other IDU populations or SEP users, and individuals who refused may have differed in meaningful ways from those who were surveyed. Further, the condom attitudes, preferences, and barriers observed in the present study may be unique to this sample and should not be generalized to other members of populations who engage in risky behaviors (e.g., men who have sex with men). In addition, because a cross-sectional design was used, we were unable to examine the direction of causality between condom attitudes and condom behaviors. Because condom use behavior was measured retrospectively, and attitudes were measured at the time of the survey, we do not know whether attitudes preceded behavior, or attitudes were formed on the basis of the reported behaviors. Thus, in-depth longitudinal studies that measure condom use attitudes and behaviors at multiple time-points are needed to understand the nature of the relations between these constructs.

Nevertheless, the data presented here were obtained from a large sample of IDUs and demonstrate the utility of examining attitudes about condom use when predicting sexual risk behavior. Unprotected sexual contact with IDUs is a rapidly growing risk factor for HIV (Kral *et al.*, 2001; Strathdee *et al.*, 2001), and understanding condom use barriers, attitudes, and preferences is a first step to changing

sexual risk behaviors. Interventions that increase awareness about positive aspects of condom use, distribute condom types requested by its clients, and work to eliminate misconceptions about partner risk, HIV, and condoms, are likely to be successful in decreasing sexual risk behavior among IDUs.

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