

The Association of Sexual Experience with Attitudes, Beliefs, and Risk Behaviors of Inner-City Adolescents

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We compared knowledge, attitudes, and demographic characteristics of 630 sexually experienced and 422 inexperienced inner-city adolescents aged 14–17 years. Sexual experience was associated with indicators of risk previously reported in the literature: male gender, older age, single-family home, smoking, drinking, and poorer academic performance. We found lower HIV knowledge in sexually inexperienced youth, which suggested an area of vulnerability compared with sexually active teens. However, most inexperienced adolescents intended to remain virgins for the next 6 months, most had peer groups they also perceived to be virgins, and they were more positive and confident about remaining abstinent. Differences between the groups suggest there may be benefits to developing intervention programs targeted to their different strengths and weaknesses.

Sexual behavior often puts urban adolescents at risk for sexually transmitted diseases (STDs) and infection with HIV. Half (49.9%) of adolescents have ever had sexual intercourse (Centers for Disease Control, 2000), and they are initiating sexual activity at younger ages (Brooks-Gunn & Furstenberg, 1989; Forrest & Singh, 1990; Forrest, 1994). Although a high proportion of urban adolescents are sexually active, many have abstained from sex. Development of interventions to delay the onset of sexual debut and encourage safer sex behaviors among adolescents depends, in part, on understanding factors that influence sexual initiation and activity.

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Researchers have attempted to identify background characteristics and other variables that distinguish between adolescents who have initiated sexual activity and those who have not. Sexually active teens tend to be older and are more likely to be male (Carvajal, Parcel, Basen-Engquist, Banspach, Coyle, Kirby, & Chan, 1999; DiIorio, Dudley, Kelly, Soet, Mbwara, & Potter, 2001; Lammers, Ireland, Resnick, & Blum, 2000; Little & Rankin, 2001; O'Donnell, O'Donnell, & Stueve, 2001; Raine, Jenkins, Aarons, Woodward, Fairfax, El-Khorazaty, & Herman, 1999; Upchurch, Levy-Storms, Sucoff, & Aneshensel, 1998; Vera, Reese, Paikoff, & Jarrett, 1996; Whitbeck, Yoder, Hoyt, & Conger, 1999). African-Americans are more likely than whites to have intercourse in adolescence and they also tend to have an early sexual debut than other ethnic groups (Blinn-Pike, 1999; Moss, 1994; Mott, Fondell, Hu, Kowaleski-Jones, & Meneghan, 1996; Upchurch et al., 1998). Studies looking at other sociodemographic correlates of sexual initiation in adolescents have yielded contradictory findings overall, but environmental factors such as single parent family structure (Blinn-Pike, 1999; Day, 1992; Lammers et al., 2000; Little & Rankin, 2001; Mott et al., 1996; Raine et al., 1999; Upchurch et al., 1998), low parental education (Day, 1992), low socioeconomic status (Moore, Miller, Morrison & Gleib, 1995; Lammers et al., 2000; Little & Rankin, 2001; Mott et al., 1996) and urban *vs.* rural residence (Lammers et al., 2000; Blinn-Pike, 1999) have consistently been found to be related to early sexual debut. Other personal characteristics of adolescents associated with being sexually experienced include participation in other risk behaviors (Feldman, Rosenthal & Canning, 1995; Kowaleski-Jones & Mott, 1998; Mott et al., 1996; Raine et al., 1999; Whitbeck et al., 1999; Zweig, Phillips, & Linberg, 2002) such as substance use (Keller, Barlett, Schleifer, Johnson, Pinner & Delaney, 1991; Jessor, Costa, Jessor, & Donovan, 1983) and smoking (Keller et al., 1991; Zabin, 1984), poor academic performance (Child Trends, 1995; Lammers, et al., 2000; Raine et al., 1999) low self esteem (Day, 1992; Vera et al., 1996) and poor psychosocial adjustment (Bingham & Crockett, 1996; Moore et al., 1995; Feldman, Rosenthal & Canning, 1995). In contrast, having positive attitudes about school and aspirations to attend college, and participating in after-school activities are associated with delaying intercourse, especially for younger females (Whitbeck et al., 1999).

Less research attention has given to differences between sexually experienced and inexperienced teens in sexual attitudes, social/peer norms, and self-efficacy beliefs (Carvajal et al., 1999; DiIorio et al., 2001; Nahom, Wells, Gillmore, Hoppe, Morrison, Archibald, Murowchick, Wilsdon, & Graham, 2001; O'Donnell, Myint-U, O'Donnell, & Stueve, 2003; Whitbeck et al., 1999). These cognitive antecedents of behavior are an essential part of social cognitive theories of behavior. During adolescence, there is

increasing focus on activities with and social acceptance by peers, who reinforce existing strengths and weaknesses through their favorable or unfavorable reactions (Brown, 1990; Shaffer, 2000), and data suggest that there is similarity among peers in their sexual behaviors (La Greca, Prinstein, & Fetter, 2001; Maxwell, 2002). Positive attitudes about abstinence are related to delaying intercourse, and these effects on behavior appear to be equally protective in subgroups that differ by gender and/or ethnicity (Carvajal et al., 1999; O'Donnell et al., 2003).

Although preventive interventions for adolescents, including those containing abstinence messages, are frequently presented to mixed groups of teens, we do not know whether attitudes and beliefs are equally protective against sexual risk behavior in adolescents who are and are not sexually experienced. Knowledge about the ways in which these beliefs are associated with sexual behavior is necessary in developing the content of preventive interventions for teens. Moreover, identification of other personal factors associated with sexual debut may be helpful in targeting preventive interventions to especially vulnerable risk groups among these adolescents. Therefore, the objective of the current investigation was to examine whether sexually experienced and inexperienced adolescents in a high-risk inner-city community differed in HIV/AIDS knowledge or in their sexual attitudes, intentions, and peer norms. We also compared the sexually experienced and inexperienced groups in terms of background characteristics and psychosocial factors that have been hypothesized as being correlated with being sexually active in adolescence: age, gender, race/ethnicity, family structure, school performance, and substance use.

METHOD

Sample and Procedures

All data analyzed in the present investigation were collected as part of Project Safe, a randomized controlled trial of an STD/HIV prevention program for inner-city teens. The Project Safe study and its procedures were reviewed and approved by the Institutional Review Boards of the Albert Einstein College of Medicine and Montefiore Medical Center. In the present analyses, we used baseline data that were gathered directly from the adolescents prior to participating in any intervention. Of more than 1,000 respondents who were screened for eligibility for Project Safe, there were 630 adolescents who reported being sexually active and 422 adolescents who had not initiated sexual activity. Data from all 1,052 adolescents who completed the baseline surveys were included in the present study.

To identify potential participants, we used a computerized database to obtain the names and addresses of adolescents aged 14–17 who had received medical care at the outpatient clinics affiliated with the medical center. No medical records or information were obtained. The adolescents served by our medical center, who were the target population from which we recruited into Project Safe, live in one primary community that is an AIDS epicenter, and they are predominantly low income and non-White. This county is one of the poorest in the United States and it has the highest number of people living below the poverty line in this state. It also is predominantly a community of people of color, with the eighth largest (35.6%) African American and 11th largest (48.4%) Hispanic population in the nation. Spanish is the language spoken in 38.9% of households. This borough has the highest AIDS rate among adolescents (8.8/100,000 in 1997) in New York City (New York City Department of Health, 2001).

The adolescents were mailed a letter and an informational packet from the “Teen Lifestyle Survey,” which invited them to participate in a study of their attitudes about themselves, their friends, drug and alcohol use, and sexual behavior. The mailings were followed by telephone calls from trained research assistants who described the study and answered questions. The consent form for the adolescent’s participation in the survey was enclosed in the packet. Adolescents this age are able to consent to their own medical services and to preserve their confidentiality, the requirement for parental consent for the survey was waived by our Institutional Review Board. This is an added strength of the study sample as it increased its representativeness and reduced potential bias that can occur when active parent consent is required for research participation.

All data collection was completed in the afternoon or on a Saturday at our office. As adolescents needed to read at least a fifth-grade level to complete the self-administered study measures using Computer Assisted Personal Interview (CAPI) terminals, they first were screened for minimal literacy using the Wide Range Achievement Test-Revised (Jastak & Wilkinson, 1984). CAPI terminals then were used for questions about sexual behavior and substance use as well as several other measures designed for self-administration. CAPI administration of measures of sexual behavior and substance/alcohol use is generally recommended to improve validity, especially among teenagers (Turner, Ku, Rogers, Lindberg, Pleck & Sonenstein, 1998).

Adolescents also were interviewed in private by a trained interviewer who asked questions that required complexity of administration such as items on HIV/AIDS knowledge, school attendance, family structure, and other personal background characteristics. The interviewer entered the additional survey responses using a CAPI terminal. Interviewers also obtained contact information for tracking purposes.

All research interviewers were trained in general techniques of survey interviewing: establishing rapport, getting informed consent, asking questions consistently, maintaining neutrality and confidentiality, probing to assure complete responses, accurately and completely recording the information, and obtaining appropriate contact data before ending the interview. Through years of experience in interviewing adolescents, we have developed expertise in obtaining honest responses in a sensitive way. Staff were trained in issues related to ethnic and cultural diversity and to concerns and needs of the adolescents they would interview and in procedures for addressing any problems that might arise. In addition, most of our interviewers come from the local community and reflect its racial/ethnic distribution. All completed interviews are reviewed by supervisors.

Measures

The following sections describe the measures that provided data for this analysis. Descriptions of other measures from the randomized controlled trial, such as items asking about contraceptive use, pregnancy, and partner characteristics are omitted and may be obtained from the authors by request. All measures are in the public domain or are used and/or adapted with permission of their authors. All measures have been used previously with inner-city minority group adolescents.

Demographic characteristics. Standard items asking about background characteristics including age, race/ethnicity, household composition, and schooling were included.

Alcohol and drug use. Questions were adapted from an instrument developed for a previous study of adolescent health (Huba, Melchior, & the Staff of The Measurement Group, 1994–1998). The substance use section asks, for each substance, whether it was ever used, age at first use, if it was ever injected (when applicable), whether it was used in last 6 months, and the number of days it was used in last 30 days. The original form asks about alcohol use as well as about use of cigarettes, marijuana/hashish, cocaine, crack, ecstasy, heroin, and amphetamines (speed/uppers). We added several additional drugs to the listing: inhalants, hallucinogens, steroids, tranquilizers/sedatives (downers).

Knowledge about HIV/AIDS. Our measure was adapted from an HIV/AIDS knowledge scale that was developed by Krauss (1997) for use in a study with minority youth. Its items include questions about ways

people can get HIV from an infected person and whether chances of HIV can be reduced by using a condom. Knowledge questions are responded to as “yes,” “no” and “not sure,” and the score is the number answered correctly. α reliability (internal consistency) in our sample was .72.

Abstinence outcome expectancies. We used a 19-item measure of outcome expectancies for abstinence behaviors developed by DiIorio et al. (2002). The measure is based on social cognitive theory. Subjects are provided a list of statements and asked to indicate their agreement or disagreement on a Likert-type five-point scale. Examples are: “If you do not have sex, you will feel more responsible,” “If you do not have sex, you be less popular,” and “If you have sex, you will get AIDS.” DiIorio et al. (2001) found that abstinence outcome expectancies was a significant predictor of participation in intimate sexual behaviors with the opposite sex among adolescents. α reliability (internal consistency reliability) was .85 in DiIorio et al.’s (2002) sample of 11–14 year olds and .87 in our sample.

Abstinence self-efficacy. Abstinence self-efficacy was measured using a 12-item scale also created by DiIorio et al. (2002). Also based on social cognitive theory, its items all begin with the stem, “How sure are you that . . .” and they are answered on a seven-point scale from “not sure at all” to “completely sure.” Items include staying out of situations that lead to your being pressured to have sex, saying no to sex, and saying no even if it means breaking up with your partner. DiIorio et al. (2001) found that adolescents expressing higher levels of self-efficacy were more likely to delay initiation of sexual intercourse. Our alpha reliability for this scale was .90, as was that reported by DiIorio et al. (2002).

Peer behavior. Our interview included five items asking about the adolescent’s beliefs about friends’ sexual practices, which we adapted from a survey used in the Healthy Oakland Teens Project of the Center for AIDS Prevention Studies. In the present analyses, we used one item from this set that asked, “How many of your friends do you think have had sexual intercourse?” It was answered on a five-point scale from “none” to “all.”

Behavioral intentions. Behavioral intentions for sex and substance use were measured with items adapted from a scale developed by Rotheram-Borus and Lightfoot (2000). These items are answered on a five-point scale (“never do it” to “all of the time”). We selected an item that asked about plans for having sexual intercourse in the next 6 months.

We also used two intention items from the Healthy Oakland Teens Project survey to assess whether they would refuse to have sex without a condom or would insist on a condom even if a partner disagreed. Adolescents answered on a 4-point scale from “I would definitely” to “I would definitely not.”

Sexual history. We measured sexual history using items taken or adapted from questions about intimate behavior, including questions about various types of intercourse, that were developed by DiIorio et al. (2002). Adolescents were asked about pre-intercourse behaviors such as kissing and touching, whether they had performed oral sex or had it performed on them, and whether they had had vaginal intercourse. Girls also were asked if they had anal sex done to them. Boys were asked both if they had done it to someone else and if their partners were female, male, or both, and whether they had had done it to them. The questions included the terms oral sex, anal sex, and vaginal intercourse, as well as more common or slang terms for these activities.

Data Analyses

Definition of sexually experienced. The interview questions about sexual history were used to categorize participants as sexually experienced or sexually inexperienced. For the purpose of determining eligibility for the Project Safe study, we wished to include adolescents who were engaging in any type of sexual behavior that would increase potential risks for HIV and/or other STDs. Therefore, we considered them to be sexually experienced if they reported they had *ever engaged in oral, anal, or vaginal intercourse*, and sexually inexperienced if they had never engaged in any of these activities.

Statistical procedures. We first examined whether sociodemographic and background factors (e.g., age, gender, race/ethnicity, family structure, public assistance, school performance, and after-school activities, substance use) differed between adolescents who were and were not sexually experienced. χ^2 analyses were used to analyze differences in proportions (categorical variables), and ANOVA in comparing means of continuous dependent variables. We also used χ^2 to compare their responses with items asking about behavioral intentions and perceptions of peer behavior, and ANOVA to compare their mean scores on the HIV/AIDS knowledge, abstinence efficacy and outcome expectancies scales. Logistic regression analyses (categorical-dependent variables) and

two-way ANOVA (continuous-dependent variables) also were used to examine whether the association of sexual experience to these variables differed by gender and to control for age as a potential covariate.

RESULTS

As noted earlier, of 1,052 14–17 year old adolescents who completed the baseline interviews, 630 (60%) were categorized as sexually experienced (SXE), i.e., they reported ever having engaged in oral, anal, or vaginal intercourse, and 422 (40%) were sexually inexperienced (SXI), i.e., they had never engaged in any of these activities. The breakdowns of age, gender, race/ethnicity and other background characteristics, school performance, and substance use by sexual experience are provided in Table 1.

As expected, the SXE group had a higher proportion of males ($p < .05$), and the mean age of the SXE adolescents also was older than SXI adolescents ($p < .01$). The majority of both groups were Black, Latina/o, or mixed race. More specifically, 27% of SXE and 24% of SXI identified as African American, 10% of each group as Black, West Indian, 31% of SXE and 29% of SXI as Puerto Rican, 11% of SXE and 10% of SXI as Dominican, and 10% of SXE and 12% of SXI as Mexican, South American, or other Hispanic/Latino. The SXI group had slightly more White and Asian adolescents than the SXE group, but the number who identified with these categories was extremely small in both groups. Table 1 also shows that family structure differed, with a smaller proportion of SXE adolescents living with two biological parents compared with the SXI group ($p < .0001$). All of the differences by sexual experience held equally for boys and girls. Contrary to expectation, there were no differences in the proportions who said their families were receiving public assistance, but it should be noted that there was a fairly high rate of missing responses (14%) for this item.

As demonstrated in other studies, being sexually experienced was associated with other indicators of risk. In terms of reported school performance, SXE adolescents in our sample were more likely to be high school drop-outs ($p < .01$); in fact, only 10 adolescents in the study said they had dropped out and all were in the SXE group. SXE adolescents were more likely to have repeated a grade than SXI adolescents ($p < .01$) and they had self-reported poorer grade averages ($p < .01$). SXI adolescents appeared to have higher educational aspirations; more SXI than SXE teens said they expected to graduate from college and/or attend graduate school ($p < .05$). However, there were no differences between the groups in whether they participated in after-school activities, clubs, or

TABLE 1
 Comparisons of Sociodemographic Characteristics, School Performance, and Substance Use
 of Adolescents by Sexual Experience (N = 1,052)

	<i>Sexually Experienced</i>	
	<i>Yes</i>	<i>No</i>
Age at interview: mean**	16.6	15.9
SD	1.0	1.1
Gender: % male*	42.5	35.3
Race/ethnicity		
Latina/o	51.9	50.4
Black	36.7	34.3
Mixed	9.0	9.6
White	2.2	3.4
Asian	.2	2.4
Family structure**		
Both biological parents	20.8	31.8
Mother alone	45.6	39.9
Mother and unrelated spouse	17.3	19.0
Other	16.2	9.3
Family receives public assistance	30.3	28.2
Dropped out of high school**	1.6	0.0
Repeated a grade**	39.4	29.2
Grade averages**		
A	5.6	9.0
B	34.7	47.4
C	41.2	35.2
D	12.1	7.2
F	6.3	1.2
School aspirations*		
Finish college	47.4	50.7
Graduate school	16.0	17.7
After-school activities		
Participates	61.1	58.5
Very active	57.8	62.7
Leadership role	29.6	24.9
Smokes cigarettes**		
Yes, in the last 6 months	24.3	6.9
Yes, but not in last 6 months	11.3	6.6
Never	64.4	86.5
Drinks alcohol**		
Yes, in the last 6 months	40.5	14.7
Yes, but not in last 6 months	15.7	9.2
Never	43.8	76.1

(Continued)

TABLE 1. (Continued)

	<i>Sexually Experienced</i>	
	<i>Yes</i>	<i>No</i>
Smokes marijuana**		
Yes, in the last 6 months	28.5	4.5
Yes, but not in last 6 months	13.7	2.8
Never	59.8	92.7
Used other drugs**		
Yes, in the last 6 months	3.0	.7
Yes, but not in last 6 months	2.5	.5
Never	94.4	98.8

Note. Adolescents were categorized as sexually experienced if they reported ever having engaged in oral, anal, or vaginal intercourse.

* $p < .05$. ** $p < .01$.

organizations; in how actively they were involved; or whether they had ever held a leadership role. Table 1 also shows that SXE teens were more likely to have ever smoked cigarettes, drunk alcohol, smoked marijuana, or used other illicit drugs at any time and to have used them in the previous 6 months (all p -values $< .01$).

Table 2 gives the comparisons between SXE and SXI adolescents in their knowledge, attitudes, intentions, and peer norms. Compared with SXE teens, SXI teens had significantly lower HIV/AIDS knowledge scores; the size of the difference in mean scores between the groups (i.e., .40 of a standard deviation) suggests a moderate effect of experience on knowledge. In contrast, abstinence self-efficacy and outcome expectancy scores were higher in SXI adolescents than in SXE adolescents. These effects of experience were small to moderate, (i.e., .20 standard deviations for self-efficacy and .33 standard deviations for outcome expectancy), and statistically significant. Similar patterns by experience were found for the proportions who said they would refuse to have sex without a condom ($p < .01$) and would insist on a condom even if a partner did not want to use one ($p < .01$); both of which were higher in SXI youth. SXI adolescents also were less likely to say all or most of their friends were sexually active, and they were much less likely to intend to have sex in the next 6 months; p -values in these analyses were $< .01$. Older age was independently related to more HIV knowledge and perceptions of greater peers involvement in sexual activity, but not to attitudes about abstinence; moreover, significant differences between SXE and SXI youth were found for each these measures at all ages.

TABLE 2
 Comparisons of HIV/AIDS Knowledge, Sexual Attitudes and Beliefs of Adolescents by
 Sexual Experience ($N = 1,052$)

	<i>Sexually Experienced</i>	
	<i>Yes</i>	<i>No</i>
HIV knowledge: mean**	20.5	19.0
SD	3.8	3.8
Abstinence self-efficacy: mean**	66.7	69.6
SD	15.2	13.0
Abstinence outcome Expectancy: mean**	53.9	57.7
SD	11.2	10.9
Plan to have intercourse next 6 months**	85.8	17.1
Think friends are sexually active**		
None	4.9	16.2
A few	16.0	38.8
About half	17.8	18.1
Most	38.6	21.7
All	22.7	5.2
Would refuse if girl/boy you like wants to have sex without condom**		
Definitely would	55.9	71.9
Probably would	24.1	18.6
Probably not	13.0	6.2
Definitely not	7.0	5.5
Would insist if partner does not want to use a condom**		
Definitely would	55.2	71.7
Probably would	23.2	11.4
Probably not	11.3	5.0
Definitely not	10.3	11.9

Note. Adolescents were categorized as sexually experienced if they reported ever having engaged in oral, anal, or vaginal intercourse.

** $p < .01$.

Further analyses (not shown) indicated that abstinence outcome expectancy scores differed significantly by gender as well: boys had less positive attitudes than girls in both the SXI and SXE groups. Moreover, boys had lower abstinence self-efficacy scores than girls on the whole, but unlike abstinence outcome expectancies, there was a gender by experience interaction such that the SXE group had significantly lower self-efficacy scores than the SXI group only among males. All other differences between SXE and SXI adolescents held similarly in boys and girls.

DISCUSSION

We found differences in characteristics between sexually experienced and sexually inexperienced 14–17 years in an urban community that supported many of the environmental and personal correlates of sexual debut suggested by the literature. There were higher rates of sexual activity among males, and the sexually active adolescents were slightly older as a group, but race/ethnicity was unrelated to being sexually experienced. As found in previous studies, living in a two-parent family was associated with not having had intercourse in this sample. It has been suggested in the literature that it is the result of better parental monitoring and supervision in these households (Romer, Stanton, Galbraith, Fiegelman, Black, & Li, 1999); however, we did not have data in our study that could be used to test this hypothesis.

We also found, as others have demonstrated, that adolescents who are sexually experienced are more likely than virgins to participate in other behaviors, such as smoking and drinking, that put them at risk for negative health outcomes and they also tend to perform less well academically. As noted by Dorius, Heaton, and Steffen (1993), the co-occurrence of substance abuse and dropping out of school with sexual activity may suggest a causal influence or may reflect behaviors that are likely to be initiated simultaneously in adolescents. Researchers also have suggested that they represent a “problem behavior syndrome” that characterizes some adolescents more than others (Little & Rankin, 2001). Most importantly, they all identify a group of adolescents at risk, and may help in determining who needs intervention.

We also determined that there are differences in knowledge about HIV/AIDS, perceptions of peer behavior, and attitudes and intentions about having sex that can have important implications for preventive interventions as well. For example, lower HIV/AIDS knowledge about transmission routes and safer sex practices in sexually inexperienced youth suggests an area of vulnerability for these adolescents. Moreover, sexually inexperienced adolescents were less likely to know that there is no cure for AIDS and that a person can be infected with HIV for years without knowing it. Although the effect size was moderate, the pattern of experienced youth giving more correct responses was consistent across the individual knowledge questions, and was not the result of differences occurring on only one or two of the scale items.

However, it was encouraging to find that many of the sexually inexperienced boys and girls said they did not intend to have sex in next 6 months, and they also responded in ways that showed they were more confident and more positive about remaining abstinent in the near future

than sexually active youth. Several studies have suggested that beliefs about friends' sexual behavior and whether friends would approve or disapprove if they had sex are among the most powerful predictors of teen sexual activity (Carvajal et al., 1999; DiIorio et al., 2001; Little & Rankin, 2001; Nahom et al., 2001; O'Donnell et al., 2003; Kinsman, Romer, Furstenberg & Schwarz, 1998). Most sexually inexperienced teens in our study had peer groups they perceived to be virgins as well, which is a likely protective factor. These strengths could be the foundation of prevention efforts that reinforce the choice to be abstinent in urban minority adolescents.

Our findings suggested, however, that once they report being sexually active, these teens are unlikely to respond to abstinence messages—they say they intend to have sex, have sexually active peer groups, are less confident they can be abstinent, and hold lower regard for abstinence outcomes. On the other hand, youth who have dealt with sexual communication and decision-making issues, pregnancy and STD concerns, and problems using condoms may have greater perspective and the motivation to explore the dynamics of relationships and the realities of risk. Boys in our sample generally seemed more vulnerable than girls, as they had lower abstinence outcome expectancy and efficacy, and were less likely to refuse unprotected sex than girls. This is consistent with male gender norms that reject virginity, value early initiation of sexual activity, sexual conquest, and multiple sexual partners (Lindsey, 1996). Interventions to prevent HIV and other STDs in adolescents tend to disregard the different challenges and strengths of experienced and virgin teens; however, there may be benefits to developing different programs for these groups. Timing of interventions is important, and should be based on developmental readiness. As O'Donnell et al. (2003) noted, programs need to be offered before students have already formed opinions about or made decisions to engage in sexual activity; however, if information is given too early it may not be relevant and may not help adolescents make decisions about sex. A recently published study provides evidence that prior sexual experience may influence the ways in which adolescents respond to risk prevention programs (Wu, Burns, Stanton, Li, Harris, Galbraith, & Wei, 2005). Targeting sexually experienced youth separately from inexperienced youth can provide opportunities to address their different degrees of risk more effectively, and our Project Safe trial is testing this hypothesis.

Developmentally, among adolescents, there is an increasing trend to participation in risky behavior with age (Wu et al., 2005). Thus, as expected, older teenagers in our study not only were more likely to be sexually experienced, but they were more likely to smoke, drink, and use drugs, and they reported having fewer peers who were abstinent.

However, differences between sexually experienced and inexperienced adolescents occurred at all ages in terms of both associated risk factors and positive outcomes (those who had had sex tended to have more accurate HIV/AIDS knowledge), and positive beliefs and attitudes about abstinence were associated with lower likelihood of having sex among older as well as younger adolescents.

One potential limitation of the proposed study concerns its generalizability. While our findings would pertain mainly to poor, minority inner-city urban teenagers in the 14–17 years age range, this also could be considered a strength of our study because these teens are in fact at higher risk for behaviorally acquired HIV. Moreover, the present analyses and more in-depth work we have done with Project Safe trial data suggest that the adolescents we have interviewed are remarkably similar to other samples of teenagers nationwide in terms of reported sexual and substance use behaviors. The large sample size is another advantage of the study. However, Project Safe eligibility criteria in terms of literacy and the need to speak English, as well as recruitment among persons who have received medical care, may have eliminated some of those who are at greatest risk.

Another potential limitation is the use of self-report data. Although behavioral research on sexual and drug use practices generally relies on people's self-reports, the private nature of these activities makes validation quite difficult. This is particularly true with regard to those behaviors that put people at risk for HIV and other STDs (Gibson, Hudes, & Donovan, 1999). Self-reports about behaviors that subjects feel are embarrassing, threatening or stigmatizing may be affected by negative response bias that leads to an underestimation of activity (Gibson et al., 1999; Gribble, Miller, Rogers, & Turner, 1999). Teenage respondents may be especially reluctant to provide accurate information to an interviewer who is an adult (Gribble et al., 1999). However, another important strength of the study is its use of computer-assisted methods of data collection that have been shown to increase the reliability and validity of self-report estimates of sexual contacts, drug use, and other risk behavior, especially in adolescents (Turner et al., 1998). Such survey technologies have been suggested as a method that both standardizes delivery of questions and provides a more private mode for data collection when questions are highly sensitive (Gribble et al., 1999; Turner et al., 1998).

In conclusion, epidemiological research shows that adolescents are a risk group for HIV infection and other STDs. Adolescents living in socioeconomically disadvantaged urban neighborhoods and those of minority race/ethnicity may be at greatest risk of behaviorally acquired HIV infection. In the context of a community that provides them with fewer economic and social alternatives than in more advantaged areas,

adolescents are more likely to engage in risk behaviors with potentially adverse outcomes, including early sexual activity (Brewster, Billy, & Grady, 1993).

Several interventions have been implemented to prevent or reduce risky sexual behavior in urban teens. However, because the demonstrated program effects are comparatively small in magnitude, program developers and researchers have been challenged to find ways to potentiate or intensify them. In order to improve our abilities to develop and tailor the content of preventive interventions for adolescents and identify particularly vulnerable risk groups to target for such intervention, we must continue to increase the scientific knowledge base about factors associated with sexual debut and with sexual risk behaviors in adolescents.

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