WHAT IS THE SIGNIFICANCE OF BLACK-WHITE DIFFERENCES IN RISKY SEXUAL BEHAVIOR?

Ernest H. Johnson, PhD, Linda A. Jackson, EdD, Yvonne Hinkle, BS, Douglas Gilbert, MA, Tonya Hoopwood, Charlie M. Lollis, MS, Cassandra Willis, MPH, and Larry Gant, PhD
Atlanta, Georgia; Washington, DC; Coral Gables, Florida; Houston, Texas; and Ann Arbor, Michigan

A sample of African-American and white young adults were classified as having multiple sex partners or one sexual partner. Subjects with multiple sexual partners were more likely to use drugs and practice risky sexual behaviors such as having anal intercourse, having sexual experiences with a prostitute, and having a history of gonorrhea ($P<.001$) and genital warts ($P<.01$). Additional analyses were conducted to determine African-American versus white differences in risky sexual behaviors. Results indicated that whites in the multiple partners and single partner groups were more likely to engage in anal and oral sex, while African Americans were more likely to have sex with prostitutes. Attitudes about the use of condoms differed significantly by multiple partner status ($P<.004$) and gender ($P<.007$), but not ethnicity. However, angry reactions about the use of condoms occurred more with African Americans ($P<.003$) and males ($P<.05$) than with whites or females. While whites reported a greater use of drugs and a significantly higher level of knowledge about HIV/AIDS, African Americans reported a significantly greater perception of risk for being exposed to human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) ($P<.01$) and significantly more gonorrhea ($P<.10$), syphilis ($P<.05$), and HIV/AIDS ($P<.05$). No whites in our sample were treated for syphilis nor had they tested positive for HIV/AIDS. On the other hand, 4.5% of the total sample of African Americans reported testing positive for HIV/AIDS. Finally, the results from discriminant analysis indicate that a large number of variables significantly discriminate between subjects who engage in risky sexual behaviors and those who do not. Although there is some similarity in the variables for African Americans and whites, there was tremendous variability between the ethnic groups in the factors that predict risky behaviors. These findings are discussed with reference to the need to develop HIV/AIDS prevention programs for African Americans that are based on data derived from African-American populations rather than from black versus white comparison studies. (*J Natl Med Assoc.* 1994;86:745-759.)

Key words • condom use
• human immunodeficiency virus (HIV)
• acquired immunodeficiency syndrome (AIDS)
• African Americans

The interrelationships between sexually transmitted diseases (STDs), drug use, and the human immunodeficiency virus (HIV) among the different ethnic groups in the United States suggests that a significant portion of young adults participate in unprotected sexual intercourse.[1-6] What is most puzzling about this phenomenon is that the practice of sexual behaviors that increase

From the Department of Family Medicine, Morehouse School of Medicine, Atlanta, Georgia; Howard University Cancer Center, Washington, DC; the University of Miami, Coral Gables, Florida; the University of Houston, Houston, Texas; and the University of Michigan, Ann Arbor, Michigan. Requests for reprints should be addressed to Dr Ernest H. Johnson, Dept of Family Medicine, Morehouse School of Medicine, 505 Fairburn Rd, SW, Atlanta, GA 30331-2099.

the risk of exposure to STDs, HIV, and the acquired immunodeficiency syndrome (AIDS) continue despite the fact that most ethnic groups are highly knowledgeable about the factors that are associated with the transmission of these diseases.[6-8] Compelling evidence now supports the claim that risky sexual behaviors such as having multiple sexual partners, minimal use of condoms, having sex with prostitutes, and participating in anal intercourse without the use of condoms are primarily responsible for the dramatic increase in STDs and HIV/AIDS among the heterosexual population of young adults.[9-11] Recent data also indicate that a large percentage of the individuals infected with STDs, such as gonorrhea, are between the ages of 15 and 24.[12-16] Although the vast majority of AIDS cases have been diagnosed in adults, the long incubation period for the disease suggests that many adults may have become infected with HIV during adolescence and young adulthood.[17-20]

There is little doubt that we have not totally come to understand the variability of high-risk sexual behaviors among African Americans or other ethnic groups. However, it may be too difficult to believe that one of the barriers to our lack of understanding has been the way that our research questions have been formulated. In other words, implicit in the earlier investigations of HIV/AIDS risk behaviors among African Americans is the notion that the sexual behavioral practices of African Americans would be best understood by making comparisons and contrasts with whites.[21-23]

For example, African Americans were believed to have severe knowledge deficits compared with whites about the factors associated with the transmission of HIV/AIDS. Consequently, the lack of awareness of the causes and routes of transmission of HIV/AIDS is believed to be primarily responsible for the alarming increase in HIV/AIDS rates among African Americans. This was the type of rationale given for the intense efforts associated with the development of the AIDS education programs across the United States. A tremendous amount of time, effort, and money was used to develop the AIDS educational materials that are currently being used in the United States. Unfortunately, very little attention was given to the possibility that while the materials may increase the knowledge deficits of African Americans compared with whites, there might not be any change in AIDS knowledge or risky sexual practices among African Americans who are at high risk for AIDS.

Moreover, there is also the possibility that differences observed between whites and African Americans may not be the same as those that distinguish high-risk African Americans from African Americans at low risk. In other words, it is possible that the factors that predict risky sexual behaviors within African Americans are not the same factors that distinguish whites from African Americans or predict risky sexual behavioral practices among whites.

The modification of sexual behaviors is a primary goal in preventing the spread of HIV/AIDS among African Americans, and successful intervention strategies may be enhanced greatly by an accurate understanding of whether ethnic differences in knowledge, attitudes, and risky sexual behavior help to identify individuals who are members of high-risk groups. Therefore, the primary aim of this study was to analyze the interrelationships between cofactors of HIV risk behaviors, such as drug use, knowledge and attitudes toward condom use, history of sexually transmitted diseases (STDs), and number of sexual partners in a sample of African-American and white young adults. Specifically, the study sought to determine if there are ethnic and gender differences in:

- knowledge and attitudes about AIDS,
- emotional reactions toward condom use,
- distinct attitudes toward the role of condoms in a sexual encounter,
- risky sexual behavior (ie, anal intercourse, sex with multiple partners, and sex with prostitutes),
- perceived risk of HIV exposure,
- previous treatment for STDs, and
- drug use.

A second major aim of this study was to determine whether factors that predict AIDS risk behaviors for African Americans are the same as those that predict risky sexual behaviors among whites. While previous studies have examined ethnic differences in AIDS-related risk behaviors, few have sought to determine the significance of ethnic group differences in explaining within-group differences in sexual behaviors believed to be associated with the transmission of the AIDS virus.

METHODS

These data were collected as a part of a larger study of the interrelationships between drug use, attitudes, and knowledge about AIDS, and condom use among African-American and white young adults. The participants for this inquiry were 149 African-American males, 155 African-American females, 40 white males, and 64 white females attending college in the southern United States. The subjects were administered the

self-report questionnaires in small groups. After the questionnaires were completed, the forms were sealed in a large envelope and a subject number was assigned at the time the data was entered into the computer—usually within 2 days of data collection.

For purposes of this study, a subject was classified as having multiple sexual partners if he or she answered "yes" to the following question: "At the current time, I have more than one girlfriend/boyfriend that I have sexual relations with on a regular basis." Subjects were classified as having one sexual partner if they responded "no" to the question. Of the 149 African-American men, 71 (47%) reported that they were currently involved with more than one sexual partner, while 78 (53%) African-American men were classified as having one sexual partner. Of the African-American women who completed the study, 29 (19%) were classified as having multiple sexual partners, while 126 (81%) African-American women were classified as having one sexual partner. For the white sample, 50% (20 subjects) of the men reported they currently had multiple sexual partners, while 50% of the men were classified as having one partner. For the females in the white sample, 24 (38%) reported having multiple sexual partners compared with 40 (62%) who reported having one sexual partner.

Measurement Instruments

The following self-report instruments were used in the study. The individual items and response formats comprising each scale can be obtained from the authors.

Attitudes Toward Condom Usage Questionnaire (ATCUQ). The ATCUQ was developed by Brown[24] to measure people's opinions about the use of condoms as contraceptive devices. The questionnaire consists of 40 questions (statements) that require respondents to indicate whether they agree or disagree with the statements using the following scale: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree.

The psychometric properties of the ATCUQ have been investigated by Brown,[24] who reported an internal consistency reliability of .93 with an average item-total correlation of .24. Item-total correlations for subjects in this study ranged from .12 to .76 with the average being .44. The factor analysis of the ATCUQ by Brown revealed that the scale is comprised of five distinct factors. Our earlier examination of the factor structure[25,26] revealed that five subscales, comprised of only 21 of the original items, could be formed. Furthermore, the items retained for the subscales had a factor loading of .35 or greater and did not load more than .25 on the other factors. Based on these criteria, we formed five subscales that measured distinctly different attitudes about the use of condoms.

The first scale measures attitudes about condoms as a contraceptive device. The scale has five items (numbers 2, 12, 34, 35, and 38 of the questionnaire), and the factor loading ranged from .37 to .91 with the average being .66. The second scale has four items (numbers 14, 18, 19, and 23) loaded on factor two with the average loading being .55. The items on this scale appear to be assessing whether condoms are viewed as being uncomfortable and interrupting sexual intercourse.

The third scale was comprised of five items (numbers 7, 8, 16, 24, and 36), and the average factor loading was .52. The items on this factor measure attitudes about the acceptability of condoms. The fourth scale was comprised of four items (numbers 5, 11, 17, and 40) loaded on factor four, and the average factor loading was .61. These items tap into attitudes about how condoms add to sexual excitement. Finally, the fifth scale was comprised of three items (numbers 15, 29, and 33), and the average factor loading was .60. The items on this scale appear to measure attitudes about whether condoms are inconvenient and interrupt foreplay.

Condoms Emotional Reactions Scale (CERS). The CERS is a 13-item self-report questionnaire that was developed to measure the intensity of anger experienced in relationship to condom use. Item total correlations for subjects in our previous investigations[25,26] ranged from .43 to .71, with the range being .48 to .70 for subjects in the present inquiry. The CERS is modeled after the State Anger Scale developed by Spielberger et al[27] and the State Anger Reaction Scale that was developed by Johnson et al.[28,29] Both instruments measure the intensity of angry reaction experienced in stressful social situations. However, neither of the instruments included items that assessed angry reactions associated with the use (or lack of use) of condoms or other relevant behaviors during sexual intercourse.

AIDS Knowledge and Attitude Survey. This questionnaire was developed by Thomas et al[30] and consists of 101 questions regarding knowledge and attitudes about AIDS. The questions in the knowledge section addressed the following broad domains:

- nature of AIDS,
- transmission of HIV,
- risk reduction, and
- knowledge of risk groups.

TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF BLACKS AND WHITES WITH MULTIPLE AND SINGLE SEX PARTNERS

	Blacks (n = 304)			Whites (n = 104)		
Variables	Multiple Partners (n = 100)	Single Partner (n = 204)	Total	Multiple Partners (n = 44)	Single Partner (n = 60)	Total
Age (years)*	27.9 ± 8.4	24.9 ± 9.4	21.5 ± 5.1	23.0 ± 6.4	20.8 ± 4.2	26.0 ± 9.1
Marital status						
Single	87%	86%	87%	47%	74%	64%
Married	3%	6%	5%	20%	11%	14%
Separated/divorced	4%	6%	5%	20%	11%	14%
Living together	5%	3%	4%	13%	4%	8%
College						
1 to 3 years	60%	67%	65%	57%	61%	60%
4 years	38%	31%	33%	43%	39%	40%
4+ years	2%	1%	2%	0	0	0

*Mean ± standard deviation.

The questionnaire also focused on known risk factors for HIV infection and simply asked if the respondents had ever engaged in certain risk behaviors, regardless of frequency or immediacy. Other items assessed whether the respondents had been previously treated for STDs. Questions were presented in a force-choice style, with response choices of "true," "false," and "do not know." A knowledge score was derived by totaling the "correct responses" (1 point each) for each of the 29 AIDS knowledge items, which yielded a summary score that ranged between 0 and 29. The overall reliability of the 29-item AIDS knowledge questionnaire, using Cronbach's alpha to measure the internal consistency, was .81 for the sample of 975 African-American college students used to create the questionnaire.[30]

Drug Usage. Individual items were used to measure the frequency with which several well-known drugs (ie, alcohol, cigarettes, marijuana, crack, and cocaine) are used. The questions required the respondents to indicate whether they: 1) never used; 2) used, but quit; 3) used rarely; 4) used sometimes, but not daily; 5) used once a day; 6) used twice a day; 7) used five times a day; or 8) used more than five times a day. For analysis purposes, three drug use groups were created for each variable. Subjects were classified as a nonuser if they endorsed response 1, an ex-user if they endorsed response 2, and a current user if they endorsed responses 3 through 8. All users were collapsed into the single groups because of the small number of subjects who reported using drugs more than once a day on a daily basis.

In general, the data for this study were analyzed using a 2 (ethnicity) × 2 (gender) × 2 (partnership) analysis of variance. Main effects and all possible interactions were examined. Subsequent pair-wise *t* tests were used to isolate the effects of significant interactions. All dichotomous variables were analyzed using chi-square analyses.

RESULTS

Demographic Characteristics

Table 1 presents characteristics of the sample of 304 African-American and 104 white subjects who participated in this study. These data are broken down by whether the subject was a member of the multiple sex partners or single sex partner group. Overall, both the African-American and white subjects in the multiple sexual partner groups were slightly older than their single sexual partner counterparts. The overwhelming majority of subjects were single with a larger percentage of African Americans reporting that they were single (never married). For the white sample, a larger percentage of those in the multiple sexual partners group (74%) were single compared with those in the single sexual partner group (47%). There were no differences in educational status among either of the groups.

Sexual Behaviors and STDs for Multiple Partners Versus Single Partners

The data presented in Table 2 show that only one out of seven main effects for ethnicity were significant for factors related to risky sexual behavior; a significantly larger percentage of whites (75%) engaged in oral sex than did African Americans (43%). In contrast, main effects for partnership yielded significance for the

TABLE 2. SEXUAL BEHAVIOR AND PREVIOUS TREATMENT FOR SEXUALLY TRANSMITTED DISEASES FOR BLACKS AND WHITES WITH MULTIPLE AND SINGLE SEX PARTNERS

	Blacks			Whites			Chi-Square Analyses		
Variables	Multiple Partners	Single Partner	Total	Multiple Partners	Single Partner	Total	Ethnicity	Multiple	Ethnic × Multiplicity
Sexual Behavior									
Sex with males	33%	49%	44%	40%	57%	51%	1.36	9.15*	10.74*
Sex with females	72%	27%	41%	77%	28%	46%	.54	74.16†	74.43†
Anal sex	25%	10%	15%	33%	12%	19%	.95	17.94†	19.13†
Oral sex	68%	30%	43%	93%	64%	75%	24.46†	46.09†	70.09†
Sex with a prostitute	24%	3%	10%	23%	0	8%	.12	45.13†	45.57†
Always used condoms	29%	30%	29%	20%	30%	26%	.42	.52	1.34
Condoms not necessary	24%	18%	20%	32%	6%	15%	.98	5.18‡	10.22†
Previous Sexually Transmitted Disease									
Gonorrhea	21%	6%	11%	10%	2%	5%	2.78§	18.29†	22.33†
Syphilis	5%	4%	4%	0	0	0	3.70‡	.15	3.96
Herpes	6%	2%	4%	7%	2%	4%	.28	4.24	4.70
Genital warts	9%	4%	6%	13%	0	5%	.09	8.09*	10.22*
Tested positive for AIDS	5%	4%	4.5%	0	0	0	3.86‡	.19	4.18

*$P<.01$.
†$P<.001$.
‡$P<.05$.
§$P<.1$.

majority of the risky sexual behavior variables. Multiple sex partner groups differed significantly from the single sex partner groups on sex with males ($P<.01$), sex with females ($P<.001$), anal sex ($P<.001$), oral sex ($P<.001$), sex with a prostitute ($P<.001$), and the belief that condoms are not necessary if you love your partner ($P<.05$).

Although the general tendency was for the multiple sex partners group to engage in high-risk behaviors, a significant percentage of both the African Americans and whites in the multiple sex partners group felt that condoms were not necessary if you loved your partner ($P<.05$). Significant interaction effects also were found for all risky sexual behavior variables except for the tendency to "always use condoms." Interaction effects demonstrated that significantly more whites than African Americans in the multiple sex partners group engaged in anal sex ($P<.001$) and oral sex ($P<.001$). By contrast, significantly more African Americans in the multiple sex partners group had experienced sex with a prostitute ($P<.001$). The interaction effects also show that while a larger percentage of whites than African Americans engaged in sex with males and females, whites with multiple sex partners were significantly more sexually involved than other groups.

Results presented at the bottom of Table 2 show that the main effect for ethnicity was significant for gonorrhea ($P<.1$), syphilis ($P<.05$), and HIV/AIDS ($P<.05$). A significantly larger percentage of subjects in the multiple sex partner group had been treated for gonorrhea ($P<.001$) and genital warts ($P<.01$). Significant interactions of ethnicity and multiple partnership also were found for gonorrhea and genital warts. For gonorrhea, the data show that a higher percentage of African Americans (21%) than whites (10%) in the multiple sex partners group had been treated for gonorrhea. In contrast, a significantly large percentage of whites in the multiple sex partners group (13%) had been treated for genital warts than were African Americans (9%). No whites in our sample were treated for syphilis nor had any tested positive for AIDS. However, 4.5% of the total sample of African Americans reported testing positive for HIV/AIDS.

Sexual Behavior and STDs by Gender

Table 3 reveals highly significant gender differences

TABLE 3. SEXUAL BEHAVIOR AND PREVIOUS TREATMENT FOR SEXUALLY TRANSMITTED DISEASES FOR BLACKS AND WHITES BY GENDER

	Blacks			Whites			Chi-Square Analyses	
Variables	Males	Females	Total	Males	Females	Total	Gender	Gender × Ethnicity
Sexual Behavior								
Sex with males	7%	76%	44%	6%	85%	51%	198.56*	199.74*
Sex with females	83%	4%	41%	89%	13%	46%	241.25*	242.69*
Anal sex	19%	11%	15%	14%	23%	19%	1.15	5.53
Oral sex	51%	35%	43%	72%	77%	75%	5.08†	34.68*
Sex with prostitute	19%	2%	10%	14%	4%	8%	26.52*	27.59*
Always used condoms	34%	26%	29%	33%	19%	26%	4.21†	4.85
Condoms not necessary	23%	19%	20%	27%	7%	15%	4.63†	7.71†
Previous Sexually Transmitted Disease								
Gonorrhea	18%	5%	11%	8%	2%	5%	14.86*	18.08*
Syphilis	7%	2%	4%	0	0	0	5.26†	10.06‡
Herpes	6%	2%	4%	0	6%	4%	1.62	6.89
Genital warts	6%	5%	6%	6%	4%	5%	.39	.47
HIV/AIDS	7%	3%	4.5%	0	0	0	3.03§	7.49†

*$P<.001$.
†$P<.05$
‡$P<.01$.
§$P<.1$.

among the African-American and white samples. Main effects for gender and interactions between gender and ethnicity were found for all risky sex behaviors except anal sex. The overall patterns suggest that the majority of our sample engaged in heterosexual sex. An interesting finding in Table 3 is that while significantly more males than females reported engaging in risky activities such as sex with prostitutes, these same males were more likely to "always use a condom" with their partner. A significantly larger percentage of males than females also reported that "condoms are not necessary if you love your partner." The significant gender by ethnicity interaction for this variable indicates that a larger percentage of white males believed that "condoms are not necessary if you love your partner." The data in Table 3 reveal that significantly more males than females engaged in oral sex. Significant interactions were found for five out of seven sexual behavior variables. A significantly larger percentage of African-American males reported having sexual experiences with a prostitute, while oral sex was practiced by a significantly larger percentage of white females (77%).

Data at the bottom of Table 3 show gender differences with regard to STDs. There was a general tendency for more men to have been treated for STDs, but significant gender differences were found only for gonorrhea ($P<.001$) and syphilis ($P<.05$). The significant interaction between gender and ethnicity for these variables indicate that a larger percentage of African-American males had been treated for gonorrhea and syphilis than members of the other groups. While no white subjects reported having HIV/AIDS, among African Americans, there was a marginally significant gender difference with a larger percentage of males having HIV/AIDS than females.

Sexual Behavior and STDs by Gender and Multiple Partnership

The data in Table 4 show results for sexual behavior and STDs for males and females by multiple partnership. A chi-square analysis revealed significant interactions for all seven risky sexual practice variables. In general, more females and males in the multiple sex partners group had engaged in anal sex, oral sex, and sex with a prostitute than females or males in the single sex partner group. Additionally, a larger percentage of males in the single partner group were more likely than females to use a condom (35% versus 28%) and believes that "condoms are not necessary if you love your partner" (21% versus 13%). Significant interac-

TABLE 4. SEXUAL BEHAVIOR AND PREVIOUS TREATMENT FOR SEXUALLY TRANSMITTED DISEASES FOR MALES AND FEMALES BY MULTIPLE AND SINGLE SEX PARTNERS

	Males			Females			Chi-Square Analyses
Variables	Multiple Partners	Single Partner	Total	Multiple Partners	Single Partner	Total	Gender by Multiple Partners
Sexual Behavior							
Sex with males	6%	8%	7%	100%	74%	78%	207.60*
Sex with females	98%	71%	84%	15%	4%	6%	256.26*
Anal sex	24%	12%	18%	33%	10%	14%	19.70*
Oral sex	72%	40%	56%	79%	36%	44%	47.09*
Sex with prostitute	28%	7%	18%	13%	0	2%	56.11*
Always used condoms	34%	35%	34%	10%	28%	24%	8.89†
Condoms not necessary	27%	21%	24%	24%	13%	15%	7.94†
Previous Sexually Transmitted Disease							
Gonorrhea	24%	7%	16%	5%	4%	4%	30.37*
Syphilis	5%	6%	6%	0	2%	1%	5.57
Herpes	4%	5%	5%	10%	1%	3%	9.59
Genital warts	9%	3%	6%	13%	2%	5%	8.99‡
HIV/AIDS	6%	5%	5%	0	2%	2%	3.68

*$P<.001$.
†$P<.05$.
‡$P<.01$.

tion effects for two out of five STDs are shown at the bottom of Table 4. Overall, a higher percentage of males than females in the multiple sex partners group reported treatment for gonorrhea, while a higher percentage of females than males in the multiple sex partners group reported treatment for genital warts.

Average Values for AIDS Knowledge by Ethnicity, Gender, and Multiple Partnership

Table 5 shows the percentage of correct responses for the AIDS Knowledge Questionnaire, total scale scores and five factor analytically derived subscale scores of the ATCUQ, average total scores of the CERS, and frequency of drug use for the three main groups in our sample. Table 6 summarizes the results by examining the main effect and interactions for the variables with P values set at .01. Generally speaking, although the average number of correct responses was similar for AIDS knowledge, a significantly larger number of correct responses were given by whites than African Americans for AIDS knowledge. Interestingly enough, whites also perceived their risk for contracting AIDS to be less than African-American subjects, and they had less intense anger reaction about the use of condoms than did African Americans. White subjects also smoked, drank alcohol, and used marijuana more frequently than did African Americans in our sample. There was also a marginal ethnic difference for cocaine use, with whites reporting greater use than African Americans ($P<.09$).

Main effects for gender were noted for several variables. First of all, a highly significant difference was revealed for AIDS knowledge ($F=15.95$, $P<.0001$); females were more knowledgeable than males. Males were found to have the strongest and most negative attitudes about the acceptability of condoms. For example, men felt that condoms interrupt sex ($P<.0001$) and that condoms are inconvenient and interrupt foreplay ($P<.0001$). Men also experienced more intense anger concerning the use of condoms than did women ($P<.003$). Likewise, more of the men were drinkers ($P<.09$), marijuana users ($P<.0002$), crack users ($P<.02$), and cocaine users ($P<.008$).

Main effects for multiple partnerships were found for 7 out of the 14 variables. Interestingly, there was no significant difference in correct responses to the AIDS knowledge scale for subjects in the multiple versus single sex partners groups. Not surprisingly, subjects within the sultiple sex partners group had more negative attitudes about the use of condoms, as reflected by their significantly ($P<.004$) higher total scale score, than

TABLE 5. MEAN ± STANDARD DEVIATION FOR AIDS KNOWLEDGE, CONDOM ATTITUDES, PERCEIVED RISK, AND DRUG USE BY ETHNICITY, GENDER, AND SEXUAL PARTNERS

	Ethnicity		Gender		Sexual Partners	
	White (n=104)	Black (n=304)	Male (n=189)	Female (n=219)	Single (n=274)	Multiple (n=144)
AIDS knowledge	25.4±1.9	23.4±4.8	23.1±5.5	24.6±2.3	23.9±4.5	23.8±4.0
Condom attitudes						
Contraceptive	14.8±3.3	14.9±4.1	15.3±4.2	14.7±3.8	14.6±4.1	15.7±3.6
Interrupts sex	15.5±4.3	15.3±5.8	16.6±5.4	14.3±5.2	14.5±5.3	16.9±5.3
Acceptability	17.7±3.2	17.0±4.1	16.9±3.8	17.3±4.1	16.9±4.1	17.6±3.6
Adds excitement to sex	11.7±2.8	11.2±3.4	11.5±3.2	11.3±3.3	11.3±3.4	11.6±2.9
Inconvenient/ interrupts foreplay	7.4±2.7	7.4±3.4	8.4±3.5	6.7±2.9	6.6±2.9	9.0±3.3
Total scale score	65.9±13.6	65.6±16.2	68.2±15.9	63.7±15.4	63.1±16.4	70.9±13.1
Perceived risk	2.7±1.2	3.1±1.0	3.1±1.1	3.0±1.1	2.9±1.0	3.3±1.2
Angry reactions	15.5±5.5	17.9±7.2	17.9±7.4	16.4±6.6	16.8±7.2	17.6±6.6
Smoking	2.7±2.2	1.4±1.2	1.7±1.5	1.7±1.5	1.5±1.3	1.9±1.8
Drinking	3.5±1.1	2.6±1.3	2.9±1.4	2.6±1.2	2.6±1.3	3.1±1.4
Marijuana	1.8±1.0	1.4±1.2	1.7±1.5	1.3±0.9	1.4±1.2	1.7±1.2
Crack	0.9±0.3	1.1±0.8	1.1±0.9	0.9±0.5	1.1±0.9	0.9±0.3
Cocaine	1.3±0.6	1.1±0.9	1.2±1.0	1.1±0.6	1.1±0.9	1.2±0.6

subjects in the single sex partner group. More specifically, subjects in the multiple sex partner group felt that condoms interrupted sex ($P<.01$) and that condoms were inconvenient and interrupted foreplay ($P<.0001$). Nevertheless, subjects in the multiple sex partners group were more likely to accurately perceive themselves at risk for contracting AIDS as reflected by their significantly ($P<.001$) higher scores on the Perceived Risk Scale.

Additionally, subjects in the multiple partner group used a larger amount of cigarettes ($P<.01$), alcohol ($P<.01$), and crack ($P<.04$). A significant ethnicity by gender interaction for drinking ($P<.01$) reveals that white males consumed more alcohol than other groups. A gender by multiple partnership interaction revealed that females in the multiple partner group used cigarettes ($P<.01$) more than their counterparts in the other groups. Finally, a significant ethnicity by partnership interaction was observed for perceived risk ($P<.03$), which indicates that African Americans in the multiple sex partner group perceived their risk to be greater for acquiring HIV/AIDS.

Predictors of Risky Sexual Behaviors

Table 7 shows the results of the discriminant function analyses, which determined the sexual behaviors, attitudes, AIDS knowledge, and drug use that discriminated between individuals who engaged in risky sexual behaviors and those individuals who did not engage in risky sexual behaviors. The analyses were conducted separately for whites and African Americans, and a separate analyses was conducted for each risky behavior. Gender, age, and the other demographic factors also were entered into the analyses. A forward stepwise variable selection procedure for a multiple linear discriminant analysis was used. The minimum F of variables to be entered into the linear equation was specified at $P<.05$.

For white subjects, having multiple sex partners was predicted by two variables (sex with women and always using condoms). Together, these two variables successfully classified 32% of the white subjects who engaged in sex with multiple partners. The analysis for African-American subjects shows that four variables (sex with women, oral sex, syphilis, and sex with prostitute) successfully classified 25% of the subjects who engaged in sex with multiple partners.

For white subjects, four variables (having multiple sex partners, engaging in sex with males, engaging in sex with females, and using marijuana) successfully classified 41% of those subjects who engaged in anal intercourse. For African-American subjects, 47% of those who engaged in anal sex were discriminated by their previous treatment of three STDs (gonorrhea, genital warts, and herpes); two ATCUQ items (condom acceptance and condoms are inconvenient); sex with males; and sex with a prostitute, gender (being male), and oral sex.

Factors involving the discrimination of subjects who practiced oral sex from those who did not also show

TABLE 6. SUMMARY OF TABLE OF RESULTS

	Ethnicity		Gender		Multiple Partners		Ethnicity by Gender		Gender by Multiple Partners		Ethnicity by Multiple Partners	
	F	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*	*F*	*P*
AIDS knowledge	2.88	.01*	15.95	.0001†	.33		.97		3.43	.06‡	.29	
Condom attitudes												
Contraceptive	.35		2.31		2.21		.57		.13		.42	
Interrupts sex	.47		16.72	.0001†	6.40	.01*	.56		1.60		.14	
Acceptability	1.88		3.24	.07‡	1.31		1.08		1.51		.04	
Adds excitement to sex	.75		.00		.05		2.04		.07		.13	
Inconvenient/ interrupts foreplay	.47		25.85	.0001†	21.53	.0001†	.69		.03		.71	
Total scale score	.78		7.35	.007*	8.05	.004*	.73		.72		.12	
Perceived risk	3.03	.01*	.78		10.64	.001*	1.32		.01		3.36	.03§
Angry reactions	3.63	.003*	3.73	.05§	.07		.68		2.36		.16	
Smoking	9.38	.0001†	.10		6.17	.01*	1.04		5.54	.01*	.27	
Drinking	8.02	.0001†	2.81	.09‡	6.66	.01*	3.04	.01*	.13		1.55	
Marijuana	3.09	.009*	13.80	.0002†	1.36		.41		.09		.42	
Crack	.34		4.95	.02§	4.03	.04§	.44		2.85	.09‡	.51	
Cocaine	1.88	.09‡	7.12	.008*	.27		.22		2.94	.08‡	1.28	

*$P<.01$.
†$P<.001$.
‡$P<.1$.
§$P<.05$.

different patterns for African Americans and whites. Three variables (multiple sex partner, sex with males, and the belief that "condoms are not necessary if you love your partner") successfully classified 24% of the white subjects who engaged in oral sex. However, for African-American subjects, seven variables (multiple sex partner, syphilis, anal sex, condoms/excitement, sex with females, sex with males, and always used condoms) predicted engaging in oral sex for 29% of the subjects.

Sex with prostitute and crack use predicted previous treatment for an STD for 35% of white subjects. For African-American subjects, oral sex, sex with a prostitute, and smoking cigarettes classified 40% of those who were previously treated for an STD.

No white subjects reported testing positive for HIV/AIDS. However, six variables (syphilis, sex with prostitute, always used condoms, AIDS knowledge, condoms/love, and angry reactions) correctly predicted 45% of African-American subjects who were at risk for HIV/AIDS.

Three variables (gonorrhea, condom/excitement, and condoms/contraceptive) successfully classified 30% of white subjects who reported drug (either of the drugs) usage. Two variables (herpes and condom/inconvenient) classified 12% of African-American subjects who used drugs.

As can be seen in Table 7, no variables significantly predicted whites who always used condoms. For African Americans, using condoms always was predicted by certain attitudes about the use of condoms (ie, condoms interrupt foreplay and condoms can be exciting), gender (being male), and having been treated for genital warts. Together, these variables successfully classified 13% of the African Americans who reported that they always used condoms.

Sexual experiences with a prostitute were predicted by three variables (genital warts, condoms as a contraceptive, and crack) for whites; together, they correctly classified 36% of the sample. By contrast, seven variables (gonorrhea, genital warts, condoms/inconvenient, AIDS knowledge, multiple partners, "condoms not necessary if you love your partner," and sex with women) correctly identified 49% of African Americans who had engaged in sex with a prostitute.

Oral sex and AIDS knowledge were predictors of being sexually active for 29% of white subjects. Four variables (oral sex, condoms/acceptance, being a multiple partner, and AIDS knowledge) correctly predicted 21% of African Americans who were sexually active. Finally, the data presented at the bottom of Table 7 show 75% of the white subjects who considered themselves "a member of an AIDS high-risk group"

TABLE 7. SUMMARY OF DISCRIMINATIVE-FUNCTION ANALYSES USED TO PREDICT RISKY SEXUAL BEHAVIORS FOR WHITES AND AFRICAN-AMERICAN STUDENTS

Blacks	Partial R^2	*F*	White	Partial R^2	*F*
Multiple Sex Partners					
Sex with women	.16	42.03*	Sex with women	.25	17.10*
Oral sex	.04	11.33*	Always used condoms	.06	4.64†
Syphilis	.02	5.97‡			
Sex with prostitute	.03	7.69‡			
Total R^2	.25	18.05*	Total R^2	.32	11.49*
Anal Sex					
Gonorrhea	.25	74.01*	Multiple sex partners†	.10	5.58
Genital warts	.07	22.96*	Sex with males	.16	10.69‡
Herpes	.03	13.28*	Sex with females	.08	6.46‡
Condoms/inconvenient	.03	12.64*	Marijuana	.06	5.12†
Sex with males	.01	7.19‡			
Sex with prostitute	.01	6.84‡			
Gender	.01	5.18†			
Condoms/acceptance	.01	3.98†			
Oral sex	.01	4.39†			
Total R^2	.47	20.79*	Total R^2	.41	8.27*
Oral Sex					
Multiple sex partners	.09	24.18*	Multiple sex partners	.08	4.61†
Syphilis	.07	18.74*	Sex with males	.08	4.91†
Anal sex	.03	10.75*	Condoms/love	.07	4.75†
Condoms/excitement	.02	6.36‡			
Sex with females	.01	4.94†			
Sex with males	.02	6.91‡			
Always used condoms	.01	4.32†			
Total R^2	.29	12.29*	Total R^2	.24	5.13‡
Sexually Transmitted Disease					
Oral sex	.30	96.08*	Sex with prostitute	.16	9.26‡
Sex with prostitute	.08	29.14*	Crack	.19	14.20*
Smoking cigarettes	.02	5.70‡			
Total R^2	.40	48.70*	Total R^2	.35	12.96*
HIV/AIDS					
Syphilis	.20	53.47*	No subjects tested positive		
Sex with prostitute	.09	28.80			
Always used condoms	.06	19.82*			
AIDS knowledge	.05	18.01*			
Condoms/love	.02	7.32*			
Angry reactions	.01	6.23‡			
Total R^2	.45	27.77*			
Drug Use					
Herpes	.08	18.24*	Gonorrhea	.15	9.01‡
Condoms/inconvenient	.04	9.98*	Condoms/exceitement	.07	4.46†
			Condoms/contraceptive	.08	5.31†
Total R^2	.12	14.18*	Total R^2	.30	6.89*

TABLE 7 (CONTINUED). SUMMARY OF DISCRIMINATIVE-FUNCTION ANALYSES USED TO PREDICT RISKY SEXUAL BEHAVIORS FOR WHITES AND AFRICAN-AMERICAN STUDENTS

Blacks	Partial R^2	*F*	White	Partial R^2	*F*
Always Used Condom					
Interrupts	.04	10.30*	No variables significant at $P<.05$		
Gender	.04	8.39			
Excites	.02	6.02‡			
Genital warts	.02	5.26†			
Total R^2	.13	7.82*			
Sex With Prostitute					
Gonorrhea	.30	94.61*	Genital warts	.23	14.88*
Genital warts	.06	20.56*	Condoms/contraception	.06	4.70†
Condoms/inconvenient	.05	18.29*	Crack	.07	5.32†
AIDS knowledge	.03	11.87*			
Multiple partners	.02	8.13‡			
Condoms/love	.01	7.55‡			
Sex with women	.01	3.88†			
Total R^2	.49	29.25*	Total R^2	.36	9.28*
Sexually Active					
Oral sex	.10	25.81*	Oral sex	.23	14.78*
Condoms/acceptance	.05	15.11*	AIDS knowledge	.06	4.54†
Multiple partners	.03	10.73*			
AIDS knowledge	.03	8.85‡			
Total R^2	.21	18.92*	Total R^2	.29	13.82*
Consider Self a Member of AIDS High-Risk Group					
Sex with prostitute	.16	40.97*	Sex with prostitute	.31	22.54*
Perceived risk	.09	27.51*	Gonorrhea	.20	21.06*
Multiple partners	.03	10.35*	Anal sex	.10	13.42*
Smoking cigarettes	.02	8.22‡	Genital warts	.04	5.85‡
Genital warts	.01	4.47†	Oral sex	.03	4.78†
			Crack	.03	5.28†
			Perceived risk	.02	4.63†
Total R^2	.29	29.13*	Total R^2	.75	19.30*

*$P<.001$.
†$P<.05$.
‡$P<.01$.

were classified successfully by seven variables (sex with a prostitute, gonorrhea, anal sex, genital warts, oral sex, crack, and perceived risk). For African Americans, five variables (sex with a prostitute, perceived risk, multiple partner, smoking cigarettes, and genital warts) successfully predicted 29% of the subjects who considered themselves a member of a high-risk AIDS group.

DISCUSSION

Our intention in this study was to determine the extent to which differences in risky sexual behaviors exist for African Americans versus whites. It was also our intention to determine whether the ethnic differences would provide insights about the variables that significantly discriminate between individuals within these ethnic groups who are at high risk from those who are at relatively low risk for HIV/AIDS. While few respondents were members of traditional HIV/AIDS high-risk groups, a significant proportion reported behaviors known to transmit HIV, which included having multiple sexual partners, minimal use of condoms, having sex with prostitutes, treatment for

STDs, and participation in anal intercourse.[31-34]

The overall level of knowledge about the transmission of HIV/AIDS was reasonably good, but knowledge was not a consistent predictor of safe sex practices for African Americans or whites. In general, the results of this investigation revealed significant gender and partnership differences in behaviors known to be associated with the transmission of HIV/AIDS. These findings are consistent with previous research and earlier findings reported by this research team.[25,26,35,36] In the current investigation, African Americans produced less accurate responses to AIDS knowledge questions than whites.

What is most notable is our finding that AIDS knowledge did not significantly contribute to the prediction of each risky sexual behavioral practice for African Americans. Most importantly, AIDS knowledge contributed significantly to the prediction of HIV/AIDS and sexual experiences with a prostitute only among African-American subjects. While AIDS knowledge was a discriminator of being sexually active for both African Americans and whites, it did not contribute to the prediction of anal intercourse, multiple sex partners, previous STDs, perception of risk, or the use of condoms. Similarly, the practice of oral sex and previous treatment for syphilis are two variables that significantly discriminated between African Americans and whites, while they also significantly contribute to risky sexual behavioral practices differently for African Americans and whites. In fact, syphilis was the most significant predictor of HIV/AIDS among African Americans, while the practice of oral sex and syphilis significantly discriminated between African Americans with and without multiple sex partners. In contrast, the use of certain drugs (ie, marijuana and crack), while being used more often among whites, contributed significantly to the prediction of some risky sexual behavioral practices (ie, anal intercourse, sexual experiences with a prostitute, and having a history of STDs) only among whites.

The overall pattern of these findings suggest that differences in risky sexual behaviors for African Americans and whites provide much insight into the variables that often are associated with high-risk sexual behaviors within these ethnic groups. In other words, many of the between-group differences are strong predictors of the risky sexual behaviors within groups. However, the extent that these observations are true for other ethnic and age groups awaits further investigation.

It is also interesting that African Americans perceive themselves to be at grater risk for contracting HIV/AIDS than do whites. This finding is somewhat at odds with the view that the perception of increased risk is a moderator of safer sex practices. Interestingly enough, African Americans in our study were the only group that reported testing positive for HIV and had higher percentages for all STDs except herpes and genital warts. Since we did not assess the perception of risk as a consequence of being treated for an STD, we do not know whether the treatment for STDs was the precipitating factor for the increased perception of risk among African-American subjects. However, the consensus in the health literature generally is that previous treatment or diagnosis of a particular disease in and of itself is rarely enough to influence more cautious behaviors or the development of a healthier lifestyle.

Our findings concerning condom usage are consistent with other studies[37-40] in that they show that a large number of both African-American and white subjects are engaging in risky sexual behaviors that promote the spread of the AIDS virus, but are not consistently using condoms. Whereas African Americans and whites did not differ in their attitudes about the use of condoms, African Americans experienced a significantly greater intense angry reaction during the negotiation and use of condoms than did our white subjects. Angry reaction during condom use was also a significant predictor of HIV/AIDS among the African-American subjects. An argument can be made from these findings that suggest that the intensity of anger surrounding the use of condoms in the African-American population may be interfering with the rational decision to protect oneself from the consequences of risky sex. However, the extent that angry and emotional reactions associated with the use of condoms would be best examined using research methods other than a cross-sectional or correlational research design.

The current investigation revealed gender differences in risky sexual behavior that are important to further our understanding of groups at risk for HIV. First, our overall findings are consistent with those suggesting that men engage in high-risk sexual practices more often than women. Consequently, the gender differences in high-risk sexual behaviors may help explain why the men in our sample were more likely to experience STDs and be exposed to HIV/AIDS than women. Males also had less knowledge of AIDS than females; these findings were consistent with previous research by this team.[25,26,35,36]

However, a somewhat surprising finding is that even though men engaged in more risky sexual practices, it

was the men who were more likely to always use condoms. A highly plausible explanation for this finding is that men are making the decisions regarding the use of condoms in the sexual arena. Further, although our study demonstrates that women have more AIDS knowledge than men, they (women) may have acquiesced to participating in potentially risky practice and relinquished the responsibility of their own health to the males. The results of the gender differences in this study lend strong support for the need for AIDS interventions aimed at empowering women to take a greater responsibility for minimizing risky sexual behavioral practices.

The current investigation revealed several significant differences between individuals in the multiple and single sex partner groups that warrant serious attention as they pertain to a risk factor for HIV/AIDS. Consistent with other research findings,[11,25,26,40-42] membership in the multiple sex partners group was significantly related to the practice of risky sexual behaviors (ie, anal intercourse and having sex with a prostitute) and contracting STDs (ie, history of genital warts and gonorrhea). The use of certain drugs (ie, smoking, drinking, and crack) was also significantly higher among subjects with multiple sex partners. However, the extent that the drugs are used during sex and/or a means of distorting rational decisions about the practice of risky sexual behaviors were not measured in the current investigation. The significance of the differences found here are crucial to an understanding of the comparative AIDS risks involved in being a member of an ethnic group versus being a member of a high-risk group.

In other words, many of the differences observed in the comparison of multiple versus single sex partners do not necessarily represent the same differences that are found between ethnic or gender groups. The implication here is that within the context of certain risky behaviors, there are ethnic norms and gender differences or cultural norms and practices that must be acknowledged. A clear example is our findings regarding anal intercourse. Although no ethnic differences were found with regard to the reported prevalence of the practice of anal intercourse, white subjects in the multiple partner group reported engaging in this activity significantly more than any other group.

Gender differences regarding the practice of anal intercourse were basically nonsignificant, but there was a tendency for African-American males and white females to engage in this sexual practice more so than their counterparts. Moreover, while 41% of the variance in anal intercourse was predicted by four variables for the white subjects, a similar percentage of the variance (47%) was explained by nine variables for African-American subjects. Of most importance is the fact that only one variable (ie, having sexual experiences with a male) consistently contributed to the prediction of anal intercourse for both whites and African Americans. Even in this case, the amount of variance explained by this variable for whites (16%) was uniquely different than for African Americans (1%). To a certain extent, the results of other analyses also indicate that the variance in risky sexual behaviors are not explained by the same variables for whites and African Americans. While the exact nature of the findings are difficult to elucidate, they indicate that the norms, attitudes, and beliefs associated with the practice of this sexual behavior may vary as a function of ethnicity and gender.

Our results contribute significantly to a void in empirical studies regarding the sexual lifestyles of young African-American adults, and they must be couched with some cautions regarding generalizability. The limitations of the present inquiry are representative of those studies dealing with the complexities of human sexual behavior. We used a convenient sample of college subjects and relied on self-report data ascertained from a cross-sectional sample that often calls for recollections regarding sexual activity. This survey or questionnaire methodology is often influenced by social desirability or the desire for subjects to produce responses that reduce the scope of their sexual behaviors or responses indicating that the respondents are boasting about their sexual potency. Also, we did not assess drug usage as a part of sexual activity. Nonetheless, our results raise some provocative questions regarding the significance of African-American and white differences. Even though the answers to these questions must be examined in light of limitations, there is clear evidence to support the need for future research.

CONCLUSION

It is likely that our efforts at risk reduction of the HIV-related behaviors have been seriously hampered by a lack of attention to specific behaviors that create risk within ethnic groups. The findings uncovered in this investigation suggest African-American versus white differences in risky sexual behaviors provide significant insights about the variables that predict high-risk sexual behaviors within the ethnic groups. However, this is not true in every case, and future research is needed to determine the reliability of the observations made in this study.

Our findings substantiate the belief that differences between African Americans and whites exist and clearly distinguish those that characterize risk between African-American and white individuals. It is important for future investigations to explore these differences in the appropriate context in order to understand the maintenance of risky sexual behaviors in African Americans and whites. There is also a strong need to determine the extent that findings obtained in this study are generalizable to other populations such as individuals attending STD clinics, persons with AIDS, and noncollege bound young adults.

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