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Risky Sex: Interactions Among Ethnicity, Sexual Sensation Seeking, Sexual Inhibition, and Sexual Excitation

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Abstract Rates of sexually transmitted infections, including HIV, vary across ethnic minority groups, yet few studies have evaluated sexual risk behaviors and their psychological correlates to determine if risk and protective factors vary by ethnicity. The purpose of the current study was to assess sexual sensation seeking (SSS), sexual inhibition (SIS1 and SIS2), and sexual excitation (SES) as correlates of risky sexual behaviors in 106 (55 male and 51 female) Asian Americans, African Americans, and Caucasian Americans. Results revealed that higher SSS was associated with more vaginal and anal sex partners. Further, the association between SSS and the number of anal sex partners was positive among Asian Americans and Caucasians, but non-significant among African Americans. SIS1 was positively associated with unprotected sex on the first date among Asian Americans and African Americans. However, the association was not significant for Caucasians. SIS2 was negatively associated with general unprotected sex, and SES was positively associated with the number of vaginal sex partners. Findings suggest that ethnicity plays an important moderating role in the relationship between sexual traits and risky sexual behaviors.

Keywords Risky sex · Ethnic differences · Sexual sensation seeking · Sexual excitation · Sexual inhibition

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Introduction

Rates of sexually transmitted infections, including HIV, vary across ethnic minority groups. However, limited research has evaluated ethnic differences and psychological correlates of risky sexual behaviors to determine if risk and protective factors vary by ethnicity (Faryna & Morales, 2000; Hahm et al., 2008; Locke & Newcomb, 2008; Moore & Erickson, 1985). African Americans have the highest rates of HIV/AIDS compared to other U.S. racial/ethnic populations (Centers for Disease Control & Prevention [CDC], 2009), and Asian Americans' HIV rates are increasing faster relative to other U.S. racial/ethnic populations (CDC, 2009). Risky sexual behaviors account for 84% of HIV transmissions in the U.S., with 31% of these transmissions coming from heterosexual contact. Also, rates of HIV transmissions from heterosexual contact have been steadily rising. From 2005 to 2008, the number of estimated HIV diagnoses from heterosexual contact for both men and women increased by 7.5% (CDC, 2009).

According to the CDC, risky sexual behavior is defined as sexual contact with a person known to have, or to be at high risk for, HIV infection. Individuals who are considered high risk may include intravenous drug users (Chan et al., 2011), due to exposure to HIV from the sharing of needles, and incarcerated individuals (Morrow, 2009), due to unprotected sex in and out of jail. Thus, heterosexual contact (anal or vaginal sex) with these

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individuals may increase one's risk of contracting HIV, especially if condom use is inconsistent or non-existent. Having high numbers of sex partners is also considered risky because the probability of being exposed to HIV increases with each sex partner (Moreno, El-Bassel, & Morrill, 2007). Again, condom use or the lack thereof greatly determines the risk. The current study operationalized risky sexual behavior as having sex without a condom, having sex without a condom on the first date, and having high numbers of vaginal and anal sex partners (Turchik & Garske, 2009).

Current research indicates that individual trait variables, such as sexual inhibition, sexual excitation, and sexual sensation seeking, are strongly associated with risky sexual behaviors (Bancroft et al., 2003; Kalichman & Rompa, 1995). However, no research has examined ethnic differences in these individual trait variables and the relationship among ethnicity, these traits, and sexual risk behaviors. The purpose of the present study was to explore relationships among ethnicity, sexual inhibition, sexual excitation, sexual sensation seeking, and risky sexual behaviors.

Ethnicity, Risky Sexual Behaviors, and HIV

Although African Americans account for only 13% of the U.S. population, they account for 48% of persons in the U.S. living with AIDS (CDC, 2009). HIV diagnosis rates for African American men are more than seven times those of Caucasian men and HIV diagnosis rates for African American women are more than 18 times those of Caucasian women (CDC, 2009). Approximately 71% of HIV infections in African American men and 75% of HIV infections in African American women are due to risky sexual behaviors (CDC, 2009). Following African Americans, Caucasians are the second highest population of persons living with AIDS in the U.S. (CDC, 2009). In 2006, Caucasians accounted for 33% of persons living with AIDS and 35% of estimated new HIV infections. Approximately 87% of HIV infections in Caucasian men and 65% of HIV infections in Caucasian women were due to risky sexual behaviors (CDC, 2009).

Compared to Caucasians' and African Americans' high percentage of persons living with AIDS, only 1% of those living with AIDS are Asian Americans. Therefore, Asian Americans are often considered not at risk for HIV/AIDS and are often overlooked in research and in prevention efforts. However, Asian Americans are now exhibiting higher HIV incidence rates than other racial/ethnic groups despite having low prevalence rates. Between 2003 and 2007, the rates of AIDS diagnoses in Asian Americans increased by 20.6% whereas rates of AIDS diagnoses decreased for other U.S. racial/ethnic populations (CDC, 2009). Further, risky sexual behaviors account for 89% of HIV infections in Asian American men and 82% in Asian American women (CDC, 2009). Approximately 89% of Asian Americans report inconsistent condom use, which is comparable to other at-risk racial/ethnic groups, such as African Americans and Caucasians (Choi et al., 2005; Manderson, Kelaher, Woelz-Stirling, Kaplan, & Greene, 2002; Schuster, Bell, Nakajima, & Kanouse, 1998). Thus, the notion that Asian Americans are a low risk group for HIV/AIDS is a misconception.

Overall, extant research indicates that, although there are differences in HIV/AIDS prevalence rates among Asian Americans, African Americans, and Caucasian Americans, the rise in Asian American incidence rates indicates that members of these groups are all at-risk for HIV infection. Further, research indicating that HIV/AIDS continues to be conferred heterosexually through risky sexual behaviors highlights the need for examining psychological correlates that may be unique risk or protective factors for each group.

Sexual Inhibition/Sexual Excitation and Sexual Behaviors

One theoretical model useful in identifying psychological correlates of risky sexual behaviors is the dual control model. The dual control model proposes that sexual responses and associated behaviors are the result of an interaction between sexual excitatory and sexual inhibitory processes in the brain (Janssen, Vorst, Finn, & Bancroft, 2002). This model postulates that these processes are biological in nature, serve adaptive purposes for human survival, and account for individual differences in the capacity for sexual interest and response. To assess these dual control processes, Janssen et al. developed the sexual inhibition/sexual excitation scale (SIS/SES), which measures an individual's propensity for sexual arousal and excitation (SES), sexual inhibition due to threat of performance failure (SIS1), and sexual inhibition due to threat of negative consequences (SIS2).

The SIS/SES scales are strongly associated with risky sexual behaviors. High scores on SIS1 were associated with more risky sexual behaviors and lower levels of safe sex assertiveness (Bancroft et al., 2003). This suggests that a lack of confidence in one's ability to achieve and sustain sexual arousal may reduce condom use and assertiveness for safe sex. Conversely, high scores on SIS2 were associated with less risky sexual behaviors and higher levels of safe sex assertiveness (Bancroft, Janssen, Carnes, Goodrich, & Strong, 2004). This is consistent with the dual control model, which proposes that sexual inhibition is an adaptive mechanism that impedes sexual response in the face of a threat or risk. Thus, individuals with a high propensity for sexual inhibition may not remain aroused in the presence of risk and, consequently, may be more likely to take risk-reducing actions, such as wearing a condom. SES was also shown to be associated with risky sexual behaviors, such that higher SES was associated with more sexual partners and less condom use (Janssen et al., 2002). Thus, individuals with a higher propensity for sexual arousal may be more likely to stay aroused in the presence of risk, thereby reducing concerns about risk and safe sex behaviors (Bancroft et al., 2003).

Sexual Sensation Seeking and Sexual Behaviors

The sexual sensation seeking (SSS) model proposes that risky sexual behaviors are an expression of the personality trait of sensation seeking. Individuals who are high in sensation seeking, defined as the need to seek out varied, novel, and complex experiences and sensations, are willing to take physical and social risks to achieve these sensations and experiences (Zuckerman, Eysenck, & Eysenck, 1978). Individuals high in sensation seeking are more likely to take risks and are also more likely to downplay the risks associated with specific behaviors if they have engaged in the behaviors without negative consequences (Kalichman & Rompa, 1995). Thus, sensation seeking influences risk-taking by increasing individuals' preparedness to take risks to achieve certain benefits and by influencing how individuals subsequently appraise risks. Sensation seeking accounts for individual differences in risky sexual behaviors and provides a motivational explanation for why risky sexual behaviors persist despite the threat of HIV infection.

Kalichman and Rompa (1995) revised Zuckerman et al.'s (1978) Sensation Seeking Scale to assess sensation seeking related specifically to sexual interests and activities. Studies using the revised scale found that SSS was strongly associated with risky sexual behaviors, such as drug and alcohol use before sex, high numbers of sexual partners, and high frequencies of unprotected and anal sex in gay men and heterosexual men and women (Bancroft et al., 2003). SSS has also been negatively correlated with risk-reduction intentions. Those high in SSS have been shown to have less intention to tell their partner to practice safer sex, less intention to avoid alcohol and drugs prior to sex, less intention to refuse unsafe sex, and less intention to negotiate for safer sex.

Although robust relationships among SIS/SES, SSS, and risky sexual behaviors have been shown in current research, few studies have examined this relationship in ethnic minority populations. Further, ethnic differences in the propensity for SIS/SES and SSS have not been examined. Thus, we attempted to explore how ethnicity interacts with these personality trait variables to influence risky sexual behaviors. Additionally, even though the literature suggests that these variables are highly correlated (Bancroft et al., 2003), both SSS and SIS/SES require further examination, because the measurement of SSS focuses on attitudes, values, and behavioral tendencies of the personality trait, whereas the measurement of SIS/SES focuses on sexual response patterns that are based on the neurobiological processes underlying the personality trait. Thus, the difference between SSS, SIS/SES, and their relationship to risky sexual behaviors among individuals of different ethnic backgrounds remains unknown and warrants exploration.

The purpose of the present study was to investigate relationships among SIS/SES, SSS, and risky sexual behaviors in Asian Americans, African Americans, and Caucasian Americans. We hypothesized that (1) higher levels of SSS would be associated with more risky sexual behaviors; (2) higher levels of SIS1 would be associated with more risky sexual behaviors; (3) higher levels of SIS2 would be associated with less risky sexual behaviors; and (4) higher SES would be associated with more risky sexual behaviors. Due to the limited research on ethnic differences in SSS and SIS/SES, we did not develop directional hypotheses regarding potential moderating effects of ethnicity on these relationships. Instead, we analyzed this possibility in an exploratory fashion, in hopes that a foundation of understanding on these topics will be provided for future research to examine a priori predictions.

Method

Participants

This study used secondary data analyses from a larger study investigating the influence of alcohol consumption on risky sexual decision-making. Participants were recruited for this larger study through community flyers and newspaper advertisements, which stated that the research involved alcohol and social perception. Participants were required to meet the following inclusion criteria: (1) be between the ages of 21–35 years, (2) have no history of alcohol-related problems or contraindications for consuming alcohol, (3) be interested in dating the opposite sex and not currently in an exclusive dating relationship, and (4) be a social drinker. In addition to completing background measures via computer, procedures for the larger experimental portion of the study involved the measurement of arousal using a penile or vaginal plethysmograph, which was completed in the laboratory. The current study only used data from the background measures, which took approximately 60–90 min. Participants were compensated $15 per hour.

The sample included in these analyses consisted of 106 participants (51.9% male; $n = 55$) with a mean age of 26.5 years ($SD = 4.7$). The ethnic breakdown of the sample was 30.2% Caucasian, 34.0% Asian-American, and 35.8% African-American. This sample was a subset of the larger sample. Since the larger study consisted of three phases of data collection, and the measures that we were interested in for this study were added to the second and third phases, we only included participants from the second and third phases in these analyses. The sexual orientation reported by 72.6% of the participants was exclusively heterosexual, with 27.4% reporting some homosexual experiences. Currently enrolled students (full or part-time) made up 36.9% of the sample and more than one-half (51.9%) were employed at least part-time. Forty-seven percent of individuals reported a household income of less than $20,999 per year and 79.2% of individuals reported "some college" to be their highest educational level. Forty-one percent of individuals reported not using a condom the last time they had sexual intercourse, 18.9%

reported to have been diagnosed with an STD, and 39.2% of women reported to have ever been pregnant.

Measures and Procedure

Sexual Inhibition and Sexual Excitation Scale (SIS/SES)

The SIS/SES is a 45-item self-report questionnaire that assesses the individual's propensity for sexual inhibition and sexual excitation (Janssen et al., 2002). The items assess sexual response patterns typical for each participant. Most of the items were written in an if–then format, such that the if-statement described an inhibiting or exciting sexual event and the then-statement described the sexual response. An example item: "When I think of a very attractive person, I easily become sexually aroused." Each item was rated on a 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

The inhibition items (SIS) reflect situations in which existing sexual arousal is lost due to the introduction of an intrapersonal or interpersonal threat. The inhibition items consist of two subscales, SIS1 and SIS2, with SIS1 assessing inhibition due to threat of performance failure and SIS2 assessing inhibition due to threat of performance consequences. The sexual excitation items (SES) assesses the individual's propensity for sexual arousal. These items cover, among others, visual, auditory, tactile, imaginary, and olfactory stimuli. They also cover potentially sexually exciting social interactions that may be relevant to SES. The SIS/SES had good internal consistency for the current sample (Cronbach's $\alpha = .84$ for SES, .91 for SIS1, and 0.82 for SIS2).

Sexual Sensation Seeking

The SSS questionnaire (Kalichman et al., 1994) measures the degree to which participants seek out sexual experiences. The 11-item scale includes statements such as "I like wild 'uninhibited' sexual encounters" and "I feel like exploring my sexuality," answered on 5-point Likert scales of 1 (*not at all like me*) to 5 (*very much like me*). This questionnaire produced good reliability ($\alpha = .79$) for the current sample.

Number of Sex Partners

The number of lifetime sex partners was assessed by two questions developed by the research team, "With how many partners of the opposite sex have you had anal intercourse?" and "With how many partners of the opposite sex have you had vaginal intercourse?" Participants typed in a numbered response.

Unprotected Sex

Unprotected sex was assessed with two questions, "In the past 12 months, how often have you had sex without a condom?" and "In the past 12 months, how often have you had sex without a condom on the first date?" These items were developed by the research team and were measured on a scale of 0 (*never*) to 6 (*all of the time).*

Data Analytic Plan

All measures were assessed for skew and kurtosis, missing data, and outliers (West, Finch, & Curran, 1995). Descriptive statistics assessing general unprotected sex, SSS, and SIS/SES showed no significant skew in their distributions. There was significant skew in the distribution of unprotected sex on the first date, number of vaginal sex partners, and number of anal sex partners. Skew was corrected for unprotected sex on the first date through an inverse transformation, for the number of vaginal sex partners through a logarithmic transformation, and for the number of anal sex partners through an inverse transformation (Tabachnick & Fidell, 2007). Transformations resulted in normal distributions for these variables. Participants with missing values for some variables were kept in the dataset and values for those items were coded as missing. We performed ANOVAS to examine ethnic and gender differences in SIS/SES and SSS. We also performed sequential regressions to examine whether (1) ethnicity, SSS, and SIS/SES each accounted for a significant amount of the variance in risky sexual behaviors beyond that accounted for by gender and age and (2) the interaction of ethnicity and SSS, and the interaction of ethnicity and SIS/SES accounted for a significant amount of the variance in risky sexual behaviors beyond the main effects of gender, age, ethnicity, SSS, and SIS/SES.

Results

Sexual Sensation Seeking and SIS/SES

Descriptive statistics for dependent variables are shown in Table 1. Results revealed significant positive correlations between SES and SIS1, SES and SSS, SIS1 and SIS2, and SIS1 and SSS. There was also a significant negative correlation between SSS and SIS2 (see Table 2). Similar patterns of correlations were shown for both men and women (see Table 3). However, the patterns of correlations differed by ethnicity (see Table 4). For Asian Americans, there was a significant negative correlation between SES and SIS2, whereas this relationship was positive for African Americans. Further, there were significant positive correlations between SIS1 and SIS2, and between SIS2 and SSS for African Americans, whereas these correlations were not significant for Asian Americans and Caucasians.

A 2 (gender) × 3 (ethnicity) analysis of variance (ANOVA) was used to examine ethnic and gender differences on the SSS and the SIS/SES. For the SSS, there was a significant main effect of gender, $F(1, 100) = 12.47$, $p < .01$. Male participants ($M = 3.55$, $SD = 0.82$) reported higher SSS than female participants ($M = 2.97$, $SD = 0.67$). For SIS2, there was a significant main

Table 1 Descriptive statistics for dependent variables by gender and ethnicity

Variable	Asian Americans			African Americans			Caucasians			Total *n*
	n	*M (SD)*	Range	*n*	*M (SD)*	Range	*n*	*M (SD)*	Range	
Gender: male										
Number of anal sex partners	14	4.86 (13.11)	0–50	16	.56 (.73)	0–2	23	2.74 (4.67)	0–20	53
Number of vaginal sex partners	13	21.77 (27.31)	0–100	15	19.67 (19.05)	0–65	23	32.78 (44.31)	1–200	51
Frequency of condomless sex	14	1.86 (1.83)	0–5	16	2.13 (1.86)	0–5	23	2.96 (2.27)	0–6	53
Frequency of condomless sex on first date	13	1.08 (2.02)	0–6	16	.75 (1.53)	0–6	21	1.48 (2.40)	0–6	50
Gender: female										
Number of anal sex partners	21	.48 (.68)	0–2	20	1.30 (1.72)	0–6	9	3.56 (8.14)	0–25	50
Number of vaginal sex partners	21	9.10 (8.15)	0–31	19	16.58 (18.35)	1–75	8	22.00 (16.50)	0–50	48
Frequency of condomless sex	18	2.67 (1.97)	0–5	21	2.71 (2.22)	0–6	8	2.88 (2.03)	0–5	47
Frequency of condomless sex on first date	17	.71 (1.49)	0–5	20	.85 (1.70)	0–6	8	1.38 (2.26)	0–5	45

Due to listwise deletion of missing data, the total *N* for each outcome variable may differ from one another and may not equal 106. The absolute range for the last two variables is 0 (*never*) to 6 (*all of the time*)

Table 2 Summary of correlations for scores on the SES, SIS1, SIS2, and SSS

Measure	1	2	3	4
1. SES	–	.32*	.62	.70*
2. SIS1		–	.40*	.20*
3. SIS2			–	−.20*
4. SSS				–

Correlations for the sample collapsed across ethnicity and gender are presented ($N = 106$)

SES Sexual Excitation Scale; *SIS1* Sexual Inhibition Scale, Subscale 1; *SIS2* Sexual Inhibition Scale, Subscale 2; *SSS* Sexual Sensation Seeking

* $p < .05$

Table 3 Summary of correlations, means, and standard deviations for scores on the SES, SIS1, SIS2, and SSS as a function of gender

Measure	1	2	3	4	*M*	*SD*	*n*
1. SES	–	.41*	.13	.73*	57.04	10.32	55
2. SIS1	.62*	–	.41*	.34*	27.98	6.47	55
3. SIS2	.14	.34*	–	−.10	25.76	5.31	55
4. SSS	.65*	.21	−.10	–	3.55	.82	55
M	52.65	30.00	29.08	2.97			
SD	11.06	6.71	5.02	.67			
n	51	51	51	51			

Correlations separated by gender are presented with male ($n = 55$) above the diagonal and female ($n = 51$) below the diagonal. Means, standard deviations, and sample sizes for males are presented in the vertical columns, and means, standard deviations, and sample sizes for females are presented in the horizontal rows

SES Sexual Excitation Scale; *SIS1* Sexual Inhibition Scale, Subscale 1; *SIS2* Sexual Inhibition Scale, Subscale 2; *SSS* Sexual Sensation Seeking

* $p < .05$

effect of gender, $F(1, 100) = 9.64$, $p < .01$. Female participants ($M = 29.08$, $SD = 5.02$) reported higher SIS2 than male participants ($M = 25.76$, $SD = 5.31$). The interaction between gender and ethnicity was not significant for the SSS or the SIS/SES.

Ethnicity, Sexual Sensation Seeking, and Risky Sexual Behaviors

Hypothesis 1 predicted that higher SSS would be associated with more sex partners and higher rates of unprotected sex. Results revealed a significant main effect for age on the number of vaginal sex partners, $R^2\Delta = .25$, $F\Delta(2, 95) = 15.56$, $p < .01$, such that older age was associated with more vaginal sex partners ($\beta = 0.47$, $p < .01$). Also, the main effect of SSS accounted for a significant portion of the variance in the number of vaginal sex partners, $R^2\Delta = .14$, $F\Delta(3, 92) = 7.17$, $p < .01$. As hypothesized, higher SSS was associated with more vaginal sex partners, $\beta = 0.39$, $p < .01$.

Results revealed a significant main effect of age on the number of anal sex partners, $R^2\Delta = .10$, $F\Delta(2, 99) = 5.47$, $p < .01$, such that older age was associated with more anal sex partners, $\beta = 0.30$, $p < .01$. Also, the main effect of SSS accounted for a significant portion of the variance in the number of anal sex partners, $R^2\Delta = .08$, $F\Delta(3, 96) = 3.29$, $p < .05$. As hypothesized, higher SSS was associated with more anal sex partners, $\beta = 0.28$, $p < .01$. Further, the interaction between ethnicity and SSS yielded a significant increment, $R^2\Delta = .12$, $F\Delta(2, 94) = 8.07$, $p < .01$, beyond that accounted for by the main effects of gender, age, ethnicity, and SSS. Tests of simple slopes revealed that the association between SSS and the number of anal sex partners was positive for Asian Americans, $\beta = .24$, $t(34) = 3.94$, $p < .01$, but non-significant for African Americans, $\beta = .06$, $t(35) = 1.06$ (see Fig. 1). Further, there was a positive association between SSS and the number of anal sex partners for Caucasians, $\beta = .23$, $t(30) = 2.82$, $p < .01$, but no significant association for African Americans and Asian Americans combined, $\beta = -.06$, $t(70) = 1.47$ (see Fig. 2).

Table 4 Summary of correlations, means, and standard deviations for scores on the SES, SIS1, SIS2, and SSS as a function of ethnicity

Measure	1	2	3	4	1	2	3	4	*M*	*SD*	*n*
1. SES	–	.36*	−.38*	.70*	–	−.32	−.10	.49*	57.69	9.08	32
2. SIS1	.62*	–	.29	.33		–	.15	−.10	27.03	4.96	32
3. SIS2	.44*	.54*	–	−.33*			–	−.41*	26.69	4.71	32
4. SSS	.78*	.36*	.02	–				–	3.54	.71	32
M	53.05	28.87	27.00	3.10	54.44	30.75	28.33	3.19			
SD	12.48	7.91	6.20	.86	10.24	6.12	5.09	.77			
n	38	38	38	38	36	36	36	36			

Correlations separated by ethnicity are presented with Asian Americans ($n = 36$) above the diagonal and African Americans ($n = 38$) below the diagonal followed by Caucasians ($n = 32$) above the diagonal. Means, standard deviations, and sample sizes for African Americans are presented first in the horizontal rows, and means, standard deviations, and sample sizes for Asian Americans are presented second in the horizontal rows. Means, standard deviations, and sample sizes for Caucasians are presented in the vertical columns

SES Sexual Excitation Scale; *SIS1* Sexual Inhibition Scale, Subscale 1; *SIS2* Sexual Inhibition Scale, Subscale 2; *SSS* Sexual Sensation Seeking

* $p < .05$

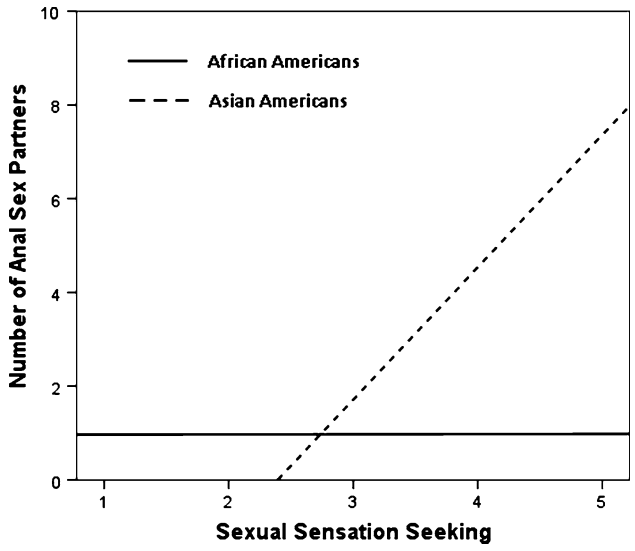

Fig. 1 Interaction of ethnicity and SSS on number of anal sex partners: African Americans vs. Asian Americans

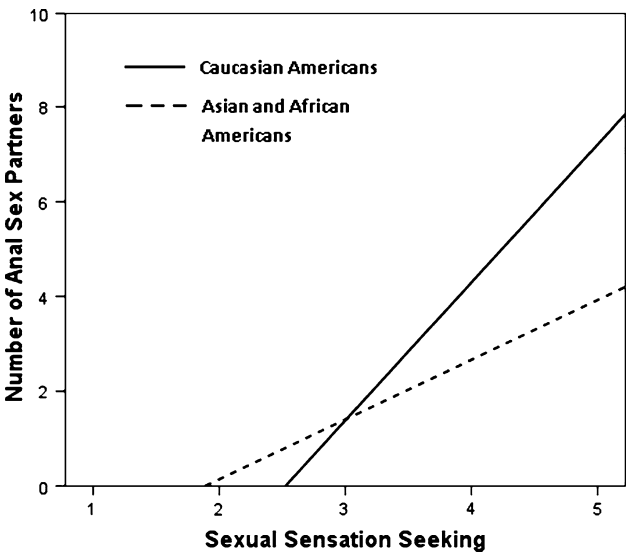

Fig. 2 Interaction of ethnicity and SSS on number of anal sex partners: Caucasian Americans vs. Asian Americans and African Americans

Ethnicity, SIS/SES, and Risky Sexual Behaviors

Hypothesis 2 predicted that higher SIS1 would be associated with more sex partners and higher rates of unprotected sex. Results revealed that the interaction between ethnicity and SIS1 yielded a significant increment, $R^2\Delta = .10$, $F\Delta(2, 72) = 4.64$, $p = .01$, for unprotected sex on the first date beyond that accounted for by the main effects of gender, age, ethnicity, and SIS1. Higher levels of SIS1 were associated with higher rates of unprotected sex on the first date for Asian Americans and African Americans, $\beta = .02$, $t(53) = 2.92$, $p < .01$. However, the association was not significant for Caucasians, $\beta = -.02$, $t(25) = 1.06$ (see Fig. 3).

Hypothesis 3 predicted that higher SIS2 would be associated with fewer sex partners and lower rates of unprotected sex. Results revealed that the main effect for SIS2 accounted for a significant portion of the variance for general unprotected sex, $R^2\Delta = .10$, $F\Delta(3, 71) = 2.77$, $p < .05$. As hypothesized, SIS2 was negatively associated with general unprotected sex, such that higher SIS2 predicted lower rates of unprotected sex, $\beta = -.25$, $p = .04$.

Hypothesis 4 predicted that higher SES would be associated with more sex partners and higher rates of unprotected sex. Results revealed a significant main effect for age on the number of vaginal sex partners, $R^2\Delta = .21$, $F\Delta(2, 80) = 10.82$, $p < .01$, such that older age was associated with more vaginal sex partners, $\beta = .44$, $p < .01$. Also, the main effect for SES accounted for a significant portion of the variance for the number of vaginal sex partners, $R^2\Delta = .09$, $F\Delta(3, 77) = 2.96$, $p < .05$. As hypothesized, SES was positively associated with the number of vaginal sex partners, such that higher SES predicted more vaginal sex partners, $\beta = .27$, $p < .01$.

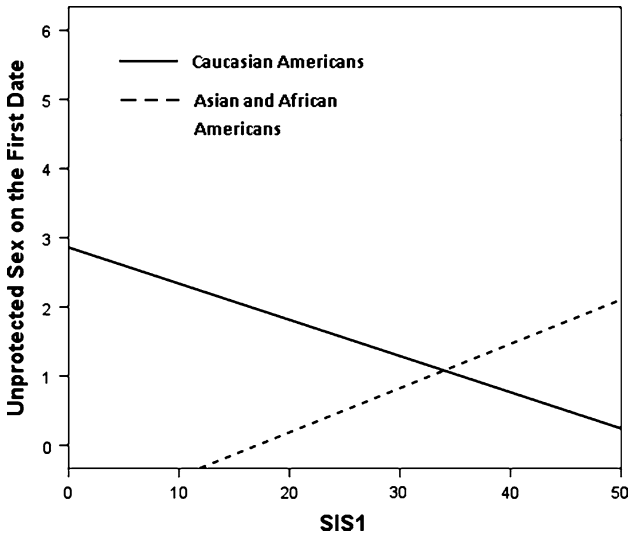

Fig. 3 Interaction of ethnicity and SIS1 on unprotected sex on the first date: Caucasian Americans vs. Asian Americans and African Americans

Discussion

The current study investigated relationships between SIS/SES, SSS, and risky sexual behaviors among Asian Americans, African Americans, and Caucasian Americans. Support for our original four hypotheses was mixed and the effects of ethnicity varied. Consistent with Hypothesis 1, higher SSS was associated with more vaginal and anal sex partners. No significant associations were found between SSS and unprotected sex. Also, ethnicity moderated the association between SSS and the number of anal sex partners, such that a positive association was found between SSS and the number of anal sex partners for Asian Americans but not for African Americans, and for Caucasians but not for African Americans and Asian Americans combined. Contrary to Hypothesis 2, there were no significant associations between SIS1 and the number of sex partners and general unprotected sex. However, ethnicity moderated the relationship between SIS1 and unprotected sex on the first date, such that higher SIS1 was associated with higher rates of unprotected sex on the first date for Asian Americans and African Americans, but the association was not significant for Caucasians. Consistent with Hypothesis 3, higher levels of SIS2 were associated with lower rates of general unprotected sex. However, SIS2 was not significantly associated with the number of sex partners and unprotected sex on the first date. Finally, consistent with Hypothesis 4, SES was associated with more vaginal sex partners, but no significant associations were found for SES and number of anal sex partners and unprotected sex. Ethnicity was not found to be significantly related to SIS2 and SES.

As hypothesized, higher levels of SSS was associated with more vaginal and anal sex partners beyond gender and age effects. This finding was consistent with extant research showing that SSS is negatively correlated with intentions to practice safe sex and positively correlated with risky sexual behaviors, including anal sex (Bancroft et al., 2003; Hendershot, Stoner, George, & Norris, 2007). Results also revealed a positive association between SSS and the number of anal sex partners for Asian Americans and Caucasians but not for African Americans. The association between SSS and anal sex partners for Asian Americans and Caucasians was in the predicted direction, such that higher SSS was associated with more anal sex partners. However, the non-significant association between SSS and the number of anal sex partners among African Americans was inconsistent with Kalichman and Rompa's (1995) study, which showed that, in a sample of primarily African Americans, those with higher SSS perceived more pleasure in practicing unprotected sex and fewer intentions to practice safe sex. This inconsistency may be due to differences in the measurement of outcome variables; in Kalichman and Rompa's study, the outcome variables were intentions and perceptions of risky sexual behaviors, whereas in the current study the outcome variables were past self-reported sexual behaviors. Additionally, it may be that, for African Americans in our sample, SSS may be associated with sexual behaviors other than the ones measured in the current analysis (i.e., anal sex partners).

Inconsistent with Hypothesis 1 and with research indicating that those with high SSS tend to engage in high frequencies of unprotected sex (Bancroft et al., 2003; Kalichman & Rompa, 1995), we found no significant association between SSS and unprotected sex. This finding could be explained by the uniqueness of the current sample, which consisted of participants who were social drinkers and who volunteered to participate in research in which their physiological levels of sexual arousal were assessed. The current sample could be considered a relatively sexually liberal group, which would imply higher than average SSS and sexual risk. With a sample of high risk individuals, our range of sexual behaviors may be more limited, which may have decreased our power to detect significant differences. Further, the current sample was more ethnically diverse than previous samples, which have consisted of primarily Caucasians and African Americans (Kalichman & Rompa, 1995). Given that the current sample consisted of equal percentages of Asian Americans, African Americans, and Caucasians, our findings may differ from past research.

Results partially supported Hypothesis 2, which predicted that SIS1 would be associated with more sex partners and higher rates of unprotected sex. Consistent with previous work with MSM populations (Bancroft et al., 2003), we found that SIS1 was associated with less condom use with first date sex for African American and Asian American heterosexual men and women. According to Bancroft et al., those with higher SIS1 may engage in less condom use because condoms may contribute to arousal loss. Bancroft et al. found that SIS1 was strongly associated with erectile dysfunction among MSM and that those who have had a history of erectile dysfunction reported more sexual risk behaviors. The association between SIS1 and condom use

was not significant for Caucasian participants in our sample. The ethnic differences observed here are not readily interpretable, particularly in the absence of cultural measures that could have elucidated the nature of these differences. Further research is needed to explore this finding.

Consistent with Hypothesis 3, SIS2 was negatively associated with general unprotected sex. This was consistent with Bancroft et al. (2004), who showed that those with high SIS2 reported less risky sexual behaviors. There were no significant SIS2 effects on general unprotected sex. Contrary to Hypothesis 3, there were no significant SIS2 effects on the number of sex partners and unprotected sex on the first date. This suggests that SIS2 is associated with unprotected sex, but not the number of sex partners. Perhaps this is because the negative consequences of not using a condom–pregnancy or STIs–are more apparent than the consequences of having many sexual partners. Thus, those with high fear of negative consequences may be more likely to associate the lack of condom use with risk than to associate having many partners with risk. However, SIS2 was not associated with unprotected sex on the first date. This suggests that there are fundamental differences in how SIS2 relates to unprotected sex on the first date, which is presumably more risky, versus general unprotected sex.

Consistent with Hypothesis 4, SES was positively associated with the number of vaginal sex partners. This is consistent with evidence indicating that those with higher SES are more likely to have more sexual partners (Janssen et al., 2002). There was no significant main effect of ethnicity and no significant interaction between ethnicity and SES on the number of vaginal and anal sex partners, and unprotected sex. This indicates that SES may be associated with less risky forms of sexual behaviors, such as vaginal sex, rather than with more risky forms of sexual behaviors, such as anal sex and unprotected sex. However, since past research has shown a positive association between SES and unprotected sex, more research is needed to further examine the relationship between SES, the number of sex partners, and unprotected sex.

The present study had a number of limitations that are important to consider. The use of self-report measures may not reflect accurate sexual behaviors and cognitions in our participants. However, all efforts were made to ensure confidentiality of reporting. Another limitation to the study was the cross-sectional nature of the data. Thus, we cannot determine if sexual risk behaviors precede or follow SSS or SIS/SES. Another limitation to the study includes the small number of African American and Asian American participants, which prevented us from examining specific ethnic subgroups (e.g., Vietnamese, Japanese, and Haitian). Since there are significant cultural differences among Asian American and African American ethnic subgroups, grouping them into general categories of Asian Americans and African Americans limits the interpretation of our data. Thus, replicating the current study in a larger sample, focusing on specific ethnic subgroups, would be important. Finally, participants in this study were social drinkers and sex research volunteers; thus, findings may not be generalizable to the broader population.

Our findings, although preliminary, indicate that ethnicity may moderate the relationship between risky sexual behaviors and dispositional variables such as SSS and SIS/SES. This implies that these variables should not be universally applied to all ethnic groups in the same manner. When differences among ethnic groups were found for SSS and SIS/SES, a distinction between Caucasians and ethnic minorities became evident. Perhaps a reexamination of the SIS/SES scale is necessary given that the scale is validated on mostly Caucasian groups but not ethnic minorities (Janssen et al., 2002). It may also be fruitful to examine aspects of sexuality and perhaps how being a member of an ethnic minority group may be related to these variables and sexual behaviors. Regardless, this distinction suggests that there is a need for incorporating culture into the conceptualization of SSS and SIS/SES. Additionally, because our findings involving ethnicity were exploratory, future research should focus on specific cultural variables theoretically relevant for each ethnic group, such as loss of face, acculturation, and stereotypes. Research with other ethnic groups not examined in the current study also remains unexplored. Results of the current study indicate that research on relationships between SSS, SIS/SES and risky sexual behaviors should take into account ethnic differences and cultural background.

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