

# The Effects of Racial Discrimination on the HIV-Risk Cognitions and Behaviors of Black Adolescents and Young Adults

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**Objective:** Two studies examined the impact of racial discrimination on HIV-risk (substance use and risky sex) behaviors (Study 1) and cognitions (Study 2) among African Americans. **Methods:** Study 1 examined longer-term effects of cumulative discrimination on HIV-risk behaviors among 833 adolescents. In Study 2, Black young adults were excluded or included in an online game (Cyberball) by White peers. **Results:** Study 1 revealed that discrimination was associated with greater HIV-risk behaviors contemporaneously, and with an increase in these behaviors over a 3-year period. In Study 2, excluded participants tended to attribute their exclusion to racial discrimination and reported greater risky sex and substance use willingness. In Study 1, the relation between discrimination and risky sex was mediated by substance use behavior. In Study 2, substance use willingness mediated the relation between perceived discrimination and risky sex willingness. **Conclusions:** Findings highlight the importance of examining the effects of discrimination on HIV risk among Black youth. The studies also demonstrate the utility of assessing social-psychological processes when examining the effects of discrimination on HIV-risk cognitions and behavior.

**Keywords:** discrimination, substance use, HIV, social exclusion, prototype/willingness model

Although African Americans (Blacks) make up around 13% of the U.S. population, they account for 50% of all new HIV cases (CDC, 2010), and 68% of recent HIV diagnoses among 13–24 year-olds (CDC, 2011). The main transmission route for HIV in this population is high-risk sexual contact (e.g., multiple partners and unprotected sex)—behavior that is exacerbated by alcohol and drug use (CDC, 2010; NIMH, 2010). Although Black adolescents are less likely to engage in substance use than White adolescents, substance use rates “cross over” among young adults, and substance use problems become more prevalent, proportionally, among Black young adults (French, Finkbiner, & Duhamel, 2002; Watt, 2005). Researchers have recently begun to focus on psychosocial factors that may contribute to these racial health disparities (Thomas, Price, & Lybrand, in press; Williams & Jackson, 2005). In particular, racial discrimination (discrimination) has been suggested as an important factor contributing to health-risk behaviors and physical health inequities, including HIV infection (Pachter & Garcia Coll, 2009; Pascoe & Smart Richman, 2009; Williams & Mohammed, 2009). This paper uses prospective

and experimental methods to examine the association between discrimination and health-risk behaviors. We rely upon two social-psychological theories, social exclusion and the prototype/willingness model, to expand on current research as it applies to HIV risk among young Blacks.

## Discrimination and Risky Health Behavior

Several studies have found synchronous relations among Blacks between perceived discrimination and reports of substance use (e.g., Borrell et al., 2007; Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006). Gibbons and colleagues found evidence of a prospective link between discrimination and substance use 2 and 5 years later among Black adolescents and their parents in the Family and Community Health Study (FACHS; Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004; Gibbons et al., 2007). A subsequent experimental study with a subsample of the adolescents demonstrated that envisioning a discriminatory (vs. nondiscriminatory) experience was associated with higher levels of substance use willingness (Gibbons et al., 2010). Feelings of anger mediated this relation. Additional research among the FACHS adolescents demonstrated that experiences of discrimination at ages 10–11 were associated with sexual risk-taking at ages 18–19 (controlling for neighborhood risk, risk taking, SES, gender, age, father absence, and virginity status) and that this relation was mediated by negative affect and affiliation with “deviant” peers (who reported stealing, using substances, etc.; Roberts et al., 2012).

Recently, researchers have called for studies that examine the impact of cumulative experiences of discrimination on health,

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This work was supported by NIDA [grant DA018871, DA021898] and NIMH [grant MH062668].

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while controlling for other life stressors (Williams & Mohammed, 2009). Additionally, research is needed to examine both substance use and risky sex among populations at risk for HIV (e.g., Black young adults), using methods other than cross-sectional surveys. The present studies address these gaps by assessing both risk behaviors in response to discrimination among an at-risk population using a longitudinal design to examine cumulative effects and an experimental design to examine causal relations.

### The Prototype/Willingness Model

Several previous studies examining the effects of discrimination on health risk (Gibbons et al., 2004; 2012; Roberts et al., 2012), as well as the current studies, were based on the prototype/willingness model of health risk behavior (see Gibbons, Gerrard, & Lane, 2003). The prototype/willingness model is a modified dual-process model that focuses on the cognitions that mediate the effects of the social environment on health behavior. Unlike most theories of health behavior, the prototype/willingness model maintains that not all health behaviors are planned or intentional, especially when they involve risk (Reyna & Farley, 2006; Webb & Sheeran, 2006). Instead, many risky behaviors are reactions to social situations (i.e., risk opportunity; Gibbons et al., 2003). These reactions are captured in an additional proximal antecedent (besides behavioral intention) in the model: behavioral willingness. Antecedents to willingness include (negative) affect, heuristics (e.g., risk images), peer influence, and (lower) risk perceptions (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). Discrimination involves heuristics, and, of course, heightened negative affect; and so the model is particularly useful for studying its effects. In fact, previous research has demonstrated that willingness to engage in HIV-risk behaviors (substance use and risky sex) is associated with perceived discrimination and this willingness predicts future risk behavior—often better than behavioral intention—for Black adolescents (Gibbons et al., 2004; 2010).

### Present Studies

Several studies, mostly among White young adults, have demonstrated that substance use impairs decision making and increases the likelihood of risky sex (e.g., Anderson & Mueller, 2008; Yan, Chiu, Stoesen, & Wang, 2007). Recent research also suggests substance use increases heterosexual transmission of HIV via sexual risk taking (NIMH, 2010). The impact of discrimination on these two behaviors may help explain higher levels of HIV infection among Black young adults. Thus, the present studies examined substance use as a mediator between discrimination and risky sex. Study 1 assessed the *cumulative* effects of discrimination on these HIV-risk behaviors among Black adolescents. These analyses controlled for other life stressors, to examine the independent effects of discrimination-based stressors. Study 2 employed an experimental design (based within social exclusion theory; Williams, 2007) to examine the *causal* impact of discrimination on HIV-risk cognitions of young Black adults.

### Study 1

Study 1 employed structural equation modeling to examine the relations between cumulative discrimination (T1-T4) and changes

in risky sex and substance use (T3-T5) among Black adolescents/young adults from FACHS, controlling for SES, gender, relationship status, risk-taking tendencies (T4) and cumulative stressful life events (T1-T4). We hypothesized that: a) discrimination would be associated with an increase in risky sex and substance use, and b) the increase in substance use would mediate the impact of discrimination on risky sex behaviors.

## Method

### Participants and Recruitment

FACHS is an ongoing study examining the impact of environmental factors on the health of Black families. Community coordinators compiled lists of all families in their area that included a fifth-grade Black child. Potential families, chosen randomly from the lists, received a recruitment phone call. A total of 889 families agreed to participate. Each family had a “target” child (the focus of this study; *M* age = 10.5 at T1; 54% female); 779 remained in the panel at T2 (*M* age = 12.5; retention rate = 87%); 767 remained at T3 (*M* age = 15.5; 86%); 714 remained at T4 (*M* age = 18.8; 80%); and 689 remained at T5 (*M* age = 21.5; 78%). There was approximately 2 years between T1 and T2, and then 3 years between each of the subsequent waves. The target and his or her primary caregiver (parent; 85% were target mothers) were interviewed separately by Black interviewers, using the computer-assisted personal interview (CAPI) technique. Parents received \$100 and targets received \$70 for participating. The current study included a subset of the full list of FACHS measures. For further description of the sample and recruitment see Gerrard, Gibbons, Stock, Vande Lune, & Cleveland (2005); Simons et al. (2002).

### Measures

All measures below, except for parents’ SES, were based on target reports. T3 reports of substance use and risky sex were included as covariates in the model.

**Perceived discrimination (T1-T4).** Discrimination was assessed with 13 items from the Schedule of Racist Events (Landrine & Klonoff, 1996), which described discrimination experiences in the last year, for example, “How often has someone said something insulting to you just because you are African American?” (1 = *never*; 4 = *several times*). Scores were averaged at each wave ( $\alpha$ s = .86–.90) and then summed.

**Substance use (T3-T5).** Use during the past 12 months was assessed for marijuana, ecstasy, methamphetamines, crack/cocaine, injection-drug use, and alcohol (general use and getting drunk) (1 = *never*; 6 = *several times per week*; Gibbons et al., 2012). All seven items were averaged ( $\alpha$ s = .80, .66, .73).<sup>1</sup>

**Risky sex (T3-T5).** Four items assessed risky sexual behaviors: number of lifetime and recent sexual partners (1 = *none*, 6 = *7 or more*), frequency of sex after using substances, and lack of

<sup>1</sup> The FACHS survey did not include these specific measures at T1 and T2 due to the age of the adolescents at these earlier waves (10.5 at T1 and 12.5 at T2). FACHS did include a few of the lifetime substance use questions and asked participants if they had ever had sex at these early waves. By T2, less than 12% reported more than minimal (e.g., tried once) use and only 7% were sexually active.

condom use (1 = *never*; 4 = *most of the time*). Virgins (those who reported no penetrative sex; 13.8%) were given a score of zero. Items were standardized and averaged ( $\alpha = .56, .61, .63$ ).

**Covariates**

In addition to T3 substance use and risky sex, several covariates associated with substance use and risky sex were included in the analyses: parents' SES (education level and family income;  $\alpha = .73$ ), gender, and relationship status. We also controlled for risk-taking tendency (six items from Eysenck & Eysenck, 1977;  $\alpha = .60$ ). All of these covariates have been associated with substance use and risky sex (e.g., Cooper, 2002; Stock, Gibbons, Walsh, & Gerrard, 2011). Cumulative stressful life events (T1-T4) were assessed with a modified version (two substance use items were removed) of Swearingen and Cohen's (1985) Life Events Survey, which included 43 events in the last year, for example, death of a parent, trouble with the law (0 = *no*, 1 = *yes*). The items were combined from each wave.

**Results**

**Descriptive Statistics and Correlations**

Percentages at T4/T5 reporting each behavior in the past year were: marijuana: 31%/62%; at least one other illegal drug: 4%/9%, > three drinks in one sitting: 31%/62%. Regarding sexual behaviors at T4/T5: 85%/86% were sexually active, 42%/68% reported infrequent condom use, 27%/48% reported having sex after using alcohol or drugs, and 37%/50% reported five or more partners. Risky sex and substance use at T3-T5 were correlated with higher levels of perceived discrimination, stressful life events, risk taking, and being male ( $ps < .05$ ). SES was associated with higher levels of both T3 and T5 substance use and risky sex ( $ps < .05$ ).

**Model**

All variables in the model were standardized. A just-identified model was conducted (the number of equations are equal to the number of identified parameters), using *MPlus* (Muthén & Muthén, 2007) with full information maximum likelihood, which resulted in a sample of 833 adolescents (46% male). Strong relations were found between substance use and risky sex at T4 and T5 (both  $bs = .28, ps < .001$ ; see Figure 1). T4-T5 stability was significant for both use ( $b = .24, p < .001$ ) and risky sex ( $b = .12, p < .05$ ). Nonetheless, the effects of T1-T4 discrimination separately on T4 use and T4 risky sex (controlling for previous behavior) were both significant;  $b = .12, b = .13; ps < .001$ , respectively. The direct effect of discrimination on T5 use was significant,  $b = .08, p < .04$ ; as was the indirect effect through T4 use,  $b = .03, p < .01$ ; however, the indirect effect through T4 risky sex was not significant ( $b = .00; ns$ ). Thus, cumulative discrimination predicted increases in use between age 18 and 21. The direct path from discrimination to T5 risky sex was marginal ( $p < .09$ ); however, the indirect effects through both T4 risky sex ( $b = .02, p < .05$ ) and T4 use ( $b = .02, p < .03$ ) were significant. These results show that cumulative discrimination predicted risky sex at age 21 through both use and risky sex behaviors at age 18, controlling for these behaviors at age 15. The results also suggest that the impact of discrimination on risky sex is mediated by substance use.

**Discussion**

Study 1 adds to previous research (Gibbons et al., 2004; 2010; cf., Pascoe & Smart Richman, 2009) by providing evidence that, as hypothesized, cumulative experiences of perceived discrimination predict change in two related HIV-risk behaviors: substance use and risky sex. Specifically, discrimination was associated with an

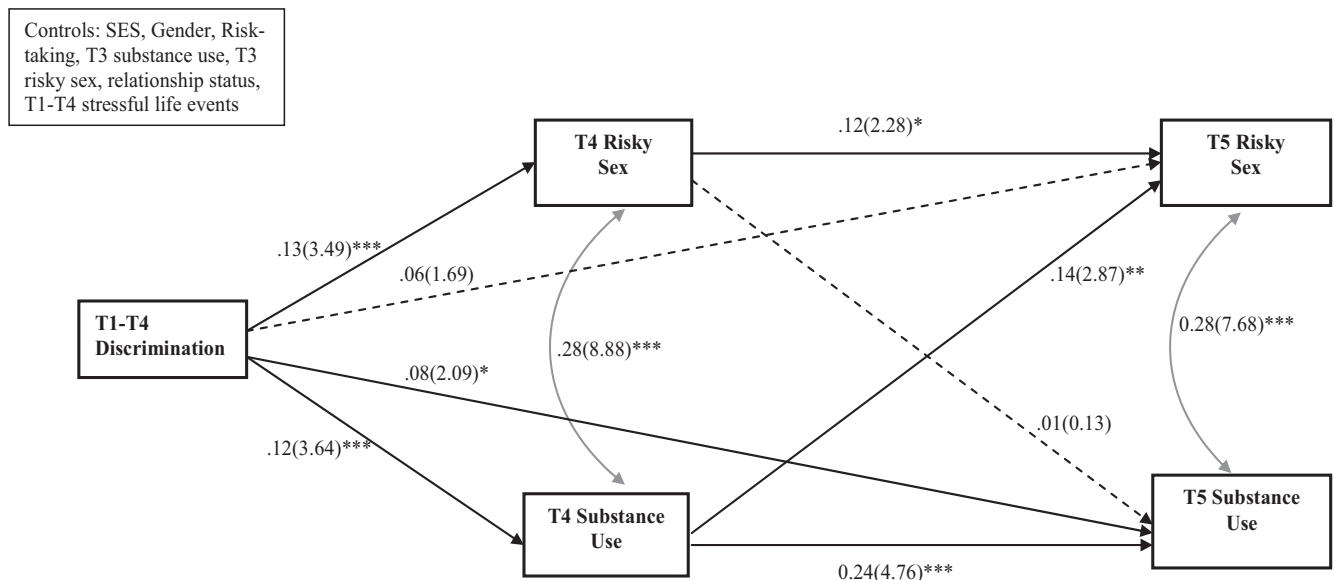


Figure 1. Structural equation model examining the impact of cumulative discrimination on substance use and risky sexual behavior. Dotted line = nonsignificant path.  $N = 833$ . \*  $p < .05$ . \*\*  $p \leq .01$ . \*\*\*  $p \leq .001$ .

increase in substance use and risky sex over a 3-year period, controlling for a number of factors linked with both behaviors. Although the behaviors were highly related, the results suggest that change in risky sex is mediated by an increase in substance use behaviors, more than vice versa. By controlling for cumulative stressful life events, this study provided evidence that the relations between discrimination and HIV-risk behaviors exist independent of other stressful life events, suggesting discrimination experiences should be a focus for future interventions. However, although Study 1 is the first study to examine both substance use and risky sex in relation to discrimination, longitudinally, like most studies of discrimination and health, it was correlational. Experimental studies are needed to increase confidence that these relations are causal. Study 2 examined the impact of actual experiences with discrimination on HIV-risk cognitions.

## Study 2

### Discrimination and Social Exclusion

Social exclusion is one of the most commonly reported forms of discrimination faced by minorities (Smart Richman & Leary, 2009; Williams & Carter-Sowell, 2009). Being socially excluded has been associated with a variety of negative psychological outcomes including negative affect, psychological stress, and impaired self-regulation (Smart Richman & Leary, 2009). However, previous research has not examined the effects of exclusion in the lab on physical health. An effective way of manipulating exclusion is via Cyberball, a computer ball-tossing game in which participants are excluded or included by other bogus players (Williams, Cheung, & Choi, 2000). Two recent studies demonstrated that Cyberball is also an effective way to examine racial discrimination effects (Goodwin, Williams, & Carter-Sowell, 2010; Stock et al., 2011). In these studies, when Black participants were excluded by Whites, the vast majority attributed their exclusion to racism. This attribution, in turn, was associated with lower levels of feelings of belonging, control, and self-esteem (Goodwin et al., 2010), and feelings of anger and heightened substance use cognitions (Stock et al., 2011). Compared to designs in which participants are asked to write about any discriminatory experience, these designs control for individual differences in the type of situation imagined by having all participants experience the same form of discrimination. Using the framework of the prototype/willingness model and social exclusion theory, we focused on willingness to engage in risk behaviors. We hypothesized that participants who were excluded by Whites would attribute their exclusion to discrimination and, in turn, report greater willingness (substance use and risky sex), compared to those who were not excluded.

### Method

#### Participants

Participants were recruited through advertisements around the Washington, DC metro area; they were told the study concerned the relations among health, emotions, and the social environment. Participants were 110 unmarried adults (57 females;  $M$  age = 22.1,  $SD$  = 2.1; 95% heterosexual) who met the criteria for participation (African American/Black, ages 18 to 25).

### Procedure

Participants played a version of Cyberball (Stock et al., 2011). They were led to believe that the other “players” were three White same-sex 18–25 year-olds. This was done by showing them bogus photos of the players while they were playing; they were also told the other players could see their photo. Participants were randomly assigned to the exclusion or inclusion conditions. In the exclusion condition ( $n = 52$ ), participants received the ball three times and then were excluded for the rest of the game. In the inclusion condition ( $n = 58$ ), the participant and each “player” received the ball 25% of the time. After the game, mood and manipulation checks were assessed, followed by measures of willingness to use substances and to engage in risky sex. Finally, participants were asked about their past substance use and sexual behaviors, debriefed, and paid \$40 for their time.

### Measures

**Manipulation checks.** Two items comprised the *belonging* manipulation check: How much participants felt they belonged to the group and how included they were (7-point scales; 7 = *stronger agreement*;  $r = .79$ ). Feelings of *perceived discrimination* were assessed with two items: “To what extent do you feel . . . your inclusion or exclusion was due to your race?” and “. . . you were being discriminated against based on your race?” (1 = *not at all* to 7 = *very much*;  $r = .85$ ).

**Substance use willingness.** The drug willingness section began with a hypothetical scenario: “Suppose you were at a friend’s apartment and there were some drugs there that you could have if you wanted . . . How willing would you be to 1) try some of the drugs? 2) use enough to get high? 3) buy some to use later?” The alcohol scenario began: “Suppose you are at a party. After several drinks, you begin to feel you have had enough. How willing would you be to stay and 1) have a few more drinks? 2) continue to drink more than a few drinks?” All five items were accompanied by a 7-point scale from *not at all* to *very* (e.g., Gibbons et al., 2004), which were averaged ( $\alpha = .85$ ).

**Risky sex willingness.** The risky sex scenario began: “Assume you are not seriously dating anyone. Suppose you were at a party and met a man/woman for the first time. You think that he or she is very attractive (the feeling is mutual). At the end of the evening, you go to his or her apartment. You’re feeling as if you might like to have sex with him/her and he or she feels the same way. Neither of you has a contraceptive (e.g., condom) of any kind. How willing would you be to . . . 1) have sex? 2) have sex but use the withdrawal method (withdrawing the man’s penis before ejaculation occurs)?” Participants were also asked willingness to “have sex with a casual partner . . . 1) without a condom 2) after using substances.” The four items were accompanied by 7-point scales, from *not at all* to *very*, which were averaged (Thornton, Gibbons, & Gerrard, 2002;  $\alpha = .74$ ).

### Control Variables

**Substance use.** Participants were asked how often they had consumed >4–5 alcoholic drinks at one time; and used marijuana, crack or cocaine, and other illegal drugs, in the past year (1 = *never* to 7 = *more than 8 times*). The four items were averaged ( $\alpha = .81$ ; Gibbons et al., 2012).

**Sexual behavior.** Two open-ended questions assessed sexual behavior: “How many [steady and casual] sex partners have you had in your lifetime?” (averaged, log transformed, and standardized). Condom use was assessed with two items: “How often have you used a condom in these steady [casual] relationships?” followed by a 7-point scale (1 = *never*; 4 = *about 50% of the time*; 7 = *all the time*, reverse coded, averaged, and standardized). Risk behavior was computed by multiplying total number of partners by condom use (e.g., Gerrard & Warner, 1994; Wu et al., 2005).

All analyses also controlled for gender relationship status, and education level.

**Results**

**Descriptive Statistics, Correlations, and Manipulation Checks**

Table 1 presents the means, *SDs*, and zero-order correlations for all variables. Seventy-six percent of the participants reported drinking more than 4–5 drinks in one sitting; 56% reported using marijuana; 17% reported using at least one other drug. Participants reported an average of seven sexual partners; level of condom use was a 5 on the 7-point scale. GLM ANCOVAs (controlling for all covariates) revealed that participants who were excluded reported less belonging ( $F(1, 109) = 88.53, p < .001, d = 1.92; Ms = 1.8$  vs. 4.2); and greater perceived discrimination ( $F(1, 109) = 18.95, p < .001, d = .80; Ms = 4.0$  vs. 2.4) than did participants who were included.

**ANCOVAs**

**Substance abuse willingness.** Past use was the only significant covariate of substance use willingness,  $F(1, 109) = 98.76, p < .001$ . As anticipated, participants in the exclusion condition reported higher willingness to engage in substance use compared to those in the inclusion condition ( $F(1, 109) = 8.06, p = .005, d = .57; Ms = 3.28$  vs. 2.82).

**Risky sex willingness.** Risky sex willingness was associated with higher levels of past risky sex,  $F(1, 108) = 13.17, p < .001$ , and being male,  $F(1, 108) = 26.34, p < .001$ . Most important, as hypothesized, excluded participants reported higher levels of risky sex willingness, controlling for previous risky sex behavior ( $F(1, 108) = 7.46, p < .01, d = .60; Ms = 2.67$  vs. 2.10)<sup>2</sup>.

We also examined potential gender × condition interactions for the above ANCOVAs; these were not significant.

Table 1  
Means, Standard Deviations, and Correlations (Study 2)

	1	2	3	4	5	6	7	8
1. Exclusion condition								
2. Belonging	-.66***							
3. Perceived discrimination	.38***	-.61***						
4. Past substance use	.12	-.06	-.07					
5. Past sexual behavior	-.04	.02	-.03	.20*				
6. Substance willingness	.24*	-.18	.18*	.69***	.06			
7. Risky sex willingness	.19*	-.11	.22*	.35***	-.05	.33***		
8. Gender	-.07	-.05	.04	-.09	-.34**	-.12	-.41***	
Mean		3.08	3.36	2.90	.01	3.02	2.50	—
SD		1.67	2.02	1.54	2.01	1.41	1.30	—

Note. *N* = 110. Exclusion condition = (0 = included, 1 = excluded). Gender (0 = male, 1 = female). All other variables coded such that high scores indicate more of the construct.  
\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

**Mediation**

To examine whether substance-use willingness mediated the impact of racial exclusion on risky sex willingness, a bootstrap test of mediation (Preacher & Hayes, 2004) was conducted. The results for substance use willingness as a mediator indicated that the bias-corrected 95% confidence interval (CI) did not contain zero (.02, .37). However, risky sex willingness was not a mediator of the discrimination to use willingness relation (CI: -.04, .11). Thus, as predicted, the relation between exclusion and risky sex willingness was mediated by (increased) willingness to use substances. In contrast, risky sex willingness did not mediate the effect of discrimination on substance use willingness.

**Perceived Discrimination**

Because exclusion was associated with perceptions of discrimination, regression analyses were conducted that substituted perceived discrimination for condition, controlling for the same covariates. The main effect of discrimination was significant for substance use and risky sex willingness ( $\beta s = .15, .20; ps < .03$ ), and revealed the same patterns as above. Although exclusion was also associated with lower belonging, when condition was replaced with belonging in the regressions, belonging did not predict risk cognitions (*ps* > .10).

**Discussion**

Study 2 is the first to examine the effects of race-based social exclusion on HIV-risk cognitions, including risky sex cognitions. Exclusion predicted higher levels of willingness to use substances and engage in casual, unprotected sex, controlling for past risk behaviors. These effects were the same when condition was replaced with perceived discrimination, but not when replaced with feelings of belonging, suggesting that perceptions of discrimination have more of an impact on risk willingness than feeling that one did not belong. Additionally, as in Study 1, although risky sex and substance use willingness were related, mediation analyses indicated that use cognitions mediated the impact of discrimination on willingness to engage in risky sex.

**General Discussion**

The current studies provide support for our hypotheses using prospective and experimental designs; self-reported and manipu-

lated discrimination are associated with HIV-risk cognitions and both risky sex and substance use. In addition, our results demonstrate behavioral mediation; substance use mediates the impact of discrimination on risky sex. These behaviors are highly related and associated with an increased risk for HIV infection, making them important to include in research designed to understand the impact of social factors on HIV-risk cognitions and behaviors.

### Risk Cognitions, Prototype/Willingness Model

To examine how social, affective, and cognitive factors influence the association between discrimination and health behavior, our experimental and prospective studies have drawn upon the prototype/willingness model (Gibbons et al., 2003). These studies have demonstrated that perceived, imagined, and actual discrimination experiences in the lab are associated with increases in risk cognitions (e.g., willingness to engage in risky behaviors; Gibbons et al., 2010; Stock et al., 2012), which in turn, predict engaging in the behaviors (Gerrard et al., 2008; Gibbons et al., 2004; 2010). Discrimination is also associated with heightened perceived norms for peer deviant behaviors, which also predict higher levels of substance use and risky sex behaviors (Gibbons et al., 2004; Roberts et al., 2012). Future research should explore this association between discrimination and other aspects of the prototype/willingness model that are influenced by social factors, including risk perceptions<sup>2</sup> and risk images.

### Social Exclusion

Previous research on social exclusion and rejection has focused primarily on their psychological effects (Williams, 2007). The current results show that race-based social exclusion (via Cyberball) may also affect physical health. It is likely that our participants perceived their exclusion to be unfair as there was no explicit reason for it, and perceived unfairness due to rejection is associated with anger and antisocial responses (Smart Richman & Leary, 2009). Current research by Stock and colleagues (2011) indicates that the increase in HIV-risk cognitions due to exclusion via Cyberball is stronger when Blacks are excluded by Whites than by other Blacks. In addition, when reports of general peer rejection were controlled statistically in Study 1, the impact of discrimination on HIV-risk behaviors did not change. In short, our findings suggest that racial exclusion, and resulting perceptions of discrimination, can have negative effects on the physical, and not just psychological, well-being of young adults.

### Why Is Discrimination Associated With Risky Health?

There are several potential psychological and individual-difference factors suggested by previous research that may help explain the association between discrimination and HIV-risk cognitions and behaviors. Space limitations preclude a full discussion of these factors; we will mention a few, briefly. Several studies have examined affective reactions and reduced self-control as possible mediators of discrimination effects on risky behavior. For example, among Black adolescents, discrimination predicted feelings of hostility/anger, and in turn, increases in substance use (Gibbons et al., 2010) and risky sex (Roberts et al., 2012). In the lab, Stock and colleagues (2011) found that racial exclusion via

Cyberball increased anger, which in turn, predicted substance use cognitions. Additionally, anger is correlated with unprotected sex, multiple sex partners, and sex under the influence of substances (Schroder & Carey, 2005), most likely because both sex and substance use can reduce anger (Aklin, Moolchan, Luckenbaugh, & Ernst, 2009; Schroder, & Carey, 2005). In addition, anger disrupts rational health-related decision making (Schroder, & Carey, 2005), which is linked with willingness and riskier behavior (Gibbons et al., 2003; Reyna & Farley, 2006). An additional individual-level factor that should be examined is self-control/self-regulation. Both exclusion and discrimination are associated with lower levels of self-control (e.g., Gibbons et al., 2012; Richeson, & Trawalter, 2005; Smart Richman & Leary, 2009), which leads to more risky decision making—including willingness to use substances and engage in risky sex (Gibbons et al., 2012; Quinn & Fromme, 2010).

Previous research on the effects of discrimination suggests future research should also examine the roles that physiological stress (Pascoe & Smart Richman, 2009; Wong, Kipke, Weiss, & McDavitt, 2010), feelings of hopelessness/reduced control (Bolland, 2003; Jang, Chiriboga, & Small, 2008), and coping strategies (e.g., substance-use-as-coping, Gerrard, Stock, Roberts, Gibbons, & O'Hara, 2012) play as moderators in the relation between discrimination and HIV risk. It is also important to further understand how additional environmental/social contexts such as racial segregation, poverty, and unemployment interact with individual differences in understanding the impact of discrimination on health. We believe these questions and issues are best addressed with studies that use both experimental and prospective data.

### Intervention Implications

These findings illustrate the potential of preventive interventions that address both substance use and risky sex behaviors in reducing HIV risk. This is of particular importance among Black young adults, for whom the incidence of HIV/AIDS is 14 times higher than it is for other racial groups within the U.S. (CDC, 2011). Our mediation results suggest that interventions should emphasize the effects of substance use on sexual risk taking in response to stressful (e.g., discriminatory) experiences. In addition to the factors mentioned above, parenting that involves communication, warmth, and discipline (Gibbons et al., 2010) and racial identity and socialization (Brondolo, ver Halen, Pencille, Beatty, & Contrada, 2009; Stock et al., 2011), may help buffer the negative effects of discrimination and racial exclusion on HIV-risk cognitions and behaviors. More generally, these findings highlight the importance of ethnic-based approaches to minority HIV prevention. An example is the Strong African American Families

<sup>2</sup> Participants in Study 2 were also asked about their perceived risk for HIV, worry about getting HIV, and perceptions of danger due to sex after using substances (these items were combined into a perceived HIV risk index). Participants in the exclusion condition reported lower perceived HIV risk compared to those in the inclusion condition ( $F(1, 109) = 6.70, p = .01, d = .59; Ms = 2.20$  vs.  $2.65$ ). Bootstrap mediation revealed that perceived HIV risk also mediated the association between racial exclusion and risky sex willingness (CI: .01, .29). However, we don't know for sure if reduced perceived HIV risk led to higher willingness or was a result of it. This important relation should be examined in future research.

Program, a prevention program for Black adolescents that addresses issues associated with race, and decreases substance use willingness and use (Brody et al., 2004; Gerrard et al., 2006). Programs should address discrimination (along with stressors) and how to cope with these experiences. By considering the interrelated nature of substance use and risky sex as risk factors for HIV and the impact of discrimination on the psychological and physical health of vulnerable minority populations, future research and interventions in this area may help reduce HIV-related disparities.

### Limitations

There are several limitations of the current studies that should be acknowledged. First, Study 1 measures of substance use (past year) did not directly correspond to the time frame in the sexual behavior items. In addition, the reliabilities for a few of the constructs were low. Finally, although we accounted for several covariates in both studies, there are other situational and affective factors (e.g., type of relationship, perceived control) that can play a role in the choices an individual makes regarding risky sex behaviors; future research should examine these factors.

### Conclusion

These results demonstrate the long-term (cumulative), as well as the immediate, effects that perceived discrimination can have on the HIV-risk cognitions and behaviors of Black young adults. In so doing, they provide additional evidence of the important role of discrimination in health disparities that exist in the U.S. today. In addition, this research demonstrates the utility of social-psychological models such as the prototype/willingness model and social exclusion in examining the effects of social and cognitive factors on health-risk behavior.

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Received June 3, 2011

Revision received November 21, 2011

Accepted November 21, 2011 ■