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Interactive Effects of Discrimination and Racial Identity on Alcohol-Related Thoughts and Use

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The interrelationships among racial discrimination, non race-based rejection, racial identity (RI), and alcohol cognitions and use were assessed in this research. In Study 1, individuals who experienced overt discrimination and who were high in RI were less likely than those low in RI to meet criteria for alcohol abuse disorder. In Study 2, discrimination and rejection were causally related to a faster reaction time in a lexical decision task to alcohol-related concepts as compared to neutral words, especially for those low in RI. Implications of discrimination and rejection on substance use and other risky health behaviors are discussed.

Perceived discrimination has emerged as an important risk factor for disease, as evidenced by a recent comprehensive meta-analysis finding robust support for associations between discrimination and multiple mental and physical health outcomes (Pascoe & Richman, 2009). One pathway by which discrimination exerts its effects is through the enactment of unhealthy behaviors, such as smoking, poor eating habits, and alcohol use and abuse, thereby increasing vulnerability to associated negative health outcomes (Jackson, Knight, & Rafferty, 2010). Evidence suggests that following discriminatory experiences, people have a heightened tendency to engage in such behaviors, which then compromise health over time. Furthermore, among racial minorities, these effects may be particularly strong for individuals who do not have a strong sense of racial identity (RI; e.g., Caldwell, Sellers, Bernat, & Zimmerman, 2004).

Although the accumulated evidence points to an association between discrimination and unhealthy behaviors, the evidence specific to alcohol use, and potential vulnerability to use, is limited (Pascoe & Richman, 2009). Furthermore, few previous studies have considered the important role of RI as a protective factor against use (although note Stock, Gibbons, Walsh, & Gerrard, 2011). The aims of the present study were twofold. We first sought to examine, in a national sample, the strength of evidence for the association between discrimination, RI, and alcohol dependence and abuse, accounting for other life stressors and relevant covariates. The second aim was to examine, in an experimental paradigm, the causal association between an experience of discrimination and vulnerability to alcohol use and the moderator effects of RI. Vulnerability was measured by cognitive accessibility of alcohol-related concepts following the discrimination experience.

Most of the current work attempting to explain the effect of discrimination on alcohol consumption frames drinking in response to discrimination as a conscious coping strategy alleviating the aversive psychological and

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physiological effects of the discriminatory experience (see Brondolo, Brady ver Halen, Pencille, Beatty, & Contrada, 2009, for a review). For example, Yen, Ragland, Greiner, and Fisher (1999), in their study of African American urban transit operators, characterize the positive association between perceived discrimination and alcohol use as an indicator of how drinking may be used as a coping strategy in dealing with work-related problems. Similarly, Borrell et al. (2007) indicated that the association between racial discrimination and substance use (including alcohol) reflects the possibility that substance use may be an unhealthy coping response.

Our predictions are not at odds with this framing of alcohol use as a coping strategy for managing stress. We suggest, however, that research on other rejection-related experiences, such as social exclusion, would predict that these behaviors may reflect broader deficits in self-regulatory capacity that occurs when a sense of acceptance and belonging is threatened (e.g., Twenge, Catanese, & Baumeister, 2002). These disinhibitory processes are considered to be largely nonconscious and automatic. We reasoned that if discrimination or more general rejection experiences activate these processes, then we should be able to detect enhanced cognitive accessibility of alcohol-related thoughts (or “attentional bias”) following these experiences. This is an important step in understanding the automaticity of certain harmful behaviors that occur in response to discrimination and other forms of rejection.

The concept of attentional bias has often been employed in the general study of substance use and addiction (Bauer & Cox, 1998; Cox, Fadardi, & Pothos, 2006; Lubman, Peters, Mogg, Bradley, & Deakin, 2000). According to that body of research, individuals for whom substance cues are more cognitively accessible are more likely to respond to substance-related stimuli in the environment by increased use. In their meta-analytic review of automatic processes in alcohol and smoking behaviors, Cox et al. (2006) noted that decisions about drinking can be highly automatic, with users often being unaware of the factors that influence their decisions. One way to measure mental accessibility of alcohol-related concepts is to present alcohol-related words and neutral words and examine the average difference in latency of response between them, with a lower latency score suggesting greater accessibility. In this way, attentional bias can be examined directly in response to a discriminatory experience.

In considering the role of racial identity in modifying how people respond to discrimination, we were particularly interested in furthering research on the potentially protective effects of racial identity for African Americans and Latinos in the case of substance use. Research on group identification and perceived discrimination finds that individuals with strong racial identification perceive

themselves as more personally vulnerable to discrimination than those with less strong racial identity (e.g., Leach et al., 2008, Sellers & Shelton, 2003), although these individuals may also be more likely to have the requisite historical knowledge to psychologically deflect discriminatory behavior (Cross, 2005). A recent study found that RI was a protective factor against willingness to use substances after imagining or experiencing discrimination via a computer simulation task, suggesting that RI may be a factor that protects against substance use (Stock et al., 2011). Similarly, Black youths who feel more positively about their racial group report less alcohol use (Caldwell et al., 2004), suggesting protective effects for this age group. Hence, an additional aim of this article was to test whether RI mitigates the effect of discrimination on alcohol behaviors and cognitive accessibility. Consistent with this past research, we hypothesized that high racial identity would moderate the impact of discrimination on alcohol, with a relatively lesser risk of alcohol abuse for those reporting high ethnic identity (Study 1) and a slower response time for alcohol-related words (Study 2).

We note that researchers have conceptualized RI as a multidimensional construct with self-identification as a group member along with a sense of belonging and pride in one’s group serving as key aspects of RI (e.g., Leach et al., 2008; Phinney, Cantu, & Kurtz, 1997; Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). In Study 1, identity was assessed by a measure of closeness “in ideas and feelings” to one’s ethnic group, and in Study 2, closeness as well as positive evaluations of one’s group were measured as indices of identity.

PRESENT RESEARCH

We approach these research questions from two methodological perspectives. In Study 1, we examined the strength of evidence for associations between discrimination and alcohol dependence and abuse in a national sample of minority group members, primarily African American, and the interaction of RI and discrimination. We controlled for stressful life events (not including discrimination), chronic family stress, depression, and several other demographic variables that may be associated with alcohol use (i.e., gender, age, race, marital status, education, and income). We hypothesized that perceived discrimination would be associated with alcohol dependence and abuse; however, strong racial identification was expected to mitigate that risk. In Study 2, we examined whether an experimentally induced experience of racial discrimination would lead to attentional bias toward alcohol-related stimuli. We also examined whether discrimination differentially affected the accessibility of alcohol cues for participants who varied in

the strength of their racial identity. We included two comparison groups: a condition in which people experienced nonidentity-based rejection and a neutral control group. Prior theorizing suggests similar underlying processes across rejection-related experiences (Richman & Leary, 2009), so we included this more general form of rejection in order to examine whether the expected attentional bias would occur across both of these conditions.

STUDY 1: EXAMINING DISCRIMINATION, RI, AND SUBSTANCE USE IN A NATIONALLY- REPRESENTATIVE SAMPLE OF AFRICAN AMERICAN AND LATINO ADULTS

Method

Participants and Procedure

This study analyzed data from the NIMH Collaborative Psychiatric Epidemiology Surveys (CPES), which was an epidemiologic survey study conducted from early 2000 through the end of 2003 by the Survey Research Center of the Institute for Social Research at the University of Michigan (see Pennell et al., 2004, for study details). The CPES represents three nationally representative mental health surveys conducted in tandem and primarily focused on minority group mental health; these are the National Comorbidity Survey Replication (Kessler et al., 2004), the National Survey of American Life (Jackson et al., 2004), and the National Latino and Asian American Study (Alégria et al., 2004).

Pennell et al. (2004) provided a detailed description of the complex survey response methodology employed to maximize respondent participation and minimize participant burden and study costs. In brief, many participants completed only specific subsets of the study measures, depending on which of the three CPES studies they were enrolled in, their racial/ethnic background, and whether they were offered an abbreviated survey. Consequently, of the 20,013 respondents in the publically available CPES data set, approximately 47% ($n = 9,349$) did not complete the discrimination measures. Of the 10,664 participants who completed discrimination measures, about 55% ($n = 5,828$), did not complete one or more of the alcohol abuse/dependence, identity, or demographic measures included in the final models. Thus, 24% ($n = 4,836$) of the original sample, which included only African Americans and Latinos, possessed the requisite data for the analyses outlined herein.

Of the participants included in these analyses, 96% identified as African American ($n = 4,663$), with the remainder identifying as Latino ($n = 173$). Sixty-three percent of the participants were female ($n = 3,050$), and on average, participants were 42 years old ($SD = 16.0$).

TABLE 1
Sample Characteristics for Study 1

<i>Sample Characteristics</i>	<i>%</i>	
Male	36.9	
<i>DSM-IV</i> depressive episode in the last 12 months	11.7	
High school diploma or greater	76.7	
Prevalence of major depressive episode in the past 12 months by education		
Less than high school	7.9	
High school diploma	5.8	
Some college	5.9	
College degree	5.1	
	<i>M</i>	<i>SD</i>
Age	42.0	
Chronic family stress	5.58	2.3
Life stress in the past 30 days	1.58	1.52
Income	\$34,800	\$30,844

Note. Possible range for chronic family stress is 0–12 and for life stress is 0–10. $N = 4,780$. *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).

Average income was \$35,000 ($SD = \$31,000$). See Table 1 for a full list of sample characteristics.

Measures

All three of the surveys utilized a modified version of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI), which is a standardized psychiatric diagnostic interview developed for administration by lay interviewers; the measures underwent rigorous validation before study deployment, and previous validity studies suggested that there is a significant correlation between these measures and diagnoses made by clinicians who reinterviewed a sample of respondents (Kessler & Üstün, 2004; Wittchen, 1994).

Alcohol outcomes. The outcomes of interest, alcohol abuse and dependence in the past 12 months, were assessed using the WMH-CIDI. The alcohol measures focus on a range of issues including frequency of drinking episodes, amount of alcohol typically consumed in an episode, level of physiological impairment resulting from drinking, interpersonal issues resulting from drinking, and physiological dependence (see World Health Organization, 2008, for the complete list of measures). A standard part of WMH-CIDI scoring includes computation of mental health diagnoses, which in this case was performed by the CPES researchers. A diagnosis of alcohol dependence was derived from the items assessing tolerance, withdrawal, persistent use, and reduction of other activities due to alcohol use. In contrast, a diagnosis of alcohol abuse was characterized by recurrent use resulting in a failure to fulfill major obligations, use when it is physically hazardous (e.g., while driving a car),

recurrent legal issues caused by use, and continued use despite persistent issues caused by use.

Perceived discrimination. Discrimination was assessed using the Everyday Discrimination Scale (Williams, Yu, Jackson, & Anderson, 1997). This scale comprises nine items designed to tap the more ubiquitous forms of interpersonal discrimination, especially for ethnic and racial minorities. Each of the items was measured using a 6-point Likert scale ranging from 1 (*almost every day*) to 6 (*never*).

Racial identity. RI was assessed using the following measure: “How close do you feel in your ideas and feelings about things to _____ people in this country?” The phrase “Black” was used for African American respondents and “Spanish-speaking groups in this country like Puerto Ricans, Cubans or Mexican-Americans” for Latinos. A 4-point Likert response scale was utilized, labeled with the descriptors *very close*, *fairly close*, *not too close*, and *not close at all*. This item is similar to Phinney’s (1992) Multigroup Ethnic Identity Measure, which asks for people to self-identify their racial/ethnic group and then asks a brief series of 4-point Likert questions regarding their perceived sense of ethnic closeness and pride.

Depression was a relevant covariate given its association with both discrimination and alcohol abuse (Grant et al., 2004). Depression was assessed using the WMH-CIDI and was coded as present if an individual was deemed to have experienced a major depressive episode in the past 12 months (see World Health Organization, 2007, for the complete list of measures). Two different measures of life stress were also included as covariates in the models in order to distinguish discrimination from other forms of stress. Short-term stress (occurring in the past 30 days) was a composite score comprising 10 items regarding the frequency of problems in domains such as health, money, and parenting, and was coded as present or not for each domain. The range in possible values was from 0 to 10 ($M = 1.5$, $SD = 1.5$). Chronic family stress was assessed with three items that measured the frequency of family members making too many demands, criticizing, and taking advantage. Each of the items was measured using a scale from 1 (*never*) to 4 (*very often*). The composite chronic family stress scores ranged from 3 to 12 ($M = 5.5$, $SD = 2.3$). Marital status was coded as either present (married) or absent (unmarried or divorce). Age was a continuous variable indicating year rounded to the most recent birthday. Education was an ordered categorical variable with 0 indicating less than a high school diploma, 1 indicating attainment of a high school diploma, 2 indicating some postsecondary school education, 3 indicating a high school diploma, and 4 indicating a college degree or higher. Income was a continuous variable with each unit representing \$10,000 in income

Results

For both groups, RI was high (90% of African Americans and 82% of Latinos indicated that they felt “very close” or “fairly close” to their group). The skewed nature of these responses led us to code RI as either high (with a rating of either *very close* or *fairly close* coded as 1) or low (with a rating of either *not too close* or *not at all close* coded as 0) for the subsequent regression analyses. This coding strategy was chosen because from a theoretical standpoint, we were most interested in comparing people who generally do not identify with their racial group with those who do.

Prior studies employing the Everyday Discrimination Scale have decomposed the scale into two 4-item and 5-item subscales (Barnes et al., 2008; Guyll, Matthews, & Bromberger, 2001). However, more recent comprehensive psychometric research on the construct validity of the Everyday Discrimination Scale has noted that the “insulted” and “harassed” items appear to tap an aspect of discrimination that is distinct from the other measures (Stucky et al., 2011). Indeed the item endorsement distributions for these two items are markedly different compared to the others (see Table 2). To determine whether these two measures were phenomenologically different from the other discrimination scale items in this sample, a confirmatory factor analysis on the CPES discrimination items was performed using *Mplus* 5.21 (Muthén & Muthén, 1998–2012). First, a one-factor solution loading all nine items on a single latent factor was computed, correlating the error terms of indicators with the same item stems. Second, a two-factor solution loading Items 1 through 7 on one factor and Items 8 and 9 on a second factor was computed (see the appendix figure). Given the non-normal distributions of the indicator variables, all were treated as ordered categorical. Fit statistics for the one-factor solution indicated a poor fit, $\chi^2(12) = 3505.4$, $p < .0001$; comparative fit index = .94, Tucker–Lewis index = .98, root mean square error of approximation = .17. In contrast, the two-factor solution had good fit, $\chi^2(13) = 1158.2$, $p < .0001$; comparative fit index = .98, Tucker–Lewis index = .99, root mean square error of approximation = .09, and the chi-square difference test indicated that the improvement in model fit from the one-factor to the two-factor solution was significant. Given these results, two separate measures of discrimination (subtle and overt) were created and used in the logistic regression analyses; they were coded as 1 if the events occurred “a few times a year or more” and 0 if “less than once a year” or “never.”

Logistic regression analyses with variables entered sequentially in blocks (see Tabachnick & Fidell, 2007) was used to test the relation between discrimination and alcohol dependence and abuse. First, the two separate measures of discrimination, subtle and overt were

TABLE 2
Everyday Discrimination Scale Item Endorsement

Item No.	Measure	African Americans ^a						Latinos ^b					
		1	2	3	4	5	6	1	2	3	4	5	6
		Almost Every Day	At Least Once a Week	A Few Times a Month	A Few Times a Year	Less Than Once a Year	Never	Almost Every Day	At Least Once a Week	A Few Times a Month	A Few Times a Year	Less Than Once a Year	Never
1	You are treated with less courtesy than other people.	2.9%	5.0%	10.8%	25.6%	33.2%	22.6%	3.5%	7.5%	7.5%	26.0%	27.2%	28.3%
2	You are treated with less respect than other people.	2.3%	4.2%	9.0%	25.0%	33.2%	26.3%	1.7%	5.2%	6.4%	23.7%	31.2%	31.8%
3	You receive poorer service than other people at restaurants or stores.	1.8%	2.4%	8.1%	25.0%	33.4%	29.3%	3.5%	1.2%	6.4%	22.5%	26.0%	40.5%
4	People act as if they think you are not smart .	6.2%	4.9%	9.8%	22.6%	27.8%	28.7%	6.9%	4.6%	9.8%	15.0%	27.2%	36.4%
5	People act as if they are afraid of you.	4.1%	2.8%	6.1%	13.5%	28.3%	45.2%	6.9%	4.6%	6.9%	12.7%	20.8	48.0%
6	People act as if they think you are dishonest .	3.2%	2.0%	5.5%	13.1%	30.8%	45.3%	3.5%	3.5%	6.4%	7.5%	26.6	52.6%
7	People act as if you are not as good as they are.	10.8%	6.1%	12.7%	25.1%	20.5%	24.9%	10.4%	4.6%	12.1%	22.5%	17.9%	32.4%
8	You are called names or insulted .	2.6%	1.8%	3.8%	9.2%	31.3%	51.3%	3.5%	1.2%	2.9%	5.2%	31.2%	56.1%
9	You are threatened or harassed .	0.9%	0.8%	1.8%	5.2%	32.4%	58.9%	0.0%	0.0%	1.7%	4.6	31.2%	62.4%

^aN = 4,663. ^bN = 173.

entered into the model. For alcohol abuse, both overt odds ratio (OR) = 2.10, 95% confidence interval (CI) [1.32, 3.35], and subtle discrimination OR = 1.99, 95% CI [1.03, 3.84], were significantly predictive. For alcohol dependence, overt OR = 2.58, 95% CI [1.37, 4.87], but not subtle discrimination OR = 1.47, 95% CI [0.63, 3.44], was predictive. Second, RI was entered into the model, and for both outcomes the main effect of RI was nonsignificant. Third, the two interaction terms between subtle discrimination and RI and overt discrimination and RI were added. For both abuse and dependence, the interaction between subtle discrimination and RI was nonsignificant. For abuse, the interaction between overt discrimination and RI was marginally significant, OR = 0.17, 95% CI [0.03, 1.07]. For dependence, the interaction between overt discrimination and RI was

significant, OR = 0.07, 95% CI [0.01, 0.97]. The nature of the interaction effect was such that individuals who experienced overt discrimination and who expressed high RI were less likely than those with low RI to meet the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) criteria for both alcohol abuse and dependence. In the case of alcohol dependence, there was a 93% reduction in the odds of diagnosis for the high RI, overt discrimination group, relative to the other groups.

After testing the predictive validity of the discrimination and RI effects, potential covariates of gender, age, and race were next entered into the logistic regression model. For abuse, being male and younger was significantly predictive, OR = 2.36, 95% CI [1.52, 3.69]; OR = 0.99, 95% CI [0.97, 1.00]. For dependence, being

TABLE 3
Study 1 Logistic Regression Results for Past 12 Month Alcohol Abuse and Dependence

	<i>Alcohol Abuse</i>		<i>Alcohol Dependence</i>	
	<i>Main Effects</i>	<i>Multivariate</i>	<i>Main Effects</i>	<i>Multivariate</i>
	<i>OR (95% CI)</i>		<i>OR (95% CI)</i>	
Subtle discrimination	1.98** [1.02, 3.83]	0.55 [0.05, 6.45]	1.48 [0.63, 3.47]	0.23 [0.01, 3.75]
Overt discrimination	2.11*** [1.32, 3.37]	6.53** [1.01, 42.4]	2.53*** [1.34, 4.78]	18.3** [1.22, 275.5]
Ethnic identity	1.00 [0.49, 2.01]	1.64 [0.20, 13.7]	0.65 [0.29, 1.47]	1.41 [0.13, 14.9]
Subtle Discrimination × Ethnic Identity		2.75 [0.21, 35.6]		5.10 [0.28, 94.0]
Overt Discrimination × Ethnic Identity		0.15* [0.02, 1.01]		0.05** [0.003, 0.85]

Note. OR = odds ratio; CI = confidence interval. Multivariate model adjusted for gender, age, race, marital status, education, income, *DSM-IV* depressive episode in the last 12 months, chronic family stress, and life stress in the past 30 days.

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

male was predictive, $OR = 2.15$, 95% CI [1.17, 3.92], but age was not. Race was a nonsignificant predictor for both outcomes such that Latinos were at no greater risk for alcohol abuse or dependence as compared to African Americans. Then, the mental health covariates of depression, short-term stress, and chronic family stress were entered. Depression and short-term stress were both predictive of abuse, $OR = 1.67$, 95% CI [0.97, 2.88]; $OR = 1.41$, 95% CI [1.23, 1.61], and dependence, $OR = 2.47$, 95% CI [1.23, 4.97]; $OR = 1.45$, 95% CI [1.21, 1.73]. Chronic family stress was predictive of abuse, $OR = 1.17$, 95% CI [1.07, 1.28], but not dependence. Finally, the demographic covariates of marital status, education, and income were entered. Marital status was not predictive for either outcome. Educational status was predictive of abuse, $OR = 0.72$, 95% CI [0.55, 0.94], but not dependence. Income level was predictive of both abuse, $OR = 0.86$, 95% CI [0.76, 0.98], and dependence, $OR = 0.73$, 95% CI [0.59, 0.91] with more education and income being associated with lower levels of these behaviors. Table 3 presents the final logistic regression models. It is especially important to note three results within the full models. First, the main effect of subtle discrimination on alcohol abuse became nonsignificant after adding the interaction terms. Second, the effect of overt discrimination on problematic drinking was qualified by a significant interaction between overt discrimination and RI. This interaction was significant for both alcohol abuse, $OR = 0.14$, 95% CI [0.02, 0.96], and dependence, $OR = 0.06$, 95% CI [0.004, 0.91], even after accounting for all of the other effects in the full model. In other words, those individuals who experienced overt discrimination but had high RI were significantly less likely to report alcohol abuse or dependence. Third, Nagelkerke R^2 , which is an approximate measure of variance

explained, was .16 for the alcohol abuse model and .17 for the alcohol dependence model; this indicates that the final model explains a meaningful amount of the variance for both alcohol abuse and alcohol dependence for both racial/ethnic groups.¹

The results from Study 1 suggest that RI is an important buffer of the relationship between discrimination and alcohol consumption. The evidence of this effect, even when controlling for depression, stressful life events, and demographic variables, suggests that discrimination accounts for unique variance in alcohol consumption in African Americans and Latinos and that RI is a protective factor that weakens the influence of experienced discrimination on serious alcohol problems.

STUDY 2: DISCRIMINATION AND COGNITIVE ACCESSIBILITY OF ALCOHOL-RELATED CONCEPTS

Study 2 was designed to examine the causal relationship between experiencing discrimination, RI, and accessibility of alcohol-related concepts. We predicted that discrimination would intensify individuals' attention to alcohol-related stimuli and that RI would moderate that effect such that higher RI would buffer against alcohol accessibility. Because increased accessibility is an important antecedent to deviant substance use, the study was conceived as a way to begin disentangling the implicit cognitive processes that link discrimination and alcohol use, and to examine whether the strength of these links vary depending on levels of RI. The aspects of racial

¹The models are also significant if only African Americans are included in the analyses.

identity that were the focus of the analyses were the ones that have been found to protect against alcohol use: private regard (how close people feel toward their racial group) and centrality (the individual importance and meaning of one's racial group). As a means to examine discrimination as a cause of elevated cognitive accessibility to alcohol cues, we exposed our experimental group to a race-based discriminatory experience and measured whether such exposure had an effect on alcohol accessibility. Also, a rejection condition was included in order to allow us to separate the effects of a stressful event (nonidentity-based rejection) from the specific effects of discrimination. Participants then completed a Lexical Decision Task to measure attentional bias toward alcohol.

Method

Participants and Procedure

Sixty-one African American undergraduate students (29 male, 32 female) from a historically Black university in the South took part in the study in exchange for \$10. Five participants expressed suspicion about the manipulation procedure, and one person did not complete the study. Their data were excluded from further analyses, and the remaining sample included 55 participants (26 male, 29 female; M age = 22.60 years, SD = 6.79 years).

Upon arriving at the study location, participants were greeted by a White female experimenter and seated in a chair in front of a table with a laptop computer on it. The experimenter explained that the study examined people's reaction times to different types of stimuli and that they would be collaborating with a partner. Participants were also told that they would be given an opportunity to exchange some personal information with the prospective partner prior to the start of the task.

At this point, participants were randomly assigned to one of three conditions: In the discrimination condition, participants were asked to complete a demographic questionnaire that included questions about race and race-related attitudes. In the rejection and control conditions, participants were asked to complete a similar questionnaire, but without questions related to race.

Completed questionnaires were then collected by the experimenter and, ostensibly, taken to the other person, who was supposedly waiting in another room and with whom the participant was supposed to work. The participant was asked to wait 5 min while the other person purportedly evaluated them as a potential task collaborator. Participants were also told that, as a part of the study, we were looking at how providing different types of information (i.e., written information vs. visual information) influence the interaction between task partners. Thus, the questionnaire they completed was shown to their task

partner, and they were given a chance to see their task partner's photograph. Participants in the discrimination condition were shown a photo of a White person of the same gender as they were, in order to make it salient that the task partner was of a different race. Participants in the rejection and control condition also saw a photo of their prospective task partner, but in these conditions it was an African American of the same gender.

After 5 min, the experimenter returned and informed participants from the experimental conditions that the other person chose not to work with them and that they had to work alone. Participants in the control condition were told that the other person did not have time to complete the task with them and that they had to work alone. Thus, in the end, all participants performed the task alone.

Participants subsequently completed an adapted Lexical Decision Task (Meyer & Schvaneveld, 1971; Zack, Toneatto, & MacLeod, 1999). The instructions explained that words and nonword letter strings would appear on the screen, and participants were asked to decide as quickly and accurately as possible whether each stimulus was a word. If they thought a particular stimulus was a word, they were to press the Z button, and when they thought it was not a word, they were to press the / button on a computer keyboard. The task began with a 30-item practice trial. During the trial, the experimenter supervised participants to ensure that they understood the instructions and performed the task properly. The stimulus set included 94 alcohol-related words (e.g., *beer*, *wine*, *plastered*, *saloon*), 60 neutral words (e.g., *kitchen*, *lights*), and 120 nonwords. Trials were divided into four blocks, and the order in which stimuli appeared on the screen was randomized.

Following the Lexical Decision Task, participants responded to questions about their racial identity and alcohol use. They were then queried for suspiciousness and attributions about their partner's behavior and were debriefed and compensated.

Measures

Multidimensional Inventory of Black Identity (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). Participants completed a modified version of the Multidimensional Inventory of Black Identity to assess dimensions of identity pertaining to race centrality and private regard. The centrality subscale consisted of eight items measuring the extent to which being African American is central to the respondents' definition of themselves, for example, "In general, being Black is an important part of my self-image." They also responded to six items measuring private regard or the extent to which respondents have positive feelings toward their race in general, for example, "I feel good about Black people." Each of the items was

measured using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), and separate mean scores for each scale were created.

Alcohol use. Participants were asked to indicate their alcohol use. A drinking index was computed by multiplying the number of days during the past month on which participants had an alcoholic drink by the number of drinks that they typically have when they are having alcohol.

Analysis Overview

Twenty-five alcohol-related words were recognized by less than 80% of participants as being alcohol related, so those words were not included in the analyses (e.g., *cider*, *loaded*). The remaining 69 words were classified by two independent raters into three categories: drink related ($n = 18$, e.g., *wine*, *beer*), state related ($n = 10$, e.g., *hangover*, *plastered*), and ambiguous ($n = 41$, e.g., *glass*, *bar*). After removal of outliers (reaction times shorter than 300 ms or longer than 3,000 ms), reaction times were averaged within a stimulus group to obtain an average reaction time in response to alcohol-related words and neutral words for each participant. Reaction times to ambiguous words were not analyzed further because these words could be used in multiple contexts, not all of them alcohol-related. To assess activation of alcohol-related concepts, average reaction time in response to drink-related and state-related words were subtracted from the reaction time in response to neutral words. Thus, higher difference scores indicate more attentional bias toward alcohol drink- and state-related concepts.

Results

To discern whether individuals in the discrimination condition indeed perceived they had been subjected to racial discrimination, we examined responses to a manipulation check asking about possible reasons for why the other person chose not to work with them. Specifically participants were asked, "How much did your race play a role in your partner's decision?" Participants in the discrimination condition attributed the other person's behavior to race more often ($M = 4.76$, $SD = 2.11$ on a scale of 1 to 7 with higher numbers reflecting more race attributions) than participants in the rejection and control conditions ($M = 2.21$, $SD = 1.47$, and $M = 2.21$, $SD = 2.02$, respectively). The differences between groups were significant, $F(2, 52) = 10.864$, $p < .001$, and further contrast analysis revealed that the difference between the discrimination condition and the other two conditions was statistically significant, $t(52) = 4.661$, $p < .001$, whereas the difference between the rejection and control condition was not significant, $t(52) = 0$, $p = 1$. Thus, the experimental

manipulation was successful in making participants in the discrimination condition attribute the rejection they experienced to racial discrimination.

A general linear model was used to assess the effects of the experimental manipulation (discrimination vs. rejection vs. control) and aspects of racial identity on activation of alcohol-drink related concepts, after controlling for typical drinking behavior. A model including experimental condition, private regard, and the interaction term accounted for a significant amount of variance in bias toward alcohol-related concepts ($R^2 = .51$), $F(6, 48) = 2.83$, $p = .02$. Although there was no significant main effect of experimental condition on response latencies to alcohol-drink words, a significant two-way interaction between RI (private regard) and experimental condition was observed, $F(2, 48) = 5.11$, $p = .01$. An examination of this interaction revealed that, among participants with low private regard, discrimination and rejection led to activation of alcohol-drink-related concepts: Participants were faster in responding to alcohol-drink-related words than the control condition. Among participants with high private regard, discrimination and rejection did not lead to activation of alcohol-drink-related concepts, and in fact these participants took longer to recognize alcohol-drink-related words than participants in the control group (see Figure 1). This finding suggests that alcohol-related words are more accessible following discrimination or rejection for those individuals with low private regard. This is consistent with previous research showing that adolescents with higher private regard reported less alcohol use than adolescents with low private regard (Caldwell et al., 2004). Racial centrality was not a significant predictor of the response latencies and did not moderate the effects of the manipulation.

There were no significant differences for alcohol state-related words. The lack of effect for this word type is

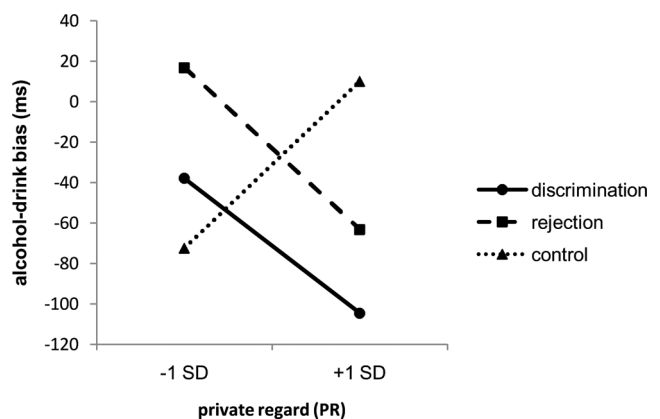


FIGURE 1 The relation between private regard (PR) and reaction time (RT) difference scores (RT to drink-related words subtracted from RT to neutral words) by experimental condition, controlling for drinking behavior (Study 2).

perhaps not surprising because, unlike the drink-related words that reflect types of drinks that people may be inclined to consume, the state-related words instead are descriptions of states of intoxication, which people may want to avoid thinking about. These results suggest that although alcohol consumption has previously been viewed as a conscious coping mechanism in response to discrimination, the accessibility of alcohol-related thoughts may be an automatic, nonconscious process. The similar effects for discrimination and rejection suggest that a strong racial identity may be a buffer against different threats to belonging.

Discussion

The results from these two studies provide evidence for the relationship between discrimination and alcohol accessibility and use. In Study 1, experiences of overt discrimination significantly increased the risk of meeting *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) criteria for alcohol abuse and dependence in a nationally representative sample of middle-aged Black and Latino respondents. In addition, there was an interaction between overt discrimination and RI, such that individuals who experienced overt discrimination and reported strong RI were significantly less likely to report alcohol abuse than those who felt little or no identification with their racial group. Furthermore, we found that the relation between discrimination and alcohol abuse remained even after accounting for other sources of stress and other covariates that could also explain the effect. Our experimental study with a sample of Black college students with no evidence of actual deviant alcohol use suggests that when racial discrimination or more general rejection is experienced and RI is low, thoughts associated with alcohol are primed.

Prior work has considered engagement in risky health behaviors such as overeating, smoking, and substance use in response to stressful events as evidence of avoidant coping strategies. However, the juxtaposition of the results of these two studies suggests that drinking (and perhaps other risky health behaviors) may have its initial roots in an automatic process that begins with increased cognitive activation of these thoughts. Although our studies do not provide evidence directly linking mental accessibility of alcohol to drinking behavior, investigators of patterns of substance use have shown that heavy substance users and individuals addicted to substances are automatically drawn toward substance-related stimuli (Ehrman et al., 2002; Lubman et al., 2000; Waters et al., 2003). Waters and his colleagues (2003) outlined potential mechanisms that may explain the impact of attentional bias for smoking on smoking behavior, and these mechanisms are also applicable to drinking. For example, attentional bias for drinking may increase awareness of

alcohol-related stimuli in the environment. Increased attentional bias toward alcohol is associated with an increase in the urge to drink and an increase in the amount of alcohol consumed (Field & Eastwood, 2005). The factors that may influence the timing of the impact of attentional bias on subsequent drinking behavior demonstrated in Study 2 are an important area of future research. In a related vein, whether experiences of discrimination have a cumulative impact on both cognitive accessibility and then subsequent alcohol abuse requires examination in a temporal context.

Extrapolating from the results of the current research, the more overt, acute types of discriminatory experiences were related to deviant alcohol use in Study 1. In Study 2, the cognitive accessibility of alcohol-related thoughts occurred in response to a relatively subtle form of discrimination (i.e., they clearly felt discriminated against, but they were not insulted or harassed) as well as rejection more generally. The similarity in effects for the discrimination and rejection conditions is consistent with theorizing by Mays, Cochran, and Barnes (2007) and Richman and Leary (2009), who suggested that these experiences may activate similar cognitive appraisal processes and subsequent effects on self-regulation. The combined implication of the two studies is that episodic experiences of discrimination and rejection have an impact on the attentional system, whereas cumulative experiences of discrimination over the life course may transform attentional biases into behavioral preferences and thus the deviant use of alcohol.

RI is an important moderating factor in the association between perceived discrimination and negative behavioral and health outcomes. Our findings were consistent with previous research finding protective effects of the private regard dimension of RI on alcohol use (Caldwell et al., 2004). Being strongly and positively identified with one's racial group provides resources such as social support and collective self-esteem, which may be valuable in dealing with the consequences of experiencing discrimination. Study 2 also suggests that a strong racial identity buffers the impact of rejection-related experiences more broadly and may protect against the automatic activation of alcohol-related thoughts.

Some limitations of this research should be noted. The measures of identity and discrimination were different across both studies. The measure of RI from Study 1 was based on a one-item measure that assessed felt closeness to other Latinos and Blacks in the United States (see Cohen & Garcia, 2005, for a discussion of the validity of one-item identity measures), whereas in Study 2, RI was assessed with two scales assessing race centrality and private regard. Although these measures were measuring different aspects of identity, it is noteworthy that they yielded similar effects across both studies. These results suggest that future research in this area would greatly benefit from

an examination of which subcomponents identity are most relevant to protecting against the negative effect of discrimination on alcohol accessibility and use. Also, although past research has found connections between attentional bias and behavior (e.g., Lubman et al., 2000), we are not able to determine in this research whether bias toward alcohol-related words in response to discrimination would be related to frequency of alcohol use.

Finally, the samples in this study each had some distinct characteristics. In Study 1 we analyzed data from a large national sample of primarily African American adults. We felt it important to include the same subsample of Latinos in the analyses; however, their small number made it impossible to examine any differences between the two racial groups (although it should be noted that there was not a main effect for race). In contrast, Study 2 was an experimental study with a Historically Black College and University (HBCU) convenience sample of African American students. Although research with students from HBCUs is not new, there is a surprising paucity of data examining how students at these institutions may differ from minority students at primarily White institutions or from minority group members in general. Freeman and Thomas (2002) identified a number of possible differences, including financial concerns, family members who have attended a HBCU, and a desire to reconnect with one's racial/ethnic cultural heritage. The data are limited, however, and are confounded by differing periods of study, methodology, and specific characteristics of various HBCUs. Given these considerations, we consider it a strength of the current research that the same pattern of results was found across different samples and methodologies. Future research would greatly benefit from exploration of these relations with other minority group populations.

The ways in which discrimination leads to compromised self-regulation is just beginning to be explored. Our research suggests that following discrimination and rejection experiences more generally, people may be primed for alcohol-related cognitions. The increased accessibility of alcohol-related concepts may, in turn, lead people to drink excessively, causing health and social problems (Field & Eastwood, 2005). Future research is needed to examine the extent to which such priming may disinhibit behavior and increase the likelihood that someone may stop for a drink or two when they see a beer logo at the entrance to a bar or may be more responsive to alcohol advertising. Furthermore, it is important for researchers to determine whether discrimination-induced, heightened responsiveness to alcohol cues is a step along a pathway leading to chronic alcohol abuse and dependence. It is plausible that experiences of racial discrimination initially increase the psychological appeal and accessibility of alcohol stimuli and other palliative substance cues, and after cumulative experiences of discrimination, this accessibility progresses

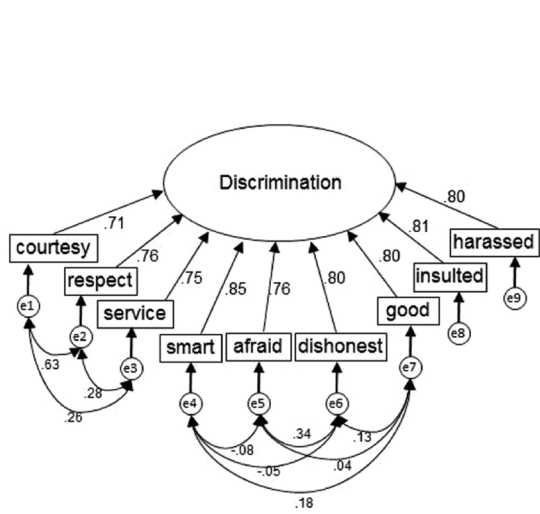
into increased use. The manner in which racial identity may "interrupt" this sequence would be an important subject for subsequent research and for the development of prevention approaches for minority youth.

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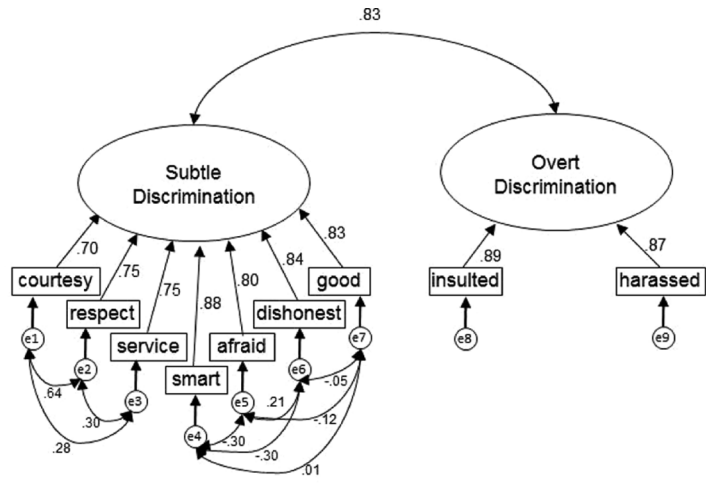
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APPENDIX
 CONFIRMATORY FACTOR ANALYSES RESULTS
 FOR THE EVERYDAY DISCRIMINATION SCALE



$\chi^2(12)=3505.4, p<.0001; CFI=.94; TLI=.98; RMSEA=.17$



$\chi^2(13)=1158.2, p<.0001; CFI=.98; TLI=.99; RMSEA=.09$