HHS Public Access

Author manuscript

Psychol Addict Behav. Author manuscript; available in PMC 2022 May 01.

Published in final edited form as:

Psychol Addict Behav. 2021 May ; 35(3): 283–294. doi:10.1037/adb0000707.

Vicarious Racial Discrimination, Racial Identity, and Alcohol-Related Outcomes among Black Young Adults: An Experimental Approach

Jessica M. Desalu, **Patricia A. Goodhines**, **Aesoon Park**

Syracuse University

Abstract

Objective: Racial discrimination is a known risk factor for alcohol-related outcomes among young Black American adults. However, *vicarious* racial discrimination's associations with alcohol-related outcomes, and the role of racial identity in these associations remain unknown. This within-subject experiment study tested whether associations of vicarious racial discrimination with alcohol craving and attentional bias differed by three components of racial identity (centrality, private regard, and public regard).

Method: Black young adult, at-risk drinkers (N=51; M_{age}=21 [SD=3.02]; 60% female) completed two vicarious racial discrimination conditions (manipulated by video) followed by alcohol craving and attentional bias tasks.

Results: Associations of vicarious discrimination with alcohol craving were exacerbated by high centrality and buffered by high private regard, but did not differ by public regard. No associations of vicarious discrimination with alcohol attention bias were found.

Conclusion: Findings highlight the important role of Black racial identity in within-group differences in the impact of vicarious racial discrimination on select implicit indicators of alcohol risk among Black young adults.

Keywords

vicarious racial discrimination; alcohol craving; alcohol attentional bias; Black young adults; racial identity

Young adulthood is a period of high-risk alcohol use and associated consequences among Black individuals in the U.S. Prevalence rates of past-year alcohol use among Black Americans drastically increase from 15% at ages 12 to 17 to 62% at ages 18 to 25 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2019). Although other racial groups on average "mature out" of binge drinking (defined as consuming five or more drinks for males and four or more drinks for females on the same occasion in the past month) during the transition to adulthood (35% to 25%), Black young adults tend to sustain

Correspondence concerning this article should be addressed to Aesoon Park, Department of Psychology, Syracuse University, Syracuse, NY 13244. aepark@syr.edu. Telephone: (315) 443-2391. Fax: (315) 443-4085.

Jessica M. Desalu, Patricia A. Goodhines, and Aesoon Park, Department of Psychology, Syracuse University, Syracuse, NY 13244.

Conflict of Interest: The authors declare that they have no conflict of interest.

or even increase binge drinking (23% to 28%; SAMHSA, 2019). Further, Black individuals experience substantial negative drinking consequences (for example, see Desalu et al., 2019), potentially at even greater rates than racial counterparts (for a review, see Zapolski et al., 2014; Zemore et al., 2016), despite equivalent or lower levels of alcohol use (SAMHSA, 2020). Thus, although Black Americans drink less than other racial groups on average, their drinking accelerates faster, is more stable across adulthood, and results in greater negative consequences. Continued research is needed to identify racially-relevant risk and protective factors for alcohol use and associated problems among Black young adults.

Racial Discrimination and Alcohol Behaviors

Racial discrimination has been identified as an important risk factor for alcohol use among Black Americans (Clark, Anderson, Clark, & Williams, 1999; Harrell, 2002). Racial discrimination is defined as perceived and/or internalized beliefs, attitudes, institutional arrangements, and acts that denigrate individuals because of their race (Clark et al., 1999). Theoretical models (e.g., the "Multidimensional Conceptualization of Racism-Related Stress" framework [Harrell, 2002]) suggests that the experience of discrimination results in heightened stress responses and depleted coping resources, thus increasing engagement in maladaptive coping behaviors such as problematic alcohol use. Although research has begun providing empirical support for this tenet of the Racism-Related Stress model (see reviews by Pieterse, Todd, Neville, & Carter, 2012; Desalu et al., 2017), additional research is needed to close the existing gaps in the discrimination-alcohol literature.

Several gaps remain in the literature on racial discrimination and alcohol use among Black individuals. First, studies investigating variability within Black individuals (versus comparisons across racial groups) are relatively lacking. Most empirical research to date has focused on racial disparities (e.g., Borrell et al., 2013; Zemore, Karriker-Jaffe, Keithly, & Mulia, 2011), which is incapable to elucidate within-group variability and identify subgroups of Black individuals at risk for alcohol use and consequences (Zapolski et al., 2013). Second, the literature heavily relies on observational studies (which preclude assessment of causal relationships) and self-report assessments (which may be subject to recall bias [Davis, Thake, & Vilhena, 2010] and/or cultural alcohol-related stigma among Black individuals [Zapolski et al., 2013]). Experimental studies using intermediate phenotypes such as alcohol attentional bias and subjective alcohol craving may overcome issues of recall and self-report biases. Alcohol attentional bias and subjective alcohol craving consistently have been shown to correlate with actual alcohol use behaviors among racially diverse samples (e.g., Dennhardt & Murphy, 2011). Finally, most studies assessing discrimination-alcohol associations within Black samples have specifically investigated personal perceived accounts of racial discrimination (apart from one study that assessed internalized racism; for a review, see Desalu, Goodhines, & Park, 2019). To better illuminate the relationship between discrimination and alcohol use, the various ways in which racial discrimination is experienced must be accounted for. To date, no experimental studies have examined the impact of *vicarious* racial discrimination on alcohol outcomes.

Vicarious Racial Discrimination among Black Americans

Racism exerts its influence not only through direct personal experience but also vicariously through first-hand accounts or narrative reports (e.g., via conversations, social media, news coverage, etc.) of others' experiences with racism; this is known as *vicarious racial discrimination* (Harrell, 2002). Unjust racial treatment is not a new phenomenon in the Black community; however, discriminatory events are increasingly documented and disseminated given the widespread use of smartphones and social media (Cooper & Fullilove, 2016). Thus, research on vicarious racial discrimination is critical to understand the associations of racial discrimination with Black well-being.

The literature on vicarious racial discrimination is nascent, with only a few studies focusing on experiences among Black Americans. In a cross-sectional study of Black young adults, 78% had heard about a Black person being injured or killed in a racially-motivated event and 67% had viewed someone being the target of racial maltreatment (Waelde et al., 2010). Similarly, in a qualitative study of Black adult women, vicarious racial discrimination emerged as one of the most salient experiences of racism (e.g., hearing about one's child being called a racial slur; Nuru-Jeter et al., 2009). Further news coverage and social media regularly feature images of violence toward Black people in the U.S. (Alvarez & Blinder, 2015).

Research on how the observation of others' discrimination experiences may influence health outcomes remains unfortunately limited among Black Americans. An experimental study of college students showed that Black students exposed to high-profile cases of police brutality against Black individuals (e.g., Eric Garner) reported greater negative affective and physiological reactivity compared to those in a control condition (Kort, 2016). Likewise, Black men exposed to a racist film clip showed greater anger and blood pressure reactivity compared to those in a neutral non-racist film clip condition (Fang & Myers, 2001). However, indicators of alcohol-related risk remain to be investigated within the contexts of vicarious racial discrimination.

The Role of Racial Identity in Racial Discrimination and Related Consequences

Racial identity may help explain individual differences in associations of discrimination experiences with health consequences, including alcohol use. Racial identity is defined as the significance that one attributes to their racial group membership (Sellers, Smith, Shelton, Rowley, & Chavous, 1998); racial identity include three components: centrality (i.e., the extent to which a person defines themselves by their race), private regard (i.e., extent to which one feels positively or negatively about their race), and public regard (i.e., extent to which one feels that their race is viewed positively or negatively by others). As described below in detail, research on these components of racial identity has yielded mixed findings, suggesting that racial identity may buffer or intensify the associations of racial discrimination with diverse psychological and alcohol/substance use indicators. Further, no research has examined the role of racial identity within the contexts of *vicarious* racial discrimination.

Specific components of racial identity may *buffer* the detrimental effects of racial discrimination. First, the more one identifies with their racial group (i.e., high centrality), the more likely they may be to make attributions to discrimination and subsequently prepare themselves to implement coping strategies, as shown in an experimental study by Salvatore and Shelton (2007). Indeed, another experimentally-designed study found that subsequent to racial discrimination, higher racial centrality has been associated with lower levels of stress and psychological distress (Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). However, no such moderating role of centrality was observed in the association of racial discrimination with alcohol or substance use in non-experimental studies (e.g., Caldwell et al., 2004; Fuller-Rowell et al., 2012). Second, focusing on the positive aspects of their racial group (i.e., high private regard) may mitigate the negative impact of discriminatory incidents on mental health among Black individuals (Sellers & Shelton, 2003). Black young adults with high private regard have reported experiencing less instances of daily racial discrimination (Burrow & Ong, 2010), possibly because they may spend more time in environments that foster racial pride and acceptance. Notably, both of these studies highlighting private regard were not experimental studies. Third, Black individuals who believe that other racial groups have relatively negative opinions of Blacks (i.e., low public regard) may be less affected by racial discrimination because it is consistent with their worldview (Sellers & Shelton, 2003). Indeed, in a longitudinal study of Black high school students, racial discrimination was less strongly associated with increases in substance use for individuals with lower (versus higher) levels of public regard (Fuller-Rowell et al., 2012). Taken together, these findings suggest that high centrality, high private regard, and low public regard of racial identity may protect against racial discrimination and associated psychosocial and alcohol/substance use indicators.

In contrast, specific components of racial identity may *intensify* the detrimental effects of racial discrimination. First, when individuals report race as a more central aspect of their self-concept (i.e., high centrality), observed threats to one's social group may be perceived as threats to oneself, making race-related stressors more damaging as evidenced in an experimental study (McCoy & Major, 2003) and a non-experimental study (Yip et al., 2008). Indeed, several scholarly works have suggested that young adults with high (versus low) centrality reported more racial discrimination and subsequent negative affect including experimental (e.g., McCoy & Major, 2003) and non-experimental based studies (Burrow & Ong, 2010; Sellers et al., 2003), as well as theoretical frameworks (Neblett, Shelton, & Sellers, 2004). Second, Black college students with high (versus low) public regard have demonstrated greater negative emotional reactivity to racial discrimination (Sellers and Shelton, 2003). Findings suggest that high centrality and high public regard of racial identity may exacerbate risk of racial discrimination and associated psychological, emotional indicators.

Current Study

Using a within-subject experimental design, this study examined: (a) whether Mild or Extreme levels of vicarious racial discrimination was differentially associated with self-reported alcohol use craving and attentional bias to alcohol cues and (b) whether these associations differed by three components of racial identity (i.e., centrality, private regard,

public regard). Black young adults identified as risky-drinkers were assigned to two vicarious racial discrimination video conditions (i.e., Mild and Extreme racism) in a randomized order. Following each video condition, participants completed two randomized tasks to assess implicit domains of alcohol risk (i.e., cued alcohol craving and attentional alcohol bias). It was hypothesized that, following exposure to Extreme (versus Mild) vicarious racial discrimination, individuals would show greater alcohol craving and attentional alcohol bias. Regarding racial identity, it was hypothesized that higher private regard would buffer and higher public regard would exacerbate the effect of vicarious racism exposure on alcohol risk indicators; a specific hypothesis regarding centrality was not denoted given the mixed and null findings of prior research on its moderating effects of alcohol use.

Method

Participants

Participants were 51 young adult, self-identified Black, at-risk drinkers aged 18–30 (M_{age}=21 [*SD*=3.02]; 60% female; 82% college students). Young adults were recruited because this developmental period is characterized by accelerated problematic alcohol use for Blacks (Cooper et al., 2008). For the purpose of this study, we operationalized at-risk drinkers as those with drinking behaviors or a pattern of drinking behaviors that increase the individual's risk for alcohol-related harm. "At-risk drinkers were identified using the Alcohol Use Disorders Identification Test-Consumption, which has been widely used to screen for at-risk drinking among general and young adult populations (e.g., DeMartini & Carey, 2012) and was found be valid to use among Black individuals (Dawson, Grant, Stinson, & Zhou, 2005; Frank et al., 2008). We used a cut-off score of 4 or more for men and a score of 3 or more for women, given that a cut-off score of 3 or 4 was recommended for screening risk-drinking among Black individuals (Dawson et al., 2008) and gender differences in alcohol use have been well-established (Nolen-Hoeksema, 2004) supporting the use of a higher cut-off score for men (4 or more) than for women (3 or more). At-risk drinkers were recruited due to their higher alcohol cue reactivity (as compared to light social drinkers; Colby et al., 2004; Herrmann, Weijers, Wiesbeck, Boning, & Fallgatter, 2001), which is an outcome of this study. Exclusion criteria included (a) a blood alcohol content (BAC) level above 0.00% at session initiation, (b) use of a medication or current/past medical or psychiatric conditions contraindicated with stress response (e.g., hypertension), and (c) current or historical alcohol dependence or treatment (due to an ethical concern about presenting alcohol cues which may trigger relapse).

This convenience sample was recruited using diverse methods, including an undergraduate research participation pool, campus news, classroom/email solicitations, flyers across college/university campuses and the community, and online advertisements (e.g., Craigslist). Participants recruited from the university's undergraduate research participation pool (24% of the sample) were compensated with course credit and participants recruited from other strategies (i.e., flyers, campus news, classroom/email solicitations, and online advertisements; 76% of the sample) were compensated with $20. Moreover, 82% of our sample reported current college enrollment at the time of their participation. All study

procedures were approved by the university Institutional Review Board. A pilot study was conducted in October and November of 2017, and a main study was conducted in February to April of 2018.

Study Procedures

Pilot study.—Videos used for the vicarious racial discrimination manipulation were piloted prior to commencement of the main study. Pilot participants (i.e., 15 Black young adults aged 18–30; no alcohol-related eligibility criteria were applied) visited the lab and viewed eight video clips of actual incidents of racial discrimination that occurred in the U.S. (primarily excerpted from news coverage). Participants then reported how intense and stressful/upsetting they found each video, with response options ranging from 1 (*not at all*) to 7 (*extremely*). Videos were categorized into Mild (e.g., verbal antagonizing with use of racial slurs) and Extreme (e.g., police brutality resulting in severe physical injury or mortality) conditions based on reported stressfulness, such that Extreme videos (M=53.07; SD=3.37; range=44 to 56) were rated as significantly more stressful than Mild videos (M=45.20; SD=8.52; range=28 to 56), $t(14)=4.86$, $p<.001$, paired-sample Cohen's d_z = 1.15). Durations of the video clips were adjusted to 5–6 minutes and comparable between the two conditions.

Main study.—Interested participants completed a pre-screening assessment to ensure eligibility. Eligible participants were informed that their BAC should be 0.00% at the time of the 2-hour experimental session. Upon participant arrival to the laboratory, research assistants verified eligibility criteria, collected a baseline BAC (BACtrack Breathalyzers: S82), reviewed study procedures, and obtained written informed consent.

During the baseline assessment period, participants completed a questionnaire assessing demographics, past-3-month alcohol use, racial identity, affective state, and social desirability. Baseline heartrate was then recorded (chest strap Polar H7 Bluetooth heart rate monitor; Polar Electro Oy, Kempele, Finland) while participants were instructed to relax and listen to Zen music accompanied by nature-related photos. Of note, we did not assess baseline alcohol use craving or alcohol attention bias. Next, all participants underwent Mild and Extreme vicarious racial discrimination video conditions in randomized order. Following each video condition, participants completed a brief questionnaire including manipulation check items and a measure of negative affect, two alcohol-related outcomes (i.e., alcohol craving and attentional alcohol bias) in a randomized order, and a 5-minute resting period. To assess alcohol craving, participants were asked to hold a cup of their preferred alcohol (beer, wine, or liquor) and smell it for 1 minute (Ramirez, Monti, & Colwill, 2015), then to report alcohol craving. To assess attentional alcohol bias, participants completed a visual alcohol probe task on a computer (Ehrman et al., 2002). During rest periods, participants were instructed to relax and listen to Zen music accompanied by nature-related photos to allow their stress responses to decrease. At the end of the experimental procedures, participants completed a questionnaire assessing perceived experience with personal accounts of racial discrimination. Participants were then debriefed and compensated.

Measures

Demographics.—Self-reported sex (0=*male* and 1=*female*) was assessed and included as a covariate given well-documented sex differences in alcohol-related outcomes among Black drinkers (Asari & Lankarani, 2016). Student status (1=college student and 0=non-college student) was assessed and included as a covariate to control for differences in drinking patterns and related consequences across college student status (Schulenberg, et al., 2020).

Binge drinking.—A computer version of the Timeline Follow Back calendar (Sobell & Sobell 1992) assessed participants' alcohol use at baseline. The Timeline Follow Back calendar has demonstrated sound validity and reliability in Black young adults (e.g., Humara & Sherman 1999; Sobell et al. 1986). Past-90-day frequency of binge drinking at baseline (defined as five or more drinks on one occasion for men or four or more for women) was used as a covariate given its peak during young adulthood and its well-documented association with alcohol-related problems in comparison to other alcohol use variables (e.g., alcohol use frequency; Thompson, Stockwell, Leadbeater, & Homel, 2014). The frequency of binge drinking variable was used instead of a dichotomized binge drinker status variable, because an overwhelming portion of our at-risk drinking sample was binge-drinkers and thus the frequency measures allowed us better control for baseline at-risk drinking behavior.

Perceived racial discrimination.—The Schedule of Racist Events (Landrine & Klonoff, 1996) assessed frequency of racial discrimination acts directed against or toward individuals. This scale has been used to assess perceived racial discrimination experiences and its association with alcohol/substance outcomes among Black young adults (Boynton et al., 2014). The 17-item scale includes items such as "How many times have you been accused or suspected of doing something wrong (e.g., stealing, cheating, breaking the law) because you are Black?" Response options were based on a 6-point scale from 1 (*never*) to 6 (*almost all of the time*). A sum score (Cronbach's alpha=.91) was used as a covariate. Perceived racial discrimination was used as a covariate given that individuals who have more frequent personal experiences of racial discrimination may have a stronger reaction to vicarious exposure to racial discrimination.

Racial identity.—The Multidimensional Inventory of Black Identity (Sellers, Smith, Shelton, Rowley, & Chavous, 1998) measured racial identity based on three subscales of centrality (8 items; e.g., "Being Black is an important reflection of who I am"), private regard (6 items; e.g., "I am proud to be Black"), and public regard (6 items; e.g., "In general, other groups view Blacks in a positive manner"). Response scale ranged from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), reverse coded as necessary. The scale has been frequently utilized among samples of Black young adults (Mason et al., 2016). A sum score for each subscale was used as a moderator for analyses; the Cronbach's alpha was .70, .56, and .77 for the centrality, private regard, and public regard subscales, respectively. The notably lower internal reliability for the private regard subscale is consistent with previous studies (e.g., Ho & Sidanius, 2010). Moreover, three outliers were identified in the private regard variable based on the boxplot (i.e., data point was more than 3 box-lengths away from the edge of the box), as well as based on the widely used interquartile range (IQR) method (i.e., calculated by subtracting the first quartile [Q1] from the third quartile [Q3], and outliers below Q1-1.5

x IQR and above Q3 + 1.5 x IQR are dropped; Turkey, 1977). These outliers may have contributed to the fairly low alpha. Participants were still included in analyses because the main result of a significant interaction between private regard and vicarious racism remained the same without these three outliers.

Social desirability.—The 13-item Reynolds Short Form C of the Marlowe-Crown Social Desirability Scale (Reynolds, 1982) measured participants' tendency to produce socially desirable responses. The scale has shown good internal reliability and has been used among samples of racially diverse young adults (Lamis & Lester, 2012). Example items include "It is sometimes hard for me to go on with my work if I am not encouraged" and "I have never deliberately said something that hurt someone's feelings." Participants responded to each item with 0 (*False*) or 1 (*True*). A sum score (Cronbach's alpha=.69) was used as a covariate.

Negative affective state.—The 10-item negative affect subscale of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) assessed negative affective state. Participants to indicated to what extent they were experiencing a variety of feelings and emotions (e.g., distressed, hostile, ashamed) in the present moment, with responses ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). This measure has been validated and utilized among young adults of color with appropriate internal reliability (Brondolo et al., 2008). A sum score (Cronbach's alpha=.62) was used in relevant analyses.

Alcohol use craving.—The 8-item Alcohol Urge Questionnaire (Bohn et al., 1995) assessed self-reported drinking craving after alcohol cue exposure. This measure has been used among predominantly Black samples (Ciccolo et al., 2016), albeit with an absence of reliability coefficients. Example items include "All I want to do now is have a drink" and "It would be difficult to turn down a drink this minute." Response options ranged from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Sum scores (Cronbach's alpha=.91 for Mild and .92 for Extreme conditions) were treated as dependent variables.

Alcohol attentional bias.—Visual probe tasks are a well-established protocol to investigate attentional bias towards a substance-related stimuli (Ehrman et al., 2002), as people with higher (versus lower) drinking urge respond faster to alcohol-related images (Field & Cox, 2008; Field & Powell, 2007). A fixation point (x) was shown for 500 milliseconds (ms) in the center of the computer screen, followed by a pair of alcohol-related (e.g., glass of beer) and neutral (e.g., chair) pictures concurrently for 1000 ms, randomly oriented on the left and right side of screen. When pictures disappeared from the screen, the fixation point (x) appeared on the left or right side, and participants were asked to answer which picture was located on that side (i.e., alcohol-related or neutral). Two blocks of 84 trials were administered. Participant reaction time ratios of alcohol-related pictures to neutral pictures (Mild and Extreme conditions) were treated as outcome variables.

Manipulation check.—After exposure to each video condition, participants completed two items assessing racism exhibited in the videos (e.g., "To what extent do you think the videos evidenced racism toward Blacks?") and two items assessing stressfulness in response to videos (e.g., "To what extent did you find the videos to be stress-provoking?"). Response

options ranged from 1 (*not at all*) to 7 (*extremely*). A sum score of perceived racism and stressfulness following the Mild and Extreme racism conditions was used as a manipulation check, consistent with previous studies (e.g., McCoy & Major, 2003).

Physiological and psychological indicators of stress reactivity were also assessed. Heart rate (i.e., beats per minute) was measured throughout the duration of the experiment, and readings were averaged for baseline (i.e., average of all readings prior to video onset) and reactivity (i.e., average of readings during video display) phases. Negative affective state was measured using the 10-item negative affect subscale of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) after each video.

Data Analytic Strategy

Descriptive analyses.—All analyses were conducted in SPSS, Version 23. Descriptive analyses demonstrated means/percentages and bivariate correlations of all study variables. Paired samples *t*-tests assessed manipulation check variables as a function of video condition. Of note, two participants had missing data on the alcohol attentional bias task and one participant had missing data on the perceived personal accounts of racial discrimination variable (i.e., Schedule of Racist Events).

Main analyses.—First, two-way mixed analyses of variance (ANOVA) were conducted to examine whether the two alcohol outcomes (i.e., alcohol craving and attentional alcohol bias) differed by video condition (i.e., Extreme versus Mild vicarious racial discrimination). One participant was dropped from analyses of attentional alcohol bias due to extreme outlying scores in the Extreme video condition, but all other assumptions of ANOVA were met (i.e., normal range of skewness/kurtosis were observed, dependent variables were continuous, and the same group of participants were exposed to both Mild and Extreme conditions). Four covariates were included to control for potential confounding effects: sex, frequency of personal accounts of racial discrimination, past 90-day binge drinking frequency, and social desirability.

Second, two-way mixed analyses of variance (ANOVA) were conducted to examine interaction effects of racial identity (between-subject) and video condition (i.e., Mild versus Extreme; within-subject) on alcohol outcomes. In total, six models were estimated separately to examine the interaction effects of each subscale of racial identity (i.e., centrality, private regard, and public regard) with level of vicarious racial discrimination on the two alcohol outcomes (i.e., alcohol craving and attentional bias). Each model included (a) main effects of grand-mean centered racial identity and video condition, (b) the mixed interaction effect between grand-mean centered racial identity and video condition, and (c) the four covariates to control for potential confounding effects of participant sex, frequency of personal accounts of racial discrimination, past 90-day binge drinking frequency, and social desirability. For significant interaction effects, marginal mean levels of the alcohol outcome variable were obtained in the two experimental conditions as a function of racial identity (i.e., one *SD* below the mean, the mean, and 1 *SD* above the mean). As effect size measures, n_p^2 (i.e., partial eta squared, which reflects the percentage of the variance in the

dependent variable explained by the independent variables) and 95% confidence interval were used.

Power analysis.: *A priori* power analyses were conducted using G*Power to determine the required sample size to detect interaction effects of racial identity and video condition on a continuous outcome variable of alcohol craving and attentional alcohol bias. Given the absence of empirical studies on vicarious racial discrimination and alcohol outcomes, an experimental study of the interaction effect between personal experiences of racial discrimination and racial identity on willingness to use alcohol by Stock and colleagues (2011) was used to obtain an effect size for power analyses. Although an effect size was not provided, f^2 value of.30 (corresponding to a medium-to-large effect size; Cohen, 1988) was calculated from statistics presented (i.e., standardized coefficient and standard deviation of the outcome variable; Lenhard & Lenhard, 2016). Results indicated that 50 participants were needed to achieve a power of .80 and a two-tailed α level of .05, and thus, the sample size of 51 provided sufficient power to detect an interaction effect of vicarious racism and racial identity on continuous alcohol outcomes.

Results

Descriptive Statistics

On average, participants engaged in binge drinking on seven of the past 90 days (*SD*=7.25), similar to previous samples of Black young adults (e.g., O'hara, Armeli, Scott, Covault, & Tennen, 2015). Most participants preferred wine as opposed to beer and distilled spirits (45%), inconsistent with previous findings (Kerr, Patterson, & Greenfield, 2009).

Bivariate correlations of study variables are presented in Table 1. Alcohol use craving after Mild and Extreme videos conditions were positively correlated with each other, r=.83, p<.001, but alcohol attention bias measured after Mild and Extreme video conditions were not correlated to each other (r=.06, p=.55). Positive associations of baseline racial discrimination with several experimental condition variables were found, including alcohol use craving score following the Extreme video condition (r=.33, p=.02) and negative affect following both video conditions (r's=.31–.43, p's=.00–.03). Racial centrality and private regard demonstrated positive associations with perceived racism following Mild video conditions (r's=.32–.48, p's=.00–.02); but, public regard was not associated with perceived racism in either condition (r=.15, p=.28).

Manipulation check.—Mean differences in perceived racism ratings, perceived stress, negative affect, and heart-rate responses as a function of the vicarious racial discrimination video conditions (i.e., Mild and Extreme) are presented in Table 2. Experimental conditions were successfully manipulated as indicated by significant condition differences. Specifically, participants reported greater levels of negative affect, stressfulness, and heart rate directly following the Extreme video in comparison to the Mild video condition, t(50)= 5.81– 2.74, ps=.001–.01, paired-sample Cohen's d_z= 0.38– 0.81. Also, the two conditions did not differ regarding their presentation of racism, t(50)= 0.26, p=.80, paired-sample Cohen's d_z= 0.03 as both conditions were designed as stimuli of vicarious racial discrimination.

Main Analyses

Effects of video conditions (without consideration of racial identity).—Results of mixed ANOVA showed no significant differences in discrimination-alcohol associations as a function video conditions for either alcohol craving, $F(1,43)=0.23$, $p=.64$, $n_p^2= .01$, or attentional alcohol bias, $F(1,41)=0.13$, $p=.72$, $n_p^2= .00$, after controlling for baseline racial discrimination, binge drinking, sex, college status, and social desirability. Further, the effect of video conditions on the two alcohol outcomes did not differ across any of the covariates, p's=.20 to .96.

Interaction effects between racial identity and video conditions.—Results of mixed ANOVA to test interaction effects between experimental conditions and racial identity on alcohol outcomes are presented in Table 3. For the alcohol craving outcome, as shown in the first two columns of data in Table 3, results demonstrated significant interaction effects of both racial centrality, $F(1,42)=7.11$, $p=.01$, $n_p^2= .15$, and private regard, $F(1,42)=6.71$, $p=.01$, $n_p^2= .14$, with experimental condition after controlling for baseline racial discrimination, binge drinking, sex, college status, and social desirability. To illustrate the pattern of significant interactions, Figure 1 shows estimated marginal means of alcohol use craving in Mild and Extreme vicarious racial discrimination experimental conditions as a function of centrality and private regard levels. Figure 1 demonstrates that participants with high racial centrality (one *SD* above the mean) reported greater alcohol use craving than those with low racial centrality (one *SD* below the mean) after the Extreme vicarious racism condition, whereas there was no difference in alcohol craving as a function of centrality after the Mild vicarious racism condition. In contrast, participants high in racial private regard reported lower alcohol use cravings than those with low private regard after the Mild vicarious racial discrimination condition. Results demonstrated non-significant interaction and main effects in models pertaining to public regard. For the attentional alcohol bias outcome, as shown in the last two columns of data in Table 3, mixed ANOVA demonstrated non-significant main and interaction effects for all three racial identity models.

Discussion

This novel study extends the literature on discrimination-alcohol associations among Black young adults in multiple important ways. To our knowledge, this is the first investigation of *vicarious* racial discrimination, as opposed to personal experiences with discrimination, in relation to alcohol related outcomes. Second, this study examined the effect of experimentally-manipulated discrimination exposures, building on previous observational and cross-sectional designs to better resolve directional associations. Third, this study tested the role of three components of racial identity (i.e., centrality, private regard, and public regard) as potential moderators of associations of vicarious racial discrimination and alcohol-related outcomes. Findings suggest that effects of vicarious racial discrimination on subsequent alcohol craving (but not attentional bias) may be *exacerbated* by centrality and *buffered* by private regard of one's Black racial identity. In contrast, public regard of one's Black racial identity does not appear to play a role in associations of vicarious discrimination with subsequent alcohol craving or attentional bias. Overall, findings highlight the important role of Black racial identity in within-group differences in the impact

of vicarious racial discrimination on select implicit indicators of alcohol risk among Black young adults.

Main Effects of Vicarious Racism Conditions

In contrast to hypotheses, there were no differences in alcohol use craving or attentional alcohol bias as a function of the two video conditions. Theses null findings regarding different levels of vicarious racial discrimination suggest that vicarious racial discrimination may be related to alcohol-related risk irrespective of the level and intensity of the vicarious racism. However, given that this is the first study of effects of vicarious (versus personal) racial discrimination on alcohol outcomes, replication of current findings is needed. Future research may additionally explore the role of vicarious racism on other maladaptive coping and self-medication behaviors demonstrating a health disparity affecting the Black population, such as tobacco (Borrell et al., 2007) and marijuana use (e.g., Parker, Benjamin, Archibald, & Thorpe, 2017).

Differing Effects of Racial Identity Components

Consistent with some previous research (e.g., Burrow & Ong; McCoy & Major, 2003; Yip et al., 2008), findings indicate that racial centrality exacerbates alcohol craving reactivity to vicarious experiences of racial discrimination. Considering one's Black racial identity as central to one's concept of self may predispose Black individuals to be sensitive to and vigilant about incidents of racism, even those that are not their own, leading to negative reactions followed by maladaptive coping behaviors (Mason et al., 2016). Thus, it is possible that current study participants high in racial centrality strongly identified with the victims portrayed in the video conditions, thereby causing the stressor to be significantly more damaging. Indeed, threats to one's racial group may be experienced as threats to the self (McCoy & Major, 2003; Yip et al., 2008). Furthermore, high centrality does not necessarily denote that one feels positively about their race. People with high centrality might often live in a state of worry because their high racial identity makes them aware of the detriment of being Black (Hoggard, Byrd, & Sellers, 2015). Continued research is warranted to replicate the role of centrality in the vicarious versus personal discrimination-alcohol relationship.

Also consistent with previous research (e.g., Caldwell et al., 2004; Richman et al., 2013), it appears that racial private regard may be protective against alcohol craving reactivity to vicarious experiences of racial discrimination. Personal positive attitudes about being Black likely helps young adults reject the harmful messages implicit in racism and deflect the message's emotional impact (Collins, 2000). Indeed, the high degree of collectivism found in Black culture (Oyserman, Gant, & Ager, 1995) may allow Black individuals to focus on the unique strengths of their group, which in turn may enhance their sense of worth and well-being. Moreover, those who feel negatively about their status as a Black person (i.e., low private regard) may not be able to de-identify with negative views on being Black (e.g., Blacks are inferior), which in turn may ignite adverse emotional and cognitive responses, and self-medication and maladaptive coping behaviors such as alcohol use.

Counter to predictions, public regard was not found to buffer or exacerbate the vicarious discrimination-alcohol association. Limited research (e.g., Fuller-Rowell et al., 2012; Sellers

& Shelton, 2003) has shown that those individuals who believe that others hold negative views of Blacks (i.e., low public regard) are less negatively impacted by racial stressors. Of note, previous studies differed such that they did not implement experimental methodologies. Moreover, such studies have examined the effect of personal experiences of racism on broader mental health outcomes (e.g., psychological distress), as opposed to the effect of vicarious experiences of racism on risky health behaviors such as substance use indicators. Thus, current null findings suggest that public regard may not influence alcohol risk in response to vicarious racial discrimination. Null findings may also be explained by the fact that public regard may reflect an individual's encapsulated belief about others' evaluations of Black people, which do not necessarily impact their personal behavior (e.g., alcohol use). Given that this is the first study to examine the impact of public regard in the association of vicarious racial discrimination with alcohol-related risk, additional research is needed to elucidate the conditions under which public regard shapes how Blacks respond to vicarious versus personal racial discrimination.

Clinical Implications

Findings may inform prevention/intervention efforts to curtail racism-induced drinking. Intervention efforts may help strengthen Black young adults' racial identity, particularly their ability to identify positive aspects of being Black (i.e., private regard), despite the negative race-related messages they may be exposed to. One way to enhance racial private regard may be through the use of process groups. Affirming process-oriented groups for young Black adults may provide them with a safe place to share and explore the richness their Black experience, as well as the reality of racism (Bogart et al., 2013; Carter & Forsyth, 2010; Elligan & Utsey, 1999) while fostering communalism. Communalism refers to a cultural orientation prominent in the Black community in which individuals view themselves as being inextricably linked with others in their social milieu and emphasizes cultural interdependence (Boykin, Jagers, Ellison, & Albury, 1997). Promoting a sense of interconnectedness and camaraderie among Black young adults may reduce negative affect and curtail adverse drinking behaviors. Psychologists, social advocacy groups (e.g., Black Lives Matter), and college campuses can support the development and execution of process support groups. Additionally, preventative efforts may aid Black young adults in understanding psychological responses to discrimination footage for increased insight into strategically moderating one's media exposure (e.g., taking breaks to lessen exposure; Adetiba & Almendrala, 2016). Finally, involvement in prosocial activities (e.g., donating money or volunteering time to pro-Black community service efforts) may help young Black individuals feel involved in the fight to end racism, as opposed to solely a victim (White-Johnson, 2012).

Limitations

Several limitations of the current study need to be considered in the interpretation of findings. First, findings do not elucidate whether exposure to vicarious racial discrimination is related to actual alcohol use behavior. Nonetheless, alcohol use craving and alcohol attentional bias are important constructs in addiction research (Skinner et al., 2010) and these widely used cognitive-based endophynotypic measures often function as a proxy for alcohol use (Sinha & O'Malley, 1999; Wapp, Burren, Znoj, & Moggi, 2015). Second, this

study only reveals short-term, momentary effects of vicarious racial discrimination. Exposure to racial discrimination and its negative psychological effects are both chronic and accumulative (Geronimus, Hicken, Keene, & Bound, 2006; Williams & Mohammed, 2009), which cannot be captured in a laboratory study. Third, Black young adults were recruited for the purposes of this study given that this is a critical period for peak alcohol use and consequences; however, results may not be generalizable to other age groups including Black adolescents or older adults. Fourth, although manipulation of the Mild and Extreme video conditions was successful, observed differences could be due to additional factors above and beyond manipulated level of racial discrimination (e.g., physical aggression observed). Lastly, a control condition and baseline measures of alcohol use craving or alcohol attention bias were not used. Future research efforts focused on the topic of vicarious discrimination may utilize control conditions that can better disentangle potential differences as a function of differential levels of discrimination exposures including an assessment-only control group while taking account for baseline differences in alcohol-related outcomes.

Future Directions

Current findings may help inform future research. First, future studies should consider the combined, synergistic effects of various domains of racial identity. For example, private regard may be especially protective when it is coupled with other high levels of racial identity (e.g., centrality), which is supported by their observed intercorrelation in this study. Second, although racial identity has been traditionally explored as a moderator of discrimination-alcohol associations, it may be worthwhile to explore its role as a possible mediator. In addition, future research may seek to explore the role of specific affective underlying mechanisms (e.g., anger, anxiety; Gibbons et al., 2010), as opposed to negative affect broadly. Third, future studies should explore how age may modify the vicarious racial discrimination-health outcome relationship. Indeed, a meta-analytic review (Desalu et al., 2019) indicated that the association of racial discrimination and certain drinking outcomes are stronger among studies of younger versus older samples of Black individuals. Fourth, findings should be replicated with larger sample sizes and samples from settings with greater Black representation such as historically Black colleges/universities. Finally, future research can address aforementioned methodological limitations by implementing an alcohol administration design to directly observe the associations of different levels of discrimination exposure with alcohol use behavior. Likewise, longitudinal designed studies will allow for the exploration of fluctuations in drinking behaviors as a function of exposure to vicarious discrimination and its varying levels.

Conclusion

Although research on racism as has proliferated over the past few decades, there is still much more to discern how racial discrimination and racial identity are related to adverse health outcomes that young Black adults are disproportionately impacted by. This study demonstrates the important role of racial identity in mitigating and buffering the deleterious effects of vicarious exposure to racial discrimination. A better understanding of racially-relevant risk and protective factors and within-group differences of Black persons will

ultimately lead to more effective individual- and community-level interventions that can serve to reduce alcohol disparities affecting Black communities.

Acknowledgments

This work was supported in part by National Institutes of Health grants R15 AA022496 and R01 AA027677 awarded to Aesoon Park.

References

Adetiba L & Almendrala A (2016, 9 20). Watching videos of police brutality can traumatize you, especially if you're Black. Black Voices. Retrieved from http://www.huffingtonpost.com/entry/watching-police-brutality-videos_us_577ee9b3e4b0344d514eaa5d

Alvarez L, & Blinder A (2015, 6 18). Recalling nine spiritual mentors, gunned down during night of devotion. The New York Times. Retrieved from http://www.nytimes.com/2015/06/19/us/nine-victims-of-charleston-church-shooting-remembered.html?_r0

Bogart LM, Elliott MN, Kanouse DE, Klein DJ, Davies SL, Cuccaro PM, … & Schuster MA (2013). Association between perceived discrimination and racial/ethnic disparities in problem behaviors among preadolescent youths. American Journal of Public Health, 103, 1074–1081. [PubMed: 23597387]

Bohn MJ, Krahn DD, & Staehler BA (1995). Development and initial validation of a measure of drinking urges in abstinent alcoholics. Alcoholism: Clinical and Experimental Research, 19, 600–606.

Borrell LN, Jacobs DR, Williams DR, Pletcher MJ, Houston TK, & Kiefe CI (2007). Self-reported racial discrimination and substance use in the Coronary Artery Risk Development in Adults Study. American Journal of Epidemiology, 166, 1068–1079. [PubMed: 17698506]

Borrell LN, Kiefe CI, Diez-Roux AV, Williams DR, & Gordon-Larsen P (2013). Racial discrimination, racial/ethnic segregation, and health behaviors in the CARDIA study. Ethnicity & Health, 18, 227–243. [PubMed: 22913715]

Boynton MH, O'Hara RE, Covault J, Scott D, & Tennen H (2014). A mediational model of racial discrimination and alcohol-related problems among African American college students. Journal of Studies on Alcohol and Drugs, 75, 228–234. [PubMed: 24650816]

Brondolo E, Brady N, Thompson S, Tobin JN, Cassells A, Sweeney M, … & Contrada RJ (2008). Perceived racism and negative affect: Analyses of trait and state measures of affect in a community sample. Journal of Social and Clinical Psychology, 27, 150–173. [PubMed: 19079772]

Brondolo E, Brady N, Pencille M, Beatty D, & Contrada RJ (2009). Coping with racism: A selective review of the literature and a theoretical and methodological critique. Journal of Behavioral Medicine, 32, 64–88. [PubMed: 19127420]

Burrow AL, & Ong AD (2010). Racial identity as a moderator of daily exposure and reactivity to racial discrimination. Self and Identity, 9, 383–402.

Bynum MS, Best C, Barnes SL, & Burton ET (2008). Private regard, identity protection and perceived racism among African American males. Journal of African American Studies, 12, 142–155.

Caldwell CH, Antonakos CL, Tsuchiya K, Assari S, & De Loney EH (2013). Masculinity as a moderator of discrimination and parenting on depressive symptoms and drinking behaviors among nonresident African-American fathers. Psychology of Men & Masculinity, 14, 47–58.

Caldwell CH, Sellers RM, Bernat DH, & Zimmerman MA (2004). Racial identity, parental support, and alcohol use in a sample of academically at-risk African American high school students. American Journal of Community Psychology, 34, 71–82. [PubMed: 15495795]

Carter RT (2007). Racism and psychological and emotional injury: Recognizing and assessing race-based traumatic stress. The Counseling Psychologist, 35, 13–105.

Carter RT, & Forsyth J (2010). Reactions to racial discrimination: Emotional stress and help-seeking behaviors. Psychological Trauma: Theory, Research, Practice, and Policy, 2, 183–191.

Center for Behavioral Health Statistics and Quality. (2016). 2015 National Survey on Drug Use and Health: Detailed Tables. Substance Abuse and Mental Health Services Administration, Rockville, MD.

Chaplin TM, Hong K, Bergquist K, & Sinha R (2008). Gender differences in response to emotional stress: an assessment across subjective, behavioral, and physiological domains and relations to alcohol craving. Alcoholism: Clinical and Experimental Research, 32, 1242–1250.

Ciccolo JT, Whitworth JW, Dunsiger SI, SantaBarbara NJ, Nosrat S, & LaBrec JE (2016). Acute effects of resistance exercise on affect, arousal, and urge to drink in temporarily abstinent young adult hazardous drinkers: Resistance exercise and alcohol. The American Journal on Addictions, 25, 623–627. [PubMed: 27717078]

Clark R, Anderson NB, Clark VR, & Williams DR (1999). Racism as a stressor for African Americans: A biopsychosocial model. American Psychologist, 54, 805–816.

Clarke N, Kim SY, White HR, Jiao Y, & Mun EY (2013). Associations between alcohol use and alcohol-related negative consequences among Black and White college men and women. Journal of Studies on Alcohol and Drugs, 74, 521–531. [PubMed: 23739015]

Cohen JE (1988). Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Lawrence Erlbaum Associates

Collins PH (2000). Black feminist thought: Knowledge, consciousness, and the politics of empowerment. New York: Routledge

Cooper HL, & Fullilove M (2016). Excessive police violence as a public health issue. Journal of Urban Health, 93, 1–7.

Cooper ML, Krull JL, Agocha VB, Flanagan ME, Orcutt HK, Grabe S, … & Jackson M (2008). Motivational pathways to alcohol use and abuse among Black and White adolescents. Journal of Abnormal Psychology, 117, 485–501. [PubMed: 18729604]

Davis CG, Thake J, & Vilhena N (2010). Social desirability biases in self-reported alcohol consumption and harms. Addictive Behaviors, 35, 302–311. [PubMed: 19932936]

Dawson DA, Grant BF, Stinson FS, & Zhou Y (2005). Effectiveness of the derived alcohol use disorders identification test (AUDIT-C) in screening for alcohol use disorders and risk drinking in the US general population. Alcoholism: Clinical and Experimental Research, 29, 844–854.

DeMartini KS, & Carey KB (2012). Optimizing the use of the AUDIT for alcohol screening in college students. Psychological Assessment, 24, 954–963. [PubMed: 22612646]

Dennhardt AA, & Murphy JG (2011). Associations between depression, distress tolerance, delay discounting, and alcohol-related problems in European American and African American college students. Psychology of Addictive Behaviors, 25, 595–604. [PubMed: 21988480]

Desalu JM, Goodhines PA, & Park A (2019; Epub ahead of print). Racial discrimination and alcohol use and alcohol-related consequences among Black individuals: A meta-analytic review. Addiction. DOI: 10.1111/add.145781

Desalu JM, Kim J, Zaso MJ, Corriders SR, Loury JA, Minter ML, & Park A (2017; Epub ahead of print). Racial discrimination, binge drinking, and negative drinking consequences among black college students: Serial mediation by depressive symptoms and coping motives. Ethnicity & Health. 2017 9 21:1–15

Drummond DC (2000). What does cue-reactivity have to offer clinical research?. Addiction, 95, 129–144.

Ehrman RN, Robbins SJ, Bromwell MA, Lankford ME, Monterosso JR, & O'Brien CP (2002). Comparing attentional bias to smoking cues in current smokers, former smokers, and non-smokers using a dot-probe task. Drug and Alcohol Dependence, 67, 185–191. [PubMed: 12095668]

Elligan D, & Utsey S (1999). Utility of an African-centered support group for African American men confronting societal racism and oppression. Cultural Diversity and Ethnic Minority Psychology, 5, 156–165. [PubMed: 15605685]

English D, Lambert SF, Evans MK, & Zonderman AB (2014). Neighborhood racial composition, racial discrimination, and depressive symptoms in African Americans. American Journal of Community Psychology, 54, 219–228. [PubMed: 24969707]

Fang CY, & Myers HF (2001). The effects of racial stressors and hostility on cardiovascular reactivity in African American and Caucasian men. Health Psychology, 20, 64–70. [PubMed: 11199067]

Feagin JR, & Sikes MP (1994). Living with racism: The black middle-class experience. Beacon Press.

Field M, & Cox WM (2008). Attentional bias in addictive behaviors: a review of its development, causes, and consequences. Drug and Alcohol Dependence, 97, 1–20. [PubMed: 18479844]

Field M, Mogg K, Zetteler J, & Bradley BP (2004). Attentional biases for alcohol cues in heavy and light social drinkers: the roles of initial orienting and maintained attention. Psychopharmacology, 176, 88–93. [PubMed: 15071718]

Field M, & Powell H (2007). Stress increases attentional bias for alcohol cues in social drinkers who drink to cope. Alcohol & Alcoholism, 42, 560–566. [PubMed: 17766316]

Fritz MS, & MacKinnon DP (2007). Required sample size to detect the mediated effect. Psychological Science, 18, 233–239. [PubMed: 17444920]

Fuller-Rowell TE, Cogburn CD, Brodish AB, Peck SC, Malanchuk O, & Eccles JS (2012). Racial discrimination and substance use: Longitudinal associations and identity moderators. Journal of Behavioral Medicine, 35, 581–590. [PubMed: 22113318]

Gerrard M, Stock ML, Roberts ME, Gibbons FX, O'hara RE, Weng CY, & Wills TA (2012). Coping with racial discrimination: the role of substance use. Psychology of Addictive Behaviors, 26, 550–560. [PubMed: 22545585]

Geronimus AT, Hicken M, Keene D, & Bound J (2006). "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. American Journal of Public Health, 96, 826–833. [PubMed: 16380565]

Gibbons FX, Etcheverry PE, Stock ML, Gerrard M, Weng CY, Kiviniemi M, & O'hara RE (2010). Exploring the link between racial discrimination and substance use: What mediates? What buffers?. Journal of personality and social psychology, 99, 785–801. [PubMed: 20677890]

Gibbons FX, O'hara RE, Stock ML, Gerrard M, Weng CY, & Wills TA (2012). The erosive effects of racism: Reduced self-control mediates the relation between perceived racial discrimination and substance use in African American adolescents. Journal of Personality and Social Psychology, 102, 1089–1104. [PubMed: 22390225]

Gravetter FJ, & Wallnau LB (2014). Introduction to the t statistic. Essentials of Statistics for the Behavioral Sciences, 8, 252-.

Greeley J, & Oei T (1999). Alcohol and tension reduction. Psychological theories of drinking and alcoholism, 2, 14–53.

Harrell SP (2000). A multidimensional conceptualization of racism-related stress: Implications for the well-being of people of color. American Journal of Orthopsychiatry, 70, 42–57.

Ho AK, & Sidanius J (2010). Preserving positive identities: Public and private regard for one's ingroup and susceptibility to stereotype threat. Group Processes & Intergroup Relations, 13, 55–67.

Hoggard LS, Byrd CM, & Sellers RM (2015). The lagged effects of racial discrimination on depressive symptomology and interactions with racial identity. Journal of Counseling Psychology, 62, 216–225. [PubMed: 25867694]

Humara MJ, & Sherman MF (1999). Brief report situational determinants of alcohol abuse among Caucasian and African-American college students. Addictive Behaviors, 24, 135–138. [PubMed: 10189981]

Hurd NM, Varner FA, Caldwell CH, & Zimmerman MA (2014). Does perceived racial discrimination predict changes in psychological distress and substance use over time? An examination among Black emerging adults. Developmental Psychology, 50, 1910–1918. [PubMed: 24730378]

Joseph J, & Kuo BC (2009). Black Canadians' coping responses to racial discrimination. Journal of Black Psychology, 35, 78–101.

Kerr WC, Patterson D, & Greenfield TK (2009). Differences in the measured alcohol content of drinks between black, white and Hispanic men and women in a US national sample. Addiction, 104, 1503–11. [PubMed: 19438419]

Kort DN (2017). We Can't Breathe: Affective and Psychophysiological Reactivity of Vicarious Discrimination (Master's thesis).

Kwate NOA, & Goodman MS (2015). Racism at the intersections: Gender and socioeconomic differences in the experience of racism among African Americans. American Journal of Orthopsychiatry, 85, 397–408.

Lamis DA, & Lester D (2012). Risk factors for suicidal ideation among African American and European American college women. Psychology of Women Quarterly, 36, 337–349.

Landrine H, & Klonoff EA (1996). The schedule of racist events: A measure of racial discrimination and a study of its negative physical and mental health consequences. Journal of Black Psychology, 22, 144–168.

Lenhard W & Lenhard A (2016). Calculation of Effect Sizes. Retrieved from: https://www.psychometrica.de/effect_size.html. Dettelbach (Germany): Psychometrica. DOI: 10.13140/RG.2.1.3478.4245

Madkour AS, Jackson K, Wang H, Miles TT, Mather F, & Shankar A (2015). Perceived discrimination and heavy episodic drinking among African-American youth: Differences by age and reason for discrimination. Journal of Adolescent Health, 57, 530–536.

Mason T, Maduro R, Derlega V, Hacker D, Winstead B, & Haywood J (2016). Individual differences in the impact of vicarious racism: African American students react to the George Zimmerman trial. Cultural Diversity & Ethnic Minority Psychology, 23, 174–184. doi:10.1037/cdp0000099

McCoy SK, & Major B (2003). Group identification moderates emotional responses to perceived prejudice. Personality and Social Psychology Bulletin, 29, 1005–1017. [PubMed: 15189619]

Neblett EW Jr., Shelton JN, & Sellers RM (2004). The Role of Racial Identity in Managing Daily Racial Hassles. In Philogène G (Ed.), Decade of behavior. Racial identity in context: The legacy of Kenneth B. Clark (pp. 77–90). Washington, DC, US: American Psychological Association.

Nolen-Hoeksema S (2004) Gender differences in risk factors and consequences for alcohol use and problems. Clinical Psychology Review. 24, 981–1010. doi: 10.1016/j.cpr.2004.08.003. [PubMed: 15533281]

Nuru-Jeter A, Dominguez TP, Hammond WP, Leu J, Skaff M, Egerter S, … & Braveman P (2009). "It's the skin you're in": African-American women talk about their experiences of racism. An exploratory study to develop measures of racism for birth outcome studies. Maternal and Child Health Journal, 13, 29–39. [PubMed: 18463971]

O'hara RE, Armeli S, Scott DM, Covault J, & Tennen H (2015). Perceived racial discrimination and negative-mood–related drinking among African American college students. Journal of Studies on Alcohol and Drugs, 76, 229–236. [PubMed: 25785798]

Operario D, & Fiske ST (2001). Ethnic identity moderates perceptions of prejudice: Judgments of personal versus group discrimination and subtle versus blatant bias. Personality and Social Psychology Bulletin, 27, 550–561.

Oyserman D, Gant L, & Ager J (1995). A socially contextualized model of African American identity: Possible selves and school persistence. Journal of Personality and Social Psychology, 69, 1216–1232.

Parker LJ, Benjamin T, Archibald P, & Thorpe RJ (2017). The association between marijuana usage and discrimination among adult Black men. American journal of men's health, 11, 435–442.

Pieterse AL, Todd NR, Neville HA, & Carter RT (2012). Perceived racism and mental health among Alack American adults: A meta-analytic review. Journal of Counseling Psychology, 59, 1–9. [PubMed: 22059427]

Ramirez JJ, Monti PM, & Colwill RM (2015). Brief and extended alcohol-cue-exposure effects on craving and attentional bias. Experimental and Clinical Psychopharmacology, 23, 159–167. [PubMed: 26053323]

Razali NM, & Wah YB (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. Journal of statistical modeling and analytics, 2, 21–33.

Respress BN, Small E, Francis SA, & Cordova D (2013). The role of perceived peer prejudice and teacher discrimination on adolescent substance use: A social determinants approach. Journal of Ethnicity in Substance Abuse, 12, 279–299. [PubMed: 24215222]

Reynolds WM (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. Journal of Clinical Psychology, 38, 119–125.

Richman LS, Boynton MH, Costanzo P, & Banas K (2013). Interactive effects of discrimination and racial identity on alcohol-related thoughts and use. Basic and Applied Social Psychology, 35, 396–407.

Salvatore J, & Shelton JN (2007). Cognitive costs of exposure to racial prejudice. Psychological Science, 18, 810–815. [PubMed: 17760778]

Schulenberg JE, Johnston LD, O'Malley PM, Bachman JG, Miech RA & Patrick ME (2020). Monitoring the Future national survey results on drug use, 1975–2019: Volume II, College students and adults ages 19–60. Ann Arbor: Institute for Social Research, The University of Michigan. Available at http://monitoringthefuture.org/pubs.html#monographs

Sellers RM, Caldwell CH, Schmeelk-Cone KH, & Zimmerman MA (2003). Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. Journal of Health and Social Behavior, 302–317. [PubMed: 14582310]

Sellers RM, Copeland-Linder N, Martin PP, & Lewis RLH (2006). Racial identity matters: The relationship between racial discrimination and psychological functioning in African American adolescents. Journal of Research on Adolescence, 16, 187–216.

Sellers RM, & Shelton JN (2003). The role of racial identity in perceived racial discrimination. Journal of Personality and Social Psychology, 84, 1079–1092. [PubMed: 12757150]

Sellers RM, Smith MA, Shelton JN, Rowley SA, & Chavous TM (1998). Multidimensional model of racial identity: A reconceptualization of African American racial identity. Personality and Social Psychology Review, 2, 18–39. [PubMed: 15647149]

Sinha R, & O'Malley SS (1999). Craving for alcohol: findings from the clinic and the laboratory. Alcohol and Alcoholism, 34, 223–230. [PubMed: 10344782]

Skinner MD, & Aubin HJ (2010). Craving's place in addiction theory: contributions of the major models. Neuroscience & Biobehavioral Reviews, 34, 606–623. [PubMed: 19961872]

Sobell LC, & Sobell MB (1992). Timeline follow-back. In Measuring alcohol consumption (pp. 41–72). Humana Press.

Sobell MB, Sobell LC, Klajner F, Pavan D, & Basian E (1986). The reliability of a timeline method for assessing normal drinker college students' recent drinking history: Utility for alcohol research. Addictive Behaviors, 11, 149–161. [PubMed: 3739800]

Stock ML, Gibbons FX, Gerrard M, Houlihan AE, Weng CY, Lorenz FO, & Simons RL (2013). Racial identification, racial composition, and substance use vulnerability among African American adolescents and young adults. Health Psychology, 32, 237–247. [PubMed: 23088177]

Stock ML, Gibbons FX, Walsh LA, & Gerrard M (2011). Racial identification, racial discrimination, and substance use vulnerability among African American young adults. Personality and Social Psychology Bulletin, 37, 1349–1361. [PubMed: 21628598]

Thompson AB, Goodman MS, & Kwate NO (2016). Does learning about race prevent substance abuse? Racial discrimination, racial socialization and substance use among African Americans. Addictive Behaviors, 61, 1–7. [PubMed: 27182620]

Thompson K, Stockwell T, Leadbeater B, & Homel J (2014). Association among different measures of alcohol use across adolescence and emerging adulthood. Addiction, 109, 894–903. [PubMed: 24467265]

Townshend J, & Duka T (2001). Attentional bias associated with alcohol cues: differences between heavy and occasional social drinkers. Psychopharmacology, 157, 67–74. [PubMed: 11512045]

Trochim W, & Donnelly JP (2006). The research methods data base. Retrieved 7.

Waelde LC, Pennington D, Mahan C, Mahan R, Kabour M, & Marquett R (2010). Psychometric properties of the Race-Related Events Scale. Psychological Trauma: Theory, Research, Practice, and Policy, 2, 4–11.

Wapp M, Burren Y, Znoj H, & Moggi F (2015). Association of alcohol craving and proximal outcomes of a residential treatment program for patients with alcohol use disorders. Journal of Substance Use, 20, 11–15.

Watson D, Clark LA, & Tellegen A (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology, 54, 1063–1070. [PubMed: 3397865]

White-Johnson RL (2012). Prosocial involvement among African American young adults: Considering racial discrimination and racial identity. Journal of Black Psychology, 38, 313–341.

Williams DR, & Mohammed SA (2009). Discrimination and racial disparities in health: evidence and needed research. Journal of Behavioral Medicine, 32, 20–47. [PubMed: 19030981]

Witbrodt J, Mulia N, Zemore SE, & Kerr WC (2014). Racial/ethnic disparities in alcohol-related problems: Differences by gender and level of heavy drinking. Alcoholism: Clinical and Experimental Research, 38, 1662–1670.

Yip T, Gee GC, & Takeuchi DT (2008). Racial discrimination and psychological distress: The impact of ethnic identity and age among immigrant and United States-born Asian adults. Developmental Psychology, 44, 787–800. [PubMed: 18473644]

Zapolski TC, Pedersen SL, McCarthy DM, & Smith GT (2014). Less drinking, yet more problems: Understanding African American drinking and related problems. Psychological Bulletin, 140, 188–223. [PubMed: 23477449]

Zemore SE, Karriker-Jaffe KJ, Keithly S, & Mulia N (2011). Racial prejudice and unfair treatment: Interactive effects with poverty and foreign nativity on problem drinking. Journal of Studies on Alcohol and Drugs, 72, 361–370. [PubMed: 21513672]

Zemore SE, Ye Y, Mulia N, Martinez P, Jones-Webb R, & Karriker-Jaffe K (2016). Poor, persecuted, young, and alone: toward explaining the elevated risk of alcohol problems among Black and Latino men who drink. Drug and Alcohol Dependence, 163, 31–39. [PubMed: 27107846]

Public Health Significance Statement:

This study identifies private-regard racial identity as a possible intervention target for Black young adult drinking to attenuate risk for alcohol use craving following vicarious racial discrimination exposure.

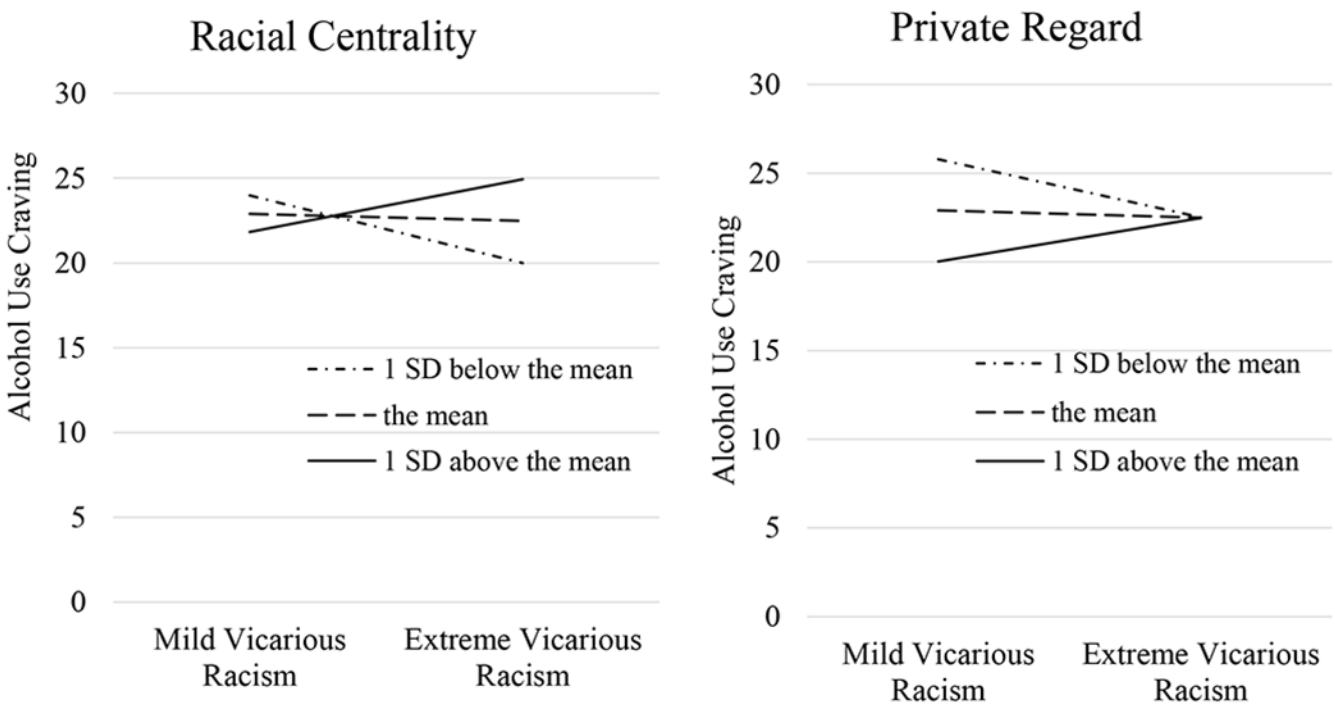

Figure 1.

Estimated marginal means of alcohol use craving in mild and extreme vicarious racial discrimination experimental conditions as a function of racial centrality and private regard levels (i.e., one SD below the mean, the mean, and one SD above the mean).

Table 1

Correlation Coefficients of Study Variables

	r																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Baseline Variables																			
1. College student (vs. non student)	—																		
2. Female sex (vs. male sex)	−.26	—																	
3. Social desirability	.26	−.06	—																
4. Binge drinking (past 90-days)	.11	.26	−.04	—															
5. Racial discrimination	**.45**	−.26	.00	.17	—														
6. Racial identity-Centrality	−.00	**.44**	.01	−.11	.25	—													
7. Racial identity-Private regard	−.03	.05	.15	−.21	.02	**.39**	—												
8. Racial identity-Public regard	.08	−.25	.11	.12	−.12	−.17	.15	—											
Experimental Variables for Mild and Extreme Video Conditions																			
9. Heart-rate (Mild)	−.04	**.39**	.01	−.11	−.10	.05	.03	−.14	—										
10. Heart-rate (Extreme)	.02	**.44**	.11	.01	−.08	.09	−.02	−.14	**.88**	—									
11. Alcohol craving (Mild)	.27	−.04	−.05	−.01	.24	.02	−.19	−.03	−.23	−.17	—								
12. Alcohol craving (Extreme)	**.28**	−.09	−.03	.07	**.33**	.21	.01	.06	−.25	−.22	**.83**	—							
13. Alcohol attention bias (Mild)	.15	**−.32**	.03	−.08	.09	−.06	.21	.10	**−.40**	**−.46**	.09	.16	—						
14. Alcohol attention bias (Extreme)	−.07	−.15	.07	−.02	.01	.19	.21	−.11	.04	−.03	−.06	.08	.06	—					
15. Negative affect (Mild)	.20	.08	.04	.11	**.43**	.04	.07	.05	.01	−.00	.16	.09	−.18	−.13	—				
16. Negative affect (Extreme)	.27	.04	−.05	.18	**.31**	.08	.07	−.17	.19	.13	.20	.20	−.18	.01	**.70**	—			
17. Racism rating (Mild)	.02	.27	.11	−.06	.12	**.48**	**.32**	.15	−.08	.07	−.11	−.05	−.01	.01	.17	.09	—		
18. Racism rating (Extreme)	−.05	−.02	−.15	.02	.08	.18	.20	−.18	.11	.11	.10	.16	−.06	**.38**	−.07	.19	.13	—	
19. Stressfulness rating (Mild)	−.01	.16	.27	−.13	.18	**.50**	.44	−.07	−.02	−.04	−.01	−.01	−.06	.06	**.37**	.11	**.35**	−.09	—
20. Stressfulness rating (Extreme)	.21	**.28**	.21	−.05	.07	.13	**.31**	−.04	**.31**	**.32**	.21	.14	−.21	.14	**.31**	**.52**	.06	.08	.31

Note. N=48–51 due to missing data. Significant group differences at p<.05 are highlighted in bold font.

Table 2

Mean Comparisons of Study Variables as a Function of Experimental Video Condition

	Mild Condition	Extreme Condition	Comparison
Racism Rating	13.51	13.57	$t(50) = -0.26$
Stressfulness	**12.71**	**13.55**	$\mathbf{t(50) = -3.40}^{**}$
Negative Affect	**26.33**	**31.41**	$\mathbf{t(50) = -5.81}^{***}$
Heart Rate	**85.55**	**91.05**	$\mathbf{t(50) = -2.74}^{**}$

Note. N=51. Paired samples t-tests were used for comparisons; Significant comparisons between the two conditions at p<.05 are highlighted in bold font.

* p<.05.

** p<.01.

*** p<.001.

Table 3

Mixed ANOVA Analyses Examining Interaction Effects of Racial Identity and Experimental Video Condition

	Alcohol craving		Alcohol attention bias	
	F statistic(*df*)	**n_p^2**	**F statistic(*df*)**	**n_p^2**
Model 1: Centrality of Racial Identity				
Condition (Mild vs. Extreme)	1.30(1,42)	.03	0.58(1,40)	.01
Discrimination	0.81(1,42)	.02	0.33(1,40)	.01
Binge Drinking	0.05(1,42)	.00	0.59(1,40)	.01
Female Sex	0.00(1,42)	.00	**6.87(1,40)** *	**.15**
College Status	2.60(1,42)	.06	0.02(1,40)	.00
Social Desirability	0.43(1,42)	.01	0.91 (1,40)	.02
Centrality	0.15(1,42)	.00	3.48(1,40)	.08
Condition × Centrality	**7.11(1,42)** *	**.15**	2.41(1,40)	.06
Model 2: Private Regard of Racial Identity				
Condition (Mild vs. Extreme)	**5.28(1,42)** *	**.11**	0.05 (1,40)	.00
Discrimination	1.50(1,42)	.03	0.03(1,40)	.00
Binge Drinking	0.16(1,42)	.00	0.44(1,40)	.01
Female Sex	0.12(1,42)	.00	3.58(1,40)	.08
College Status	2.45(1,42)	.06	0.00(1,40)	.00
Social Desirability	0.21(1,42)	.00	0.90(1,40)	.02
Private Regard	0.48(1,42)	.01	0.35(1,40)	.01
Condition × Private Regard	**6.71(1,42)** *	**.14**	0.37(1,40)	.01
Model 3: Public Regard of Racial Identity				
Condition (Mild vs. Extreme)	0.40(1,42)	.01	0.00(1,40)	.00
Discrimination	1.62(1,42)	.04	0.03(1,40)	.00
Binge Drinking	0.12(1,42)	.00	0.62(1,40)	.02
Female Sex	0.25(1,42)	.01	3.26(1,40)	.08
College Status	2.76 (1,42)	.06	0.00(1,40)	.00
Social Desirability	0.43(1,42)	.01	1.21(1,40)	.03
Pubic Regard	0.44(1,42)	.01	0.04(1,40)	.00
Condition × Public Regard	0.23(1,42)	.01	0.47(1,40)	.01

Note. N=48–51 due to missing data. Significant statistics of at least $p<.05$ are highlighted in bold.

* $p<.05$.

** $p<.01$.

*** $p<.001$.