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## Examining the unique and additive effect of trauma and racial microaggressions on substance use risk among Black young adults

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### Abstract

**Objectives:** Exposure to traumatic events is linked to adverse health outcomes, including substance use. Contemporary models have conceptualized racism, including racial microaggressions, as a form of trauma. However, few studies have been conducted examining the unique and additive effect of racial microaggressions within models that include exposure to traditional forms of trauma on substance use outcomes, as well as whether effects vary by gender.

**Methods:** 399 Black young adults between 18 and 29 (61% female, mean age 20.7) completed measures on problem alcohol and cannabis use, and experiences of trauma and racial microaggressions.

**Results:** Controlling for age, gender, income, race (i.e., monoracial versus multiracial), and recruitment source, regression analyses showed that racial microaggressions predicted problem substance use above the effect of trauma exposure. Moreover, exoticization/assumptions of similarity and workplace/school microaggressions primarily accounted for the effect of racial microaggressions on substance use risk. One gender effect was found, with trauma exposure associated with lower cannabis use for Black males and a non-significant effect found for Black females.

**Conclusions:** Racial microaggressions provide unique and additive understanding in risk for substance use outcomes among Black young adults above effects observed from exposure to traditional forms of trauma. This finding highlights the significance of racial microaggression on health outcomes for Black young adults and can inform future research in the area of trauma exposure and substance use risk among this population of young people.

### Keywords

trauma; racism; racial microaggressions; alcohol; cannabis

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### Introduction

Trauma exposure, broadly defined as experiencing a physically or emotionally harmful or life threatening event (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014a) is a public health concern, as it has the potential to evoke substantial levels of stress and lasting adverse effects on an individual's functioning and wellbeing (SAMHSA, 2014a). Specifically, studies have documented an association between trauma exposure (e.g., domestic violence, physical assault, automobile accidents, combat) with increased risk for internalizing outcomes, such as anxiety and depressive symptoms (Heim et al., 2010; Norman et al., 2012) and post-traumatic stress disorder (PTSD) diagnosis (Heim et al., 2010; Nemeroff et al., 2006). In line with the stress-coping theory (Amirkhan & Marckwordt, 2017; Lazarus & Folkman, 1984), which posits that threatening events cause a stress response which results in behavioral and physiological responses to ameliorate the distress, exposure to trauma has been associated with increased risk for externalizing behaviors, such as substance use, that may serve as a coping response to stress exposure (Devries et al., 2014; Kristman-Valente & Wells, 2013; Norman et al., 2012). However, the observed effect between trauma exposure and substance use is weaker than effects found for internalizing health outcomes (Thege et al., 2017). In turn, there has been a call for additional research to better understand the unique circumstances in which trauma exposure negatively impacts substance outcomes, and subpopulations at greatest risk for substance use as a consequence of trauma exposure (Thege et al., 2017).

A subpopulation that may be particularly impacted by trauma exposure and experience unique circumstances that can place them at greater risk for substance use are Black Americans. Specifically, studies have documented elevated risk of exposure to traumatic experiences, particularly exposure to violence (López et al., 2017; McGruder-Johnson et al., 2000; Roberts et al., 2011), and risk for post-traumatic stress disorder (McLaughlin et al., 2019; Roberts et al., 2011) among Black Americans in comparison to White Americans. This elevated risk has been postulated to be due to a number of factors, including exposure to racism (Crouch et al., 2000; Roberts et al., 2011).

Racism is an important cultural factor to consider when conceptualizing trauma and risk for negative health outcomes (e.g., Bryant-Davis, T., 2007; Helms et al., 2012; Suarez, 2016) among Black Americans, given the high rate of experiencing racism among Black individuals (Chou et al., 2012; Lee et al., 2019) and its association with a number of physical and mental health outcomes, including substance use (Carter, 2007; Carter et al., 2017).

Moreover, although racism does not always involve exposure to actual or threatened physical injury, death, or sexual violence, which is necessary to be classified as a traumatic event by the American Psychological Association (APA, 2013), racism does typically involve exposure to emotionally harmful events, which is included in the criteria for a traumatic event by the Substance Abuse and Mental Health Services Administration [SAMHSA] (2014a). It is within this broader conceptualization of trauma, that researchers have called for the APA to broaden the definition of trauma to include racism as a traumatic event (Bryant-Davis & Ocampo, 2005; Holmes et al., 2016), and have coined the term “racial trauma” to encapsulate this conceptualization of racism as a form of trauma (Carter, 2007; Comas-Díaz et al., 2019; Williams et al., 2018a).

There is also mounting empirical evidence to support the conceptualization of racism as a form of trauma, with similarities documented in the adverse psychological and behavioral responses reported by survivors of racism to those found among survivors of the aforementioned traditional forms of trauma (Butts, 2002; Carter, 2007; Franklin et al., 2006; William et al., 2018; Williams et al., 2003, Williams & Mohammed, 2013). For instance, a meta-analysis conducted by Carter et al. (2017) found that across 105 studies, racism led to adverse mental and physical health outcomes represented by a small to medium size effect, which is similar to the effect sizes observed for the effect of exposure to traditional forms of trauma on health outcomes (Afari et al., 2014; Humphreys et al., 2020). It has been speculated that exposure to racism may lead to development of post-traumatic stress disorder (PTSD; Butts, 2002; Helms et al., 2012; Sivrava et al., 2019), with positive associations found between racism and diagnosis of PTSD (Chou et al., 2012; Sivrava et al., 2019), symptoms of PTSD such as, anxiety, shame, avoidance, numbing, and hypervigilance (Carter & Forsyth, 2010; Kang & Burton, 2014; Kirkinis et al., 2018; Pieterse et al., 2010; Polanco-Roman et al., 2016), as well as other trauma-related outcomes, such as decreased psychological well-being and depressive outcomes (Hurd et al., 2014; Mereish et al., 2016; Schmitt et al., 2014; Sellers et al., 2003). Additionally, similar to trauma, exposure to racism is associated with increased risk for externalizing behaviors, such as substance use (Carter et al., 2017; Gilbert & Zemore, 2016; Hurd et al., 2014). The stress-coping theoretical model (Clark et al., 1999; Lazarus & Folkman, 1984) has also been used to understand this relationship, suggesting that racial discrimination can induce a stress response, which results in behavioral and physiological responses to ameliorate the distress, such as depressive symptoms and substance use. In support of this theory, researchers have documented this pathway, in that experiences of racial discrimination have been shown to be positively associated with substance use through depressive symptoms (Brody et al., 2012; Clark, 2014).

The positive association between racism and substance use outcomes has also been found when examining more subtle and frequent forms of racism, referred to as racial microaggressions. (Blume et al., 2012; Pro et al., 2018; Su et al., 2019). As defined by Sue et al. (2007) racial microaggressions are “brief and commonplace daily verbal, behavioral, and environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory or negative racial slights and insults to the target person or group” (p. 273). Racial microaggressions are expressed in a number of forms and include themes such as: alien in one’s own land, assumption of intellectual inferiority, color

blindness, assumption of criminality, assumption of inferior status, denial of racism, myth of meritocracy, pathologizing cultural norms/communication styles, second-class citizenship (treating others as lesser beings), environmental invalidation (negative environmental messages about a racial group), assumption of similarity, invisibility (feeling devalued or ignored), and sexualization/exoticism (Nadal, 2011; Sue et al., 2007; Sue et al., 2008; Torres-Harding et al., 2012). Racial microaggressions are an important stressor to consider, particularly when conceptualizing trauma and its association with negative health outcomes, given the breath and frequency at which they occur (Donovan et al., 2013; Wong et al., 2014), distress evoked due to exposure to microaggressions (Sue et al., 2008; Wong et al., 2014), and the positive association between racial microaggressions and trauma-related outcomes (Moody & Lewis, 2019; Nadal et al., 2019). Specifically, in regard to trauma-related outcomes, Nadal et al. (2019) found among a racially diverse sample of adults, a positive association between experiences of racial microaggressions and the number of trauma symptoms endorsed. Moreover, at the subscale level the type of microaggression driving the positive association was workplace/academic microaggressions. These findings highlight the importance of examining racial microaggressions, particularly at the subscale level, to better illuminate the specific contexts in which exposure to this form of racism poses risk on trauma-related health outcomes. Moreover, in line with the minority stress theory (Meyer, 2003), cumulative exposure to microaggressions can tax an individual's capacity and resources to cope, and result in adverse psychological, physical, and behavioral outcomes, including trauma-related outcomes (Moody & Lewis, 2019; Smith et al., 2011). Consequently, given these findings, researchers have argued for racial microaggressions to also be included within conceptual models of trauma (e.g., Bryant-Davis & Ocampo, 2005).

Thus, for the current study, we will examine the effect of trauma exposure on risk for substance use among Black young adults that includes both traditional forms of trauma (e.g., domestic violence, physical assault, automobile accidents, combat) and racial microaggressions. Moreover, we will examine these relationships for two specific substances, alcohol and cannabis use, as they are the two most commonly used substances in the United States (SAMHSA, 2014b), with cannabis being more commonly used among Black populations than other racial/ethnic groups (Keyes et al., 2015; Sartor et al., 2013). It is hypothesized that traditional traumatic experiences will be associated with greater problematic substance use. Moreover, it is hypothesized that racial microaggressions as a whole will be associated with increased risk for problematic substance use above the risk posed by traditional trauma experiences. However, it is unclear whether differences in effects will be found at the subscale level, as a majority of the previous research examining the relationship between racial microaggressions and substance use have done so using composite scores rather than examining effects based on subscale scores (Blume et al., 2012; Dickerson et al., 2019; Forest-Bank, 2015; Lui, 2020; Pro et al., 2018; Su et al., 2020).

There is also a need to examine these risk models as a function of gender. Within the trauma literature, while some studies have found comparable effects of trauma exposure on substance use based on gender (Boyras & Waits, 2018), others suggest a stronger effect for females compared to males (Kobulsky, 2017; Kobulsky et al., 2016; Norman et al., 2012). Yet, Scheidell et al. (2017) found that the presence of gender differences was more complex, varying based on the developmental stage during which the relationship was examined and

substance type. As for the association between racism and substance use, although some studies have found no evidence of a gender effect (Benner et al., 2018; Boynton, et al., 2014; Hurd et al., 2014), others have observed the effect of racism on substance use to be stronger among Black males in comparison to Black females (Brodish et al., 2011; Brody et al., 2012; O'hare et al., 2015). To our knowledge, there are no published studies examining gender differences on the effect of racial microaggressions on substance use outcomes. Given mixed findings in the trauma and racism literature on the moderating effect of gender on substance use, and with no studies to our knowledge examining gender differences on racial microaggressions on substance use outcomes, no a priori hypotheses were made as to whether hypothesized effects of racial microaggressions on substance use would vary based on gender.

## Material and Method

### Procedures and Participants

Upon obtaining university IRB approval, an online questionnaire was made available to Black students over the age of 18 who were enrolled in the introductory psychology course at a Midwestern university. Young adult (ages 18–30) Black participants were also recruited via referrals from other studies conducted with Black participants, an email listserv of Black students, flyers posted across the university campus and surrounding community, and an online flyer posted on Craigslist. Participants could self-identify as belonging to more than one racial/ethnic group, but were required to at least identify as African American/Black to be eligible for the study. Those individuals who participated through the introductory psychology course were compensated with class research credit. All other participants received a \$5 gift card.

A total of 399 Black participants completed an online survey on the variables of interest. A majority of participants were recruitment outside the introductory psychology course ( $n=345$ ; 86% of the sample); however almost all participants, regardless of recruitment source, were currently in college ( $n=370$ , 92.7% of sample). In regard to demographics, a majority of participants (85.5%) identified as only Black, with 14.5% of participants identifying as Black and at least one other race/ethnicity. The age of the participants ranged from 18 to 29 ( $M=20.7$ ,  $SD=1.9$ ), with a majority identifying as female ( $n=245$ , 61.4%). Additionally, the most commonly ( $n=112$ , 28.1%) reported annual income among participants was “less than \$25,000.” However, the second most commonly reported income ( $n=81$ , 20.3%) was “\$75,000-\$99,000” suggesting variability in the socioeconomic status reported by participants. See Table 1 for descriptive statistics.

### Measures

**Demographics.**—Participants were asked to provide information regarding demographic variables, including their race/ethnicity, gender, age, and income. For the race/ethnicity variables participants could choose from any or all of the following options: African American/Black, Asian American/Pacific Islander, American Indian/Native American/Alaska Native, Caucasian/White, Bi-racial/Multi-racial, Other, and Hispanic or Latino. For the income variable, participants were asked to indicate their total household income before

taxes during the past 12 months. Responses were rated on a Likert-type scale with (1) *less than \$25,000*, (2) *\$25,000-\$34,999*, (3) *\$35,000-\$49,999*, (4) *\$50,000-\$74,999*, (5) *\$75,000-\$99,999*, (6) *\$100,000-\$149,999*, and (7) *\$150,000 or more*.

**Trauma.**—The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) is a self-report measure used to assess an individual’s lifetime and past year trauma history. The events included in the TLEQ were designed to be consistent with Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criterion A1 for a PTSD diagnosis (APA, 2013), with research to support its usefulness as a comprehensive assessment to measure traumatic events and PTSD diagnoses (Peirce et al., 2009). For the current study, we utilized a modified version of the TLEQ to better capture experiences among African Americans (Stevens-Watkins et al., 2014). The modified version contained 23 items, but for the current study three items were omitted as they referred to experiences prior to age 18, which would not be relevant for a majority of our participants when assessing past year experiences of trauma. Sample items of traumatic events included in the measure are “involvement in a motor vehicle accident for which you received medical attention or that badly injured or killed someone,” “threatened with death or serious bodily harm,” “you have had a life-threatening personal illness,” and “you had problems with the police and a court appearance.” For each item, respondents were asked how often they had experienced the event in the past year. Responses were rated on a Likert-type scale with the following response options: (0) *never*, (1) *once*, (2) *twice*, (3) *three times*, (4) *four times*, (5) *five times*, and (6) *more than five times*. Items were summed to create an indicator for past year trauma history, with higher values indicating greater trauma exposure. Reliability of the TLEQ was high ( $\alpha = .98$ ), which is consistent with previous studies among young adult samples (Edman et al., 2016; Read et al., 2017).

**Racial Microaggressions.**—The Racial and Ethnic Microaggressions Scale (REMS; Nadal, 2011) was used to assess past 6 months experiences with racial microaggressions. The measure was developed and validated among college samples of African American/Black, Latinx, Asian American, and Multiracial participants, which yielded a 6-factor model (with 5–9 items each): (a) Assumptions of Inferiority (i.e., assumed to be poor or hold substandard careers because of your race), (b) Second-Class Citizen and Assumptions of Criminality (i.e., stereotyped to be deviant or criminals or substandard to Whites), (c) Microinvalidations (i.e., experienced verbal statements in which perpetrators convey negative messages regarding your race), (d) Exoticization/Assumptions of Similarity (i.e., assumed that everyone of one race is the same), (e) Environmental Microaggressions (i.e., positive perceptions of one’s race represented within media and positions of power), and (f) Workplace and School Microaggressions (i.e., experienced unfair treatment within school and work environment due to your race). Responses from items on each of the subscales are rated on a Likert-type scale with (1) *I did not experience this event*, (2) *1–3 times*, (3) *4–6 times*, (4) *7–9 times*, and (5) *10 or more*. Subscale item scores were totaled and averaged to produce a mean score for each subscale. A composite mean score was also created using scores across the six subscales. Higher scores indicate greater exposure to the type of microaggression. Previous studies have shown high internal consistency across

subscales among racial minority populations (Nadal et al., 2014b; Lewis & Neville, 2015). The current study produced similar results with alphas ranging from .83 to .93.

**Substance Use.**—*Alcohol use* was assessed using the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is a 10-item measure developed by the World Health Organization to measure past year problem alcohol use, and has been used widely among young adult populations (Hagman, 2016). The maximum total score is 40, with a total score below 8 suggestive of low risk, a score between 8 and 15 suggestive of risky or hazardous level of alcohol use, 16 to 19 suggestive of high risk or harmful level of alcohol use, and 20 or more suggestive of high-risk with the likelihood of alcohol dependence. For the current study, the scale reliability was high ( $\alpha = .96$ ). *Cannabis use* was assessed using the Cannabis Use Disorders Identification Test-Revised (CUDIT-R; Adamson et al., 2010). The CUDIT-R is an 8-item measure that contains items relating to consumption, dependence, cannabis-related problems, and psychological features of cannabis use within the past year. Scores can range from 0 to 32 with a score above 13 suggestive of cannabis use disorder. The CUDIT-R has shown high reliability, with a Cronbach's alpha coefficient of 0.91 (Adamson et al., 2010). For the current study, the scale reliability was good ( $\alpha = .81$ ).

### Data Analyses

All analyses were performed using SPSS 26.0. A hierarchical linear regression analysis was performed separately for each substance use outcome to test the study hypotheses. After entering the covariates, trauma exposure was entered in model 2, the microaggression composite or subscales were entered in model 3, and the interaction term of mean centered trauma exposure and microaggressions with gender was entered in model 4. The PROCESS macro (Hayes, 2013) was then used to probe any significant interactions between trauma exposure or racial microaggressions and gender (simple moderation: the conditional effect model specified as Model 1 by Preacher et al. (2007)), with a 10,000 bootstrap sample to calculate standard errors and confidence intervals. Given that few empirical studies have included microaggression subscales in models with traditional forms of trauma and the large number of tests carried out with the various different types of microaggressions as independent variables (with no specific hypotheses about the impact of these different forms of microaggressions), the Bonferroni correction of  $p < .003$  (i.e.,  $.05/19$  predictors) was used to adjust for simultaneous predictors in each regression model and to reduce chances of type I error (Armstrong, 2014; Perrett et al., 2006).

### Results

A majority of participants (84.5%) reported experiencing at least one traumatic event over the past year, with an average of 7.6 unique trauma experiences reported in the past year. Moreover, microaggressions were experienced on average 1–3 times within each of the categories in the past 6 months. In regard to the outcome variables, a large proportion of participants (76.7%) had used alcohol in the past year, with a smaller proportion who had used cannabis (44.9%). Scores on all measures, except for cannabis use, differed by gender,

with higher scores found for males compared to females. Means and standard deviations for the study variables are shown in Table 1.

Initial bivariate and point-biserial correlations between all study variables are shown in Table 2. Correlation analyses revealed significant associations between the demographic variables and recruitment source with most variables of interest, with older age, being male, having higher income, identifying as only Black/African American (i.e., monoracial) compared to identifying as Black/African American and at least one other racial/ethnic group (i.e., multiracial), and recruitment through the community compared to recruitment through the undergraduate course being associated with higher scores on the study variables. Given evidence that age, income, race, and recruitment source were differentially associated with the key study variables, they were included as covariates in the subsequent analyses. Regarding the predictor variables, trauma exposure had a positive and significant correlation with all of the microaggression variables and alcohol use, but not cannabis use. Additionally, racial microaggressions were positively and significantly correlated with the substance use outcomes.

### **Trauma Exposure, Racial Microaggressions, and Problem Alcohol Use**

The first set of hierarchical linear regression analyses were conducted to examine the unique and additive effects of racial microaggressions on problem alcohol use above the effects observed for traditional trauma exposure. In the model with the composite microaggression score, results indicated that after controlling for the effect of the demographic variables and recruitment source, trauma exposure significantly predicted problem alcohol use ( $\beta = .55, p < .001$ ). When the composite racial microaggression score was added to the model, trauma exposure remained significant ( $\beta = .46, p < .001$ ), with racial microaggressions providing unique and incremental prediction ( $\beta = .20, p < .001$ ;  $R^2$  change =  $.02, p < .001$ ) for problem alcohol use. A gender effect was not found for either trauma exposure or racial microaggressions at the Bonferroni corrected p-value of  $< .003$ .

The hierarchical linear regression was rerun with the racial microaggression subscales. Results indicated that after controlling for the demographic variables and recruitment source, trauma exposure significantly predicted problem alcohol use ( $\beta = .55, p < .001$ ). When racial microaggressions were added into the model, trauma exposure remained significant ( $\beta = .42, p < .001$ ), with exoticization/assumptions of similarity microaggressions ( $\beta = .20, p < .001$ ) significantly predicting problem alcohol use. The amount of variance accounted for also significantly increased with the inclusion of racial microaggressions, with the model accounting for 75 percent of the variance ( $R^2$  change =  $.04, p < .001$ ). When the gender interaction variable was added into the model, a gender effect was not observed. See Table 3 and 4 for detailed results of the hierarchical linear regression analysis.

### **Trauma Exposure, Racial Microaggressions, and Problem Cannabis Use**

The second set of hierarchical linear regression analyses were conducted to examine the unique and additive effects of racial microaggressions on problem cannabis use outcomes above the effects observed for trauma exposure. In the model with the composite microaggression score, results indicated that after controlling for the effect of the



demographic variables and recruitment source, trauma exposure was not significantly related to problem cannabis use ( $\beta = -.01, p = .872$ ). When the composite racial microaggression score was added to the model, trauma exposure remained non-significant, with racial microaggressions providing unique and incremental prediction ( $\beta = .21, p = .001$ ;  $R^2$  change = .02,  $p < .001$ ) for problem cannabis use. In the final step, a gender effect was found for trauma exposure ( $\beta = .22, p = .002$ ). The interactive effect was further probed using the PROCESS macro, with a significant negative relationship found for males (estimated conditional effect =  $-.08, SE = .027, p = .003$ , Boot CI [95] =  $-0.133 - -0.026$ ) and a non-significant effect found for females (estimated conditional effect =  $.054, SE = .036, p = .131$ , Boot CI [95] =  $-0.016 - 0.124$ ).

The hierarchical linear regression was rerun with the racial microaggression subscales. Results indicated that after controlling for the demographic variables and recruitment source, the effect of trauma exposure on problem cannabis use was not statistically significant ( $\beta = -.01, p = .872$ ). When the racial microaggression subscales were added to the model, trauma exposure remained non-significant, however work and school microaggressions significantly predicted cannabis use ( $\beta = .34, p = .001$ ). The amount of variance accounted for also significantly increased with the inclusion of racial microaggressions, with the model accounting for 16 percent of the variance ( $R^2$  change = .08,  $p < .001$ ). Similar to the composite microaggression results, in the final step with the inclusion of the interaction terms for gender, a significant interaction was found for trauma exposure ( $\beta = .25, p = .001$ ). The interactive effect was further probed using the PROCESS macro, with a significant negative relationship found for males (estimated conditional effect =  $-.108, SE = .029, p = .0002$ , Boot CI [95] =  $-0.164 - -0.051$ ) and a non-significant effect found for females (estimated conditional effect =  $.040, SE = .036, p = .262$ , Boot CI [95] =  $-0.030 - 0.111$ ). See Table 5 and 6 for detailed results of the hierarchical linear regression analyses.

## Discussion

The current study examined the unique and additive effect of exposure to racial microaggressions above exposure to traditional forms of trauma on substance use outcomes among Black young adults, and potential variations in risk based on gender. Our first hypothesis on the significant effect of racial microaggressions on substance use was supported, finding that racial microaggressions provided unique and additive variance in risk for problem alcohol and cannabis use above the effect found for exposure to traditional forms of trauma. Moreover, although this effect was observed when utilizing the composite racial microaggressions score, limited information can be gleaned from this finding as to the specific circumstances that pose the greatest risk for substance use. Understanding risk at this level of detail can only be accomplished by examining effects at the subscale level. Thus, regression models were also run at the subscale level, finding that the effect of racial microaggressions on problem alcohol use was primarily driven by experiences of exoticization/assumptions of similarity microaggressions. Whereas for problem cannabis use, the effect of racial microaggressions was primarily driven by experiences of microaggressions within school and work environments.

These findings can be incorporated into the small, but growing body of literature on the association between racial microaggressions, assessed at the subscale level, and health outcomes (Nadal et al., 2014a; 2014b; 2017; 2019). Within this body of research, the most consistent finding has been the positive association between workplace/school microaggressions and negative health outcomes. Nadal and colleagues published four separate studies on the effect of racial microaggressions on a number of psychological and physical health outcomes among diverse young adult and adult populations, with three of the four studies finding a significant effect of workplace/school microaggressions on the study outcomes (Nadal et al., 2014a; 2014b; 2017; 2019). Moreover, two of the studies found workplace/school microaggressions to be the only significant predictor of the six microaggressions on the health outcomes (Nadal et al., 2014b; Nadal et al., 2019). Thus, microaggressions experienced within academic and work settings may be particularly impactful on health outcomes for racial/ethnic minorities, and appears to be an important context to consider from an intervention and policy perspective (e.g., Ogunyemi et al., 2020).

This may be especially important for young adults who are in higher education, which represented a majority of the participants in the current study. There is evidence that the negative effect of racial microaggressions on an individual's stress response increases with level of educational attainment (Smith et al., 2011). Research has also been conducted to better understand microaggressions within higher education, finding that Black college students experience racial microaggression across multiple settings, including within their classes, interactions with faculty and peers, and social spaces both on and off campus (Solorzano et al., 2000). Participants in the Solorzano et al. (2000) study noted that experiences with microaggressions negatively impacted the students' sense of self, as well as academic performance. Although, the effect of these types of microaggressions on substance use was not examined within the Solorzano et al. (2000) study, there is evidence based on studies conducted among racial-ethnic minority college students that a direct effect exists between exposure to racial microaggression and risk for both alcohol (Blume et al., 2012) and cannabis use (Pro et al., 2017). However, these studies were also limited in that racial microaggressions specific to school were not assessed. Thus, more work is warranted to better understand the specific circumstances within higher education settings in which racism impacts substance use outcomes among Black students.

Understanding the specific academic contexts in which racial microaggression occur, may also help in understanding our finding on the effect of microaggressions regarding assumed similarity on substance use among Black young adults. This finding is novel, as it has not been observed in previous literature (e.g., Pro et al., 2018). However, there is evidence, particularly among studies that have examined experiences of microaggressions in higher-education settings, that this type of microaggression also occurs often (Keels et al., 2017; Solorzano et al., 2000). Thus, more research is warranted to better understand within academic settings the type or themes of racial microaggressions experienced and their impact on substance use risk for Black young adults. This is particularly important for cannabis use, given evidence of increased cannabis use among both Black youth (Hasin et al., 2019; Johnson et al., 2015) and young adults (Hasin et al., 2019; Finlay et al., 2012), in

contrast with some evidence of decreased cannabis use among non-minority groups (Hasin et al., 2019).

Our second aim examined the moderating effect of gender on the relationship between racial microaggressions and substance use. Given the dearth of research in this area, no a priori hypotheses were made. Our findings indicated no evidence of a gender effect of racial microaggressions on either substance use outcome. However, additional research is needed to confirm this finding and to examine whether there are particular circumstances in which a gender effect may be observed.

Lastly, although not a study aim, interesting findings were observed on the effect of exposure to traditional forms of trauma on substance use. Specifically, among our sample of Black young adults, a positive effect of trauma was found for problem alcohol use, but a non-significant main effect was found for problem cannabis use. These findings though mixed, are consistent with previous findings in the literature. Thege et al. (2017) found among the 181 studies included in their systematic review that almost two-thirds of the tested associations found a non-significant effect between trauma and addictive behaviors, one-third found a positive association, and a small portion (1.3%) found a significant negative association. Moreover, the delineation of effects as positive, negative, or non-significant also varied based on substance type (Thege et al., 2017). It is unclear why traditional forms of trauma would be associated with alcohol use but not cannabis use. Future research should examine mechanisms, such as substance motives, expectancies, and coping styles (Cooper et al., 2016; Gaher & Simons, 2007; Simons et al., 2000; Van Gundy et al., 2015), as this may provide insight into differential processes involved in risk for substance use as a consequence of trauma exposure among Black young adults. Additionally, in regard to gender, a significant gender effect was found for problem cannabis use, such that exposure to trauma was associated with reduced risk for cannabis use for Black males, with a non-significant effect observed for females. As noted above, although there is some evidence for a negative association between trauma exposure and substance use in the literature (e.g., Thege et al., 2017), this finding is largely inconsistent with previous literature suggesting a positive association between trauma exposure and substance use among Black men (e.g., Cross et al., 2015; Jiang et al., 2018; Rich & Grey, 2005). Thus, examining the mechanisms proposed above (i.e., motives, expectancies, and coping styles) may help explain the association between trauma exposure and substance use risk among Black young men.

Although some findings were unexpected, overall the current study provides novel and important information on the unique and additive effect of exposure to racism above the effect of exposure to traditional forms of trauma on substance use outcomes among Black young adults. Yet, there are limitations that should be noted and suggestions for future studies. First, findings were based on cross-sectional data, which precludes interpretation of causality. Second, findings were based primarily from young adults who were engaged in higher education, and attended a predominately White Midwestern university in an urban setting. Thus, additional research is needed to determine if the findings are generalizable to a larger population of Black young adults. This body of research can also be extended to examine within-group variability in risk among Black young adults. Specifically, our

findings indicated that responses within the general trauma, racial microaggressions, and substance use measures varied significantly between those young adults who identified as only Black/African American compared to those who identified as Black/African American and at least one other race/ethnicity. Therefore, there may be significant within-group variability in the relationship between racial microaggressions and substance use risk that warrants additional investigation in future studies. Fourth, in regard to measurement, the trauma and substance use measures were based on a past year timeframe whereas the racial microaggressions were based on events over the past six months. Thus, it is plausible that differences in the timeframe could have influenced the magnitude of the effects observed for experiences to trauma and microaggressions on the substance use outcomes. Another measurement consideration is the lack of measures assessing neighborhood-level factors, such as neighborhood disadvantage or residing in violent neighborhood, that could have influenced substance use risk, and should be considered within future research in this area. Lastly, we only examined risk for alcohol and cannabis use, with future research needed to examine the risk model with other substances, such as tobacco, blunt use, and illicit drugs.

## Conclusions

Researchers have advocated for the inclusion of racism, as well as racial microaggressions specifically, within conceptual models of trauma and the diagnosis of PTSD (e.g., Bernard et al., 2020; Bryant-Davis & Ocampo, 2005; Helms et al., 2012; Kirkinis et al., 2018). This is important, as noted by Kirkinis and colleagues (2018), because the current conceptualization of trauma based on DSM criteria limits the ability for people with other types of traumatic experiences, such as race-based trauma, to be given appropriate diagnoses, access to appropriate medical care, and obtain insurance reimbursement (Kirkinis et al., 2018). Our findings support this call, showing that racial microaggression predict risk for health outcomes above and beyond the risk posed by exposure to traditional forms of trauma. Moreover, through examination of racial microaggressions at the subscale level, we found that there are two specific types of racial microaggressions – exoticism/assumption of similarities and work/school racial microaggressions – that are primarily accounting for the effects found among Black young adults. These findings suggest that assessment of racial microaggressions, particularly exoticism/assumption of similarities and work/school racial microaggressions, can provide important contextual information on the types of traumatic experiences that negatively impact the health of Black young adults. Future research, thus, should utilize the Racial and Ethnic Microaggressions Scale (REMS; Nadal, 2011), or other measures that assess for racism and racial microaggressions, such as the UConn Racial/ Ethnic Stress & Trauma Survey (UnRESTS; Williams et al., 2018a) and the Trauma Symptoms of Discrimination Scale (TSDS; Williams et al., 2018b) when conducting trauma-based research and assessments. It may also be important for future studies to develop measures of trauma exposure that include items assessing racism and racial microaggressions, as well as traditional forms of trauma within the same measurement.

Kirkinis and colleagues (2018) also noted in their study that given evidence of moderate associations between racial discrimination and PTSD symptoms among non-veteran populations, it is plausible that PTSD conceptualizations of trauma may not be capturing the full experience of race-based trauma. In turn, the authors stated that there may be unique

aspects of race-based trauma that differ from traditional forms of trauma that do not fit within the current diagnostic trauma framework. Given the current study findings on the unique effects of racial microaggressions on substance use above the effect of traditional forms of trauma exposure, this may be the case. Thus, future research can build from the current study to examine whether racial microaggressions provide unique and incremental prediction of PTSD symptoms and other health outcomes above traditional forms of trauma among racial/ethnic minority young adults. Moreover, as suggested by Kirkinis et al. (2018) future studies are also needed to determine whether there are theoretically unique outcomes of race-based trauma that differ from PTSD, such as low self-esteem and anger. This work would be important for both researchers and clinicians to better understand the unique qualities of racism that impact health in ways that do not necessarily fit within the current diagnostic trauma framework.

The second aim of the current study was to examine variation in risk models based on gender. Although limited gender effects were observed, future research is needed to confirm whether gender differences are present within the relationship between racial microaggressions and health outcomes. Moreover, research is needed to determine whether there is within-group variation in risk based on racial/ethnic identity among Black young adults, given the dearth of research in this area. Future studies are also needed to examine potential mechanisms underlying this risk pathway (e.g., motives, expectancies, and coping styles) and other factors that may buffer risk for substance use among Black young adults. Such work can clarify the circumstances and subpopulations in which trauma exposure adversely impacts substance use outcomes, which can in turn be used to inform intervention programming and policies aimed at reducing substance use risk among Black young adults.

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**Public Significance Statement:**

Racism, including racial microaggressions, have been conceptualized as a type of traumatic event. However, little is known of the incremental risk posed by racial microaggressions above exposure to other forms of trauma. Study results showed that racial microaggressions predicted risk for alcohol and cannabis use among Black young adults above effects produced by exposure to traditional forms of trauma. These findings highlight the need to better understand the impact of racial microaggressions within trauma risk models on health outcomes among Black individuals, which can inform future research and intervention programming for this population.

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**Table 1**

## Demographics and Descriptive Statistics for the Sample

Variable	Full Sample	Males	Females
<i>Demographics</i>			
Gender <sup>a</sup>			
Male	146 (36.6%)		
Female	245 (61.4%)		
Race			
Monoracial (Black/African American)	341 (85.5%)		
Multiracial (Black/African American and other race/ethnicity)	58 (14.5%)		
Age	20.65 (1.93)*	21.24 (1.88)	20.29 (1.87)
<i>Descriptive Statistics</i>			
Trauma	16.07 (21.76)*	29.68 (25.91)	7.63 (12.89)
Microaggression			
Assumption of Inferiority	2.33 (.98)*	2.67 (.83)	2.13 (1.02)
Second-Class Citizen	2.18 (.92)*	2.60 (.84)	1.91 (.85)
Microinvalidation	2.35 (.90)*	2.63 (.74)	2.17 (.93)
Exoticization/Similarity	2.18 (.83)*	2.58 (.73)	1.93 (.80)
Environmental	2.45 (.78)*	2.72 (.70)	2.28 (.78)
Work and School	2.11 (.95)*	2.57 (.83)	1.83 (.90)
Alcohol Use	10.97 (11.16)*	17.7 (11.27)	6.87 (8.89)
Cannabis Use	4.78 (6.43)	5.13 (6.58)	4.66 (6.41)

Note:  $N = 399$ ; study variables with an asterisk were statistically significant ( $p < .001$ ) between males and females;

<sup>a</sup> there were 8 individuals who did not indicate their gender.

Table 2

Correlation Coefficient Matrix

	Age	Gender	Income	Race	Source	Trauma	REM	AI	SC	MI	ES	ENV	WS	Alcohol	Cannabis
Age	—	-.024***	0.12*	-.009	-.013**	0.26***	0.26***	0.16**	0.21***	0.14**	0.24***	0.15**	0.27***	0.37***	0.24***
Gender	—	—	-.036***	0.113*	0.09	-.049***	-.036***	-.027***	-.037***	-.025***	-.038***	-.027***	-.038***	-.047***	-.004
Income	—	—	—	-.014**	-.019***	0.53***	0.40***	0.26***	0.34***	0.30***	0.39***	0.40***	0.39***	0.61***	0.10*
Race	—	—	—	—	0.19***	-.020***	-.029***	-.024***	-.030***	-.020***	-.020***	-.014**	-.030***	-.024***	-.013*
Source	—	—	—	—	—	-.019***	-.022***	-.018***	-.018***	-.017**	-.021***	-.016**	-.025***	-.030***	-.009
Trauma	—	—	—	—	—	—	0.59***	0.46***	0.56***	0.45***	0.59***	0.47***	0.61***	0.78***	0.09
REM	—	—	—	—	—	—	—	0.91***	0.89***	0.89***	0.89***	0.68***	0.88***	0.65***	0.23***
AI	—	—	—	—	—	—	—	—	0.79***	0.78***	0.76***	0.50***	0.80***	0.49***	0.22***
SC	—	—	—	—	—	—	—	—	—	0.72***	0.75***	0.52***	0.81***	0.59***	0.26***
MI	—	—	—	—	—	—	—	—	—	—	0.74***	0.52***	0.72***	0.50***	0.13**
ES	—	—	—	—	—	—	—	—	—	—	—	0.55***	0.80***	0.66***	0.19***
ENV	—	—	—	—	—	—	—	—	—	—	—	—	0.50***	0.50***	0.14**
WS	—	—	—	—	—	—	—	—	—	—	—	—	—	0.66***	0.29***
Alcohol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37***
Cannabis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note: N=399, Gender: male=0, female=1; Race: Black/African American=0, Black/African American and other race/ethnicity=1; Source: 0=community, 1= undergraduate course; REM= Racial Microaggressions Total Score; AI= Assumption of Inferiority; SC= Second-Class Citizen; MI= Microinvalidations; ES= Exoticization/Assumption of Similarity; ENV= Environmental; WS= Work and School.

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$

**Table 3**

Hierarchical Linear Regression for Problematic Alcohol Use

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	$\beta$	p-value	B	SE B	$\beta$	p-value	B	SE B	$\beta$	p-value
Age	1.32	.21	.23	.000	.93	.17	.16	.000	.86	.16	.15	.000
Gender	-5.21	.90	-.23	.000	-1.23	.76	-.05	.104	-0.96	.72	-.04	.186
Income	2.55	.22	.45	.000	1.42	.19	.25	.000	1.30	.18	.23	.000
Race	-3.41	1.14	-.11	.003	-2.01	.91	-.06	.027	-1.16	.88	-.04	.190
Source	-4.82	1.21	-.15	.000	-3.47	.96	-.11	.000	-2.97	.93	-.09	.001
Trauma					5.70	.37	.56	.000	4.66	.39	.46	.000
REM									2.98	.50	.20	.000
Trauma x Gender												
REM x Gender												
$R^2$												

Note: Gender: male=0, female=1; Race: Black/African American=0, Black/African American and other race ethnicity=1; Source: 0=community, 1= undergraduate course; REM= Racial Microaggressions Total Score.

Bolded values at significant at  $p < .003$ .  $R^2$  significance values:

\*  $p < .05$ ;

\*\*\*  $p < .001$ .

**.53**\*\*\*

**.71**\*\*\*

**.73**\*\*\*

**.74**\*

**Table 4**  
Hierarchical Linear Regression for Problematic Alcohol Use with Microaggression Subscales

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SEB	β	p-value	B	SEB	β	p-value	B	SEB	β	p-value
Age	1.32	.21	.23	.000	.93	.17	.16	.000	.80	.16	.14	.000
Gender	-5.21	.90	-.23	.000	-1.23	.76	-.05	.10	-.64	.72	-.03	.374
Income	2.55	.22	.45	.000	1.42	.19	.25	.000	1.23	.18	.22	.000
Race	-3.41	1.14	-.11	.003	-2.01	.91	-.06	.027	-1.28	.89	-.04	.150
Source	-4.82	1.21	-.15	.000	-3.47	.96	-.11	.000	-2.78	.92	-.08	.003
Trauma					5.62	.37	.55	.000	4.32	.40	.42	.000
AI					-1.22	.60	-.11	.044	-1.02	1.13	-.09	.366
SC					.42	.63	.03	.501	.04	1.01	.00	.971
MI					.12	.57	.01	.831	2.89	1.44	.23	.045
ES					<b>2.64</b>	<b>.69</b>	<b>.20</b>	<b>.000</b>	1.59	1.25	.12	.203
ENV					.61	.49	.04	.213	1.01	.92	.07	.276
WS					1.21	.68	.10	.075	1.09	1.26	.09	.384
Trauma x Gender									1.18	.85	.06	.169
AI x Gender									-.23	1.35	-.02	.865
SC x Gender									.37	1.28	.02	.774
MI x Gender									-3.42	1.57	-.23	.030
ES x Gender									1.36	1.50	.08	.365
ENV x Gender									-.61	1.09	-.03	.574
WS x Gender									-.02	1.48	.00	.990
<b>R<sup>2</sup></b>									<b>.53</b>	<b>.71</b>	<b>.75</b>	<b>.76</b>

Note: Gender: male=0, female=1; Race: Black/African American=0, Black/African American and other race/ethnicity=1; Source: 0=community, 1= undergraduate course; AI= Assumption of Inferiority; SC= Second-Class Citizen; MI= Microinvalidations; ES= Exoticization/Assumption of Similarity; ENV= Environmental; WS= Work and School.

Bolded values at significant at  $p < .003$ . R<sup>2</sup> significance values:

\*\*\*  
 $p < .001$ .



**Table 5**

Hierarchical Linear Regression for Problematic Cannabis Use

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	$\beta$	p-value	B	SE B	$\beta$	p-value	B	SE B	$\beta$	p-value
Age	.76	.17	.23	.000	.77	.18	.23	.000	.74	.17	.22	.000
Gender	.96	.73	.07	.192	.91	.78	.07	.244	1.07	.77	.08	.166
Income	.28	.18	.08	.120	.29	.19	.09	.137	.22	.19	.07	.252
Race	-1.98	.93	-.11	.034	-2.00	.94	-.11	.034	-1.49	.94	-.08	.115
Source	-.66	.99	-.03	.507	-.67	1.00	-.04	.500	-.37	.99	-.02	.705
Trauma					-.06	.39	-.01	.872	-.63	.42	-.11	.131
REM					<b>1.78</b>	<b>.54</b>	<b>.21</b>	<b>.001</b>	<b>3.10</b>	<b>1.04</b>	<b>.36</b>	<b>.003</b>
Trauma x Gender									<b>2.70</b>	<b>.87</b>	<b>.22</b>	<b>.002</b>
REM x Gender									-1.95	1.19	-.18	.103
<b>R<sup>2</sup></b>			<b>.08</b>	<b>***</b>			<b>.08</b>	<b>***</b>			<b>.10</b>	<b>***</b>
											<b>.13</b>	<b>**</b>

Note: Gender: male=0, female=1; Race: Black/African American=0, Black/African American and other race/ethnicity=1; Source: 0=community, 1= undergraduate course; REM= Racial Microaggressions Total Score.

Bolded values at significant at  $p < .003$ . R<sup>2</sup> significance values:

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$ .

**Table 6**  
Hierarchical Linear Regression for Problematic Cannabis Use with Microaggression Subscales

Variable	Model 1			Model 2			Model 3			Model 4						
	B	SE B	β	p-value	B	SE B	β	p-value	B	SE B	β	p-value				
Age	.76	.17	.23	.000	.77	.18	.23	.000	.66	.17	.20	.000	.18	.001		
Gender	.96	.73	.07	.192	.91	.78	.07	.244	1.41	.76	.11	.065	1.56	.77	.12	.043
Income	.28	.18	.08	.120	.29	.19	.09	.137	.20	.19	.06	.288	.15	.19	.05	.447
Race	-1.98	.93	-.11	.034	-2.00	.94	-.11	.034	-.72	.94	-.04	.449	-.56	.94	-.03	.554
Recruitment	-.66	.99	-.03	.507	-.67	1.00	-.04	.500	-.12	.97	-.01	.900	-.11	.97	-.01	.910
Trauma					.06	.39	-.01	.872	-.97	.42	-.16	.022	-.217	.57	-.36	.000
AI					-.02	.64	-.00	.976	1.38	1.19	.21	.250	1.38	1.19	.21	.250
SC					1.27	.66	.18	.057	.23	1.07	.03	.829	.23	1.07	.03	.829
MI					-1.40	.61	-.19	.021	-2.36	1.52	-.32	.121	-2.36	1.52	-.32	.121
ES					-.39	.73	-.05	.594	-1.09	1.32	-.14	.412	-1.09	1.32	-.14	.412
ENV					.47	.52	.06	.367	1.70	.98	.20	.082	1.70	.98	.20	.082
WS					<b>2.34</b>	<b>.72</b>	<b>.34</b>	<b>.001</b>	<b>4.24</b>	<b>1.33</b>	<b>.61</b>	<b>.002</b>	<b>4.24</b>	<b>1.33</b>	<b>.61</b>	<b>.002</b>
Trauma x Gender													<b>2.98</b>	<b>.90</b>	<b>.25</b>	<b>.001</b>
AI x Gender													-1.69	1.42	-.21	.236
SC x Gender													1.69	1.36	.18	.215
MI x Gender													.99	1.66	.11	.552
ES x Gender													.71	1.59	.07	.656
ENV x Gender													-1.47	1.15	-.14	.203
WS x Gender													-2.65	1.56	-.29	.091
<b>R<sup>2</sup></b>									<b>.08</b>				<b>.16</b>			<b>.19</b>

Note: Gender: male=0, female=1; Race: Black/African American=0, Black/African American and other race/ethnicity=1; Source: 0=community, 1= undergraduate course; AI= Assumption of Inferiority; SC= Second-Class Citizen; MI= Microinvalidations; ES= Exoticization/Assumption of Similarity; ENV= Environmental; WS= Work and School.

Bolded values at significant at  $p < .003$ . R<sup>2</sup> significance values:

\*  $p < .05$ ;

\*\*\*  $p < .001$ .