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The Experience of Racism on Behavioral Health Outcomes: The Moderating Impact of Mindfulness

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Abstract

Research shows that racial discrimination results in adverse behavioral health outcomes for African American young adults, including risk for depression, anxiety, and substance use. Although high levels of mindfulness have been shown to reduce risk for such health outcomes, it is unknown whether mindfulness can reduce risk as a consequence of racial discrimination, particularly among African Americans. Three-hundred and eighty-eight African American young adults between the ages of 18–24 ($M=20.6$, 62% female) completed measures assessing past year experiences of racial discrimination, depressive symptoms, anxiety symptoms, alcohol use, and trait mindfulness. A positive correlation was found between racial discrimination and the behavioral health outcomes, as well as a negative correlation between mindfulness and the behavioral health outcomes. Moreover, mindfulness was found to significantly moderate the effect of racial discrimination on mood symptoms. Although mindfulness was found to lessen the effect of racial discrimination on alcohol use, this difference was not statistically significant. In line with previous literature, racial discrimination was shown to have a negative impact on behavioral health outcomes among African Americans. Moreover, our findings provide support for the buffering effect of mindfulness on mood symptoms as a consequence of racial discrimination. This suggests that increasing mindfulness may be an effective strategy to include in interventions targeting improvement in mood symptoms for African American young adults. However, alternative strategies may be more appropriate to address outcomes, such as alcohol use, as a consequence of racial discrimination.

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Compliance of Ethical Standards

Conflict of Interest: All authors have given final approval of the version to be published. My coauthors and I do not have any conflicts of interest or activities that might be interpreted as influencing the research submitted, and this study was conducted in accordance with APA ethical standards.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee at Indiana University Purdue University in Indianapolis and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

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Keywords

African American; mindfulness; racial discrimination; alcohol use; depression; anxiety

Introduction

Over the past few decades, a significant body of literature has been conducted on the experience of racial discrimination among African Americans, with findings of prevalence rates that exceed those reported by other racial/ethnic groups in the United States (e.g., Borrell et al., 2010; Forrest-Bank & Jenson, 2015). As such, studies have documented the chronicity of exposure to racial discrimination across development among African Americans (e.g., Williams & Mohammed, 2009, for review), and its association with numerous psychological, physical, and behavioral health outcomes, including risk for depression, anxiety, cardiovascular problems, physical well-being, and substance use (Williams & Mohammed, 2009; 2013). It has also been noted that the negative effects of racial discrimination on health outcomes may be particularly severe during young adulthood (Hope, Hoggard, & Thomas, 2015), as exposure to racial discrimination has been posited to intensify during this developmental period (Kogan, Yu, Allen, & Brody, 2015; Madkour et al., 2015).

Similarly, young adulthood is a developmental period in which risk for engagement in high-risk health behaviors (e.g., substance use and unprotected sex; Arnett, 2000; Chen & Jacobson, 2012) and the experience of psychiatric problems (e.g., mood disorders, anxiety and depressive symptomatology; Ibrahim, Kelly, Adams, & Glazebrook, 2013; Kessler et al., 2007) also intensifies. For example, Mahalik et al. (2013) examined the course of changes in substance use, violence, and sexual behaviors from early adolescence through adulthood (ages 13 to 31 years) among a nationally representative sample of youth and found a steady increase in engagement in such behaviors through the early 20s with a subsequent leveling off or decline afterwards. Additionally, Copeland et al. (2011) examined the cumulative prevalence of psychiatric disorders from childhood to young adulthood among youth from the Great Smoky Mountains Study, finding that a majority of participants met criteria for a psychiatric disorder, including substance use disorders, anxiety disorders, or mood disorders, by age 21. Thus, given the potentially elevated risk of experiencing racial discrimination among African Americans during young adulthood, as well as risk for experiencing adverse health outcomes, a growing body of research has been devoted to examining the effect of racial discrimination on health outcomes specifically among African American young adults (Hurd, Varner, Caldwell, & Zimmerman, 2014; Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003; Solorzano, Ceja, & Yosso, 2000). Within this body of research, racial discrimination has been shown to increase risk for numerous behavioral health outcomes, including anxiety and depression symptoms, anger, fear (Hope et al., 2015; Sellers et al., 2003), substance use (Hope et al., 2015; Hurd et al., 2014), suicidal risk, and aggression (Hope et al., 2015).

In light of these known adverse health outcomes of racial discrimination among African American young adults, research has turned to examine factors that can mitigate risk, such

as ethnic identity development (e.g., Sellers et al., 2003), religiosity and social support (e.g., Bowen-Reid & Harrell, 2002; Prelow, Mosher, & Bowman, 2006). Outside of these sociocultural factors, given that the relationship between discrimination and health outcomes is understood in the context of stress and coping theory (Smart-Richman, Pek, Pascoe, & Bauer, 2010), there is an emerging body of literature examining the influence of affect-based coping strategies, such as mindfulness, to mitigate risk associated with racial discrimination exposure among African Americans (Lewis, Cogburn, & Williams, 2015; Pascoe & Richman, 2009).

Mindfulness, as defined by Kabat-Zinn (1994), is the ability to place non-judgmental attention and awareness to the present moment. Mindfulness has been examined among diverse populations, including African Americans, and has been shown to have a direct effect on positive health outcomes, including increased psychological well-being (Baer, Lykins, & Peters 2012; Masuda, Anderson, & Sheehan, 2009), lower levels of psychological distress (Coffey, & Hartman, 2008; Masuda & Tully, 2012), decreases in depressive symptomatology (Kuyken et al., 2010; Masuda & Tully, 2012), and lower levels of substance use (Bowen et al., 2006). Moreover, a growing body of literature suggests that mindfulness promotes successful coping in stressful situations (Brown, Ryan, & Creswell, 2007; Keng, Smoski, & Robins, 2011; Womack & Sloan, 2017). For example, Weinstein, Brown, and Ryan (2009) found that trait mindfulness served as a buffer against stress by increasing one's tolerance to distress, and thus serving as an adaptive coping mechanism in response to negative and stressful experiences.

Mindfulness has also been posited to moderate the effect of discriminatory experiences on health outcomes, as individuals with higher mindfulness are thought to have a greater ability to regulate emotions and are less likely to be emotionally reactive to distress (Coffey, Hartman, & Fredrickson, 2010). Although the current body of literature on the topic is sparse, there is promising evidence for the protective effect of mindfulness on the relationship between experiences of discrimination and health outcomes. Brown-Iannuzzi, Adair, Payne, Richman, and Frederickson (2013) conducted a study among a community sample of adults, a majority of whom self-identified as White (77.5%; African American 14%) finding that mindfulness buffered the relationship between experiences of perceived discrimination, though not race-specific, and symptoms of depression, and did so above and beyond the effects of positive emotions (e.g., amusement, awe, love). Support for the relationship has also been found among a sample of older (aged 43 to 83) Australian gay-identified males, with mindfulness attenuating the negative effect that experiences of sexuality-related and age-related discrimination had on psychological distress and self-esteem (Lyons, 2016). These two studies have documented support for the moderating effect of mindfulness, though neither were conducted primarily among African Americans nor examined race-specific discrimination.

To date, two published studies have been conducted among primarily African American adult samples. Shallcross & Spruill (2017) examined the moderating effect of mindfulness on the relationship between perceived, non-race specific discrimination and depression, among a sample of racial/ethnic minority adults (mean age 36), a majority of whom identified as non-Hispanic Black (45%, followed by Hispanic 38%). The authors found that

depressive symptoms as a consequence of perceived discrimination were significantly lower among individuals with higher levels of mindfulness compared to those with lower levels of mindfulness. To our knowledge only one study has been conducted among African Americans and examined race-specific discrimination. Graham, West, and Roemer (2013) found among a small sample ($N=57$) of African American adults aged 19 to 50, a moderating effect of mindfulness on the relationship between experiences of racial discrimination and symptoms of anxiety, such that past year frequency of racist events predicted anxiety arousal among individuals with lower levels of mindfulness, with a non-significant effect observed at higher levels of mindfulness.

Thus, although there is some evidence of a buffering effect of mindfulness on mood outcomes as a function of discrimination, these studies are limited in that most did not focus on race-based discrimination or include a large proportion of African Americans. Moreover, none were conducted exclusively among African American young adults and are limited in scope in that only mood outcomes were examined. Thus, the current study aims to add and extend upon this body of literature by examining the moderating effect of mindfulness on the relationship between racial discrimination on both psychological (i.e., depressive and anxiety symptoms) and behavioral (i.e., alcohol use) outcomes. Moreover, this study examined these relationships among African American young adults, as this is the developmental period in which racial discrimination is posited to intensify (Kogan et al., 2015; Madkour et al., 2015), as well as increased prevalence of negative psychological (Ibrahim et al., 2013; Kessler et al., 2007) and behavioral outcomes (Arnett, 2000; Chen & Jacobson, 2012). We hypothesized that among our sample of African American young adults, past year experiences of racial discrimination would be positively associated with higher scores on each of the behavioral health outcomes measured (i.e., depression and anxiety symptoms, and alcohol use). Second, we hypothesized that trait mindfulness would be negatively associated with the behavioral health outcomes. Third, we hypothesized that trait mindfulness would moderate the relationship between perceived discrimination and the behavioral health outcomes, such that at higher levels of mindfulness, the effect of racial discrimination on the outcomes would be significantly weakened.

Method

Participants

A total of 416 participants completed an online survey on the variables of interest. In response to the validity check, 9 participants were determined ineligible due to reporting being untruthful about their race. Nineteen participants were also excluded from analyses due to responses on the age ($n=10$) and gender variable ($n=8$) or did not complete measures on the variables of interest ($n=1$). Thus, the final sample for the current study was 388 participants. The majority of participants were college students, with nearly 88% of the sample reporting their educational status as college freshman (26.8%), college sophomore (24.5%), college junior (21.9%), or college senior (14.4%). The age of the participants ranged from 18 to 24 ($M=20.6$, $SD=1.8$), a majority reported being female (62%, see Table 1 for full descriptive statistics). Based on a power analysis using G-Power (Faul, Erdfelder, Buchner, & Lang, 2009) with three continuous predictor variables (racial discrimination,

mindfulness, and racial discrimination x mindfulness) at 80% power, our sample size was adequate to detect a small effect ($f^2 = .03$).

Procedures

Upon obtaining university IRB approval, an online questionnaire was made available to all African American students aged 18–24 enrolled in the introductory psychology course at a Midwestern university. Participants were also recruited via referrals from African American study participants, an email listserv of African American students enrolled at the university, flyers posted across the university campus and surrounding community, and an online flyer via Craigslist. The inclusion criteria were the same as recruitment settings, which restricted participation to individuals aged 18–24 who self-identified as African American/Black. The online survey first asked the participant to mark their race. If the participant did not select the African American/Black response option, they were not allowed to complete the remainder of the questionnaire. Those individuals who participated through the introductory psychology course were compensated with class research credit for their participation. All other participants received a \$5 gift card.

Measures

Demographics—Participants were asked to provide information regarding demographic variables, including their age, gender, and race/ethnicity. 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, Hispanic or Latino, Biracial/Multi-racial, and Other. Participants who did not select the African American/Black option were automatically screened out and were not able to complete the remaining questionnaire. Additionally, a validity check regarding race was added to the end of the survey asking participants if they had been truthful in response to the question about racial identification. Those individuals who indicated they were untruthful were excluded from the study analysis.

Racial Discrimination—The Schedule of Racist Events (SRE; Landrine & Klonoff, 1996) scale was used to assess frequency of past year experiences of *racial discrimination* (e.g., “How many times in the past year have you been treated unfairly by strangers because you are Black?”). The SRE includes 18 items that are rated on a Likert-type scale with (1) *never*, (2) *once in a while*, (3) *sometimes*, (4) *a lot*, (5) *most of the time*, and (6) *almost all of the time*. The scale has been used widely among African American populations and has strong psychometric properties (Klonoff & Landrine, 1999; O’Hara, Armeli, Scott, Covault, & Tennen, 2015). For the current study, items were summed with higher scores indicating more frequent racial discrimination ($\alpha = .96$).

Behavioral Health Outcomes—*Depression and anxiety* were assessed using the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item scale that assesses symptoms of depression and anxiety experienced over the past week. Depressive symptoms assessed include dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. Anxiety symptoms assessed include autonomic arousal, skeletal muscle effects, situational

anxiety, and subjective experience of anxious affect. Items are rated on a 4-point Likert scale ranging from (0) *did not apply to me at all over the last week* to (3) *applied to me very much or most of the time over the past week*. Depression and anxiety scores are multiplied by 2 to calculate the final score. For depression, levels of severity are based on the following cut-off scores: scores of 0–9 indicate normal range of severity, 10–13 indicate mild range of severity, 14–20 indicate moderate range of severity, 21–27 indicate severe range of severity, and 28 or higher indicate extremely severe range of severity. For anxiety, levels of severity are based on the following cut-off scores: scores 0–7 indicate normal range of severity, 8–9 indicate mild range of severity, 10–14 indicate moderate range of severity, 15–19 indicate severe range of severity, and 20 or higher indicate extremely severe range of severity. For the current study, scale reliability was high (depression: $\alpha = .89$; anxiety: $\alpha = .83$). Additionally, given the high correlation between the depression and anxiety scales ($r = .77, p < .001$), both individual and a composite score was used for the analysis.

Alcohol use was assessed using the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). The AUDIT-C is a brief 3-item measure taken from the full AUDIT scale (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993), and was used to assess hazardous drinking. Both the AUDIT and AUDIT-C have been used widely among young adult populations to assess hazardous drinking and related problems (Wahesh & Lewis, 2015; Hagman, 2016). A score of 4 or more for males and 3 or more for females is suggestive of a higher likelihood for at-risk drinking or problematic alcohol use. For the current study, the scale reliability was good ($\alpha = .82$).

Mindfulness—Trait mindfulness was measured using the Five-Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietmeyer, & Toney, 2006), a 39 item Likert-type scale with responses ranging from (1) *never or very rarely true* to (5) *very often or always true*. The FFMQ consists of five facets: Observing, Describing, Acting with awareness, Non-judging, and Non-reactivity. For the current study, responses were summed across the five facets to obtain a total mindfulness score ($\alpha = .81$). Higher scores are indicative of higher levels of trait mindfulness.

Data Analyses

Data were screened for outliers on the variables of interest; univariate skewness and kurtosis were also examined for the variables of interest and were found to be within an acceptable range. The PROCESS macro (Hayes, 2013) in SPSS 24.0 was used to examine the main effect of racial discrimination and mindfulness on the study outcome variables, as well as the moderating effect of mindfulness on each outcome as a consequence of racial discrimination. Model 1 in PROCESS conducts a simple moderation analysis (Preacher, Rucker, & Hayes, 2007) in which significant moderating effects are probed using a pick-a-point method. For the pick-a-point method a standard deviation below the mean, the mean, and a standard deviation above the mean, respectively, was used to probe the conditional effect of the independent variable at various values of the moderator variable (Hayes, 2012). For these analyses, a 10,000 bootstrap sample was used to calculate standard errors and confidence intervals. Mood symptoms and alcohol use were indicated as the dependent variables, racial discrimination was indicated as the independent variable, and mindfulness

was indicated as the moderator. Both the independent and moderator variables were mean-centered for the analyses.

Results

Means and standard deviations for the measures of interest are shown in Table 1. Of the 388 participants included in the statistical analysis, over half of participants (57.5%) reported experiencing racial discrimination on average at least “once in a while” or more frequently (i.e., mean score at 2 or greater) over the past year. In regard to the outcome variables, a large proportion of participants (76.3%) had used alcohol over the past month. Moreover, the overall mean levels on the AUDIT-C was 3.66 (SD=3.05), suggesting the potential for at-risk drinking; however, significant differences were observed based on gender ($t(386) = 9.29, p = <.001$). Clinically elevated levels of at-risk drinking were found for males ($M=5.34, SD=2.95$), but not for females ($M=2.64, SD=2.65$). As for mood symptoms, mean levels of depression fell within the moderate range ($M=16.6$) and levels of anxiety fell within the severe range ($M=17$). Lastly, mean levels of mindfulness ($M=120.4, SD=14.16$) were comparable to scores of young adults (e.g., Bodenlos, Wells, Noonan, & Mayrsohn, 2015; Roberts & Danoff-Burg, 2010) and African Americans (Graham et al., 2013) in previous studies.

Initial bivariate and point-biserial correlations between all study variables are shown in Table 2. Correlation analyses revealed that age and gender were significantly correlated with most variables of interest. Specifically, older participants were more likely to experience past year racial discrimination ($r = .29, p < .001$), and greater mood symptoms (depression: $r = .25, p < .001$; anxiety: $r = .19, p < .001$), and alcohol use ($r = .40, p < .001$). Additionally, male participants were more likely to experience past year racial discrimination ($r = -.25, p < .001$) and report greater mood symptoms (depression: $r = -.35, p < .001$; anxiety: $r = -.30, p < .001$), and alcohol use ($r = -.42, p < .001$) than females. Thus, age and gender were included as control variables in subsequent analyses. Regarding the variables of interest, consistent with our hypotheses, past year racial discrimination was positively associated with all behavioral health outcomes: depressive symptoms ($r = .59, p < .001$), anxiety symptoms ($r = .61, p < .001$), composite mood variable ($r = .64, p < .001$), and alcohol use ($r = .56, p < .001$). Trait mindfulness was also negatively associated with each behavioral health outcome: depressive symptoms ($r = -.52, p < .001$), anxiety symptoms ($r = -.39, p < .001$), composite mood variable ($r = -.49, p < .001$), and alcohol use ($r = -.16, p < .001$).

Moderating role of mindfulness on perceived discrimination and health outcomes

Mood Symptoms—Analyses were run using both the individual mood subscales and a composite score. Based on the composite mood score, after controlling for age and gender, a direct effect of past year racial discrimination ($b = 0.465, p < .001$) and mindfulness ($b = -0.538, p < .001$) on mood symptoms was found. A significant interaction between mindfulness and discrimination on mood symptoms was also found ($b = -.005, p = .033$). Probing the interaction indicated that a significant effect of discrimination on mood symptoms was found at low (i.e., 1 standard deviation below the mean: estimated conditional effect = 0.539, SE = .045, Boot CI [95] = 0.451–0.627), mean (estimated

conditional effect = 0.465, SE = .034, Boot CI [95] = 0.399–0.531) and high levels of mindfulness (i.e., 1 standard deviation above the mean: estimated conditional effect = 0.391, SE = .052, Boot CI [95] = 0.290–0.492). This change in effect sizes was statistically significant indicating a more pronounced weakening effect of discrimination on mood symptoms at higher levels of mindfulness. The model accounted 57.6 % of the variance in mood symptoms, with a significant change in the effect size with the inclusion of the interaction term ($R^2 = .005$, $F[1, 382] = 4.58$, $p = .033$). See Table 3 for values and Figure 1 for moderation results. The analyses were also run examining both depressive and anxiety symptoms separately (see Table 3 for detailed results). Within each model similar effects were found with a significant main effect of past year discrimination of the mood symptoms. However, for the moderating effect of mindfulness a marginally significant effect was found for depressive symptoms ($b = -.002$ $p = .105$), with a statistically significant effect found for anxiety symptoms ($b = -.003$ $p = .033$).

Alcohol Use—Based on the simple moderation analysis conducted in PROCESS, after controlling for age and gender, a direct effect of past year racial discrimination on alcohol consumption was found ($b = 0.064$, $p < .001$). However, mindfulness was not predictive of alcohol consumption ($b = -0.017$, $p = .082$) nor was there a significant interaction between mindfulness and discrimination on alcohol ($b = -.001$ $p = .312$). The model accounted 43.7% of the variance in past year alcohol use, with a nonsignificant change in the effect size with the inclusion of the interaction term ($R^2 = .002$, $F[1, 382] = 1.03$, $p = .312$). See Table 4 for detailed results.

Discussion

The current study examined the buffering effect of mindfulness on the relationship between racial discrimination and three behavioral health outcomes: depressive and anxiety symptomatology and alcohol use. Of note, a majority of participants (57.5%) reported experiences racial discrimination on average at least “once in a while” or more frequently over the past year. These findings are consistent with previous literature among African Americans more broadly (Kessler, Mickelson & Williams, 1999), as well as studies specific to African American young adults (Brown & Tylka, 2011). For example, Donovan et al. (2013) found that among their sample of African American college students, 68% of participants reported experiences of racial discrimination at least “once in a while” in the past year. Regarding the outcome variables assessed in the current study, rates of depressive and anxiety symptoms were in the moderate and severe range, respectively, with scores on the alcohol consumption measure falling within the at-risk range for males and just below the cut-off for females. These findings highlight not only the high prevalence of race-based stressors, but also the experience of negative behavioral health outcomes among African American young adults.

Moreover, consistent with previous research, our findings provided support of the positive association between past year experiences of racial discrimination and these behavioral health outcomes among African Americans (e.g., Fuller-Rowell et al., 2012; Pascoe & Richman, 2009). Thus, given evidence that African American young adults experience racial discrimination regularly (Swim, Hyers, Cohen, Fitzgerald, & Bylsma, 2003), in multiple

sectors of their lives (Chao, Mallinckrodt, & Wei, 2012), and at higher rates than their peers (Pieterse, Carter, Evans, & Walter, 2010), exploring ways to reduce the occurrence of discriminatory actions towards African Americans is critical.

There is a growing body of literature on intervention and training programs directly aimed at reducing intergroup conflict and implicit racial biases, with promising results (e.g., Kalinoski et al., 2013; Lai et al., 2014). For example, Garriott et al. (2015) tested the efficacy of a brief multicultural education intervention among White college students finding that educational reading on White privilege and watching a video clip on racial discrimination produced significant changes in awareness to racial discrimination. Devine et al. (2012) also developed a 12-week multifaceted prejudice habit-breaking intervention that was implemented among a sample of non-Black university students, finding significant reductions in implicit racial biases, as well as increased concern about discrimination and personal awareness of biases. However, there were no significant changes in explicit racial attitudes or motivations to respond without bias. Similarly, Soble et al. (2011) found among a sample of White college students that providing a brief video intervention on institutional racism and White privilege produced significant increases in racial awareness and empathy. However, no significant changes were found in regard to attitudes related to personal closeness and comfort with racial diversity in one's own life or racial prejudice. As posited by Soble et al. (2011), the lack of change in closeness and response to biases may be enhanced through inclusion of interracial contact which provides opportunities to interact and dialogue with individuals of different racial backgrounds and motivate change in behavior.

Though not directly affecting the occurrence of discriminatory actions, our finding also provided support for the hypothesis that trait mindfulness would buffer the effects of racial discrimination on behavioral health outcomes, specifically affect-based responses to racial discrimination. This finding adds to the evidence provided by Graham et al. (2013) and Shallcross and Spruill (2017) who also found significant moderating effects of mindfulness on anxiety and depressive symptoms, respectively, as a function of discrimination among predominantly African American samples. However, both studies were limited in that the sample sizes were small and did not examine the relationships among young adults. Moreover, Graham et al. (2013) examined the effects of perceived discrimination that were not specific to race, thus providing less clear evidence as to whether mindfulness is an important factor to reduce the effects of specific forms of discriminatory actions.

Our findings provide such clarity by providing empirical evidence for the buffering effect of mindfulness on race-based discrimination on mood outcomes among African American young adults. In turn, as noted by Womack and Sloan (2017) and supported by our findings, intervention programs that incorporate mindfulness techniques may be particularly beneficial at reducing race-related stress outcomes for African American young adults. We anticipate such programs will be well received and prove effective for African American young adult populations given evidence on the feasibility and acceptance of mindfulness-based interventions among African Americans (e.g., Vallejo & Amaro, 2009; Woods-Giscombé & Black, 2010) and the effectiveness of mindfulness-based interventions in reducing behavioral health outcomes among college students and young adults (e.g., Bamber

& Schneider, 2016; Dvořáková et al., 2017; Greeson, Juberg, Maytan, James, & Rogers, 2014).

The current study also examined the moderating effect of mindfulness on the relationship between racial discrimination and alcohol use. Although our findings indicated that mindfulness decreased the magnitude of the effect between racial discrimination and alcohol use, this difference did not reach statistical significance. One plausible explanation of the null effect may be the influence of mood, as studies have documented the mediating role of depression symptoms (e.g., Boynton, O'Hara, Covault, Scott, & Tennen, 2014; Clark, 2014) on the effect of racial discrimination on substance use among African American young adults. Thus, it may be the case that although a direct relationship between discrimination, mindfulness, and alcohol use was not found, this pathway may operate indirectly through mood such that mindfulness reduces the severity of mood symptoms as a consequence of discrimination, which in turn decreases alcohol use among African American young adults. It is also plausible that the effect of mindfulness on the relationship between racial discrimination and substance use outcomes may vary based on substance type. For example, studies examining substance use among African American young adults have documented high rates of marijuana use that have exceeded those of other racial/ethnic groups (Chen & Jacobson, 2012). Moreover, given evidence of adverse negative health consequences from marijuana use among young adults (Pearson, Liese, & Dvorak, 2017; Suerken et al., 2016), mindfulness may be an important coping strategy to examine in order to reduce the severity of marijuana use among this at-risk population of young adults. Lastly, other protective factors such as social support, coping style, ethnic identity, and religiosity (Bowen-Reid & Harrell, 2002; Sellers et al., 2003; Prelow, Mosher, & Bowman, 2006) should also be explored, as it is plausible that for substance use outcomes, these factors may prove to be stronger buffers on the negative effect of racial discrimination exposure than mindfulness.

Limitations and Future Research

Although this study addressed the importance of mindfulness in weakening the effect of experiences of racial discrimination on behavioral health outcomes among African American young adults, which had not been previously examined, there are limitations that must be addressed. First, the study used a college and community sample of young adults in the Midwest. Specifically, participants were recruited from a predominantly White university setting and the surrounding community that is predominately White. Thus, examining the effects of racial discrimination within this context may result in a higher prevalence of racial discrimination than if participants resided in communities in which they were the majority. Although examining racial discrimination within this context is critical and provides important information on the impact of racial discrimination on health outcomes among African American young adults, it may not generalize to all other settings. Secondly, the study questionnaire was available to participants online, thus, even though validation checks were included, we cannot guarantee that all participants were African American. Thirdly, there are additional factors, such as immigration status, income, and sociocultural factors, such as level of religiosity and racial identity, that could impact the effect of discrimination on health outcomes and should be examined in future research.

Finally, future studies should also consider a prospective study design to look at differences over time and examine more recent and/or acute experiences of discrimination.

In sum, the current study examined the influence of mindfulness as a buffer of the effect of racial discrimination on behavioral health outcomes among African American young adults. Examining these relationships during young adulthood is critical, as this is a developmental period in which racial discrimination is posited to intensify (Kogan et al., 2015; Madkour et al., 2015), as well as increased prevalence of negative psychological (Ibrahim et al., 2013; Kessler et al., 2007) and behavioral outcomes (Arnett, 2000; Chen & Jacobson, 2012). Our findings provided support for the direct and moderating effect of mindfulness on mood outcomes (i.e., depression and anxiety symptoms) as a consequence of discrimination. These findings suggest that mindfulness may serve as an important component of affective-based intervention programming to promote adaptive coping among African American young adults in response to discriminatory experiences.

However, our findings did not suggest a significant buffering effect for alcohol use. Given the dearth of published research examining the influence of mindfulness on substance use outcomes as a consequence of racial discrimination, more research is warranted in this area. Additionally, although physical health outcomes, such as cardiovascular risk, were not the focus of the current study, this is also another area in which mindfulness may play an important role at reducing risk for negative health outcomes as a consequence of racial discrimination (e.g., Steffen, McNeilly, Anderson, & Sherwood, 2003), and warrants future investigation.

Lastly, although a large proportion of participants in the current study were recruited from a predominantly White university in the Midwest, not all participants were college students and may have attended different types of institutions (i.e., community college, four-year institution). Racial/ethnic minority youth who attend predominantly White universities experience marginalization and race-related stressors, in addition to exposure to racial discrimination, that negatively impact health and academic outcomes (Chavous, 2002; Watkins, Green, Goodson, Guidry, & Stanley, 2007). Thus, an important extension of the current study would be examining the effect of racial discrimination on both health and academic outcomes exclusively among African American college students, and the moderating effect of mindfulness within this risk pathway. Such studies will advance our understanding on the potential benefits of mindfulness and mindfulness-based interventions on providing adaptive coping strategies to mitigate the negative effects of racial discrimination on behavioral health and academic outcomes among African American young adults.

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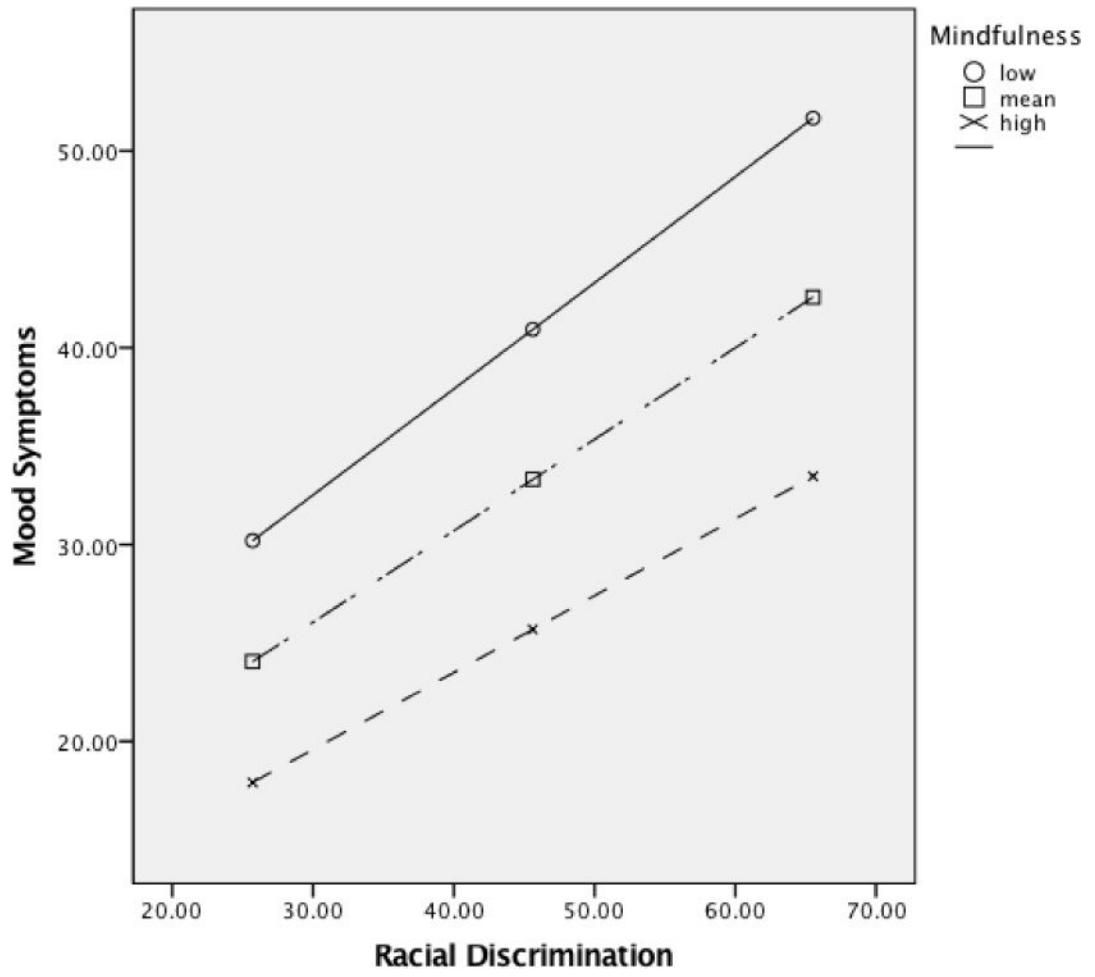


Figure 1.

Table 1

Demographics and Descriptive Statistics for the Sample

Variable	N or Mean	(% or SD)	Range
Age	20.55	1.81	18–24
Gender			
Male	146	37.6%	
Female	242	62.4%	
Mindfulness	120.41	14.16	44–174
Discrimination	45.62	19.91	7–91
Depression	16.62	10.05	0–42
Anxiety	16.96	9.40	0–42
Alcohol Use	3.66	3.05	0–8

Note: $N = 388$

Table 2

Correlation Coefficient Matrix

	Gender	Age	Discrimination	Mindfulness	Depression	Anxiety	Mood	Alcohol
Gender	—	-.27**	-.25**	0.04	-.35**	-.30**	-.35**	-.42**
Age		—	0.29**	-.06	0.25**	0.19**	0.24**	0.40**
Discrimination			—	-.19**	0.59**	0.61**	0.64**	0.56**
Mindfulness				—	-.52**	-.39**	-.49**	-.16**
Depression					—	0.77**	0.94**	0.53**
Anxiety						—	0.94**	0.52**
Mood							—	0.56**
Alcohol								—

Notes. Mood is a composite of depression and anxiety symptomatology, N=388. Gender: male = 0, female = 1

* $p < .05$;

** $p < .01$

Table 3
 Results of Path Model Analyses Predicting Mood Symptoms from Past Year Discrimination and the Moderating Role of Mindfulness

Variables	Depressive Symptoms					Anxiety Symptoms					Mood Symptoms							
	b	SE	p-value	LL	UL	R ²	b	SE	p-value	LL	UL	R ²	b	SE	p-value	LL	UL	R ²
Perceived Discrimination	.220	.019	<.001	.183	.257		.245	.019	<.001	.207	.283		.465	.034	<.001	.399	.531	
Mindfulness	-.324	.028	<.001	-.379	-.270		-.214	.028	<.001	-.270	-.159		-.538	.049	<.001	-.635	-.442	
Perceived Discrimination x Mindfulness	-.002	.001	.105	-.005	.001		-.003	.001	.033	-.006	.000		-.005	.003	.033	-.010	.000	
						.556						.473						.576
Low Mindfulness	.252	.025	<.001	.202	.301		.287	.026	<.001	.237	.338		.539	.045	<.001	.451	.627	
Mean Mindfulness	.220	.019	<.001	.183	.257		.245	.019	<.001	.207	.283		.465	.034	<.001	.399	.531	
High Mindfulness	.188	.029	<.001	.131	.245		.202	.030	<.001	.144	.260		.391	.052	<.001	.290	.492	

Note. Mood symptoms is a composite of depression and anxiety symptomatology. Confidence intervals are stated at 95%. Age and gender were included as covariates in all analyses. Bolded values are significant at p < .05 or lower.

Table 4
Results of Path Model Analyses Predicting Alcohol Use from Past Year Discrimination and the Moderating Role of Mindfulness

Variables	Alcohol Use					
	b	SE	p-value	LL	UL	R ²
Perceived Discrimination	.064	.007	<.001	.000	.051	
Mindfulness	-.017	.010	.082	-.035	.002	
Perceived Discrimination x Mindfulness	-.001	.001	.312	-.001	.000	
						.437
Low Mindfulness	.071	.009	<.001	.054	.088	
Mean Mindfulness	.064	.007	<.001	.051	.076	
High Mindfulness	.057	.010	<.001	.038	.076	

Note. Confidence intervals are stated at 95%. Age and gender were included as covariates in all analyses. Bolded values are significant at $p < .05$ or lower.