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The Protective Role of Mindfulness in the Relationship Between Perceived Discrimination and Depression

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Abstract

This study examined the potential buffering role of trait mindfulness in the relationship between perceived discrimination and depressive symptoms in a community-based sample of racial and ethnic minority adults. Analyses conducted on 97 participants indicated that self-reported trait mindfulness moderated the relationship between perceived discrimination and depressive symptoms. Individuals low in mindfulness experienced elevated depressive symptoms at high levels of discrimination. However, individuals high in mindfulness reported lower depressive symptoms at high levels of discrimination. Results remained robust when controlling for potential confounding effects of age, sex, and income. Results suggest mindfulness is an important individual difference that may confer resilience for racial and ethnic minority communities who experience disproportionate levels of discrimination-related stressors and health disparities. Findings point to the potential utility of interventions that target mindfulness as a modifiable skill that can be used specifically to cope with discrimination. Socio-cultural considerations for the use of mindfulness-based approaches in racial and ethnic minority communities are discussed.

Keywords

Trait mindfulness; Perceived discrimination; Depressive symptoms; Racial and ethnic minorities

Introduction

Perceived discrimination, defined as subjective perception of unfair treatment based on societal group membership (Williams, Neighbors, & Jackson, 2003), is associated with a range of adverse health outcomes, including depression and stress-related chronic diseases (Paradies, 2006; Williams & Mohammed, 2009). Discrimination operates at the level of structural and/or societal influences (e.g., inequitable and/or exclusionary public or institutional policies) and at the individual level (e.g., interpersonal interactions ranging

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Ethical approval. This research was approved by the Institutional Review Board at New York University School of Medicine. Informed consent was obtained from all individual participants.

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from physical transgressions to microaggressions characterized by dismissive, insulting, or invalidating experiences) (Sue et al., 2007). The deleterious effects of discrimination are commonly conceptualized within a stress and coping framework whereby exposure catalyzes heightened psychological (e.g., anxiety and fear) and physiological responses (e.g., elevated pressure, heart rate) that increase vulnerability to mental illness and stress-related chronic diseases (Sawyer, Major, Casad, Townsend, & Mendes, 2012).

The link between discrimination and depression, in particular, is of critical importance given the high prevalence and frequently debilitating and unremitting course of depressive disorders (Richards, 2011). Also, the magnitude of the relationship between discrimination and depression has been shown to be stronger than associations between discrimination and other mental health and quality of life outcomes (Pieterse, Todd, Neville, & Carter, 2012). The strength of this relationship can be explained by several underlying mechanisms supported by theory and evidence within a biopsychosocial framework. First, the harmful effects of discrimination are often additive to other persistent sources of stress that are derived from societal systems of inequality. For example, racial and ethnic minority individuals who are disproportionately affected by discrimination *and* the chronic strain of low socioeconomic status are especially vulnerable to depression (Everson, Maty, Lynch, & Kaplan, 2002). Second, unlike general life stress, discriminatory experiences are inherently personal and can compromise an individual's sense of core identity, self-worth, and self-esteem (Brown, Keith, Jackson, & Gary, 2003), which can lead to feelings of helplessness, negative self-referential thinking, and self-focused rumination, each of which are robust risk factors for depression (Segal et al., 2006). Third, individuals may avoid raising concerns about discrimination due to fear of intimidation, retaliation, or damage to their careers and thus may struggle with restricted coping options to manage the socio-emotional effects of discriminatory experiences (Plummer & Slane, 1996). Finally, in addition to psychological reactivity (e.g., fear, anger), exposure to discrimination may lead to sustained levels of physiological reactivity (e.g., cardiovascular, endocrine, neurological, immunological). Given that discrimination is often uncontrollable and unpredictable, it can be associated with particularly pernicious effects on psychophysiological functioning (Richman, Bennett, Pek, Siegler, & Williams, 2007), increasing risk for chronic illness, which can contribute to and exacerbate depressive symptomatology.

Although the majority of direct evidence supporting the link between discrimination and depression has been correlational, longitudinal investigations indicate that discrimination is a risk factor for the development of depressive symptoms (Brown et al., 2000; Schulz et al., 2006) and major depressive disorder (Kessler, Mickelson, & Williams, 1999). Experimental studies that manipulate perceptions of discrimination experiences indicate that discrimination directly leads to depressogenic cognitions and increased negative affect (Sawyer et al., 2012; Schmitt, Branscombe, Postmes, & Garcia, 2014). These longitudinal and experimental studies support a causal association between discrimination and depression and substantiate the importance of understanding which strategies are most effective for coping with discrimination. This line of research is of particular significance among racial and ethnic minorities who experience some of the highest levels of discrimination due to phenotypic characteristics and/or non-dominant cultural values, beliefs, or characteristics (Bhopal, 2004).

Established frameworks that serve to categorize methods of coping have identified two primary types of coping strategies: problem-focused coping (efforts to remove or alleviate the stressor) and emotion-focused coping (efforts to regulate emotional responses to the stressor) (Folkman & Lazarus, 1980). In light of the frequently uncontrollable nature of discrimination and the risk of retaliation and/or other untoward consequences, racial and ethnic minorities (e.g., Blacks, Hispanics, and Asians, in particular) may rely less on direct confrontation or other problem-focused strategies aimed at directly removing or alleviating the stressor (Utsey, Ponterotto, Reynolds, & Cancelli, 2000; Wei, Heppner, Ku, & Liao, 2010; Winkelman, Chaney, & Bethel, 2013). Instead, these populations frequently employ emotion-focused strategies that target the underlying emotional responses to discrimination. Such strategies range from approach-oriented coping such as social support seeking and religious coping among African Americans (Lewis-Coles & Constantine, 2006) and Hispanics (Fernandez & Loukas, 2014) to more avoidance-based strategies such as emotional and expressive suppression, passive acceptance, and denial as has been found among samples of Southeast Asians (Noh, Beiser, Kaspar, Hou, & Rummens, 1999) Hispanics (Winkelman et al., 2013) and Blacks (Utsey et al., 2000). It should be noted, however, that such strategies may not fall cleanly into one category or another (Brondolo, Brady, Pencille, Beatty, & Contrada, 2009). Further, due to a dearth of epidemiological studies on coping with discrimination, the degree to which certain racial and ethnic groups rely on one strategy over another is poorly understood (Brondolo et al., 2009). One additional caveat is that the same strategies that individuals habitually (or prefer to) employ (e.g., avoidance or denial) may not necessarily be associated with positive outcomes (Utsey et al., 2000). Contextualizing discrimination-related coping within a stress-buffering framework is useful for identifying which specific strategies are helpful in ameliorating depressogenic effects of discrimination; advancing and validating the importance of understanding the effects of coping under conditions when it matters most (i.e., high levels of discrimination); and advancing our understanding of possible targets for coping-based interventions.

Specific coping strategies that have been examined within a stress-buffering framework and that have been given considerable attention in racial and ethnic minority samples include strength of racial and/or cultural identity, social support, and religiosity (for reviews see: (Brondolo et al., 2009; Pascoe & Smart Richman, 2009)). While some studies support that these strategies buffer the effects of discrimination on psychological health (Mossakowski, 2003; Mossakowski & Zhang, 2014; Wei, Alvarez, Ku, Russell, & Bonett, 2010), the findings across studies are mixed with some studies indicating null results (Bynum, Burton, & Best, 2007; Noh & Kaspar, 2003; Sanders Thompson, 2006) and others demonstrating harmful effects on psychological health (Fernandez & Loukas, 2014). Some of the discrepancies among studies can be explained by methodological and measurement variation as well as sample heterogeneity (Brondolo et al., 2009). These studies also underscore the likely possibility that sociocultural contexts and individual experiences and perceptions of discrimination are important boundary conditions that may explain how and why the effects of certain coping strategies differ both across and within racial and ethnic groups (Soto, Dawson-Andoh, & BeLue, 2011). While probing a possible three-way interaction between discrimination, sociocultural context, and coping, is an important area of investigation, an

equally critical step is to advance our understanding of specific adaptive emotion-focused strategies that may be feasible targets for interventions aimed at mitigating the negative effects of discrimination on psychological health (Lewis, Cogburn, & Williams, 2015).

One specific emotion-focused strategy that has been shown across experimental (Weinstein, Brown, & Ryan, 2009) and clinical intervention (Fjorback, Arendt, Ornbol, Fink, & Walach, 2011) studies to be effective for coping with a range of stressful experiences is mindfulness, defined as deliberate and nonjudgmental attentiveness to present-moment experiences (i.e., thoughts, emotions, sensations) (Kabat-Zinn, 1990). Mindfulness is antithetical to avoidance or denial and instead involves active awareness of and engagement with internal experiences. This process of awareness provides an opportunity to cultivate clarity about one's psychophysiological responses to the environment, thus fostering the capacity to engage in more adaptive responding. Given that Black, Hispanic, and Asian samples, in particular, frequently report employing avoidance-based coping strategies (e.g., passive acceptance and suppression) that can be associated with worse psychological functioning (Noh et al., 1999; Seaton, Upton, Gilbert, & Volpe, 2014; Thomas, Witherspoon, & Speight, 2008; Utsey et al., 2000; Winkelman et al., 2013), mindfulness may be especially helpful as an alternative coping strategy for these populations. Several theoretical considerations and an emerging body of evidence also support that mindfulness may be specifically helpful for buffering the negative effects of discrimination-based stressors.

From a theoretical perspective, mindfulness is a promising moderator of the effects of discrimination on depression in marginalized populations for two reasons. First, mindfulness promotes a non-judgmental attitude toward the experience of negative emotion and builds the capacity to recognize emotional responses as passing experiences (Kabat-Zinn, 1990). Thus, rather than becoming hijacked by one's emotional reactions to specific triggers (e.g., discrimination) and internalizing these effects, mindfulness may promote the capacity to separate the experience of discrimination from conceptualizations of self-worth, thus mitigating the likelihood of developing depressive symptoms. Second, mindfulness reduces biological sensitivity to threat (e.g., cognitive, physiological, and emotional reactivity) (Bergeron, Almgren-Doré, & Dandeneau, 2016; Britton, Shahrar, Szepsenwol, & Jacobs, 2012; Goldin & Gross, 2010). This effect is surmised to be a result of enhanced attentional control as well the capacity to non-judgmentally engage with, rather avoid, the internal responses that arise after exposure to a stressful stimulus. Reductions in cognitive, physiological, and emotional reactivity may be helpful for mitigating the effects of discrimination on depression by reducing negative self-focused thinking and rumination and by minimizing physiological antecedents (e.g., pro-inflammatory hormones) to stress-related chronic diseases, which are highly comorbid with depression (Moussavi et al., 2007). Additionally, reductions in threat arousal may lead to more objective informational processing, judicious behavioral responding, and, in-turn, adaptive short-term resolution to discriminatory encounters (Sohn et al., 2015). Preventing escalated conflict or hostile interactions after exposure to discrimination may be especially protective for marginalized communities who already suffer from high levels of general life stress and who are at elevated risk for depression.

Although preliminary, evidence from two correlational studies support that mindfulness mitigates the harmful effects of discrimination on psychological health. One study demonstrated that in a small sample of African American undergraduate and graduate students, self-reported trait mindfulness moderated the relationship between frequency of past-year racist events and anxious arousal symptoms (Graham, West, & Roemer, 2013). Specifically, in the context of high racism, individuals high in mindfulness had significantly lower anxious arousal than individuals low in mindfulness. One additional study demonstrated that self-reported trait mindfulness buffered the link between perceived interpersonal discrimination and depressive symptoms such that only individuals high in mindfulness were protected from elevated depressive symptoms in the context of high interpersonal mistreatment (Brown-Iannuzzi, Adair, Payne, Richman, & Fredrickson, 2014).

While promising, evidence for the buffering role of mindfulness in the relationship between discrimination and depressive symptoms, in particular, is lacking given that only one study has examined depressive symptoms as an outcome. Additionally, one notable limitation of each of these studies is the inclusion of homogeneous samples—e.g., university students in the Graham et al. investigation and primarily White participants in the Brown-Iannuzzi et al. study. Although the Graham and colleagues' sample was comprised of African Americans, the predominately White sample in the Brown-Iannuzzi et al. study is a significant limitation given that marginalized groups, in particular racial and ethnic minority populations, are most likely to experience and report discrimination (Pérez, Fortuna, & Alegria, 2008; Seaton, Caldwell, Sellers, & Jackson, 2008). Further, because the Graham et al. study included only African Americans, the generalizability of the moderating effects of mindfulness to other racial and ethnic minorities is unknown. Finally, the strength of the buffering effects of mindfulness on depressive symptoms is unclear from Brown-Iannuzzi study given that discrimination was operationalized as relatively minor experiences of everyday interpersonal mistreatment (e.g., being treated with less courtesy than others) (Williams, Yan, Jackson, & Anderson, 1997). Thus, the potential buffering effect of mindfulness on the experiences of discrete, major discriminatory events (e.g., being unfairly fired or denied a promotion) is poorly understood. Also, the validity of the findings from this study is unclear because measures of everyday perceived discrimination and other types of daily interpersonal stress may be subject to greater confounding by personality characteristics and psychological distress than are measures of discrete, major life events (Dohrenwend & Shrout, 1985; Hunte, King, Hicken, Lee, & Lewis, 2013).

The present study builds on these limitations by testing whether trait mindfulness is a moderator of the relationship between major experiences of discrimination and depressive symptoms in a heterogeneous minority community sample. Based on theory and prior evidence, we hypothesized that individuals with higher vs. lower trait mindfulness would be buffered from experiencing elevated depressive symptoms in the face of high (vs. low) discrimination.

Method

Participants

Participants were community-dwelling adults living in New York City who were recruited as part of a larger study on stress, rumination, and blood pressure. Participants were recruited via several methods including flyers and electronic-based advertising on ResearchMatch. Individuals were eligible if they were over the age of 18, able to speak and read English, and had screening blood pressure < 160/100 mmHg and were not currently being treated with antihypertensive medications. Exclusion criteria were self-reported cardiovascular disease, angina or major arrhythmias; other self-reported major medical condition, e.g., cancer; current use of medications known to substantially affect blood pressure, e.g., steroids; and self-reported major psychiatric disorder or current use of mood-altering medications.

One hundred and six racial and ethnic minority participants completed the cross-sectional questionnaire portion of the study. Of these, 97 participants had complete data. Demographic characteristics are presented in Table 1. The mean age of the sample was 36.08 years ($SD=13.02$) and was primarily comprised of females (64.9%). The racial and ethnic breakdown of the sample was 45.4% Black, 11.3% Asian, 5.2% other, and 38.1% Hispanic. Approximately 60% of the sample reported a family income $\leq$ \$40,000. All study protocols were approved by the NYU School of Medicine Institutional Review Board and procedures were carried out in accordance with the approved guidelines. Informed consent was obtained from all participants.

Power analyses using G-power (Faul, Erdfelder, Buchner, & Lang, 2009) indicated that, based on three continuous predictors (discrimination, mindfulness, and mindfulness $\times$ discrimination), our sample size provided 80% power to detect a moderation effect size of $f^2=.11$ (small-to-medium effect).

Procedure

Participants were provided a take-home packet of questionnaires after meeting eligibility criteria and signing consent. Questionnaires were completed off-site and were returned during a subsequent study visit that pertained to the larger study on stress, rumination, and blood pressure.

Measures

Mindfulness—The Revised 12-item Cognitive and Affective Mindfulness Scale (CAMS-R; (Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2006)) is a uni-dimensional inventory that measures dispositional mindfulness by indexing four components of mindfulness (attention, awareness, present-focus, and acceptance/nonjudgment). The 12 items are scored using a four-point scale, with responses ranging from 1 (rarely/not at all) to 4 (almost always). A total mindfulness score is computed by summing the items. Scores range from 12 to 48, with higher scores reflecting greater mindfulness. The scale demonstrated acceptable levels of internal consistency in our sample (Cronbach's $\alpha = .79$). This measure has not been validated in samples of color.

Discrimination—The Detroit Area Study Discrimination Questionnaire (DAS-DQ; (Taylor, Kamarck, & Shiffman, 2004)) measures reports of lifetime history of major discriminatory events. Participants were presented with six questions about discriminatory encounters and asked to indicate whether they had ever experienced each type of event. The six discriminatory encounters include: 1) unfair termination of employment or denial of a promotion; 2) unfairly overlooked for employment; 3) mistreatment by police (e.g., stopped, searched, questioned, physically threatened, or abused; 4) discouraged by a teacher or advisor from pursuing educational opportunities; 5) restricted housing options because landlord or realtor refused to sell/rent apartment/home; 6) mistreatment from neighbors that resulted in moving. Items were summed to create a total composite score of lifetime discrimination. Scores have a possible range from 0 to 6 with higher scores indicating endorsement of more major discriminatory events. The DAS-DQ has been validated and widely used in Black and Hispanic samples (Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005; Taylor et al., 2004). Previous studies have used this measure to assess perceived discrimination in Asian Americans as well (Gee, Delva, & Takeuchi, 2007).

Depression—The Center for Epidemiologic Studies Depression Scale short form (CES-D-10; (Cole, Rabin, Smith, & Kaufman, 2004)) is a 10-item scale that assesses severity of depressive symptoms over the preceding two weeks. Responses range from 0 (rarely or none of the time/one day) to 3 (most or all of the time/5–7 days). Scores range from 0–30, with higher scores reflecting more severe depressive symptoms, and a score of 10 or more reflecting clinically significant depressive symptoms. The CES-D-10 demonstrated acceptable internal consistency in our sample (Cronbach's $\alpha = .77$). Short forms of the CES-D have been validated in Black, Hispanic, and Asian samples (Assari & Moazen-Zadeh, 2016; Boey, 1999; Gonzalez et al., 2017).

Data Analyses

Prior to analyses, all variables were examined for extreme outliers and fit between their distributions and the assumptions of multivariate analysis. To test whether mindfulness moderated the relationship between perceived discrimination and depression, hierarchical regression analyses were conducted, centering predictor variables around their grand mean to facilitate the interpretation of main effects in models containing interaction terms (Aiken & West, 1991). Predictors were entered into the regression model in the following order: (1) discrimination; (2) mindfulness; (3) the interaction of discrimination and mindfulness (discrimination $\times$ mindfulness). To confirm the validity of relationships in the initial model, secondary analyses were conducted with an adjusted model that included covariates shown in prior studies to be related to one or more of the primary model variables. Predictors were entered in the following order: (1) age; (2) sex; (3) income; (4) discrimination; (5) mindfulness; (6) discrimination $\times$ mindfulness. Significant interactions were probed using simple slopes analyses conducted on separate regression lines estimated for individuals high and low on mindfulness at one standard deviation above and below the mean, respectively (Aiken & West, 1991). Analyses were conducted using IBM SPSS Statistics version 20.

Results

Means and standard deviations of model variables are presented in Table 1. The sample average on the CAMS measure was 34.4 (SD=5.6). The sample reported average depressive symptoms that were below the cutoff (>10) for clinical significance (mean=7.08, SD=5.21, range=0–23). Approximately 23% of individuals had scores above 10 and met criteria for clinical levels of depressive symptoms. Scores on the DAS-DQ indicated a sample average of 1.289 (SD=1.27; range=0–5) and reflected the following breakdown: 32% indicated having experienced no major discriminatory events over their lifetime; 33% experienced one event; 18.6% experienced 2 events; and 16.4% experienced 3 events.

Variables in the regression models were free of extreme outliers and distributions were confirmed to be appropriate for regression analyses. Analyses of variance indicated no differences between racial and ethnic groups on reported levels of trait mindfulness, discrimination, or depression ($F_s < 1.03$; $p_s > .38$). Correlations of study variables are presented in Table 2. As shown in Table 3, and consistent with our hypothesis, regression analyses indicated a significant two-way interaction (perceived discrimination $\times$ mindfulness) ($B = -.186$, $p = .02$, 95% CI: $-.335 - -.037$). The addition of the interaction term also explained significant variance in the model ($R^2 = .047$, $p = .02$). Simple slopes analysis (Figure 1) indicated that, as expected, perceived discrimination was associated with greater depressive symptoms at low levels of mindfulness ($B = 1.76$, $t = 3.25$, $p = .001$, 95% CI: $.686 - 2.84$) but was not associated with depressive symptoms at high levels of mindfulness ($B = .295$, $t = -.525$, $p = .60$, 95% CI: $-1.41 - .819$). The pattern and significance of the interaction effect and simple slopes analyses were unchanged when covariates (age, sex, income) were included in the model.

Discussion

The current study tested the hypothesis that higher trait mindfulness buffers the relationship between perceived discrimination and depressive symptoms in a heterogeneous sample of racial and ethnic minority adults. As hypothesized, mindfulness moderated the association between perceived discrimination and depressive symptoms such that high perceived discrimination was related to elevated depressive symptoms only among individuals low in mindfulness. Thus, results support that individuals high in mindfulness may be buffered from experiencing elevated depressive symptoms under high levels of discrimination. The magnitude and significance of these relationships were unchanged when controlling for potential confounding effects of age, sex, and income.

One prior investigation, conducted in a predominately White sample, has demonstrated that mindfulness is helpful for mitigating the effects of perceived everyday discrimination on depressive symptoms (Brown-Iannuzzi et al., 2014). To our knowledge, this is the first study to demonstrate the moderating role of mindfulness in the relationship between the experience of major discriminatory events and depressive symptoms in an exclusively minority sample. This study advances knowledge of individual differences and resilience in racial and ethnic minority populations who are disproportionately exposed to stressful life events and who are thus at elevated risk for stress-related mental illness and chronic disease

(Williams & Mohammed, 2009). Study findings suggest that higher levels of mindfulness may improve individuals' psychological adjustment and ability to cope with repeated encounters with major discriminatory events.

The pragmatic implication of a stress-buffering effect of mindfulness is that distress may be reduced by increasing levels of mindfulness without necessarily having to change the environment (Bergin & Pakenham, 2016). These findings are significant because many forms of discrimination are a result of system and society-level influences, changes to which are slow to evolve (Simpson & Yinger, 1985). It is important to note that the current findings are not intended to imply that such changes are not critically needed. Nor are results meant to suggest that individuals who have been harmed by discrimination should bear responsibility for reducing discrimination itself. Rather, results are hoped to inform strategies that individuals can employ to mitigate the deleterious effects of discrimination until structural and systemic changes that minimize or eliminate discrimination are realized. Although results do not directly indicate that people high in trait mindfulness actually use mindfulness to cope with discrimination, this study is an important antecedent to future investigations that use real-time measures (e.g., ecological momentary assessments) to index which coping strategies individuals use to effectively cope with specific types of stressors.

The current study also contributes to the literature on mindfulness in racial and ethnic minority populations. This is important given that the effects of mindfulness for racial and ethnic minorities are largely unknown because very few clinical and observational studies have examined effects of mindfulness in non-White samples (Fuchs, Lee, Roemer, & Orsillo, 2013). Well-documented health disparities, which are expected to widen as racial and ethnic minorities comprise increasingly higher proportions of the population (Colby & Ortman, 2014), substantiate the need for research on mindfulness in racial and ethnic minorities. The present findings are poised to begin to address these disparities and to help to lay the groundwork for mindfulness-based intervention studies that target the effects of exposure to discrimination on psychological and physical well-being in racial and ethnic minority communities.

Recent theorizing supports the relevance of mindfulness-based interventions for racial and ethnic minorities, in particular. For example, because the practice of mindfulness validates negative emotions as a natural and universal human experience, mindfulness may be especially helpful for and appealing to disenfranchised communities who have understandable mistrust of mental health care and who worry that they will be blamed for their circumstances (Fuchs et al., 2013; Whaley, 2001). Additionally, individuals from non-Western and/or non-dominant cultures may perceive the experiential orientation of mindfulness practice to be more culturally congruent (i.e., reflective of shared values) than traditional psychological treatments like cognitive behavioral therapy (CBT) that are rooted in individualism and analytical/rational cognition (Hays, 2009). For example, mindfulness-based principles that emphasize the goal of modifying one's relationship to one's thoughts via acceptance may be experienced as more cooperative and less pedagogic than CBT approaches that emphasize changing the content and frequency of thoughts by evaluating their rationality (Fuchs et al., 2013). Still, some evidence suggests the need for potentially adapting mindfulness-based approaches for racial and ethnic minorities given concerns

about its Buddhist origins, particularly among religious minority communities (Woods-Giscombé & Gaylord, 2014). Lower engagement and retention among racial and ethnic minorities vs. non-Hispanic White participants in clinical investigations of mindfulness-based interventions (Roth & Robbins, 2004; Shallcross et al., 2015) also underscores the potential need for cultural adaptation of mindfulness-based approaches for racial and ethnic minorities (Lau, 2006). Future studies are needed to determine the extent to which extent to which mindfulness-based interventions should be adapted to target the deleterious effects of discrimination-related stressors in diverse communities.

Limitations

Although the present study had a number of strengths, including the exclusively minority sample and the measure of major discriminatory events, results must be interpreted in the context of several methodological limitations. First, this investigation was cross-sectional, which restricts causal conclusions about the relationships between perceived discrimination, mindfulness, and depression. Although our directional model is consistent with evidence from experimental and longitudinal studies that support that discrimination and mindfulness predict depression instead of the other way around (Brown et al., 2000; Schmitt et al., 2014), future investigations should test the moderating effects of mindfulness in a longitudinal design whereby discrimination and mindfulness are measured prospectively and at multiple time points.

Second, our sample was comprised primarily of Hispanics and non-Hispanic Blacks who were treated as undifferentiated groups, which ignores potentially significant heterogeneity (i.e., differences in racial and cultural identity, socio-cultural environment, and geographical origin) within these groups that may influence outcomes (Agyemang, Bhopal, & Bruijnzeels, 2005; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). Thus, future studies would do well to comprehensively measure race and ethnicity by including response options not included in the present investigation (e.g., separate categories for Hispanics who may identify as Dominican vs. Puerto Rican, Blacks who may identify as Haitian vs. Jamaican, and Asians who may identify as Chinese vs. Japanese), and to examine these groups separately in order to thoroughly understand whether the protective effect of mindfulness generalizes across cultural groups.

Third, the present study is limited by reliance on self-report measures. Although we applied standardized inventories that have been used extensively in previous investigations, our measures of depression and discrimination, in particular, are subject to retrospective and recall bias. Future research utilizing methods that minimize these biases (e.g., daily diary assessments) would enhance the validity of results and also our understanding of the time-course of the buffering effects of mindfulness on the relationship between perceived discrimination and depressive symptoms.

Additionally, because we were primarily interested in the effects of perceived discrimination, broadly defined, and due to limited power given the wide distribution of attributed reasons for discrimination (e.g., race, ethnicity, religion, physical appearance), specific reasons for discrimination were not examined in the present study. Although this increases generalizability of results, future investigations should test whether the moderating

effect of mindfulness on depressive symptoms is robust across specific dimensions of discrimination.

Also, although summary scores on the DAS-DQ were comparable to at least one other study conducted with Black and Hispanic samples (Krieger et al., 2005), and other studies on Black and Hispanic samples have similarly found that over 30% of individuals endorse having experienced no major events (Krieger et al., 2005; Williams et al., 1997), a smaller proportion of individuals in this study endorsed 3 major discrimination-related life events. This may be due to a younger average age of the current sample compared to other studies (Krieger et al., 2005; Taylor et al., 2004) and/or may reflect the possibility that the selection of major events on this measure are not equally relevant across racial and ethnic categories. The DAS-DQ has been validated in Black and Hispanic samples but not in younger Asian samples. Further, this measure has been used primarily to assess everyday discrimination (rather than lifetime) in Asian individuals and it is unclear whether the specific examples of major discriminatory events are as pertinent to this group. Thus, the generalizability of results may be limited to younger ages and/or may have questionable relevance for Asian populations. Also related to potentially limited generalizability, only 23% of the current sample met criteria for the cut-off of clinically elevated depressive symptoms. Thus, results may not generalize to racial and ethnic minority individuals with severe levels of depressive symptoms. Further work is needed to replicate our findings in racially and ethnically diverse clinical samples.

Finally, the measure used to assess mindfulness (CAMS) has not been validated in racial and ethnic minorities. Although the sample average on this measure is comparable to other studies (Feldman et al., 2006) and the alpha coefficient was adequate, thorough psychometric evaluations (e.g., item characteristic curves) are needed to assess the validity of the CAMS for use in racial and ethnic minority samples.

Overall, study results suggest that mindfulness is an important trait that may protect racial and ethnic minority individuals from experiencing elevated depressive symptoms in the face of high perceived discrimination. Results advance our understanding of mindfulness and resilience among diverse communities who suffer from disproportionate levels of discrimination and stress-related health disparities. Findings also point to the potential utility of interventions that target mindfulness as a modifiable skill that can be used specifically to cope with exposure to discrimination.

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Figure 1.

Test for a non-zero slope of the unadjusted two-way interaction effect of mindfulness and discrimination on depressive symptoms. Values depict estimates at ± 1 SD for mindfulness and discrimination. Error bars represent standard error of the mean. * Slope is significantly different from zero ($p < .05$).

Table 1

Demographic and psychosocial characteristics of study population

Characteristics	Overall (n=97)
Age (years), mean $\pm$ SD	36.08 $\pm$ 13.02
Sex	
Female (N, %)	63 (64.9)
Race and Ethnicity	
Hispanic (N, %)	37 (38.1)
Black (Not Hispanic) (N, %)	44 (45.4)
Asian (Not Hispanic) (N, %)	11 (11.3)
Other (Not Hispanic) (N, %)	5 (5.2)
Family income per year	
\$40,000 (N, %)	57 (58.8)
Mindfulness (CAMS score) mean $\pm$ SD	34.44 $\pm$ 5.6
Depression (CES-D score) mean $\pm$ SD	7.08 $\pm$ 5.21
Discrimination (DAS-DQ score)	
Summary score mean $\pm$ SD	1.29 $\pm$ 1.27
0 events (N, %)	31 (32.0)
1 event (N, %)	32 (33.0)
2 events (N, %)	18 (18.6)
3 events (N, %)	16 (16.4)

Notes. CAMS=Cognitive and Affective Mindfulness Scale; CES-D=Center for Epidemiologic Studies Depression Scale; DAS-DQ= Detroit Area Study Discrimination Questionnaire.

Table 2

Correlations between study variables.

Variable	CES-D	CAMS-R	DAS-DQ
CES-D	–	–.41 **	.16
CAMS	–	–	.07
DAS-DQ	–	–	–

**
 $p < .01$

Table 3

Hierarchical regression analyses reporting the variance in depressive symptoms explained by trait mindfulness and discrimination.

Model	Variable	Unadjusted						
		R ²	R ²	B	B SE	b	t	95% CI
1	DAS-DQ	.024	.024	.630	.407	.154	1.56	-.178 – 1.44
2	CAMS	.200	.176***	-.391	.084	-.421	-4.65	-.558 – -.224
3	CAMS X DAS-DQ	.247	.047*	-.186	.075	-1.60	-2.47	-.335 – -.037
		Adjusted						
		R ²	A R ²	B	B SE	b	t	95% CI
1	Age	.049	.049	.020	.044	.050	.452	-.067 – .107
	Sex			1.41	1.13	.130	1.25	-.835 – 3.67
	Income			-.856	.507	-.182	-1.67	-1.86 – .151
2	DAS-DQ	.076	.027	.687	.418	.167	1.64	-.144 – 1.52
3	CAMS	.232	.156***	-.374***	.087	-.400**	-4.30	-.546 – -.201
4	CAMS X DAS-DQ	.285	.053**	-.198*	.076	-1.70*	-2.60	-.349 – -.046

R^2 = Proportion of variance in depressive symptoms explained by independent variable; R^2 = Incremental increase in explanatory variance; B=Unstandardized regression coefficients; SE= Standard error; b=Standardized regression coefficients; CI=Confidence interval; DAS-DQ= Detroit Area Study Discrimination Questionnaire; CAMS=Cognitive and Affective Mindfulness Scale.

* $p < .05$;

** $p < .01$;

*** $p < .001$.