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The Association between Mindfulness, Depressive Symptoms and Neuroticism in Older African Americans

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Abstract

Background: Major depressive disorder is one of the most common psychiatric conditions. The prevalence in African Americans is difficult to estimate. Research suggests that among African Americans with clinical depression, symptoms are more likely to be persistent compared to whites. Depression may also manifest as other negative emotions such as anger, hostility, and insecurity. Negative emotionality has been linked to suboptimal health conditions and outcomes, reduced ability to cope with stress, and diminished quality of life. This is particularly the case for older African Americans. Recent research points to mindfulness as a potential buffer from negative emotions. The association between mindfulness and negative emotionality is unclear for older African Americans.

Aim: The primary objective of the current study was to explore the association between mindfulness and depressive symptoms and neuroticism in an older, African-American community sample. A second objective was to examine whether these associations varied by age, sex, or education.

Methods: Participants were 132 African Americans (47% male), aged 50 years or older (mean=62.7, SD=8.5), from the Washington, DC metropolitan area. On average, participants had 13.6 (SD=3.0) years of education. Participants completed the Mindful Attention Awareness Scale, Center for Epidemiologic Studies Depression Scale, and Neuroticism Extraversion Openness-Five-Factor-Inventory.

Results: Hierarchical regression analyses showed mindfulness was negatively associated with depressive symptomatology (β =-.42, p<.001), and neuroticism (β =-.39, p<.001) after adjusting for age, sex, and education; moderation analyses revealed that these associations did not vary by age, sex, or education.

Conclusions: The findings suggest that older community dwelling African Americans who are more mindful report lower depressive symptoms and neuroticism. Future research should investigate the usefulness of mindfulness-based interventions to promote psychological well-being in this group.

Keywords: Neuroticism; Mindfulness; African Americans; Depressive symptoms; Older adults

Introduction

Depression is the most common psychiatric condition in the United States and a major public health concern [1]. Major Depressive Disorder (MDD), as well as depressive symptoms are associated with increased morbidity and mortality, chronic disease onset and progression, and decreased overall quality of life [2-4]. It is estimated that the lifetime prevalence for depression is 16.2% [5], and it continues to increase in all age groups [6]. In older adults, depression rates are up to 4% [7]. Depression rates increase to 6-9% in primary care settings, 14% for older populations requiring home health care, and 12% for hospitalized older adults [7,8]. Yet, evidence has suggested the prevalence of depression may even be higher because it is often underdiagnosed in older adults [9]. In addition, older adults are more likely to have complex medical conditions that make them more susceptible to MDD. Later life onset of depression is linked to cardiovascular disease (CVD), neurological disorders, and disorders associated with the aging process such as Alzheimer's disease [8,10,11]. Chronic medical conditions in older adults are further exacerbated by minor depressive syndromes, as well as MDD. However, despite the critical need to accurately diagnose and treat depressive disorders in older adults, scant research has addressed the accuracy in diagnostic tools for depression in this population or effective treatment options [12,13].

The racial/ethnic patterns in the prevalence of MDD are mixed. Some evidence has suggested that African Americans have a lower lifetime prevalence of depression [5,14], while other research has reported more depressive symptomatology and higher rates of depression among African Americans, as compared to other racial/ethnic groups [15-17]. Moreover, among African Americans with clinical depression, symptoms are more likely to be chronic and persist secondary to inadequate mental health care, poorer overall quality of care, lower socioeconomic status, and chronic psychological stress [18-20]. African Americans may also present with less traditional depressive symptoms and report more somatic complaints [21]. Inconsistent findings for African Americans may also be attributed to what previous research has described as low-grade sadness that manifests as anger, hostility, or aggression [22].

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Among African-American older adults, the research has shown that lifetime prevalence of MDD and other depressive disorders is lower or similar to other racial/ethnic groups [14,23,24]. However, as with previous findings, older African Americans may experience more depressive symptoms and chronic MDD that is mentally and physically debilitating because it often goes undiagnosed and untreated [14]. The strong link between depression, depressive symptoms, and physical health in cross-sectional and longitudinal research studies [25] suggests that older African Americans may be more vulnerable to depressed mood because of disparate risks for chronic health conditions, such as obesity, hypertension, diabetes, kidney disease, and CVD, when compared to other populations [26-32].

Despite mixed findings concerning the prevalence of MDD and the severity of symptoms for African Americans, there have been few studies conducted to address how depression and negative affect, in general, manifest in this population. MDD, as well as depressive symptoms, may be a reflection of a more chronic underlying vulnerability to experience negative emotions. There is a critical temporal distinction to be made between depressive symptomatology and longstanding personality styles. In a community-based sample of African Americans, Mwendwa et al. examined both state depressive symptoms and enduring negative affective personality styles [33]. Their findings showed that personality dispositions are more strongly associated with lower education and increased levels of health risk biomarkers as compared to acute experiences of depressive symptoms. Therefore, examining both enduring personality styles and acute mood states is important for this group. Neuroticism is a personality style characterized by proneness to anxiety, insecurity, anger, and sadness as well as susceptibility to stress, reduced ability to cope with stress, and lower subjective well-being [34,35]. In African Americans, neuroticism and depressive symptoms are associated with greater financial strain, negative social interactions, and less social support [36,37].

To date, there is scant literature examining factors that protect against depressive symptomatology and neuroticism in the older African-American population. The study of mindfulness is a burgeoning field and may represent a unique protective factor. Mindfulness refers to the practice of attending in a non-judgmental manner and accepting experiences as they occur in the moment. Mindfulness facilitates psychological flow and well-being by enabling the mindful individual to directly experience reality without elaborate and ruminative maladaptive thoughts. Mindfulness can be assessed as a dispositional trait. Trait mindfulness is described as a willingness to be aware of and attend to present experience, intentionally and non-judgmentally [38]. Correlates of mindfulness include trust, acceptance, and patience in moment-to-moment experiences [39]. Mindfulness interventions, such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) [39,40] have been used in the treatment of depression, chronic stress, and borderline personality disorder [41-43]. Deyo et al. have demonstrated that mindfulness mitigates depressive rumination, which has been linked to concentration impairments, memory and problem solving difficulties, lower motivation, and intensified negative mood [44]. Trait mindfulness has been inversely associated with depressive symptoms, worry frequency, self-consciousness, angry/hostility, impulsivity, and stress [38,45]. Higher levels of mindfulness also predict a decrease in the utilization of avoidant coping strategies and greater positive affect [38,46].

A better understanding of how trait mindfulness is associated with depressive symptomatology and an enduring vulnerability to experience negative emotions is a critical first step to explore the usefulness of mindfulness-based therapies for African-American older adults. This population may be more prone to depression but underdiagnosed and more vulnerable to depressed mood because of chronic health conditions. Previous studies have not, however, examined the association between trait mindfulness and depressive symptomatology, or neuroticism in this population. The current study aimed to fill this gap by exploring the relationship between trait mindfulness, and depressive symptomatology and neuroticism. We hypothesized that greater mindfulness would be associated with less endorsement of depressive symptoms and trait neuroticism. In addition, the study aimed to explore whether these relationships varied as a function of age, sex, and education.

Materials and Methods

Study sample

A community-based sample of 132 African-American older adults, aged 50 years and older, participated in the study. Participants were part of a larger study conducted by the Health Promotion and Risk Reduction Research Center (HealthPARC) entitled, the HealthPARC Study of Cognitive Aging (SOCA). The purpose of the SOCA study was to examine the relationships among cardiovascular disease risk factors and cognitive function in middle age to older African Americans. Participants were recruited for the study from the Howard University campus community and Howard University Hospital. Recruitment also took place at non-assisted senior living facilities and senior centers. Participants were screened by phone and eligibility was determined based on self-report. Inclusion criteria included age 40 years and older, of African descent, and residence in the greater Washington, DC metropolitan area. Exclusion criteria included a history of dementia, traumatic brain injury, recent stroke, or suspected moderate to severe cognitive impairment (Telephone Interview of Cognitive Status score<21). All participants provided informed consent. On average, the protocol took two hours for completion and participants received monetary compensation.

Measures

Trait mindfulness

The Mindful Attention Awareness Scale (MAAS) was used to measure trait mindfulness [38]. The scale consists of 15 items and participants indicated, on a six-point Likert scale ranging from one (almost always) to six (almost never), how frequently or infrequently they have encountered the experience described [38]. Higher scores on the MAAS reflect more mindfulness. To illustrate, item numbers 1 and 12 state, "I could be experiencing some emotion and not be conscious of it until sometime later" and "I drive places on 'automatic pilot' and then wonder why I went there." The MAAS scale has been validated for use across a variety of groups including community and nationally sampled adults, as well as college students and cancer patients [38]. Cronbach's alpha coefficients for the MAAS range from .80 to .87 across studies [38]. The MAAS scale also demonstrates convergent and discriminant relationships in the expected directions, with the NEO Personality Inventory (NEO-PI), NEO Five Factor Inventory (NEO-FFI), Mindfulness/Mindlessness Scale, Beck's Depression Inventory, Rosenberg's Self-esteem Scale, and the State-Trait Anxiety Inventory (STAI) [38].

Depressive symptomatology

The Center for Epidemiologic Studies - Depression (CES-D)

Scale is a measure of self-reported depressive symptomatology for the general (non-clinical) population [47]. The 20-item scale examines depressive symptoms experienced within the past week. Participants answered items such as, "I felt that I could not shake off the blues even with help from my family and friends" and "I felt hopeful about the future. Higher scores indicate higher depression. The CES-D has high internal consistency, with Cronbach's alpha coefficients ranging from 0.85 to 0.90 across studies [47]. Studies have shown acceptable test-retest reliability and excellent construct validity. Widely used, the CES-D has distinguished depressed from non-depressed participants in community and clinical samples [48].

Neuroticism

The Neuroticism Extraversion Openness-Five-Factor Inventory (NEO-FFI) is the brief version of the well-known NEO-Personality Inventory-Revised (NEO-PI-R) developed and validated by Costa and McCrae [49]. It is a 60-item inventory that measures the five major dimensions of normal adult personality- Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The neuroticism dimension describes an individual's experience with negative affect such as anger, sadness, and vulnerability. Examples of items that comprise the neuroticism scale include "Sometimes I feel completely worthless," "I often get angry at the way people treat me," "Too often, when things go wrong, I get discouraged and feel like giving up," and "I often feel helpless, and want someone to solve my problems."

Data analyses

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Prior to inferential data analysis, frequencies and descriptive statistics were calculated for all study variables. All variables were checked for normality of variance. Independent t-tests were performed to observe any differences in variables of interest between men and women. Unadjusted associations between trait mindfulness, depressive symptomatology, and neuroticism were conducted. Next, the relation between mindfulness and depressive symptomatology was examined using hierarchical regression analyses. The regression consisted of three models. The first model tested the association between demographic factors known to be associated with depressive symptoms: age, sex, and education. The second model tested the association between mindfulness and depressive symptoms after controlling for age, sex, and education. The third and final model included the addition of three interaction terms: mindfulness X age, mindfulness X sex, and mindfulness X education. Finally, three additional models were run to test associations between mindfulness and neuroticism.

Results

Sample characteristics

Descriptive statistics for sample characteristics and study measures are presented in Table 1. The mean age of participants was 62.7 years (SD=8.5) and mean educational attainment was 13.6 years (SD=3.0). On average, study participants were half male and unmarried with a yearly household income of less than $25,000. A CES-D cutoff score of 16 is indicative of "significant" or "mild" depressive symptomatology [47], thus our sample mean of 12.6 did not reflect significant depressive symptomatology. The mean neuroticism score for the sample was 29.4 (SD=6.8). As for the MAAS, the sample mean was 4.6 (SD=0.9). Men and women did not differ significantly in endorsement of mindfulness, depressive symptoms, neuroticism, age, or education.

	Mean (SD)
Age (yrs)	62.7 (8.5)
Years of Education	13.6 (3.0)
CES-D Total	12.6 (10.2)
Neuroticism	29.4 (6.8)
MAAS Total	4.6 (.92)
	%
Male	47.4
Income	
< 25,000	63.6
25,001-50,000	18.8
50,001-75,000	9.7
75,001-100,000	5.2
>100,000	2.6
Marital Status	
Married	23.4
Divorced	36.4
Never Married	26.6
Widowed	13.6

Table 1: Sample Characteristics.

Correlational analysis

Correlation analyses yielded a significant bivariate association between MAAS scores and CES-D scores (r=-.44; p<.001) suggesting higher trait mindfulness is associated with lower depressive symptomatology. Neuroticism was negatively associated with trait mindfulness (r=-.42, p<.001), and positively associated with depressive symptomatology (r=.53, p<.001).

Hierarchical Regression Analyses

Depressive symptomatology

The first model of the hierarchical regression tested the relationship between the demographic factors age, education, and sex and CES-D scores. This model was significant (F=2.890, Adj R^2=.041, p<.05); education was inversely associated with CES-D scores (β= -.221, p<.05). The second model added MAAS scores to examine their relationship with CES-D scores after adjusting for covariates. This model was also significant (F=9.323, p<.001) and explained 20% of the variance in CES-D scores (Adj R^2=.203). The addition of MAAS explained significantly more variance than the first model (ΔR^2=.164, p<.001). Within this model, MAAS scores were significantly and negatively associated with CES-D scores (β=-.416, p<.001). The third and final model included the addition of three interaction terms—MAAS x age, MAAS x sex, and MAAS x education--and assessed whether the relationship between MAAS scores and CES-D scores varied as a function of age, sex, and education. This model was significant (F=5.671, p<.001), and explained about 20% variance in CES-D scores (Adj R^2=.200) but did not significantly improve model fit (ΔR^2=.016, p>.05). Within this model neither MAAS x age, MAAS x sex, nor MAAS x education interactions were significant. Regression statistics are reported in Table 2.

Neuroticism

The first model of the hierarchical regression tested the relationship between the demographic factors age, education, and sex and neuroticism scores. This model was not significant (F=2.320, Adj R^2=.029, p>.05). The second model added MAAS scores to examine their relationship with neuroticism scores after adjusting for the first

	CES-D Total	Neuroticism Total	MAAS Total
CES-D Total	1.0		
Neuroticism Total	.53	1.0	
MAAS Total	-.44	-.42	1.0

All correlations are significant; p ≤ .01

Table 2: Unadjusted Correlations.

model. This model was significant (F=7.621, p<.001) and explained 17% of the variance in neuroticism scores (Adj R^2=.166). The addition of MAAS explained significantly more variance than the first model (ΔR^2=.140, p<.001). Within this model, MAAS scores were inversely associated with neuroticism scores (β=-.385, p<.001). The third and final model included the addition of three interaction terms—MAAS x age, MAAS x sex, and MAAS x education--and assessed whether the relationship between MAAS scores and neuroticism scores varied as a function of age, sex, and education. This model was significant (F=4.639, p<.001), and explained about 16% of the variance in neuroticism scores (Adj R^2=.161) and did not significantly improve model two (ΔR^2=.014, p>.05). Within this model, neither MAAS x age, MAAS x sex, nor MAAS x education interactions were significant. Regression statistics are summarized in Tables 3 and 4.

Discussion

The current study aimed to explore the relationship between mindfulness, and depressive symptomatology and neuroticism in an older African-American community sample. Specifically, we examined the relationship between both transient mood symptoms as well as the longstanding vulnerability to experience negative emotions and mindfulness. Our findings indicated that greater mindfulness is associated with lower endorsement of brief depressive symptoms and dispositional neuroticism for this group. Mindful individuals are able to tolerate unpleasant thoughts, emotions, and experiences by early detection and disengagement from automatic or conditioned responses [50]. These individuals are also able to reduce reactivity to negative affect, minimize rumination, and decrease avoidance-based coping strategies - factors that perpetuate negative emotions and diminish overall quality of life [44,51,52]. Contrarily, neuroticism has been linked to poor coping, decreased subjective well-being, and higher levels of reactivity to events [35,53,54].

To our knowledge, no studies have examined mindfulness as a potential protective factor to ameliorate the effects of depressed mood or an enduring personality style with heightened vulnerability to negative transient mood states in an older African-American community sample. Our findings suggest that in this group, greater endorsement of depressive symptoms or neuroticism is associated with lower mindfulness, that is, attention to moment-to-moment experiences. Previous research has proposed that rumination is the underlying factor of neuroticism and diverts attention away from being in the present moment, which is linked to increased reactivity to negative events [54]. Self-regulation, the ability to control automatic negative thinking, has been proposed as the link between a negative affective personality style and adverse psychological and physical sequelae [54]. As such, the practice of mindfulness can mitigate negative reactivity to stress-provoking events. From a cultural context, African Americans may be distress-prone considering their experiences of perceived discrimination, financial strain, sub-standardized housing, and other acute and chronic stressors [37,55]. Endorsement of greater mindfulness in the current sample may reflect adaptive self-regulation skills to combat negative reactivity to stressful events [50]. Reibel et al. (2001) examined the effects of mindfulness training in a racially heterogeneous sample [56]. Participants showed decreased psychological distress, anxiety and depressive symptoms, and maintained these improvements after one year.

Greater mindfulness was also associated with lower depressive symptoms in the current sample. Although less established in older African-American community samples, the relations between mindfulness and associated interventions have been established for alleviating depressive symptoms as well as their recurrence [43,57]. Similar to the theory underlying the association between a negative affective personality disposition and mindfulness, Paul and colleagues have proposed that mindfulness reduces an individual's vulnerability or risk for developing depression through promoting cognitive and emotional non-reactivity [52]. Brown et al. also found that trait mindfulness may promote healthy emotional functioning through its association with reduced emotional reactivity [58].

We did not find any joint effects of mindfulness and age, sex, or education on neither depressive symptoms nor neuroticism. Previous studies have suspected that women are more prone to stress, depression, and anxiety, and are less mindful compared to men [59-61]. In the current community-based sample of African Americans, women did not endorse higher neuroticism or depressive symptoms, which may help explain why there were no significant interactive effects with sex in the current sample. Furthermore, men and women had similar education and age assuaging effects of socioeconomic status and age-related stressors that may influence the effects of mindfulness.

Research studies that have examined the efficacy of mindfulness as a treatment modality for mental health disorders in African Americans are scarce. The current findings provide preliminary evidence

Model 1			**Model 2**		**Model 3**	
Predictors	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.11	.20	-.06	.45	-.35	.52
Sex	-.03	.76	-.01	.88	.63	.14
Education	-.22	.01	-.14	.07	.09	.85
MAAS			-.42	.00	-.28	.71
Age XMAAS					.53	.58
Sex XMAAS					-.75	.13
Education XMAAS					-.32	.63
F	2.890*		9.323**		5.671**	
Adj R^2	.04		.20		.20	
ΔR^2			.16**		.02	
***p<.01*						

Table 3: Regression Analysis CES-D.

Model 1			**Model 2**		**Model 3**	
Predictors	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.07	.45	-.02	.80	.70	.21
Sex	-.07	.45	-.06	.47	.16	.71
Education	-.21	.02	-.14	.10	-.48	.34
MAAS			-.39	.00	.46	.55
Age XMAAS					-1.29	.19
Sex XMAAS					-.24	.63
Education XMAAS					.46	.50
F	2.320		7.621**		4.639**	
Adj R^2	.03		.17		.16	
ΔR^2		.14**	.01		.02	
***p ≤ .01*						

Table 4: Regression Analysis Neuroticism.

and direction for future research to examine mindfulness-based interventions as viable treatment options for African Americans, who are often burdened by psychological, emotional, or physical conditions. Through consistent mindfulness practice, African Americans may nurture self-regulation skills to impede ruminative thoughts that promote vulnerability to negative affective experiences. Available and novel treatment options are critical for African Americans considering existing barriers to quality mental health treatment and less acceptable views of medication as treatment for depression [62]. Mindfulness training may help African Americans cultivate their awareness more thoroughly, using it as a tool to better cope with stressful events and improve their overall well-being.

Limitations

The current study was cross-sectional and exploratory in nature. Although a longitudinal study would be useful in providing evidence for the relationships between mindfulness and depressive symptoms and trait neuroticism over time, our findings suggest a significant pattern that exists at one point in time. Accordingly, we are unable to conclude if mindfulness is protective against depressed mood or neurotic personality style. In addition, the findings from our community-based sample cannot be generalized to populations that are clinically depressed. The CES-D is not intended as a diagnostic scale.

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