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The Impact of Adverse Childhood Experiences on Anxiety and the Protective Role of Mindfulness Among BIPOC Adults

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Introduction

Adverse childhood experiences (ACEs) refers to experienced violence, abuse, or neglect in an individual's childhood (Brown et al., 2009, Felitti et al., 1998). ACEs cover three general classifications of affliction experience: physical, emotional, and sexual. The term ACEs was first coined in a 1998 study by Dr. Vince Felitti and colleagues. The study consisted of 13,500 adult participants who were asked if they had any history of exposure to ACEs. Felitti et al. (1998) classified ACEs using seven distinct categories, three having do with childhood abuse (psychological, physical, or sexual abuse) and four associated with household dysfunction (violence against mother, exposure to substance abuse, mental illness, or criminal behavior). Felitti et al. then examined correlations between ACEs and health outcomes and found that more than half of participants experienced at least one ACE, and a quarter experienced two or more. Additionally, they found that there was a positive relationship between the number of ACEs and negative health outcomes in adulthood. Since their study, and decades of other research, ACEs have been linked to various negative health outcomes such as obesity, autoimmune disease, depression, alcohol use disorder, and premature mortality (Brown et al., 2009). The more ACEs one experiences, the more likely they are to develop psychological and other health problems. Furthermore, evidence suggests that individuals who have experienced ACEs have higher levels of daily stress and anxiety in adulthood (Hovens et al., 2010, Mosley-Johnson et al., 2021). In a large sample study ($N = 1931$) conducted in the Netherlands, researchers found that those who reported exposure to emotional neglect, physical abuse, or sexual abuse in childhood were more likely to report symptoms of anxiety than those who had not experienced any history of ACEs (Hovens et al., 2010).

Anxiety disorders have been found to considerably impact cognition, interpersonal and social functioning, and physical health. Furthermore, anxiety disorders in childhood are related to more disadvantageous outcomes in adulthood (Essau et al., 2014; Lee et al, 2020; Teubert & Pinquart, 2011). Orsillo and Roemer (2005) noted that anxiety disorders are considered to be the product of a disruption in information processing that result in misinterpretation of a potential threat or an individual's discernment and capacity to cope.

Remnants of this description can be seen in early ideologies within Greek and Latin literature. The term anxiety first came about after the 19th century. Before this time period, anxiety was not distinguished as a separate illness; however, there were various reports of what would be considered common anxiety symptoms today (Crocq, 2015). The Hippocratic Corpus, a compilation of medical texts written by Hippocrates and his students (500 BC), tells a story of a man named Nicanor who was experiencing fear at night every time he heard a flute play. His

symptoms would continue over a long period of time, and this was labeled under the medical disorder phobia in the text. Additional early ideologies can be seen in Latin stoic philosophical writings.

There are various forms of anxiety included in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) such as panic disorder, generalized anxiety disorder, phobias, and obsessive-compulsive disorder, and there are many theories as to what causes anxiety, including environmental and genetic factors. According to Hettema et al. (2001), approximately only about 30-40% can be attributed to an individual's genetics, this is considerably less than disorders such as schizophrenia and bipolar disorder. This promotes space for interpretation of the larger ratio, which may be explained by environmental factors. In fact, there has been past evidence identifying a strong connection between childhood neglect and anxiety (Sachs-Ericsson et al., 2017).

Although ACEs have been studied as significant criteria when evaluating childhood neglect, less is known surrounding BIPOC (Black, Indigenous, and People of Color) communities. In fact, there is a noteworthy lack of empirical research surrounding BIPOC communities in general (Buchanan et al., 2021). In psychological research, only 1.31% of articles published from the 1970s to the early 1990s focused on BIPOC communities (Iwamasa & Smith 1996; Safran et al., 2000). To grasp why implementing research within BIPOC communities is so important, it must be understood why there is a lack of literature to begin with.

The absence of textual evidence surrounding BIPOC communities centers around the ingrained dehumanization of individuals who are not in proximity to whiteness. Specifically, Black individuals as they are the furthest from whiteness. White has been the standard, and anything that does not equate to it has been seen as insignificant. This can be traced back to Voltaire's enlightenment ideology, which stated that Black individuals were inadequate by genetic design (Lewis, 1998). This was the beginning of categorizing individuals with different skin color into lesser than or greater than categories (Lewis, 1998). This ideological parasite would linger through time and become the foundation of various theories that would follow.

In the late 18th century, a physician by the name of Samuel Cartwright wrote multiple articles stating that Black individuals had smaller brains than white individuals. He essentially originated scientific racism. The term BIPOC has not been around very long. Various terms have been used to identify oppressed individuals, such as ethnic minorities. "Ethnicity", derived from the Greek word "ethnos" meaning nation or peoplehood, and "minority" from the Medieval Latin "minoritatem" meaning less, lesser, smaller, or junior. Essentially, it means a group or culture that exists apart from a more dominant group. The term was not truly actualized until the 1960's, during the civil rights movement (Swierenga, 1977). Words such as "ethnic" and "white ethnic" were being used to demonstrate the

distinction between groups who did not fall under the popular Anglo-Saxon cultural, political, and socioeconomic norms. The tumultuous decade of the 1960's catapulted various shifts in the American social structure (Swierenga, 1977). One being the axiomatic "melting pot" algorithm, where immigrants voluntarily gave up their cultural customs and language to adopt the "American way" or in other words the white way. Remnants of Voltaire's enlightenment ideology still remain in the roots of white supremacy, with a prime example of white/European being the standard in empirical research throughout the years.

The gaps in the psychology research literature surrounding BIPOC communities leaves them vulnerable to misattribution of psychological dysfunction that has not been formerly researched within these communities (Buchanan et al., 2021). For instance, various sociodemographic and socioeconomic factors can be ascribed to increased exposure to child abuse or neglect and other adverse childhood experiences (ACEs) (Mersky & Janczewsky, 2018). Furthermore, the interrelationship between race/ethnicity and socioeconomic status seems to forecast a greater chance of exposure to chronic stress and with that comes behavioral and biological stress processes that predict poorer health (Biggers et al., 2020). Roberts et al. (2010) found that individuals who identify as Black or Hispanic had a higher chance of being exposed to child maltreatment, in part due to witnessing domestic violence. However, little research has examined the impact of ACEs and race-related stress in BIPOC communities. The interplay of these factors may increase the likelihood of anxiety to develop, as well as other psychopathology related issues. Mindfulness practices have been utilized across various cultures to reduce suffering for several millennia. In this study, dispositional mindfulness was examined as a moderator of the relationship between ACEs and anxiety within BIPOC adults.

Dispositional mindfulness (DM) is the inherent ability to be in the present moment with an open-minded and non-judgmental perspective (Brown & Ryan, 2003). Mindfulness has been characterized as both a state of being and a trait. Its origins and practices stem from the east, originating in early Buddhism and Hinduism traditions. In the past few years, there has been a rise in research surrounding the trait of DM and its capacity to improve psychological health and wellbeing among the general population (Dolber et al., 2021; Tomlinson et al., 2017; Whitaker et al., 2014). Furthermore, studies have demonstrated significant negative correlations between DM and stress/anxiety (Dolber et al., 2021; Hou et al., 2015, Tomlinson et al., 2017). DM is also associated with positive changes in brain structure and function that are related to psychological factors of the stress response (Whitaker et al., 2014). However, research surrounding mindfulness and BIPOC communities is limited. Additionally, authors of several studies have found that DM moderates the relationship between ACEs and various psychopathologies, including anxiety; however, these studies were conducted among primarily white

samples (Dolbier et al., 2021; McKeen et al., 2021). Mindfulness practices have been taught almost entirely in white, middle- and upper-class settings with very little implementation in BIPOC communities within the U.S. (for exceptions, see Bigger et al. 2020; Salmon et al. 2004; Proulx et al., 2017; Woods-Giscombé & Gaylord 2014), therefore, the primary goal of this study was to assess the impact of DM on the relationship between ACEs and anxiety in a BIPOC sample of adults.

Hypotheses

It was hypothesized that:

1. ACEs would predict anxiety in BIPOC adults.
2. DM would moderate the relationship between ACEs and anxiety in BIPOC adults, such that, when DM is low, the relationship between ACEs and anxiety would be statistically significant, whereas when DM is high, the relationship between ACEs and anxiety would not be statistically significant.

Method

This study was a cross-sectional survey and secondary analysis of a larger parent study of BIPOC adults with the aim of assessing the impact of social and environmental stressors on the health and wellbeing of caregivers and their children. Eligible participants were English-speaking adult caregivers of children between the ages of thirteen and seventeen, with internet access, and who live in the U.S. Data from one hundred and seventy-two BIPOC individuals were included in this study. Questionnaires were provided online in a randomized order to lessen ordering effects. The study was approved by the university's institutional review board and informed consent was obtained by all participants prior to participating in the study. All participants received a mental health resource list at the end of their participation and were compensated with a small incentive, commensurate with typical compensation provided in online survey research.

Measures

The *Five Facet Mindfulness Questionnaire* is a 24-item scale used to measure DM, or the propensity to enter mindfulness awareness on a regular basis (FFMQ-24; Baer et al., 2006; Bohlmeijer et al., 2011). The 24 items included in the questionnaire are organized into five subscales: Acting with Awareness, Nonjudging, Nonreactivity, Observing, and Describing. Two subscales, Observing

and Describing, were not included so as to lessen participant burden, resulting in a 15-item measure. Participants answer questions using a 5-point Likert-type scale (1 = *Never or rarely true* to 5 = *Very often or always true*). The total number is then calculated by summing up the scores of all items. A higher score signifies greater DM.

The *ACE Questionnaire* is a 10-item scale that reflects the presence of various childhood adversities occurring before the age of 18. It assesses 10 ACEs, these include: emotional, physical, and sexual abuse; emotional and physical neglect; parent separation or divorce; violence against mother; and exposure to family member substance abuse, mental illness or suicidality, or imprisonment (Felitti et al., 1998). It consists of yes or no questions. The total score is calculated by summing the number of yes's by the participant; higher scores indicate more ACEs.

The *PROMIS Emotional Distress Anxiety Short Form* is a six-item questionnaire that measures anxiety experienced over the past seven days. It uses a 4-point Likert-type scale (0 = *Never* to 4 = *Always*). A total score is calculated by summing scores across all items, with higher scores indicating greater anxiety.

Statistical Analyses

All statistical analyses were performed using IBM SPSS for Macintosh version 28.0 at an alpha level of 0.05. Prior to data analyses, all variables were examined to evaluate data compliance with parametric analysis assumptions. Pearson's correlations were conducted to identify the overall relationship between variables. To test hypothesis 1, a linear regression was performed to examine if ACEs (and DM) predicted anxiety. To test hypothesis 2, the ACEs X DM interaction was included in the model to determine if DM moderated the relationship between ACEs and anxiety.

Results

Correlations

Zero-order correlations indicated that ACEs positively correlated with anxiety ($r = .52; p < .001$) and negatively with DM ($r = -.18; p < .001$), and anxiety and DM were negatively correlated ($r = -.62; p < .001$). Additionally, age was positively correlated with anxiety ($r = -.25; p = .002$) and was included as a covariate in regression analyses.

Linear Regression

Consistent with hypothesis 1, ACEs positively predicted anxiety ($\beta = .34, p < .001, sr^2 = .16$). DM negatively predicted anxiety ($\beta = -.51, p < .001, sr^2 = .33$). Inconsistent with hypothesis 2, DM did not significantly moderate the relationship between ACEs and anxiety ($\beta = -.08, p = .19, sr^2 = -.01$). Despite the non-significant interaction, given the novelty of the research topic, we further investigated the interaction using the Johnson-Neyman technique. These results indicated that ACEs predicted anxiety at all levels of DM, except for the highest values (i.e. 48 and above).

Discussion

Higher levels of exposure to ACEs have been linked to increased anxiety symptoms and other psychological disturbances. DM has been studied as a moderator of this relationship in primarily white samples (e.g., Dolbier et al., 2021). The first aim of this research was to investigate the impact of ACEs exposure on anxiety in BIPOC adults. The second aim was to identify if DM moderated the relationship between ACEs exposure and anxiety. As anticipated, ACEs were a predictor of anxiety; however, DM did not significantly act as a protective factor in regards to anxiety. However, this has been understudied in BIPOC communities, therefore it is important research.

The results for hypothesis 1 were consistent with previous literature (Dolbier et al., 2021, Hou et al., 2015, Tomlinson et al., 2017). The results for hypothesis 2 conflict with past literature. Authors of several studies have found that DM moderates the relationship between ACEs and various psychopathologies, including anxiety; however, these studies were conducted among primarily white samples (Dolbier et al., 2021, Makeen et al., 2021). Furthermore, past literature indicates individual FFMQ facets consistently act as moderators to anxiety. Researchers found that primarily *non-judging* and *nonreactivity* were the main components of mindfulness that significantly moderated the relationship between ACEs and anxiety symptoms (Dolbier et al., 2021, Sherwood et al., 2020). Conversely, *observing* has either been correlated to higher levels of anxiety or no correlation at all (Sherwood et al., 2020). This could indicate that only certain facets within the FFMQ are pivotal in moderating symptoms of anxiety, and others may be skewing the data. Examining specific components may be applicable to gather further insight into DM specific moderating effects. It is also noteworthy that although the ACEs X DM interaction was statistically non-significant, at extremely high levels of DM, the relationship between ACEs and anxiety was non-significant, whereas it was significant at low, medium, and high levels of DM. This suggests that DM may in fact confer some benefit in protecting against negative consequences of ACEs.

Mindfulness practices originated millennia ago and have been documented to combat anxiety in the 19th century seen in early Latin stoic writings. In his book, *Of Peace of Mind (De tranquillitate animi [DTA])*, Seneca describes the concept of “peace of mind” as a state where one is undisturbed or tranquil, and advises an individual to focus on the present moment. (Crocq, 2015, Seneca et al., 1671). This is a pivotal technique with similar elements being utilized today as DM. Furthermore, there have been multiple studies that have indicated a negative correlation between DM and anxiety (Hou et al., 2015, Tomlinson et al., 2017).

Limitations and Future Research

This research had various limitations. First, due to the relatively small sample size, we did not explore potential differences between racial groups. This may have resulted in important data surrounding racial differences being obscured. Multiple components can be missed when clustering all oppressed races into one category. Second, all data was self-reported, and due to this, biases such as recall, social desirability, and self-selection may have affected the results. Third, symptoms surrounding anxiety have been correlated to exposure to traumatic events (Breslau., 2010). Trauma itself is often unseen, and can manifest throughout a multitude of physiological systems, wreaking havoc causing diseases and various other external manifestations such as anxiety. An example of this can be seen with the “weathering hypothesis”, a term coined during a study on the perpetual trauma of Black women and its impact on their physiological mechanisms (e.g., advanced biological aging, and the accelerated rate of disease; Geronimus, 1992). The weathering hypothesis suggests that the wellbeing of black women may begin to decline in adulthood as a result of accumulative socioeconomic disadvantage (Geronimus, 1992). It can be said that BIPOC communities as a whole are disproportionately afflicted by traumatic environmental factors, and that the complexity of trauma leaves more questions than answers. There are various studies surrounding the subject with a lot of overlap of knowledge, however the ways in which trauma has been measured varies, and this can create ambiguity within the literature. Research tends to view trauma from one layer instead of as a large wound affecting a multitude of systems. Future research may be more impactful by uniting current studies with former work, demonstrating how common biological pathways and external aspects of trauma materialize into mental disorders throughout adulthood.

Despite these limitations, this study is distinctive in that it investigated the relationship between ACEs and anxiety and if DM played a moderating role on anxiety symptoms within BIPOC adults. Though there has been research involving ACEs, anxiety, and DM (e.g., Dolbier et al., 2021), there has not been specific research looking at BIPOC individuals as the focal point. Furthermore, as noted, depending

on the color of one's skin there have been notable differences in external lived experiences. As an instance, BIPOC individuals tend to show considerably higher levels of ACE's than white individuals (Dolbier et al., 2021).

Future research must take into account the absence of BIPOC participants in research and the ever-present influence of white supremacy in psychological literature. The definition of any mental disorder including anxiety can be attributed to the standard white man, as the definition varies depending on culture and what is considered out of the norm (Stein et al., 2021). If the norm has always been viewed through a white lens, then the science itself is based on white standards. In order to move forward, and improve science, we not only have to take accountability for the oppression of BIPOC individuals in research, but also look at ways of changing it (Buchanan et al., 2021). An example of this would be examining how research is being reported. For instance, ethnicity and race tend to be used inaccurately interchangeably. Ethnicity means an individual's culture and customs, and race means the color of an individual's skin. This can include asking all individuals what their ethnicity is instead of only specific groups (e.g., Hispanic/Latinx) (Buchanan et al., 2021). Looking to the future, we hope that this research will examine other potential protective factors surrounding anxiety and encourage others to look at an accurate representation of all populations when doing research.

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Table 1

Linear Regression Predicting Anxiety

Step	Predictor	<u>Unstandardized</u> <u>Coefficients</u>		β	t	R^2	R^2 <i>change</i>	F <i>change</i>
		B	SE					
1	Age (Years)	-.13	.06	-.14**	-2.0	.29	.29	32.78
	ACES	3.1	.44	.50**	7.2			
2	Age (Years)	-.06	.05	-.07**	-1.2	.52	.23	75.87
	ACES	2.3	.37	.36**	6.2			
	DM	-.41	.05	-.50**	-8.7			
3						.52	.005	1.74
	Age (Years)	-.06	.05	-.07**	-1.2			
	ACES	2.2	.39	.34**	5.6			
	DM	-.42	.05	.51**	-8.8			
	ACES*DM Interaction	-.06	.04	-.08	-1.3			

* $p < .05$; ** $p < .01$; ACEs = Adverse Childhood Experiences; DM = Dispositional Mindfulness

Figure 1 (Model A)

Simple Moderation of Mindfulness

