REVIEW



The Role of Religion and Spirituality in Adapting Mindfulness-Based Interventions for Black American Communities: A Scoping Review

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Abstract

Objectives Pilot studies have demonstrated the preliminary effectiveness and acceptability of mindfulness-based interventions (MBIs) with Black Americans. However, qualitative evidence suggests that some participants perceive discordance between mindfulness and religion/spirituality. This presents a potentially significant barrier to MBI engagement given the centrality of religion/spirituality for many Black Americans. This scoping review examines Black Americans' perceptions of MBIs and adaptations they have proposed to MBIs in relation to their religion/spirituality.

Method A scoping review search was conducted using PubMed, PsycInfo, and Scopus databases. Peer-reviewed journal articles utilizing a qualitative methodology to examine perceptions of mindfulness or MBIs with samples comprised of greater than 75% Black American adults were included. Key study characteristics were extracted and mapped onto a literature table, including sample composition, study design, and themes and adaptations related to religion/spirituality.

Results The literature search yielded 571 studies, 18 of which met inclusion criteria. Although participants across the studies generally perceived mindfulness as culturally acceptable and potentially beneficial, responses varied in how they viewed mindfulness in relation to religion/spirituality. Some participants viewed mindfulness as complementary to religion/spirituality, while other participants viewed it as potentially conflicting. Adaptations related to religion/spirituality proposed by participants included using culturally familiar language, addressing religious/spiritual concerns, implementing MBIs in churches, and spiritually tailoring MBIs for groups in faith-based settings.

Conclusions Religion and spirituality are important to consider when adapting MBIs for Black Americans. The themes and proposed adaptations identified suggest areas for future research on aligning MBIs with the religious/spiritual contexts of Black Americans.

Preregistration This study is not pre-registered.

 $\textbf{Keywords} \ \ Religion \ and \ spirituality \cdot Mindfulness \cdot Mindfulness \cdot based \ interventions \ (MBIs) \cdot Black/African \ Americans \cdot Cultural \ adaptations$

Racial and ethnic minority populations have been historically underrepresented in mindfulness research (Waldron et al., 2018). In recent years, an increasing number of studies have aimed to address this gap in the literature by examining the unique experiences of racial and ethnic minority participants

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in mindfulness-based interventions (MBIs). The focus on stress reduction in MBIs holds promise for racial and ethnic minority individuals who experience greater stress due to discrimination, structural inequality, and health disparities (Proulx et al., 2018). Yet, the currently available evidence for the effectiveness of MBIs among racial and ethnic minority communities is modest, and evidence of acceptability is mixed (Sun et al., 2022). Cultural adaptations to MBIs can improve acceptability and engagement among racial and ethnic minority participants, which may in turn improve effectiveness (Hall et al., 2016; Sun et al., 2022). However, adaptation, testing, and implementation of culturally adapted MBIs with racial and ethnic minority populations remain limited (DeLuca et al., 2018; Sun et al., 2022).



Some pilot studies have shown acceptability and improved health outcomes of MBIs with Black Americans (Burnett-Zeigler et al., 2016b, 2019; Powers et al., 2023; Woods-Giscombé et al., 2019). Other studies have found that some Black American individuals who participate in MBIs experience tension between mindfulness concepts and their religious and spiritual beliefs (Tenfelde et al., 2018; Watson et al., 2016; Watson-Singleton et al., 2019; Woods-Giscombé & Gaylord, 2014). This perceived discordance can present a barrier to engagement and retention in MBIs, especially given the significant role that religion and spirituality plays in the lives and well-being of Black Americans (Pew Research Center, 2021).

Spirituality serves as a framework for understanding the meaning of life through an interconnected relationship to the sacred or transcendent (Koenig, 2012). Though the concepts of religiosity and spirituality overlap in some ways, spirituality is distinguished by a greater emphasis on personal growth and inner understanding. Meanwhile, religion encompasses an organized system of beliefs and rituals (Lazaridou & Pentaris, 2016; Wittink et al., 2009). In the most recent U.S. Religious Landscape Study, conducted by the Pew Research Center in 2014, Black Americans reported higher rates than all other racial and ethnic groups in various measures of religiosity. According to the Pew Research Center (2021), 75% of Black Americans are Christian, 18% are not affiliated with any particular religion, and 3% belong to other faiths, most commonly Islam. Seventy-five percent of Black Americans rate religion as very important in their lives, compared to 49% of White Americans, 36% of Asian Americans, 59% of Latinx Americans, and 54% of those who identify as Other/Mixed. Black Americans also reported the highest frequency of prayer, with 73% praying at least daily. Lastly, Black Americans reported feeling spiritual peace and well-being more often than people from other racial and ethnic groups (Pew Research Center, n.d.). These figures portray the richness of religious and spiritual life among Black Americans and point to an important area of consideration for health professionals seeking to provide culturally competent care.

Black Americans often look to God for strength, support, and guidance to cope with stress and other personal problems (Chatters et al., 2009). In response to an accumulation of stressors driven by race-based stress, Black Americans have at times used their spirituality to cope with detrimental social and health circumstances (Dill, 2017). Common healing practices such as prayer circles (Dill, 2017), church attendance (Smith, 2017), and the dissemination of prayer requests (Chatters et al., 2009) illustrate the importance of spirituality in Black communities. Similarly, African American primary care patients ranked spirituality as three times more important for depression treatment than White patients

(Cooper et al., 2001), demonstrating its important role in the wellness of Black American communities.

Mindfulness-based interventions teach participants to develop an awareness of their environment and internal experience without judgment, such that they can change their relationship to distressing thoughts, emotions, and sensations (Segal et al., 2002; Shapero et al., 2018). MBIs have been found to improve well-being among clinical and non-clinical populations (Khoury, 2013). Meta-analyses indicate that MBIs are particularly effective for treating anxiety and depression and managing stress (Goldberg et al., 2018; Khoury et al., 2013). However, most studies on MBIs have been conducted with predominantly White samples (DeLuca et al., 2018; Hazlett-Stevens, 2020; Proulx et al., 2018; Waldron et al., 2018). Further, Proulx et al. (2018) noted that American mindfulness programs often reflect White culture, experiences, and social references, which may be culturally discordant for racial and ethnic minorities. Centering the experiences of racial and ethnic minorities in mindfulness programs and research can help inform cultural adaptations to increase the accessibility and acceptability of MBIs for these populations.

Mindfulness-based interventions may hold particular relevance for Black American communities. The focus on stress management within MBIs may help reduce the negative health impact of chronic stressors facing Black Americans, such as discrimination, financial strain, and trauma (Biggers et al., 2020). Racial and ethnic minorities encounter multiple barriers to accessing traditional mental health treatments such as pharmacotherapy and psychotherapy, and mind-body approaches are a potentially more accessible and acceptable alternative to these modalities (Burnett-Zeigler et al., 2016a). Research on the experiences of Black Americans in MBIs has been limited but is growing (Biggers et al., 2020).

This scoping review examined religion and spirituality as a consideration for adaptations to MBIs within Black communities. Religion and spirituality are observed as culturally salient factors in studies of African Americans and in studies of Black immigrants from the Caribbean and Africa (Chatters et al., 2009; Diamant, 2021). As such, our discussion of religion and spirituality in implementing MBIs offers insights for Black immigrants and African Americans. We utilize the term "Black Americans" throughout our discussion, which describes people of African descent from various national origins. "African American" is conceptualized as a cultural subgroup therein (American Psychological Association, 2019). Meanwhile, in our review of other studies, we will use the race or ethnicity term deployed by the author being cited to maintain accuracy.

The following questions guided this scoping review: (1) What are the perceptions of Black Americans regarding the compatibility of MBIs with their religious and spiritual beliefs and practices? (2) How can practitioners consider adapting MBIs to align with the religious and spiritual



contexts of Black Americans? To this end, we reviewed qualitative studies that examined the perceptions of MBIs among Black Americans and discussed the clinical implications of these studies. We chose to focus on qualitative studies because their data contained rich, detailed descriptions of the experiences of Black Americans in MBIs. Examining these descriptions illuminates the complexities and nuances of the role of religion and spirituality in mindfulness and grounds our analysis in participants' perspectives.

Method

We searched the scientific literature for studies on perceptions of mindfulness and MBIs with predominantly Black American samples. We then evaluated whether each record met the following inclusion criteria: (1) the record is a peerreviewed journal article; (2) the article is an original research study with primary data collection; (3) the study sample is comprised of greater than 75% Black/African Americans; (4) the study sample is comprised of adults; (5) the study utilizes or integrates a qualitative method such as interviews, focus groups, or open-ended survey responses; and (6) the study examines participants' perceptions of mindfulness or responses to participating in a mindfulness-based intervention, program, or workshop.

The threshold of having greater than 75% of Black participants in the study sample for inclusion in the review was based on similar thresholds utilized in previous systematic reviews of MBIs among racial and ethnic minorities (DeLuca et al., 2018; Sun et al., 2022). Review articles, including systematic reviews, scoping reviews, meta-analyses, and literature reviews, were not considered.

Articles that studied an intervention with a mindfulness component were excluded if mindfulness was not central to the intervention and the intervention was not explicitly an MBI (e.g., some lifestyle and symptom management programs, third-wave cognitive-behavioral therapies including Acceptance and Commitment Therapy and Dialectical Behavioral Therapy). Interventions that only included provision of yoga classes were also excluded. Lastly, articles that involved the same study sample and design as other articles already included in the review were excluded. In cases of multiple articles from the same study and sample, we chose the article which provided greater focus on the qualitative data.

Our search was conducted using PubMed, PsycInfo, and Scopus databases and yielded 571 records after de-duplication. Table 1 provides further details regarding the databases searched, the dates of the searches, and the number of results from each search.

A mix of search terms and filters/limits were used across the databases according to the search conventions of each

Table 1 Database searches and results

Database searched	Date searched	Results
PubMed	03/01/2023	300
PsycInfo	03/01/2023	297
Scopus	03/01/2023	398
Total		995
After de-duplication		571

database. Table 2 specifies the terms and filters used in each database search and the filters/limits applied. We used iterations of the following terms: (African American OR Black American OR Black) AND (Mindfulness OR mindfulness-based intervention OR meditation OR MBSR). We limited our search to peer-reviewed journal articles based in the USA. Mindfulness-Based Stress Reduction (MBSR), a structured group program that integrates mindfulness meditation, stress psychoeducation, and hatha yoga (Kabat-Zinn, 1990), was utilized as a search term because it is often cited as the most widely implemented MBI (Rosenkranz et al., 2019).

We followed PRISMA guidelines (Tricco et al., 2018), with Fig. 1 providing a flow chart of the record screening process and results (template of flow chart derived from Page et al., 2021). The first author completed the screening of all records on Rayyan, a web app for conducting systematic and scoping reviews (Ouzzani et al., 2016). The first round of screening involved title and abstract review. Records that did not meet the eligibility criteria based on information provided in the title and abstract were excluded. If it was unclear whether the record met eligibility criteria based on the title and abstract, the record was passed on to the full-text review. The first author downloaded full-text PDFs of the records onto Rayyan and reviewed each full text according to the same inclusion and exclusion criteria as the title and abstract screening. For each of the records that met inclusion criteria for the final qualitative synthesis, the following data were extracted: the study's design and sample, gender and racial composition of participants, and references to religion and spirituality. These key characteristics were mapped onto a literature review table (Table 3).

Results

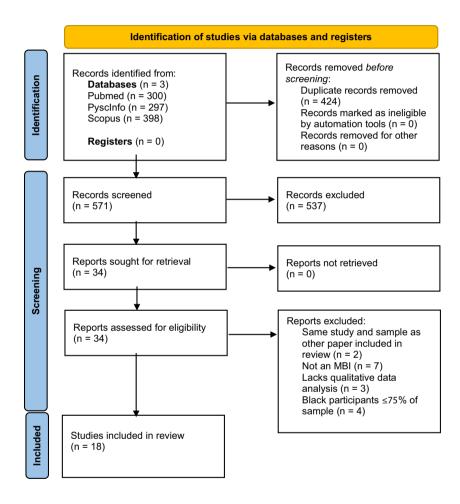
Thirty-seven records were selected for full-text review from the title and abstract screening. Of the 34 records in the full-text review, 18 were identified for inclusion in the final qualitative synthesis (Fig. 1). The following themes were identified related to religion and spirituality across the articles: mindfulness can be practiced alongside religion/spirituality, mindfulness can enhance religion/spirituality, participants relate mindfulness to religious/spiritual practice,



Table 2 Search terms and filters/limits

Database	Search terms	Filters/limits
PubMed	("black people" [MeSH Terms] OR African-American*[tw] OR Black[tw] OR African-immigrant*[tw] OR Caribbean-immigrant*[tw]) AND ("Mindfulness" [Mesh] OR "meditation" [MeSH Terms] OR mindfulness[tw] OR meditation[tw] OR meditat*[tw] OR MBSR[tw])	None
PsycInfo	(DE "Blacks" OR african-american* OR black OR african-immigrant* OR caribbean-immigrant*) AND (DE "Mindfulness OR DE "Meditation" OR DE "Mindfulness-Based Interventions" OR mindfulness OR meditation OR meditat* OR mbsr)	Limit to: - Peer reviewed
Scopus	TITLE-ABS-KEY ((african-american* OR black OR african-immigrant* OR caribbean-immigrant*) AND (mindfulness OR meditation OR meditat* OR mbsr))	Limit to: - Location: USA - Type: Article

Fig. 1 PRISMA flow diagram



some participants perceive a religious/spiritual conflict with mindfulness, participants generally do not perceive a conflict between mindfulness, and religion/spirituality was not mentioned by participants. Further, the following adaptations to MBIs related to religion/spirituality were proposed across the articles: address religious/spiritual concerns, integrate religious and spiritual content, separate mindfulness from religion/spirituality, use culturally familiar terminology, and collaborate with community faith leaders. These themes and adaptations were mapped onto a literature review table, along with key characteristics extracted from each record (Table 3).

General Characteristics of Reviewed Studies

The studies spanned a range of clinical populations, including participants with depression (Burnett-Zeigler et al., 2019; Powers et al., 2023), histories of trauma and intimate partner violence (Vroegindewey & Sabri, 2022), HIV (Hunter-Jones et al., 2019; Taylor et al., 2021), smoking addiction (Cottrell-Daniels et al., 2022; Mhende et al., 2021; Spears et al., 2019), prediabetes (Woods-Giscombé et al., 2019), mild cognitive impairment and hypertension



Table 3 Literature review table with key characteristics and themes/adaptations related to religion and spirituality (R/S)

Citation	Sample	Study design	Themes/adaptations
Burnett-Zeigler et al. (2019)	27 socio-economically disadvantaged patients with depression at an urban community health center (100% Black, 100% female)	Focus groups with participants after an 8-week mindfulness program adapted from MBSR	 Participants generally did not perceive conflict between mindfulness and R/S Participants related mindfulness to R/S One participant dropped out due to perceived conflict between mindfulness and R/S
Cottrell-Daniels et al. (2022)	32% low socioeconomic status smokers (90.6% Black, 46.0% female)	Interviews with participants after participating in an 8-week Mindfulness-Based Addiction Treatment program coupled with iQuit Mindfully, a text-messaging program in which participants received daily texts to reinforce mindfulness skills development	None
Damian et al. (2021)	21 adults between ages 18–29 (85.7% Black, 29.6% female)	Semi-structured interviews with participants after completing a year-long mindfulness-based workforce development program to understand changes in psychosocial resources and perceptions of mindfulness and yoga	None
Hunter-Jones et al. (2019)	18 adults living with HIV (100% Black, 66.7% cisgender women, 33.3% transgender women)	Focus groups with participants providing feedback on materials and exercises for an 8-week program adapted from MBCT	 Participants generally did not perceive conflict between mindfulness and R/S Participants related mindfulness to R/S
Mhende et al. (2021)	23 adult cigarette smokers (82.6% Black, 34.8% female)	Mixed methods pilot randomized controlled trial of a mobile mindfulness-based smoking cessation treatment during the COVID-19 pandemic with open-ended evaluation questions	None
Powers et al. (2023)	26 adults meeting criteria for PTSD and MDD (100% Black, 82.4% female), 11 of which completed follow-up interviews	Mixed methods randomized pilot study of a mind-fulness-based cognitive therapy (MBCT) program with a qualitative interview after completion of the intervention	None
Proulx et al. (2020)	10 adults aged 50–89 (100% Black; 100% female)	Focus groups with participants throughout and after a 4-week mindfulness program adapted from MBSR	 Participants generally did not perceive conflict between mindfulness and R/S Participants related mindfulness to R/S Participants proposed adaptation to include content related to R/S
Spears et al. (2017)	32 adults currently receiving services at a community health center (91% Black, 50% female)	Focus groups examining participants' perceptions of mindfulness and immediate responses to specific mindfulness practices implemented during the focus group	 Participants generally did not perceive conflict between mindfulness and R/S Participants related mindfulness to R/S Mindfulness can enhance R/S
Spears et al. (2019)	25 predominantly low SES adult smokers (Study 1: <i>n</i> = 15, 87% Black, 80% female; study 2: <i>n</i> =10, 80% Black, 50% female)	Focus groups to provide suggestions for development of mobile health mindfulness-based smoking cessation program (Study 1) and in-depth interviews to provide feedback on 1-week version of the pilot program (Study 2)	- Participants generally did not perceive conflict between mindfulness and R/S - Participants proposed adaptation to include content related to R/S



Table 3 (continued)			
Citation	Sample	Study design	Themes/adaptations
Szanton et al. (2011)	13 older adults in a low-income housing residence (100% Black, 100% female)	Focus groups with participants in an 8-week mind-fulness program adapted from MBSR	- Participants generally did not perceive conflict between mindfulness and R/S - Mindfulness can enhance R/S - Mindfulness and R/S can be practiced alongside each other
Taylor et al. (2021)	18 adults living with HIV (100% Black, 100% female)	Focus groups following a presentation on mindfulness (Part I, all 18 participants) and a 2-hr mindfulness workshop (Part II, 8 of the 18 participants from Part I)	None
Tenfelde et al. (2018)	22 predominantly low-income and single adults (100% Black, 100% female)	Age-stratified (18–34, 35–65, and 66 years and older) focus groups examining participants' perceptions of mindfulness, yoga, and MBSR, with no prior practice of these modalities necessary for participation	- Mindfulness can enhance R/S - Concerns expressed about conflict between mindfulness and R/S - Participants proposed to collaborate with community faith leaders - Participants proposed to separate mindfulness from R/S
Vroegindewey and Sabri (2022)	18 immigrants who were recent IPV survivors (100% Black, 100% female)	Qualitative feedback with participants in a digital intervention integrating MBSR practices, collected through weekly forms documenting participants' evaluation of sessions and a post-intervention survey	- Participants generally did not perceive conflict between mindfulness and R/S - Mindfulness and R/S can be practiced alongside each other
Watson et al. (2016)	12 adults (100% Black, 100% female)	Focus groups immediately following a 90-min mindfulness meditation training workshop	- Concerns expressed about conflict between mindfulness and R/S
Watson-Singleton et al. (2019)	7 adults (100% Black, 100% female)	Focus group and semi-structured interviews after delivery of 4-week MBSR intervention	- Concerns expressed about conflict between mindfulness and R/S - Participants proposed to collaborate with community faith leaders - Participants proposed to separate mindfulness from R/S - Participants proposed to use culturally familiar terminology
Woods-Giscombé and Gaylord (2014)	15 adults (100% Black, 80% female)	Semi-structured individual interviews with participants with prior or current experience in mindfulness programs	 Participants generally did not perceive conflict between mindfulness and R/S Concerns expressed about African American peers perceiving conflict between mindfulness and R/S Mindfulness can enhance R/S Participants related mindfulness to R/S
Woods-Giscombé et al. (2019)	38 adults with prediabetes (sorted into the MBI, 100% Black, 73.7% female), 23 of which completed interviews	Mixed methods RCT, in-depth interviews with participants in a mindfulness-based diabetes prevention group	 Participants generally did not perceive conflict between mindfulness and R/S Mindfulness can enhance R/S
Wright et al. (2021)	13 older adults with mild cognitive impairment and hypertension (100% Black, 92% female)	Cluster randomized controlled trial of a mindfulness-based intervention coupled with dietary coaching for hypertension, utilizing mixed methods with interviews to assess acceptability	None



(Wright et al., 2021), and other treatment-seeking populations (Spears et al., 2017).

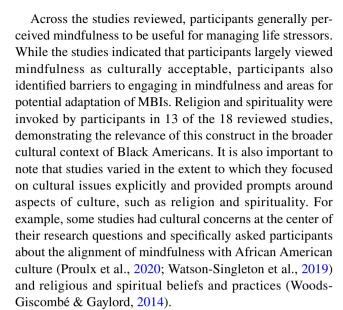
Non-clinical samples were also studied, and these included studies examining perceptions of mindfulness among groups comprised of all Black American adults (Proulx et al., 2020; Szanton et al., 2011; Tenfelde et al., 2018; Watson et al., 2016; Watson-Singleton et al., 2019; Woods-Giscombé & Gaylord, 2014) and a study of changes in attitudes toward mindfulness among a group of predominantly Black young adults who participated in a mindfulness-based workforce development program (Damian et al., 2021).

The reviewed studies skewed toward the experiences of women, with 14 studies having samples that were predominantly or solely comprised of women. All reviewed studies were with adults, and some studies focused on older adults (Proulx et al., 2020; Szanton et al., 2011; Wright et al., 2021) or had age-stratified groups with one group comprising older adults (Tenfelde et al., 2018).

Study designs among the articles varied. Several studies involved implementation of MBIs over 4 to 12 weeks, followed by qualitative investigation of participants' perceptions of the MBIs (Burnett-Zeigler et al., 2019; Damian et al., 2021; Hunter-Jones et al., 2019; Powers et al., 2023; Proulx et al., 2020; Szanton et al., 2011; Vroegindewey & Sabri, 2022; Watson-Singleton et al., 2019; Woods-Giscombé et al., 2019; Wright et al., 2021).

Perceptions of an MBI for smoking cessation delivered via a mobile health app (iQuit Mindfully) were also assessed in two different contexts, with participants completing interviews after a pilot version of the intervention (Cottrell-Daniels et al. 2022) and open-ended evaluations with a sample that participated in an iteration of the intervention administered during the COVID-19 pandemic (Mhende et al., 2021). The intervention was developed through a preliminary qualitative study that was also included in this review, in which focus group participants provided suggestions for the development of a mobile health mindfulness-based smoking cessation program, and another group of participants completed interviews to provide feedback on a weeklong version of the pilot program (Spears et al., 2019).

Other studies utilized focus group discussions to examine perceptions of mindfulness after providing participants with introductory exposures, in the form of a 90-min mindfulness workshop (Watson et al., 2016), a presentation on MBSR and a mini workshop (Taylor et al., 2021), and short mindfulness exercises during the focus group discussion (Spears et al., 2017). One study examined perceptions of mindfulness and yoga among participants in the community without providing an introductory exposure to these modalities (Tenfelde et al., 2018). Another study utilized semi-structured individual interviews with participants that already had significant prior experience with mindfulness (Woods-Giscombé & Gaylord, 2014).



Meanwhile, other studies focused more broadly on the overall implementation context of an MBI or had a significant focus on outcomes associated with participation in the MBI (Mhende et al., 2021; Powers et al., 2023; Wright et al., 2021). Further, cultural issues were not always asked about explicitly. For example, Taylor et al. (2021) described how they "did not purposely and explicitly ask the participants about African American cultural issues," to avoid "labeling" the participants and instead giving them the opportunity to "tackle these [cultural] issues themselves... if [they] were a big concern for them" (p. 7).

Despite this variance in focus on cultural issues across the studies, we chose not to exclude articles based on whether they had explicit questions around cultural concerns impacting acceptability of mindfulness, such as religion and spirituality. This decision was based on multiple factors, such as the challenge of delineating an objective threshold for a sufficient focus on culture in the research questions, most studies focusing on a range of factors beyond cultural issues that impact acceptability, and the possibility that participants could bring up cultural issues when asked generally about obstacles to engaging in mindfulness.

Themes and Proposed Adaptations Related to Religion and Spirituality

Diverse perspectives emerged among participants regarding the relationship between mindfulness and their religious and spiritual beliefs. In some instances, participants related their religious and spiritual beliefs and practices to mindfulness concepts and practices (Burnett-Zeigler et al., 2019; Proulx et al., 2020; Spears et al., 2017; Woods-Giscombé & Gaylord, 2014). Participants connected mindfulness and meditation to culturally familiar practices such as prayer (Spears et a., 2017; Woods-Giscombé & Gaylord, 2014), listening



to religious music, and focusing on scripture (Spears et al., 2017). They also related mindfulness and meditation practices and concepts with teachings from Christianity (Woods-Giscombé & Gaylord, 2014, p. 8). Some participants connected principles of loving kindness and benevolence from Eastern traditions to Christian principles of "loving one's neighbor" (Proulx et al., 2020, p. 6). Further, participants compared the stillness of prayer while "listen[ing] to what God is telling you" with stillness cultivated in mindfulness meditation (Woods-Giscombé & Gaylord, 2014, p. 6). In a multicomponent intervention for Black immigrant trauma survivors, which included a series of four weekly individual MBSR sessions conducted over the phone, one participant talked about praying regularly and maintaining a meditation practice which integrates religious texts: "I take a scripture, think through it quiet myself and get to the spirit behind that space. I just take my time, so far about 30 min, sometimes an hour" (Vroegindewey & Sabri, 2022, p. 8).

The format of the MBI also evoked comparisons to the format of participants' religious and spiritual practices. In a study of a Mindfulness-Based Cognitive Therapy intervention for African American women with HIV, participants likened the delivery of the program via weekly phone calls to "a prayer line" in which they "call in and the pastor prays and we have a little bit of conversation with people" (Hunter-Jones et al., 2019, p. 1164). Hunter-Jones et al. (2019) note that this is an "important contextual finding" given the relevance of spirituality for African American women living with HIV/AIDs (p. 1164). Similarly, in semi-structured interviews with African Americans that had prior or current experience in mindfulness programs, one participant described the group format of MBIs as personally meaningful and likened it to "church-based group activities such as Bible study or revivals where people come together to have a shared experience then leave to complete homework that enhances the incorporation of the lesson into daily life" (Woods-Giscombé & Gaylord, 2014, p. 7).

Participants also described how mindfulness could enhance their religious and spiritual worship (Spears et al., 2017; Woods-Giscombé et al., 2019). For example, in the focus groups by Spears et al. (2017), a participant discussed how one could meditate before or after reading a religious text, and another indicated that practicing mindfulness while reading scripture would increase one's absorption of the text (p. 11). Women in the focus groups also invoked the potential for mindfulness to help them "get stronger spiritually," develop "strength for that contact with a higher power," and improve their relationship with God by increasing acceptance (Spears et al., 2017, p. 11). In a study of an MBI for a prediabetic population conducted by Woods-Giscombé et al. (2019), one participant described enjoying "meditation and being quiet," and noted that "mindfulness practices enhanced her spiritual practice" as a Baptist (p. 9). In a study

of an adapted MBSR program for older adults conducted by Szanton et al. (2011), participants described meditation as spiritual, with one participant invoking her "spiritual self" being nurtured through participation in the intervention (p. 4). Similarly, Black immigrant participants in a study of an MBI conducted by Vroegindewey and Sabri (2022) reported increased engagement in faith-based practices and prayer to cope with stress.

Some participants recommended that facilitators integrate MBIs with their religious and spiritual traditions. In an intervention adapted from MBSR for older Black American adults, participants requested modifications such as the inclusion of scripture-based materials and New Testament readings (Proulx et al., 2020). One participant spoke of the importance of "Christ-centered tailoring" and helping to integrate mindfulness principles with those from Christianity (Proulx et al., 2020, p. 6). Similarly, in a pilot study of a mindfulness-based text messaging program for smoking cessation, several participants "suggested including messages like 'Pray,' 'Let go and let God,' and 'Have faith in God' or incorporating 'scriptures from the Bible'" (Spears et al., 2019, p. 6). In the study conducted by Woods-Giscombé and Gaylord (2014), participants suggested that facilitators frame mindfulness meditation as complementary to one's religious practice. Further, they suggested that facilitators consider connecting mindfulness meditation to relevant Biblical text and Christian hymns if the MBI is being implemented for a group of Christian African Americans (Woods-Giscombé & Gaylord, 2014, p. 12).

Another recommendation referenced by participants in multiple studies was to collaborate with faith leaders in the implementation of mindfulness programs, with the implication that support from such leaders would increase acceptability among community members (Tenfelde et al., 2018; Watson et al., 2019; Woods-Giscombé & Gaylord, 2014). However, one participant "mentioned that churches would not be the best route for introducing mindfulness meditation because of potential philosophical discordance" (Woods-Giscombé & Gaylord, 2014, p. 12).

While some participants saw alignment and synergies between mindfulness and their religious and spiritual practices, others perceived conflicts and tensions. In focus groups following a 90-min mindfulness meditation workshop, participants expressed concerns about meditation being practiced by "hippies," "New Age spiritualists," and "atheists," with the implication that these mindfulness practitioners were *other* than African American (Watson et al., 2016, p. 1039). Some participants also commented that removing shoes and sitting on cushions in mindfulness training settings evoked a foreign religion (Watson et al., 2016, p. 1039). In semi-structured interviews with African Americans who had prior or current experience in mindfulness programs, participants noted how language in mindfulness



training settings, such as discussion of the Buddha or "the Universe," can be discordant with the worldview of religious Christians (Woods-Giscombé & Gaylord, 2014, p. 8). However, these participants also recognized that mindfulness meditation is generally taught in a secular manner that does not conflict with religious and spiritual beliefs.

Similar religious concerns were observed in focus groups and semi-structured interviews conducted by Watson-Singleton et al. (2019) after a 4-week adapted MBSR intervention. Some participants in this study struggled with the term "meditation," because for them, it "engendered the connotation of being controlled by forces outside of themselves" (p. 135). Further, the use of practices that were not "familiar religious practices (e.g., Christian prayer)" contributed to their fear that "meditation could open them up to unfamiliar and malevolent spiritual forces" (p. 135). Some participants in focus groups examining perceptions of mindfulness, yoga, and MBSR among predominantly low-income and single Black women expressed similar fears of a "deviant spiritual connection" (Tenfelde et al., 2018, p. 233) that may ensue from these modalities. Yet, other participants in the focus groups viewed yoga as an activity akin to exercise and separate from religious or spiritual practice. Still other participants in this study discussed how mind-body practices can enhance spirituality, with one participant stating that "this is a form of channeling your inner being your, inner God-ness" (Tenfelde et al., 2018, p. 233).

In one case, a Black American participant dropped out of an adapted MBSR intervention after one session, citing concerns about mindfulness conflicting with her religion due to the use of bells in the sessions (Burnett-Zeigler et al., 2019). Although this participant attended a focus group after the intervention, she did not offer any elaboration on her concerns.

Another concern expressed by participants in numerous studies was that other Black Americans would perceive mindfulness to be discordant with their religious and spiritual practices. Some participants worried that others in their community would perceive them as embracing another religion even if they personally felt that the MBI was compatible with their Christian values (Watson-Singleton et al., 2019). Related sentiments were expressed among other participants with prior or current experience in mindfulness programs (Woods-Giscombé & Gaylord, 2014). These participants highlighted that although mindfulness meditation did not conflict with their own religious/spiritual practice, other African Americans with "traditional religious beliefs" may perceive a conflict or feel guilty about pursuing stress management strategies "beyond or outside of their specific religious doctrine" (Woods-Giscombé & Gaylord 2014, p. 11).

Participants made suggestions to assuage concerns about perceived discordance between religion/spirituality and mindfulness among Black Americans. These largely involved having facilitators draw a clear distinction between mindfulness meditation and one's religious and spiritual practice. Some participants expressed strong beliefs in the need to "disconnect" yoga and mindfulness from spirituality (Tenfelde et al., 2018, p. 233). Participants recommended that facilitators present mindfulness meditation as a "tool for stress management and wellness" (Woods-Giscombé & Gaylord, 2014, p. 12) and as "health-specific behavioral strategies divorced from any particular religious orientation" (Watson-Singleton et al., 2019, p. 136). Further, participants indicated that MBI facilitators should address participant's religious concerns and clarify to participants that meditation can be used alongside one's existing religious practices (Watson-Singleton et al., 2019, p. 136).

Discussion

Our review of the literature suggests that religion and spirituality represent an important domain for researchers and facilitators to consider in adapting and implementing MBIs with Black American communities. Cultural adaptations can improve the effectiveness of psychological interventions for racial and ethnic minorities and are particularly effective when used to amplify resilience factors (Hall et al., 2016). Resilience factors are resources that facilitate "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (American Psychological Association, 2020, para. 4). Religion and spirituality have been cited as resilience factors among Black communities (Dill, 2017), underscoring their importance when considering adaptation of MBIs. Along with the potential to increase the effectiveness of interventions, cultural adaptations can reduce the burden upon racial and ethnic minority individuals to constantly reinterpret MBIs, which have largely been developed for White participants (Proulx et al., 2018).

The cultural sensitivity framework, developed by Resnicow et al. (1999), can be used to identify areas for culturally adapting an intervention. Cultural sensitivity is conceptualized as a continuum ranging from surface structure to deep structure. Surface structure is "the extent to which interventions meet target populations where they are; how well they fit within their culture, experience, and behavioral patterns" (Resnicow et al., 2000, p. 274). Surface structure adaptions involve modifying intervention materials and messages to better match the culture of the target population, as well as identifying appropriate channels, media, and settings for implementing interventions. Meanwhile, deep structure "reflects how cultural, social, psychologic, environmental, and historical factors influence health behaviors differently across racial/ethnic populations" (p. 274). Deep structure adaptations consider contextual factors such as "religion,



family, society, economics, and the government" (p. 274) within the target population and how these factors shape community perceptions of illness, wellness, and the intervention's target behaviors. Deep structure adaptations aim to increase program impact and convey salience, whereas surface structure adaptations aim to increase receptivity and establish feasibility (Resnicow et al., 2000).

Drawing upon the cultural sensitivity framework, we synthesize considerations from the literature on adapting MBIs to align with Black Americans' religious and spiritual contexts. Cultural adaptations should be grounded in a "bottom-up" (Hwang, 2006) or "inside-out" approach (Hall et al., 2016), which centers the perspectives of community members engaged in the intervention. The development of novel MBIs from within the cultural contexts of Black communities is also discussed (Hazlett-Stevens, 2020; Proulx et al., 2018).

Adapting Language, Metaphors, and Content

At the surface level, mindfulness researchers and facilitators can address the religious and spiritual concerns of Black participants in the MBI (Watson-Singleton et al., 2019). This represents a surface-level adaptation because it deals with questions of how the intervention "fits" within the target population's culture. The mindfulness literature offers various considerations for approaching conversations about mindfulness, religion, and spirituality. Various authors have approached these complex and multifaceted conversations with thoughtfulness and sensitivity. Rather than recommend that all facilitators and researchers take the same approach to these conversations, we offer perspectives from the literature and considerations for how these conversations may be conducted in MBIs with Black Americans.

Participants from the study conducted by Woods-Giscombé and Gaylord (2014) asserted that mindfulness researchers and facilitators can frame mindfulness meditation as "a tool for stress management and wellness" and emphasize that it is not a religious practice (p. 12). Participants in the study conducted by Watson-Singleton et al. (2019) similarly recommended that facilitators present mindfulness meditation exercises as "health-specific behavioral strategies divorced from any particular religious orientation" (p. 136). These suggestions from participants reflect preferences for a secular mindfulness that "fits" in their life but does not conflict with their religious and spiritual beliefs or practices.

However, these suggestions to divorce mindfulness from specific religious and spiritual traditions differ from perspectives offered by other investigators. Proulx et al. (2018) emphasized the importance of "recognizing the influence of Buddhism on mindfulness" (p. 362) as facilitators and

researchers work with racial and ethnic minority communities to integrate mindfulness practices with existing religious, spiritual, and cultural practices. Similarly, Martinez et al. (2022) asserted that it is "important to recognize the Buddhist influences" to mindfulness approaches while also being aware of the reactions that the term "mindfulness" can elicit among participants (p. 1118). These perspectives invite mindfulness facilitators and researchers to hold the tension of honoring traditions while translating and adapting mindfulness for diverse communities.

Recognizing the Eastern roots of MBIs in the USA while increasing their accessibility across cultures and religious and spiritual traditions is a critical challenge for facilitators and researchers to engage as the field of mindfulness matures and grapples increasingly with ethical issues (Baer & Nagy, 2017; Compson, 2017; McCown, 2017). Rising to the challenge will require ongoing cultural humility and willingness to tolerate ambiguity as facilitators and researchers engage communities in dialogue. To advance these challenging dialogues, Compson (2017) argued for a "pragmatic approach," which centers the evidence that mindfulness seems to work toward alleviating human suffering. Compson (2017) also advocated for a "postsecular" approach, which challenges the binary between "religious" and "secular," and recognizes that these terms are contested and constantly "interacting and modifying each other" (p. 41). A pragmatic, postsecular approach invites "porosity and mutual dialogue" (Compson, 2017, p. 41) between religious and secular domains, and sees opportunity for convergence and complementarity between mindfulness and religious/spiritual practice.

In contrast, Baer and Nagy (2017) asserted that providing "genuinely secular" MBIs with "secular foundational ethics" will increase accessibility of mindfulness-based training among participants of diverse religious, spiritual, and cultural backgrounds, though they maintain that overtly Buddhist MBIs "may be beneficial in some settings" (Baer & Nagy, 2017, p. 106). They maintained that the "adaptation of mindfulness practices from Buddhist traditions into contemporary [MBIs] for mainstream settings" allows for the integration of mindfulness into various ethical contexts (Baer & Nagy, 2017, p. 90). Meanwhile, Brown (2017) argued that contemporary MBIs are not "ethically neutral" because they are "founded upon Buddhist assumptions" (p. 149). Further, facilitators and researchers should make transparent the "Buddhist ethics" underlying MBIs, "even if transparency comes at the cost of no longer reaping benefits of being perceived as secular" (p. 45). Brown (2017) maintained that transparent communication about the Buddhist origins and ethics of MBIs facilitates informed consent of participants and prevents facilitators from engaging in cultural appropriation of Asian traditions.

Though resolving these differing perspectives on the ethics of mindfulness is beyond the scope of this paper,



drawing from these arguments can inform an approach to addressing the religious and spiritual concerns of Black American participants in MBIs. For example, while orienting participants to the MBI, facilitators may acknowledge the influence of Buddhism and Eastern traditions on contemporary mindfulness programs, while also informing participants that these programs are designed to be secular and focused on improving well-being and reducing stress. Further, facilitators can consider telling participants that any concerns they may have about participating in mindfulness are "not only acceptable, but important and welcome" and allowing participants to "share their reactions with each other" (Green et al., 2021, p. 114). Anticipating reactions such as "distrust, confusion, or rejection" when implementing MBIs among historically marginalized communities and addressing participants' concerns proactively facilitates trust and informed consent (Green et al., 2021, p. 113).

Facilitators may also consider engaging participants in conversations about the "ways that contemplative practices are not singularly tied to Buddhism" (Martinez et al., 2022) and inviting participants to reflect on contemplative practices from within their cultural contexts. Facilitators can share how participants from diverse religious and spiritual affiliations have engaged with and benefitted from contemporary mindfulness programs. The effectiveness of taking such an approach in improving engagement in MBIs among religiously affiliated Black Americans can be examined in future research.

It is also important to acknowledge that some participants in MBIs may perceive a discrepancy between mindfulness and their religious/spiritual commitments that is too great to reconcile. In these cases, accepting that some participants may decide not to engage in mindfulness demonstrates respect for their values and worldviews as they make choices about how they would like to pursue wellness (Brown, 2017). The importance of transparency in MBIs and respecting participants' autonomy is affirmed by Green et al. (2021), in their assertion that "an introduction to the history, uses, and implementation of the intervention is necessary to ensure groups are informed and aware of the process prior to participating" (p. 113).

In the study conducted by Watson-Singleton et al. (2019), participants also recommended facilitators highlight that mindfulness approaches can be used *alongside* one's existing religious and spiritual practices. Based on participant responses in other studies, facilitators may also consider discussing how mindfulness meditation has the potential to enrich one's religious and spiritual practices through the cultivation of qualities such as stillness and presence (Burnett-Zeigler et al., 2019; Woods-Giscombé & Gaylord, 2014).

Another adaptation that was mentioned in the reviewed studies was using culturally familiar language. For the predominantly Christian samples in the studies that we reviewed examining MBIs among Black participants, the term "meditation" and sometimes even "mindfulness" invoked connotations of unfamiliar and potentially conflicting religious practices. The investigators in these studies recommended using more neutral terms such as relaxation, breathing, and awareness (Watson et al., 2019; Watson-Singleton et al., 2019; Woods-Giscombé & Gaylord, 2014). Proulx et al. (2018) also noted that in their work on MBIs with Black communities, they noticed a preference for the term "stress reduction" over the terms "mindfulness" and "meditation" (p. 368). Utilizing language that reflects the preferences and cultural contexts of Black participants may help dispel the notion that mindfulness meditation is discordant with their religious beliefs or otherwise not for them.

A deeper level of adaptation that was proposed in the reviewed studies was to integrate religious concepts and content into MBIs. In many instances, participants drew connections between mindfulness and their religious and spiritual practice, pointing to areas for potential integration of content. Parallels between mindfulness and religion/spirituality can be invoked in an MBI, and this adaptation can be tested to see if it helps increase receptivity among Black Christian groups. Woods-Giscombé and Gaylord (2014) suggested that it may help to connect Biblical text and Christian hymns with concepts from mindfulness meditation curricula. They offered content and metaphors invoked by participants in their study:

Specific examples included the Biblical phrase 'Be still and know that I am God'; 'Marantha,' a word used in Christian meditation practice that means 'come, Lord Jesus'; 'Selah,' which means 'pause,' 'settle in, or 'stop and lister'; and hymns such as 'Peace be Still,' 'Blessed Quietness,' and 'Sweet Hour of Prayer [that calls me from a world of care]' (Woods-Giscombé & Gaylord, 2014, p. 12).

Knowledge of these and other potential intersections between mindfulness concepts may help facilitators engage more meaningfully with participants seeking stress reduction techniques that align with their spiritual and religious orientations. This strategy may be best received in a faithbased setting, where participants identify strongly with a common religious tradition. In diverse groups outside of a faith-based setting, rather than inserting religious metaphors into the instruction of content, facilitators may instead consider inviting participants to share their reflections on mindfulness concepts and where they see alignment with their own religious and spiritual practices. A similar approach was used in a study examining the acceptability of incorporating religion and spirituality into a physical activity program for African American women outside of a faith-based setting (Joseph et al., 2017). Joseph et al. (2017) found that participants universally accepted general spiritual messages about connecting to a higher power in the physical activity



program, whereas inclusion of content from a specific religious tradition elicited negative reactions among participants and raised concerns of alienating those who do not identify with that faith. Overall, the participants recommended that programs with specific religious content should be delivered through a formal religious institution.

Collaborating with Faith Leaders to Adapt Settings and Practices

Participants across several studies suggested collaboration with faith leaders in Black communities toward adapting MBIs at the surface and deep structure levels. Church was described by participants as a culturally familiar setting, with church leaders representing trusted community gate-keepers (Watson-Singleton et al., 2019). The provision of MBIs in churches and other houses of worship could demonstrate to community members that their respected leaders support mindfulness as a viable stress reduction strategy and tacitly communicate that MBIs need not conflict with one's existing religious and spiritual beliefs.

Collaboration with community faith leaders has the potential to yield deeper levels of cultural adaptation for MBIs, conveying relevance of the intervention for religious participants. Mindfulness researchers, practitioners, and community religious and spiritual leaders can work together toward integrating mindfulness meditation practices with existing cultural strengths (Proulx et al., 2020; Woods-Giscombé & Gaylord, 2014). Such collaboration could facilitate the development of spiritually tailored services which integrate religious and spiritual practices and concepts with evidence-based MBI strategies (Watson-Singleton et al., 2019). Collaboration that involves training community leaders as facilitators also encourages more equitable research partnerships by ensuring that resources are sustained in the community after the research study is completed.

None of the studies reviewed were implemented in a house of worship or in collaboration with faith leaders. However, there are other studies that did not meet our inclusion criteria which offer useful examples of implementing MBIs in religious settings or in collaboration with faith leaders. Zhou et al. (2017) implemented a lifestyle intervention with a mindfulness component in a church. The group setting in the church provided a "strong supporting social milieu for participants," with sessions "fitted into the church's schedule of activities" (Zhou et al., 2017, p. 3). Further, the pastor of the church delivered a presentation entitled "You and Your Body" with "biblical scriptures aligned with healthy lifestyle messages" (p. 4).

Another example is provided by Green et al. (2021), in their article detailing a 2-hr mindfulness workshop that they implemented in a church with a group of 40 Black participants. Though their article did not include data from participants, it provided an extensive overview of the content covered in the workshop. The workshop demonstrated several strategies for integrating religious and spiritual content and collaborating with faith institutions and leaders that can be tested in mixed methods intervention studies. For example, the facilitator introduced mindful deep breathing exercises with the following scripture from Genesis: "then the Lord God formed man from the dust of the ground, and breathed into his nostrils the breath of life; and the man became a living being" (New Revised Standard Version, 1989, Genesis 2:7, as cited in Green et al., 2021, p. 113).

Novel Interventions

We extend the cultural sensitivity framework of surface and deep structure adaptations to highlight the work of researchers proposing the development of novel interventions. Hazlett-Stevens (2020) explored this idea in a review of MBIs among racial and ethnic minority communities: "Some cultural groups might best be served by novel interventions from within their given culture before examining intervention effectiveness within that cultural context" (p. 20). Rather than adapting existing evidencebased practices to align more closely with a community's culture, novel interventions can be developed within the community's cultural context and then tested. Hazlett-Stevens (2020) noted that empirical work on novel MBIs developed within culturally diverse communities "has only just begun" (p. 20). Harrell (2018) undertook such an effort in the development of "soulfulness" as a framework for contemplative practice that is rooted in diasporic African culture and considers the centrality of religion and spirituality in African American communities (p. 9). Developing other novel, culturally specific frameworks for mindfulness will require researchers to situate community members as the experts, reflecting a bottom-up alternative to the usual top-down process of cultural adaptation.

The development of MBIs for racial and ethnic minority groups should be led by people from the particular community of interest (Proulx et al., 2018). Developing novel MBIs that meet the needs of racial and ethnic minority groups will require a strengths-based approach that is grounded in community-based participatory research principles of building trust, demonstrating cultural humility, and being open to community conceptualizations of stress, wellness, and coping (Proulx et al., 2018). This approach could be utilized to develop MBIs from within Black communities broadly and Black religious communities specifically.



Limitations and Future Directions for Research

A limitation of our scoping review is that not all studies had samples comprised of all Black participants, as we had set our criteria to include studies with greater than 75% Black participants in their samples. We made this decision to have a wider range of studies to review, especially given that the literature on mindfulness and MBIs among Black Americans remains limited. Of the 18 reviewed studies, 13 had samples comprised of all Black participants, and the themes and adaptations we have discussed are supported by these studies. However, it is important to note that our synthesis also includes studies with samples that contain participants of other racial and ethnic identities. This limitation in our study points to the need for further research focusing on the experiences of Black Americans in MBIs, especially with respect to cultural adaptations.

Our review relied on qualitative data, which illustrated the multifaceted ways in which Black American participants relate religion and spirituality to their experiences of MBIs. Given that the body of literature on mindfulness among Black Americans is still growing, rich descriptions of participant experiences are especially important. Qualitative data can inform the process of developing, testing, and implementing evidence-based MBIs for Black American communities that consider their cultural context.

Additionally, the studies reviewed in this paper were conducted with predominantly Black Christian samples. Indeed, the majority of Black Americans are Christian. However, other religious and spiritual affiliations among Black Americans are not represented in the mindfulness literature. Future research can examine perceptions of MBIs among Black Americans identifying with other religious and spiritual traditions. For example, per our review, there were no qualitative studies on the experiences of Black Muslims in MBIs. Black Muslims demonstrate a high degree of religious commitment and represent a substantive portion of the religiously affiliated Black population in the USA (Mohamed & Diamant, 2019), indicating an important area for future inquiry.

Black immigrants and refugees are also underrepresented in the mindfulness literature, with only one of the reviewed studies focusing on a Black migrant sample (Vroegindewey & Sabri et al., 2022). While religion and spirituality are observed as culturally salient factors in studies of African Americans and in studies of Black immigrants from the Caribbean and Africa, beliefs and practices between these communities may differ (Chatters et al., 2009; Diamant, 2021). The heterogeneity and dynamic nature of Black communities in the USA requires cultural adaptations of mindfulness to be contextualized within specific ethnic and cultural communities rather than applied universally.

Our review also points to the need for research on perceptions of mindfulness among other groups within Black communities. The experiences of men in MBIs are not as well-represented as the experiences of women in the qualitative studies we reviewed. Further, only one of the reviewed studies specified the percentages of women who identified as transgender and cisgender (Hunter-Jones et al., 2019), suggesting a need for more research on MBIs among individuals with diverse gender identities. Additionally, studies stratified by age may help elucidate how generational differences impact the perception of alignment or discordance of mindfulness with religion/spirituality among participants in Black communities. Analysis of perceptions by age cohorts is particularly relevant given recent generational shifts in how Black Americans relate to religion and spirituality, with younger Black adults identifying as less religious and less engaged in religious institutions (Pew Research Center, 2021). Further examination of other identity intersections can also be considered, such as generational status for children of migrants, national origin, socioeconomic status, level of education, geographic location, urban/rural residence, and other factors.

Lastly, the adaptations proposed by participants in the reviewed studies to address religious and spiritual concerns in MBIs can be implemented and tested. Future research can engage community partnerships to reach religiously affiliated participants at their houses of worship and examine participants' reception of MBIs, especially those with religious content and spiritually tailored adaptations. Adaptations in secular settings with diverse religious affiliations may also be implemented and studied by asking for participant feedback. These include adaptations such as proactively discussing religious and spiritual beliefs within the group and how these relate to mindfulness and encouraging participants to share their experiences. Novel interventions can also be implemented and evaluated with mixed methods to assess feasibility, cultural acceptability, and effectiveness.

Author Contributions AH conceptualized the review, conducted the database searches, screened and selected studies, and wrote the initial draft of the manuscript. EN conducted a literature review to frame the relevant context and background for the study and contributed to the initial draft of the manuscript. The senior author, IBZ, provided expert oversight and feedback on the review conceptualization, methodology, and manuscript writing. All the authors contributed to editing the final manuscript and all the authors read and approved the final version of the manuscript for submission.

Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Conflict of Interest The authors declare no competing interests.



Ethics Approval and Informed Consent This study did not engage human subjects and thus did not require ethical approval or informed consent

Use of Artificial Intelligence Rayyan (Ouzzani et al., 2016) was utilized to organize the records in the review and track inclusion and exclusion decisions. While Rayyan has features that utilize Artificial Intelligence, all records were screened by the first author.

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