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ORIGINAL PAPER

# Mindfulness for Reducing Minority Stress and Promoting Health Among Sexual Minority Men: Uncovering Intervention Principles and Techniques

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## Abstract

**Objectives** Tailored, evidence-based interventions are in high need for sexual minority men (gay, bisexual, and queer men who have sex with men) to address prevalent mental health issues and HIV/STI risk. This study describes the formative research that informed the development of Mindfulness-Based Queer Resilience (MBQR): a mindfulness-based intervention for health promotion among sexual minority men.

**Methods** Guided by the ADAPT-ITT model, we conducted a series of interviews with community stakeholders, including sexual minority men with anxiety and depressive symptoms ($n = 15$) and mindfulness service providers with experience working with sexual minority men ($n = 11$). Thematic analysis was used for data analysis.

**Results** Six intervention principles and seven key techniques/delivery considerations emerged relevant to intervention development. Principles included (a) reducing minority stress as a key theoretical guide, (b) affirming LGBTQ + identity and facilitating healthy identity development, (c) attending to intersectionality, (d) facilitating resilience and self-empowerment, (e) trauma sensitivity, and (f) promoting healthy relationships and a healthy community. Key techniques represent the pathways through which MBQR may address the adverse impacts of minority stress, including through attention control practice to facilitate agency and self-awareness, enhancing emotion regulation, reducing reactivity to minority stress-informed thoughts, self-compassion to increase self-acceptance, and reducing behavioral avoidance. Delivery considerations also included careful navigation regarding mindfulness and religion, as well as using modern technology to increase reach, access, and engagement.

**Conclusions** If proven to be feasible and efficacious, MBQR may offer the potential to alleviate adverse impacts of minority stress and improve mental and sexual health of sexual minority men.

**Keywords** Mindfulness · Intervention development · Gay and bisexual men · Health promotion · HIVSTD

Gay, bisexual, and other sexual minority men experience considerable minority stress, which leads to elevated risks for a range of health outcomes. Experiences of distal minority stress (e.g., discrimination and prejudice) along with appraisal of such experiences, also referred to as proximal minority stress (e.g., internalized stigma, concealment), confer vulnerability to poor psychological health and behavioral health issues associated with human immunodeficiency virus (HIV)/sexually transmitted infections (STI) risk (Newcomb & Mustanski, 2010; Pachankis et al., 2020). For instance, sexual minority men experience prevalent, often co-occurring mental health issues (Kerridge et al., 2017; Russell & Fish, 2016). Compared to their heterosexual peers, gay and bisexual men are more than twice as likely to meet criteria for at least one psychiatric disorder and are four times more likely to experience comorbid disorders in the past 12 months, with depression and anxiety disorders being most prevalent (Cochran et al., 2003). Minority stress and these mental health conditions are linked to behavioral health issues, including sexual risk behaviors, substance use, and HIV/STI risk. Specifically, victimization, internalized

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homophobia, identity concealment, depression/anxiety, and low self-esteem confer vulnerability to high-risk contexts such as difficulty negotiating safe sex, decreased access and engagement to HIV/STI testing and LGBTQ + care, and sex under the influence of alcohol and other substances (Babel et al., 2021; Operario et al., 2022). For instance, sexual minority men made up 70% of new HIV cases in the USA in 2017 (CDC, 2019), among which the majority were young adults. Compared to their heterosexual peers, sexual minority men are also at higher risk for STIs such as gonorrhea, chlamydia, and syphilis and less likely to seek testing and treatment (Ramchandani & Golden, 2019). However, there are limited tailored evidence-based mental health interventions (e.g., CBT-based therapy, see Pachankis et al., 2015a, 2015b) that address the needs of sexual minority men. Developing and providing culturally sensitive treatment modalities to address the mental and sexual health of sexual minority men are key to advancing health equity and the ending of the HIV epidemic (Operario et al., 2022).

Over the past few decades, there has been substantial growth in research on mindfulness-based interventions (MBIs) (Goldberg et al., 2022). MBIs may specifically benefit sexual minority men, as meta-analyses have found that evidence-based MBIs such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 2003) and Mindfulness-Based Cognitive Therapy (MBCT; Teasdale et al., 2000) reduce psychiatric symptoms including depression, anxiety, and substance use (Goldberg et al., 2018, 2022), which commonly affect sexual minority men. Cross-sectional research with sexual minority populations has also identified mindfulness and self-compassion as relevant protective factors against psychological distress (Lyons, 2016; Toomey & Anhalt, 2016; Toplu-Demirtaş et al., 2018).

However, there has been little research applying MBIs for sexual minority men (Sun et al., 2021). Extant MBI trials with sexual minority men have focused on gay and bisexual men living with HIV (Carrico et al., 2018, 2019; Gayner et al., 2012). No known MBI has been developed to address the needs of sexual minority men in the context of addressing mental health and HIV/STI prevention. In addition, a recent systematic review on mindfulness for sexual and gender minority groups (Sun et al., 2021) highlighted the need for formative, qualitative research to improve the relevance and acceptability of MBIs through adaptation, including consideration of clinical characteristics and the etiology of health outcomes of interest (Sun et al., 2021).

Minority stress theory (Hatzenbuehler, 2009; Meyer, 2003) offers a useful conceptual lens for adapting interventions for sexual minority men. Research in this area indicates that experiences of distal minority stress (e.g., discrimination and prejudice) along with appraisal of such experiences, also referred to as proximal minority stress (e.g., internalized stigma, concealment), confer vulnerability to mental and behavioral health issues associated with HIV/STI risk (Newcomb & Mustanski, 2010; Pachankis et al., 2020). Thus, understanding and addressing sexual minority men's experiences of minority stress may be integral to the development of tailored MBI protocols for this group.

As one of the most empirically tested mindfulness programs, MBSR (Kabat-Zinn, 2003) is a good candidate for intervention adaptation with sexual minority men for several reasons. First, MBSR has shown efficacy in treating stress-sensitive psychological conditions (e.g., depression, anxiety) prevalent among sexual minority men (Goldberg et al., 2022; Khoury et al., 2015). Second, MBSR has been adapted in a variety of other marginalized populations (e.g., African American adults) and clinical conditions (e.g., addiction) with demonstrated efficacy (Grant et al., 2017; Palta et al., 2012; Sibinga et al., 2014; Witkiewitz & Bowen, 2010). Third, the curriculum's emphasis on understanding and addressing stress naturally lends itself to adaptation for stress reduction in a different context (i.e., minority stress).

The current paper describes the systematic adaptation and development of an MBI for young sexual minority men to promote mental and sexual health. Informed by minority stress theory (Meyer, 2003), the primary aim of this qualitative study was to uncover key treatment principles, techniques, and important considerations in the adaptation of an MBI for sexual minority men to reduce the adverse impact of minority stress, enhance psychological health, and prevent HIV/STI risk. The adaptation process was guided by the ADAPT-ITT model (Wingood & Diclemente, 2008), a framework for systematically adapting empirically based interventions for HIV-related behavioral health. This process involved iterative development through formative research with members of the sexual minority cisgender male community and with professionals who provide psychosocial services to this population. Such a process allows for adherence to the core elements of the original intervention while improving its relevance, cultural responsiveness, acceptability, and sustainability for sexual minority men.

## Method

### Participants

**Sexual Minority Men Participants** Fifteen sexual minority men participated in the study. Men were eligible if they (a) resided in the USA, (b) read and spoke English, (c) had access to an electronic device that allowed for Zoom-based interviews, (d) were aged 18–34, (e) were assigned male at birth, (f) identified as a cisgender man, (g) identified as a sexual minority (e.g., gay, bisexual, queer, etc.), (h) reported a lifetime history of condomless anal sex, (i) self-reported as HIV-negative

or status unknown, and (j) reported elevated symptoms of psychological distress, such that symptoms of depression and anxiety were at or above the mild cutoff (≥ 3) on the Patient Health Questionnaire-4 (PHQ-4) (Kroenke et al., 2009).

Participants were on average 23.0 years old ($SD = 2.5$). Participants had varying degrees of experience with mindfulness, with some sexual minority men having never practiced mindfulness ($n = 10$, 66.7%) while others having accessed or attended mindfulness teachings before (e.g., via YouTube videos, apps, formal mindfulness class, etc.) ($n = 5$, 33.3%).

**Professional Provider Participants** A total of 11 providers participated in the study. Professional providers had to either be (a) a professional mental health service provider (e.g., licensed social worker or mental health counselor) working with LGBTQ + individuals or (b) a professionally trained mindfulness teacher who had experience working with LGBTQ + individuals. Providers were on average 49.3 years old ($SD = 14.4$). Table 1 provides detailed demographics on sexual minority and provider participants.

**Table 1** Characteristics of sexual minority men and providers included in the study

| Demographic characteristic | Sexual minority men ($n = 15$) | Providers ($n = 11$) |
|---|---|---|
| | *n* (%) | *n* (%) |
| Sex | | |
| Male | 16 (100%) | 7 (63.6%) |
| Ethnicity | | |
| Hispanic | 5 (33.3%) | 0 (0%) |
| Non-Hispanic | 11 (73.3%) | 11 (100%) |
| Race | | |
| African American/Black | 5 (33.3%) | 2 (18.2%) |
| Asian American | 0 (0%) | 0 (0%) |
| American Indian or Alaska Native | 1 (6.7%) | 0 (0%) |
| Latinx | 1 (6.7%) | 0 (0%) |
| White | 5 (33.3%) | 9 (81.8%) |
| Multiracial | 3 (20.0%) | 0 (0%) |
| Sexual orientation | | |
| Gay | 11 (73.3%) | 7 (63.6%) |
| Bisexual | 3 (20.0%) | 0 (0%) |
| Queer | 1 (6.7%) | 2 (18.2%) |
| Heterosexual/straight | 0 (0%) | 2 (18.2%) |
| Education background | | |
| High school | 4 (26.7%) | 0 (0%) |
| Undergraduate | 10 (66.7%) | 3 (27.3%) |
| Graduate degree or higher | 1 (6.7%) | 8 (72.7%) |
| Income | | |
| Less than $30,000 | 6 (40.0%) | |
| $30,000 to $59,000 | 4 (26.7%) | |
| More than $59,000 | 5 (33.3%) | |
| Experience with mindfulness | | |
| No prior practice of mindfulness | 10 (66.7%) | |
| Some prior practice of mindfulness | 5 (33.3%) | |
| Psychological distress | | |
| Mild (3–5) | 3 (20.0%) | |
| Moderate (6–8) | 6 (40.0%) | |
| Severe (9–12) | 6 (40.0%) | |
| Mental health treatment history | | |
| Yes | 9 (60.0%) | |
| No | 6 (40.0%) | |

## Procedure

The current study is part of a larger NIH-funded project (K23AT011173) that aims to develop and test a mindfulness-based intervention to promote mental and sexual health among young adult sexual minority men. The project is guided by the ADAPT-ITT model (Wingood & Diclemente, 2008), a multi-phase procedure for intervention adaptation that includes an iterative process of formative data collection and protocol refinement, followed by a pilot trial to assess feasibility and acceptability. The current study presents the early stages of the adaptation process to uncover the principles and techniques of a mindfulness-based intervention for sexual minority men. Below we describe various phases of this iterative approach.

**Phases 1 and 2** involved a literature review of the needs of our population of focus (i.e., sexual minority men vulnerable to HIV/STI acquisition) and selection of an intervention for adaptation. As elaborated in the Introduction, addressing stress-related mental and behavioral health (e.g., depression, anxiety, sexual compulsivity) is key to health promotion among sexual minority men. MBSR was selected as the intervention of interest for adaptation for reasons described in the Introduction.

**Phase 3** focused on interviewing participants of the population of interest. Study advertisements were posted on social media platforms (Facebook, university listservs) and via LGBTQ + community-based organizations. Interested individuals were invited to learn more about the study, review informed consent, and complete an eligibility screening questionnaire online via clicking a link or scanning a QR code. Those who appeared eligible provided their contact information and met individually with research staff via videoconferencing (i.e., Zoom) to confirm their eligibility and schedule an individual interview. Interviews lasted 1.5 to 2.5 h, were audio recorded, and professionally transcribed.

Interviews with sexual minority participants started with questions aiming to understand participants' experiences as a sexual minority man, including experiences of discrimination and stigma, and the impact of such experiences on their psychological and HIV/STI-related behavioral health. Then, the interviewer solicited participants' opinions and suggestions regarding mindfulness. Specifically, the interviewer inquired about participants' impressions on mindfulness, led three mindfulness-based practices, and solicited their opinions on the potential utility of mindfulness to promote psychological and behavioral health of sexual minority men. The three mindfulness-based practices (exercises on focused attention, body scan, and self-compassion) lasted between 5 and 10 min each, and were each followed by a discussion about participants' experience. Following these discussions, the interviewer provided a brief overview of the MBSR curriculum as a concrete example and sought feedback for adaptation to address the mental and sexual health needs of sexual minority men.

**Phases 4 and 5** involved a preliminary analysis of participants' input, followed by interviews with providers for further input and continued data analysis by the research team. We recruited providers via announcements made to staff at local community-based organizations as well as an academic mindfulness center. Interested individuals reviewed the study information and completed a brief online screening form, and they were later contacted by a study staff to schedule focus group participation. A total of three focus groups were conducted. Each focus group lasted between 3 and 3.5 h.

Focus groups with providers took place after completing the preliminary analysis of the interviews with sexual minority men participants. During these groups, we first presented the study rationale, led the same three mindfulness practices (exercises on focused attention, body scan, and self-compassion) for discussion, presented preliminary findings from our interviews with sexual minority men participants, and solicited feedback and suggestions for intervention development based on providers' work experiences with LGBTQ + individuals.

**Phases 6–8** are currently ongoing and involve finalizing the intervention manual and pilot testing the intervention. The treatment manual, entitled "Mindfulness-Based Queer Resilience (MBQR)", is derived from this process.

## Data Analyses

We used thematic analysis (Braun & Clarke, 2006) to analyze the qualitative data. Three PhD-level psychologists with research and clinical experience working with LGBTQ + individuals and mindfulness performed coding and analytic procedures. We followed the six steps of thematic analysis, including (a) familiarizing ourselves with the data through repeated readings of transcripts; (b) line-by-line coding of transcripts to identify units of data that were descriptive and latent regarding the principles and techniques of mindfulness-based interventions for sexual minority men; (c) generating themes through reviewing, analyzing, and sorting of codes; (d) reviewing and refining themes; (e) defining and naming themes to capture the essence of each theme; and (f) producing the report via final analysis and writing. Pseudonyms were used to protect confidentiality.

# Results

The intervention development process described above yielded six mindfulness-based intervention principles and six key techniques and delivery considerations (Fig. 1). Principles represent guiding philosophies of the developed

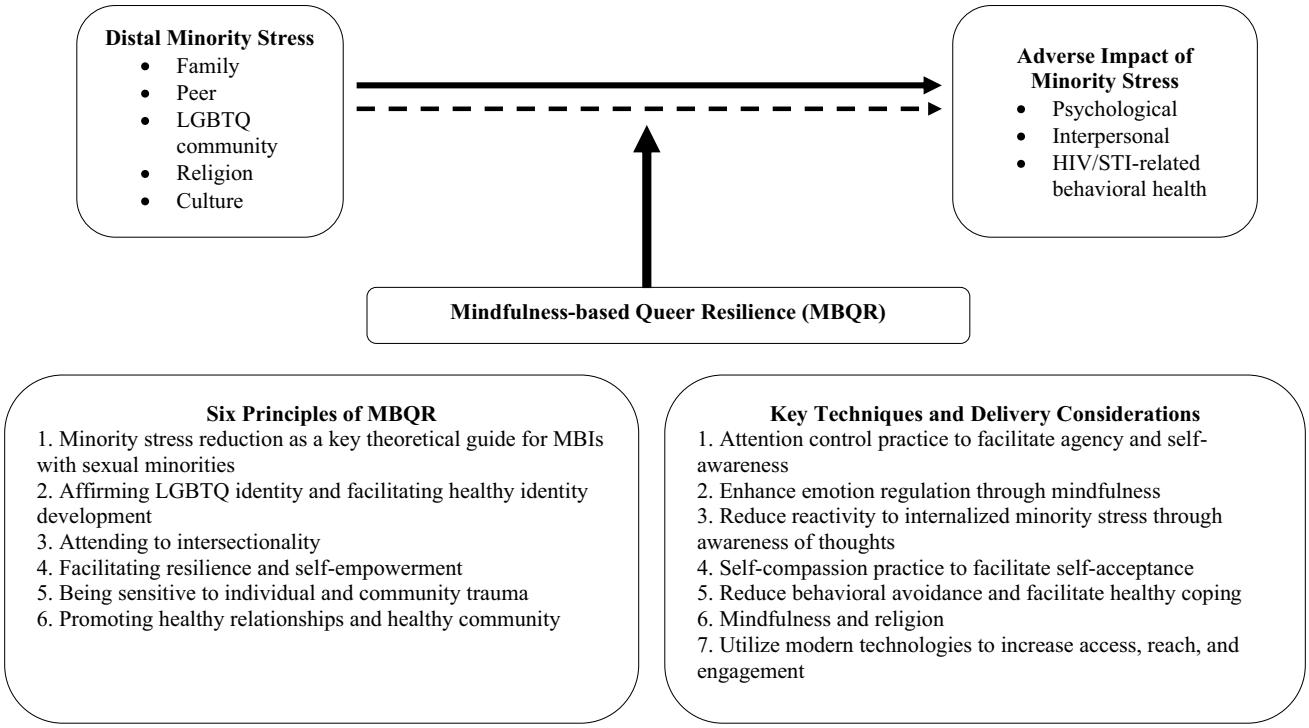



**Fig. 1** Principles and techniques of MBQR to address minority stress and improve the health of sexual minority men. *Note*. Detailed descriptions on distal minority and adverse impact minority stress are depicted in Table 2

intervention (Mindfulness-Based Queer Resilience; MBQR) for health promotion among sexual minority men, whereas techniques are specific practical delivery considerations in the application of MBQR with this population.

## Intervention Principles

### Principle 1. Minority Stress Reduction as a Key Theoretical Guide

Participants reported that various sources of minority stress play a key role in the mental and behavioral health of sexual minority men. Specifically, they described minority stress due to assumed heterosexuality and non-acceptance from family members, experiences of bullying and exclusion from peers due to sexual identity, as well as stress from within the LGBTQ + community (e.g., regarding one's appearance), religious community, and the larger culture (e.g., heteronormativity). For instance, Oliver, a 22-year-old Black gay man, shared that he was excluded from family after coming out: "They were really disappointed. In the end most my close people, like my family and friends, it has been no good. Like there's no need for me to be discriminated in attending family things or family meetings or interacting with some people. Like they get to cut me out. For me it's very stressing actually." Minority stress also manifests as microaggressions and social isolation. For example, Jack, a 21-year-old White gay man, shared that he suffers from depression due to lack of male friends and peer support: "It's hard to make male friends. I feel like they sometimes would say, like, 'I don't want you to be tracking me,' or something like that. They think being gay means that I like every single guy around."

Participants shared that experiences of discrimination, victimization, and stigma had a profound impact on their psychological, social, and behavioral health. One salient subtheme noted by participants was the internalization of stigma, which they noted contributed to feelings of loneliness, rejection, inferiority, and being "abnormal" when thinking about their sexual identity. Due to minority stress experiences both related to sexual orientation and gender norms (e.g., emotional suppression), sometimes starting in early life, participants noted emotion regulation difficulties, such that some participants described themselves as "super emotional" and some avoided emotions (e.g., "closed off") as a coping mechanism. In general, avoidance as a form of coping was commonly mentioned, such as avoiding people or public settings, occupying oneself with activities to avoid thoughts related to identity, using sex or substances to avoid psychological pain, and avoiding medical care and HIV testing due to anxiety and anticipation of stigma from medical staff. Table 2 summarizes findings on minority stress sources and their impacts as mentioned by participants.

As an individual-level intervention, MBQR is not designed to directly address distal stressors. However, it

**Table 2** Examples of minority stress and their impacts on sexual minority men

| | |
|---|---|
| Sources of distal minority stress | |
| Family | |
| | Experience of rejection and exclusion (e.g., not being invited to family events); culture of silence (e.g., lack of open discussion about one's LGBTQ + identity); ignorance and stereotypes about LGBTQ + individuals (e.g., having to educate one's family about sexual orientation); microaggressions; assumption from family about one being straight/heterosexual; experience of disapproval and being mocked due to not fitting in gender norms |
| Peer | |
| | Peer victimization and bullying; loss of friendship and experience of exclusion (e.g., being removed from friends' group after coming out) |
| LGBTQ + community | |
| | Gender expression–related victimization (e.g., made fun of due to "deemed flamboyant"); discrimination due to bisexuality; "unrealistic body standards"; experience of racism within LGBTQ + community (e.g., racial slur from other gay people); racial hierarchy within gay community (e.g., feeling that Black gay men are less desired compared to White gay men) |
| Religion | |
| | Being rejected due to family and others' religious beliefs; fear of being punished by God; loss of support from one's spiritual community; negative messages about one's sexuality due to religious upbringing |
| Culture | |
| | Culture of machismo and expectation related to manhood; lack of representation in mainstream media |
| Impacts of minority stress | |
| Psychological | |
| | Internalized minority stress, including: feelings of inferiority, low self-esteem, rejection of one's own identity, and self-consciousness; emotion dysregulation: rejection and avoidance of one's own emotions; social anxiety; fear, anxiety, and worries about rejections if come out; isolation and loneliness; early feelings of being different; perfectionism; need for achievement; difficulty enjoying sex due to guilt and masculinity norms |
| Interpersonal | |
| | Identity concealment; pressure to perform masculinity; social withdraw and avoidance; lack of trust toward people; hypervigilance in social and public settings; fear of judgement and concerns over acceptance by other gay people; pressure to prove one's "gayness" to LGBTQ + community |
| Behavioral health | |
| | Avoiding HIV testing due to anxiety about results, anticipation of poor treatment from medical staff; lack of and avoidance of medical care; compulsive sex as a way of coping; "act in the moment"; disordered eating due to body image issues |

could provide a safe and accepting space to facilitate reduction of proximal minority stress (e.g., internalized heterosexism) and disrupt the processes through which minority stress adversely impacts psychological and behavioral health. Participants vocalized the need for such tailoring: "the program should emphasize the community's daily struggles" (Leo, 23-year-old Latino queer man), "make sure the program content is specific to LGBTQ + experience" (Michael, 25-year-old Black gay man), and "use mindfulness to cope with stress related to being a sexual minority" (Samuel, 27-year-old Native American gay man). Table 3 provides a brief outline of MBQR, the adapted MBI program for sexual minority men. Understanding and reducing minority stress and its adverse impact is integrated throughout the program. For instance, the "unpleasant event calendar" homework in MBSR is adapted to "minority stress event calendar" where participants explore their stress experiences related to being a sexual minority, as well as cognitive, emotional, bodily, and behavioral reactions.

### Principle 2. Affirming LGBTQ + Identity and Facilitating Healthy Identity Development

Due to common experiences of rejection, invalidation, and exclusion that result in feelings of inferiority and unworthiness, the second principle of MBQR is to affirm LGBTQ + identity and facilitate healthy identity development. Key attitudes of mindfulness such as acceptance and non-judging can be beneficial to combat identity negativity and promote self-love. For instance, participants noted that mindfulness is about "attending to your mental state" (Michael, 25-year-old Black gay man), "being in touch with yourself" (Ezra, 22-year-old Black gay man), and "appreciating who you are" (Dylan, 25-year-old White gay man). In particular, the curriculum of MBQR aims to enhance healthy sexual identity development on two levels. First, MBQR creates an environment that is affirmative, responsive, and validating. As participants noted, intentional practices to promote self-acceptance (e.g., bringing attitudes

**Table 3** Outline of Mindfulness-Based Queer Resilience (MBQR)

| |
|---|
| **Orientation** |
| (1) overview of the MBQR program and its principles, including discussion and inquiry on mental health, minority stress, intersectionality, LGBTQ + health and mindfulness, HIV/STI risks and sex positivity; (2) introduce mindfulness practice and encourage kindness and curiosity to one's experience; (3) review logistics, expectations, risks and benefits of participation |
| *Key practice:* brief focused attention practice |
| **Session 1: Our inner resources and the possibility for well-being** |
| (1) start community forming and cultivate belonging; (2) explore why we are here, shared experience of minority stress (attending to intersectionality), and our inherent wholeness, capacity, and resources; (3) establish safety and trauma sensitivity, review zones of experience (adapted from window of tolerance), and explore essential tools for coping with potential challenges; (4) experiment with various practices that connect with their body, with an emphasis on choice and agency |
| *Key practices*: focused attention; body scan (brief); standing yoga; homework includes mindfulness practices, identifying self-care choices and the 9-dots puzzle |
| **Session 2: Perception and creative responding** |
| (1) continue to explore self-care and safety; (2) discuss daily practice, challenges and explore how to work with challenges with non-judging and accepting attitudes; (3) continued practice on body scan and inquiry on "queer body"; (4) discuss 9-dots, how minority stress may affect "what we see" (e.g., how others may view us as well as self-view), and creative responding |
| *Key practices*: focused attention; standing yoga; body scan (long); homework includes mindfulness practices and "pleasant event calendar" |
| **Session 3: The power of being present** |
| (1) deepen attention and stability via attention control practice; (2) continue to work toward a sense of agency and sovereignty of the body via lying down yoga; (3) unpack "pleasant event calendar", encourage awareness on how we know an experience is pleasant (e.g., signals in the body), and discuss how we relate to pleasant experiences (e.g., craving, indulging, fear of joy) |
| *Key practices*: focused attention (long); lying down yoga; homework includes mindfulness practices and "minority stress calendar" |
| **Session 4: Minority stress and reactivity** |
| (1) explore working with "the unwanted" in practice, with various choices including the possibility of self-kindness; (2) unpack "minority stress calendar", inquire how minority stress affects thoughts, emotions, bodily sensations, and reactivity to foster awareness of social stress triggers |
| *Key practices*: focused attention (long); working with difficulties in practices; brief self-compassion (LGBTQ-tailored); homework includes mindfulness practices and attending to how we react to minority stress without trying to change |
| **Session 5: Mindfulness for minority stress-linked habit change** |
| (1) awareness of automatic, habitual response to minority stress, including stories about who we are; (2) discuss how minority stress may affect health behaviors such as HIV/STI testing and other HIV/STI prevention services; (3) explore how mindfulness and self-compassion may serve as mediators and promote flexibility and authenticity in responding to minority stress |
| *Key practices*: choiceless awareness; self-compassion (LGBTQ-tailored); homework includes mindfulness practices, exploring one's minority stress linked habit loop, meeting reactivity with mindfulness and self-compassion, and "difficult interpersonal moments calendar" |
| **All-Day: Sitting together** |
| Various mindfulness practices including focused attention, lying down yoga, choiceless awareness, self-compassion practice, mindful walking, mountain meditation, with tailored introduction, talks and reflections related to mindfulness and LGBTQ health |
| **Session 6: Mindful relating** |
| (1) strengthen skills in minority stress-linked habit change via mindfulness and self-compassion; (2) unpack "difficult interpersonal moments calendar" and explore how mindfulness may support authenticity, vulnerability, and assertive communication; (3) explore mindfulness in sexual well-being and how mindfulness may support healthy boundary, safety and intimacy, including role-plays on self-advocacy in potentially challenging interpersonal context related to sex |
| *Key practices*: choiceless awareness; self-compassion (LGBTQ-tailored); homework includes mindfulness practices and "what we take in calendar" |
| **Session 7: Charting a new course** |
| (1) deepen self-compassion practice, followed by discussion on the practice, potential challenges and how to work with them; (2) unpack "what we take in", raise awareness on how minority stress on individual and systemic levels, as well as other daily activities/exposures, may be depleting or nourishing, and explore how mindfulness and self-compassion may support acts of self-care |
| *Key practices:* self-compassion; awareness practice without guidance; self-care, from intention to action; homework includes mindfulness practices, a writing exercise to one's inner child/teen, and engaging in a nourishing activity daily |
| **Session 8: The rest of your precious life** |
| (1) reinforce new skills and minority stress coping strategies learned in MBQR; (2) letter-writing to one's future self; (3) discuss how to apply skills learned in MBQR to future minority stress experiences and daily life |
| *Key practices*: continued mindfulness practice to support one's coping with minority stress and psychological and sexual health |

of non-judging, acceptance, and trust to one's identity, self-compassion practice) can combat the internalization of stigma (as a consequence of distal minority stress) and promote the association of positive emotions with one's identity. To build a validating environment, providers also suggested incorporating LGBTQ + -related content such

as poetry by LGBTQ + people throughout the program to facilitate feelings of belongingness and pride. Second, the program challenges internalized stigma and supports congruence and identity integration through awareness. Participants shared deeply held beliefs that their sexual identity is a source of shame, inferiority, and unworthiness, which come from cumulative experiences of minority stress, internalization of these experiences, and heteronormative messages from the larger society. Although self-love is a powerful concept, as participants noted, it could be challenging to achieve with this population due to longstanding patterns of self-degradation. Mindfulness could help to bring awareness to such beliefs and their roots. Awareness of one's thoughts and emotions in the moment could also help men move toward congruence and identity integration. As Lucas (21-year-old multiracial bisexual man) described: "mindfulness can help me learn who I am and love who I am."

#### Principle 3. Attending to Intersectionality

The third principle of the MBQR program is attending to intersectionality of identities, social statuses, and experiences of privilege and oppression among sexual minority men. Notably, sexual minority men of color shared struggles related to the intersection of race and sexuality, such as racism within LGBTQ + community and heterosexism within one's racial minority community, resulting in severed belonging and lack of trust. For instance, John, a 22-year-old Black gay man, shared: "Being Black and gay has been challenging, especially in dating. Guys are like 'OMG I love chocolate' or like 'Oh wow, you're cute for a Black guy' to then like flat out rejections of 'I don't date Black guys.'" Ezra (22-year-old Black gay man) noted internalized feelings of body dissatisfaction due to not fitting the stereotypical "thin, White gay man" image: "I feel like if I come out then I'm gonna look ridiculous, you know, like I'm like a heavy-set Black person, and so, well, maybe I'm too fat to be gay." Some participants noted feelings of distrust toward other White LGBTQ + individuals and/or people of color due to past experiences of exclusion. Some shared that their sexual identity is less salient for them compared to their race/ethnicity due to the visibility and early development of racial identity. Thus, the MBQR program attends to intersectionality throughout its course. This means that the program recognizes, on an individual level, participants' intersecting identities and social positions and the importance of working toward self-integration and acceptance of the whole self, as well as on a systemic level, the structural and sociocultural forces that shape the day-to-day experiences of sexual minority individuals. Thus, MBQR invites participants to recognize and reflect on minority stress as conceptualized in the context of their intersecting identities and communities. For instance, in Sessions 1 and 2 where the body scan is introduced and practiced, the MBQR teacher inquires participants to share their experiences, with acknowledgement of the legacy of societal stigmatization of the queer body, particularly for queer men of color, as well as the possibility of moving toward intimacy with and sovereignty of the body through the body scan practice.

#### Principle 4. Facilitating Resilience and Self-empowerment

Participants demonstrated a great amount of resilience and strength despite their noted descriptions of adversity. This includes, for instance, growing self-efficacy, self-acceptance, reaching out for support, building one's own family/community, etc. Recognizing the resourcefulness among members of the community, the MBQR program facilitates the growth and expression of people's strength and inner wisdom. Participants also noted the utility of mindfulness in facilitating resilience. This includes the role of mindfulness in promoting psychological health, including mental stability ("this is all I need for me to be mentally stable", Oliver, 22-year-old Black gay man), self-knowledge ("mindfulness reveals yourself to yourself", Lucas, 21-year-old Multiracial bisexual man), and self-love ("mindfulness could help learn how to love yourself", Leo, 23-year-old Latino queer man). Participants highlighted the benefits of mindfulness particularly for gay, bisexual, and queer men due to the frequent stress and adversity this group encounters (e.g., "it will be very beneficial due to the fact that we really face a lot of hard things in life." Oliver). Participants also shared that mindfulness could aid self-care and the practice of safer sex, since "mindfulness can help you 'step back' in risk situations," (Lucas), "self-love involves having protected sex," (Antonio, 27-year-old Black bisexual man), and "centering self can help you advocate for yourself and empower you to take necessary precautions to practice safe sex" (Dylan, 25-year-old White gay man).

#### Principle 5. Being Sensitive to Individual and Community Trauma

Participants shared their exposure to trauma and adversity, such as personal experiences of victimization (e.g., being harassed, bullied), witnessing harmful treatment of other LGBTQ + people (e.g., Charles, a 21-year-old White gay man noted learning of a friend being put into conversion therapy and witnessing parental punishment to his sister due to her sexual orientation), and lack of acceptance and representation of LGBTQ + people in larger sociocultural spaces (e.g., lack of equal rights), which led to trauma-avoidant coping strategies (e.g., avoiding related stimuli, numbing of emotions). It is worth noting that during our test practices with sexual minority men participants, most participants indicated pleasant experiences (e.g., calm, feeling grounded,

feeling in touch with oneself/body) and some experienced more emotional activation. For instance, Michael, a 25-year-old Black gay man expressed struggling with internalized heterosexism and "coming out," also shared that in all three practices he "felt frightened," with increased heartbeat and palms sweating as well as "feeling bad about himself." As mindfulness practice involves attending to one's mental and physical state, it could engender thoughts and emotions that one typically avoids as well as subsequent reactions (e.g., physical sense of anxiety, feeling overwhelmed). The body scan could also bring up unpleasant feelings. For instance, Ezra, a 22-year-old Black gay man, shared that the body scan was difficult for him due to body image issues ("I deal with a lot of body image issues so then, I don't know, for me, like maybe being hyper aware of my body isn't what I should do?"). Providers also shared the importance of trauma sensitivity. Thus, the fifth principle of the MBQR program is being trauma sensitive. This includes trauma-sensitive practices throughout the program, such as (a) promoting safety (e.g., discuss confidentiality and privacy, teach "window of tolerance" (a zone of optimal arousal states; see Siegel, 1999), note participant's rights to disclose oneself or not in group setting), (b) facilitating choice and control (e.g., in meditation postures, object of awareness, program sequencing; also see more in key techniques and delivery considerations), and (c) emphasizing empowerment and skill building (e.g., conceptualizing mindfulness and self-love as a skill that can facilitate participants to achieve their own goals). Ultimately, building these skills can provide a solid foundation for participants to work toward acceptance and regulation of difficult emotions.

#### Principle 6. Promoting Healthy Relationships and Healthy Community

As discussed by participants, a major form of minority stress for sexual minority men occurs in interpersonal relationships. This includes early experiences of rejection and victimization within one's family, from peers, and sometimes from one's own community (e.g., LGBTQ + community, racial minority community). Thus, the sixth principle of MBQR is to promote healthy relationships and healthy community. Participants shared that this is vital for the success of the program and their well-being. For instance, participants noted that discussion and practice of mindfulness to address interpersonal stressors and build healthy relationships will be important: "tailored pieces on dealing with family members and using mindfulness practices to cope with those family members" (Samuel), "to have something specific about queerness and interpersonal relating in the class" (Ezra), "would be helpful to have something like building relationships with other queer people, and maybe like how to build healthy relationships with other people, to understand what is a healthy relationship versus unhealthy relationship" (Leo). Therefore, the MBQR program incorporates and emphasizes related skills training, such as mindfulness for interpersonal communication, the role of mindfulness for authentic self-expression and self-advocacy, and mindfulness for healthy relationship building. This includes endorsing a sex-positive attitude and promoting healthy sexual relations via mindfulness. Sexual minority participants and providers shared the benefits of focusing on sex wellness and empowerment for healthy decision making via mindfulness, as HIV/STI prevention and sex education programs that have a sole focus on behavior (e.g., condom use) may convey harmful messages regarding sexuality and reinforce internalized homonegativity (e.g., shame and fear regarding sex and one's sexuality).

### Key Techniques and Delivery Considerations

Guided by the intervention principles summarized above, below we outline key techniques and delivery considerations in the development and implementation of MBQR.

#### Technique 1. Attention Control Practice to Facilitate Agency and Self-awareness

Consistent with the principles of trauma sensitivity and enhancing resilience, MBQR emphasizes the teaching of attention control early in its sequence of mindfulness practices, whereas practices that involve open monitoring are introduced later in the program. One technique is skills training regarding how to orient, place, and maintain one's attention to an anchor of choice (e.g., breath, part of the body, sound, an object), which helps participants to develop skills in attention control and regulation. It is important to emphasize various options for attention placement and empower participants to make their own decisions regarding the anchor of choice. Due to the cumulative effect of living in a non-affirming environment, sexual minority individuals may develop the coping mechanism of being hyper-alert and cautious to their environment (e.g., anticipating rejection) and therefore pay less attention to their own experiences. The practice of attention control could aid self-awareness of one's own experiences in the moment. Attention control practice is also beneficial for participants who may have a trauma history. Consistent with trauma sensitive practice of mindfulness (Treleaven, 2018), MBQR teaches zones of arousal (e.g., window of tolerance) early in its sequencing and encourages participants to re-orient their attention if they find themselves in the zones of hyperarousal or hypoarousal/dissociation. This practice can assist participants' development of agency and self-efficacy instead of being trapped in habitual, automatic responses.

### Technique 2. Enhance Emotion Regulation Through Mindfulness

As noted by our participants, emotion regulation difficulties (e.g., numbing, avoidance) are common and stem from early experiences of minority stress (e.g., familial rejection, peer bullying, cultural norm of masculinity on emotional suppression). Difficulties in emotion regulation contribute to and maintain mental health issues (depression and anxiety) as well as maladaptive coping behaviors among sexual minority men including alcohol and substance use and sexual compulsivity (Pachankis et al., 2014). Thus, intentional re-work on emotion regulation through mindfulness is a key technique that can assist healthy coping. Specifically, MBQR emphasizes recognition, acceptance, and non-judgmental responding to one's emotional experiences. For instance, adapted meditation practice includes inviting participants to observe an unpleasant emotional experience, potential impulses and reactions (e.g., to act, to avoid), and moving toward acknowledgement and acceptance of their emotional experience. When implemented with monitoring of one's zone of arousal (i.e., window of tolerance), this technique can help sexual minority men develop emotional awareness, increase tolerance of emotional distress, and reduce emotional avoidance. It may also reduce the self-referential processes (e.g., self-criticism, extensive worry) that helps to maintain emotional distress. Applied to HIV/STI prevention, for example, participants shared that mindful emotion regulation could help to reduce their anxiety associated with HIV testing (e.g., waiting for HIV test results).

### Technique 3. Reduce Reactivity to Internalized Minority Stress Through Awareness of Thoughts

Internalized minority stress often manifests in negative beliefs regarding one's sexual identity and oneself (e.g., "I am gay and therefore I am unlovable"), which is a result of cumulative experiences of societal stigma and victimization. Consistent with the principle of reducing minority stress, a key technique to challenge these internalized beliefs is through awareness of thoughts, particularly thoughts during and after a minority stress event (e.g., when ruminating about one's identity, following experience of interpersonal rejection). This provides an opportunity for participants to identify them as thoughts and interpretations that are mental events and may represent mental habits of internalized stigma that stem from a heteronormative environment. Thus, instead of believing them as an essential fact about oneself, participants are invited to become aware of them, understand that they may arise from minority stress experiences, and develop flexibility in responding to these thoughts (e.g., letting go, shifting attention).

### Technique 4. Self-compassion Practice to Facilitate Self-acceptance

Although self-compassion practice is not an explicit aspect of MBSR, traditional MBSR programming includes loving kindness meditation practice where self-compassion (or self-kindness) is a key component. Consistent with the principle of affirming and promoting healthy identity development, MBQR incorporates self-compassion to enhance identity positivity. This includes both formal practice of self-compassion and developing a compassionate stance in various practices (e.g., encouragement for kind and curious attention to one's body during the body scan). As noted by many participants in our interviews, self-compassion practice was relevant to sexual minority men as it can help alter their relationship with self that is often characterized by self-criticism. Some participants also noted the importance of "loving yourself well so you can love well" (Antonio, 27-year-old Black man). Essentially, self-compassion can serve as a way to learn how to be your own best ally when participants need it most. Intentional use of self-compassion practice to combat minority stress on various levels (e.g., internalized stigma, interpersonal victimization, sociocultural stress) could also assist in greater understanding of one's experiences, self-acceptance, and identity positivity.

### Technique 5. Reduce Behavioral Avoidance and Facilitate Healthy Coping

Consistent with the principles of facilitating resilience and promoting healthy relationships, a key technique of MBQR is to reduce behavioral avoidance and facilitate healthy coping through mindfulness. This may occur through several pathways. First, mindfulness could improve coping by reducing emotionally driven unhealthy behaviors (e.g., alcohol use induced by shame following interpersonal rejection). Second, overall improvement in identity positivity via self-compassion practice could enhance the motivation for self-care behaviors. For instance, Antonio noted that mindfulness could improve HIV testing and safe sex behaviors since "loving themselves and loving other people around them can encourage men to get tested and prevent HIV by practice safe sex". Third, by increasing self-awareness and subsequently greater intrinsic motivation, mindfulness could help sexual minority men move toward healthy coping behaviors guided by their values. For instance, participants shared that mindfulness could help to enhance the "long view" instead of "a rushed, go-go-go lifestyle that many gay men endorse" (Lucas). Thus, mindfulness could encourage participants to make healthy behavioral choices through reflection on their values, needs, and long-term goals. MBQR particularly incorporates mindfulness teachings and practices to support healthy coping and health behaviors along with and

following the foundation of attention control, awareness, and self-compassion training. Tailored practices also encourage participants to notice the impact of various behaviors on their subsequent well-being.

#### Consideration 6. Mindfulness and Religion

A key consideration in the implementation of mindfulness-based interventions for sexual minority men is the relationship between mindfulness and religion. A few participants shared that mindfulness meditation could feel similar to religious/spiritual practices in its format and effect. Participants noted that individuals with a sexual minority identity may have a history of rejection/trauma from their religious community; therefore, mindfulness teachers and programs need to adopt a nuanced approach in the introduction and delivery of mindfulness. Several providers shared to possibly avoid the utilization of bells in meditation as it may represent a religious symbol. A provider who primarily works with African American sexual minority men shared that with successful delivery, mindfulness could offer a path to well-being and spiritual belonging that many sexual minority men long for. In the introduction of mindfulness, it may be important to use everyday language, avoid jargon from religious contexts, and clarify that mindfulness is not a religion. Meanwhile, teachers need to stay open to participants' experiences, including experiences that may remind them of or resemble spiritual experiences. Skillful exploration of such experiences and participants' interpretation of them, including kind and curious attention to them while applying attention control techniques when needed, could facilitate self-understanding and further engagement in mindfulness practice.

#### Consideration 7. Utilize Modern Technologies to Increase Access, Reach, and Engagement

Sexual minority men participants and providers noted the value of utilizing modern technologies in the delivery of mindfulness. The interviews were conducted during the COVID-19 pandemic (Fall 2020–Spring 2021), and many participants shared that they often faced various barriers for social support during this period including geographical limitations (e.g., residing in small rural area without a large LGBTQ + community), physical closeness to family members who may not know or validate their sexual identity, and decreased peer contact in general. The dual stigma of sexual minority identity and mental health also prohibits many sexual minority men from seeking professional psychological help. Thus, coupled with technology-mediated delivery (e.g., internet, mobile phone), mindfulness could offer a de-stigmatized, accessible approach to reach and engage sexual minority men in need of care. Participants expressed that such delivery could ensure easy access and help them to integrate mindfulness into their daily life. Providers also shared that creative use of everyday platforms that young sexual minority men engage in, such as Facebook and Instagram, has led to successful recruitment and engagement of the LGBTQ + community. Meanwhile, sexual minority men participants shared the importance of confidentiality and privacy in participating in LGBTQ + -oriented programs, including via an online platform. Discussion and clarification on participants' rights, including confidentiality and privacy, are therefore important in the beginning of the program to establish trust. Potentially, a tailored approach to engage sexual minority men and reduce minority stress via internet-delivered mindfulness could both provide reach and maximize engagement of participation.

## Discussion

Guided by the ADAPT-ITT model for adapting evidence-based interventions, we identified essential principles and techniques of a mindfulness-based approach for health promotion among sexual minority men. The resulting intervention, "Mindfulness-Based Queer Resilience" (MBQR), represents a systematic process to develop a mindfulness-based intervention to address the psychosocial sequelae of minority stress and to improve sexual and mental health among sexual minority men, a historically marginalized population at risk for psychological distress and HIV/STI. If proven to be feasible, acceptable, and efficacious in future clinical trial research, it may represent a promising approach to engage this underserved group in the ending of HIV epidemic and achieving optimal health and well-being.

There has been increasing efforts in helping professions to develop guidelines and cultural competencies for working with sexual minority populations (American Psychological Association, 2012; Boroughs et al., 2015). However, MBI research in this area is lagging behind. Recently, similar work was conducted with LGBTQ + youth, in which Iacono et al. (2022) found through qualitative analyses that an affirmative stance and psychological safety were important in affirmative mindfulness. The current study complements these efforts and aims to further diversify evidence-based approaches for sexual minorities and advance research on mindfulness for HIV/STI prevention. Psychological distress, sexual risk, and service avoidance are responses driven by external and internal identity-based minority stressors (Pachankis et al., 2014, 2018, 2015a, 2015b; Storholm et al., 2016), yet psychosocial-based interventions for HIV/STI prevention in this group have been limited. As minority stress adversely affects sexual minority men's health, a mindfulness-based approach capable of addressing the pathway through which minority stress asserts these impacts

offers the potential of addressing mental health and HIV/STI-related health outcomes in this population (Fig. 1).

The principles identified serve as philosophical foundations of the MBQR intervention and point to the importance of contextualizing mindfulness in the lived experiences of sexual minorities, trauma sensitivity, and emphasizing strength and resilience. The principle of addressing minority stress also applies in attending to intersectionality and trauma sensitivity. Similar to other sexual and gender minority populations, sexual minority men, particularly men of color, are at heightened risk for trauma exposure and PTSD symptoms due to the concomitant experiences of racism and heterosexism (Roberts et al., 2010). Our study findings on trauma are consistent with the view that for LGBTQ + individuals, trauma goes beyond individual events and is linked to the heterosexist cultural context (Cvetkovich, 2003). Understanding trauma from a minority stress lens is essential when implementing mindfulness with this group. Cumulative experiences of rejection, stigmatization, harassment, and violence on individual and systemic levels based on one's identity can be conceptualized as trauma (Keating & Muller, 2020) and can result in PTSD symptoms and a profound sense of invalidation, helplessness, and loneliness (Cardona et al., 2022). With this understanding, the current study suggests trauma-sensitive techniques and principles be incorporated into MBQR, such as teaching the "window of tolerance" (Treleaven, 2018), so that the mindfulness teacher can better assist participants to cope with potential challenges. Consistent with the principles of minority stress reduction, intersectionality, and trauma sensitivity, MBQR adopts an identity affirmative stance with an emphasis on resilience, self-empowerment, and healthy relations. This is especially important given psychological treatments' history of pathologizing and stigmatizing LGBTQ + individuals (Haldeman, 1994). Further, given the often-relational nature of minority stress and trauma that sexual minority men experience, we suggest purposefully applying mindfulness in relational aspects of men's lives, such as authentic self-expression, mindful communication, and self-advocacy. The principle of healthy relationships also applies to the relationship with the teacher (i.e., one that honors participant's agency, space, and inner wisdom) and the intervention group (i.e., one that fosters community building, inclusion and belonging).

The first five techniques of MBQR represent the "how" or processes to address minority stress, whereas the last two points (mindfulness and religion, and utilizing modern technologies) concern maximizing engagement. As shown, there are multiple pathways through which MBQR may alleviate the adverse impact of minority stress, including increasing attention control, enhancing emotional awareness and regulation, reducing reactivity to minority stress informed thoughts, cultivating self-compassion, and lowering behavioral avoidance. These techniques are consistent with identified principles of MBQR and aim to address the various aspects of the adverse impact of minority stress, including attentional and emotional dysregulation, internalized stigmatizing thoughts, negative attitude/view toward oneself, and avoidant coping. Consistent with the principle of trauma sensitivity, MBQR starts with attention control practices to facilitate agency, awareness, and self-efficacy. Building on this foundation, the program encourages participants to pay specific attention to minority stress induced emotions and thought patterns, via homework, class discussions, and practices. Such awareness can be key in disrupting the pathways of how minority stress impacts health through mental habits that have become automatic (rumination, anticipated rejection, stress reactivity, hypervigilance). Beyond awareness, MBQR also incorporates the explicit practice of self-compassion (Neff & Germer, 2013). Self-compassion can serve as a direct antidote to self-criticism and low self-worth due to experiences of discrimination and stigma, and facilitate the development of a healthy identity. As riskier health behaviors in sexual minority men, including lack of HIV/STI testing, sexual risk behaviors, and suboptimal utilization of mental health and medical services, often represent minority stress-driven, avoidant coping patterns, tailored mindfulness program such as MBQR could offer the potential of improving multiple health behavior outcomes. With the challenges that COVID-19 poses to the mental and sexual health of sexual minority young adults (e.g., increased isolation, lack of access to community support), creating a confidential, safe, and supportive online space that fosters development of coping skills such as mindfulness could be an effective and accessible approach to reach and engage vulnerable sexual minority men and enhance population health (Fish et al., 2022; Platero & López-Sáez, 2021; Sun et al., 2022).

## Limitations and Directions for Future Research

The study has several limitations. First, as the study was advertised as mindfulness-related research for sexual minority men, we may have oversampled those with an interest in and openness to mindfulness. Future research is needed to understand the perception and willingness to participate in a mindfulness-based intervention among the larger sexual minority men community. Second, consistent with the inclusion criteria of the planned future RCT trial, sexual minority men in this study were young adults, all endorsed depressive and/or anxiety symptoms, and had a history of condomless sex. Thus, there may be unique psychosocial characteristics of this group of men as well as the utility of mindfulness for this group. The generalizability of this approach in a more general sexual minority men population, as well as subpopulations with different behavioral health issues, such as alcohol and substance use, smoking, and disordered eating, needs to

be examined through future research. In a related vein, some aspects of principles and techniques of MBQR may also be applicable to other sexual and gender minority populations, such as sexual minority women and transgender and gender non-conforming individuals, yet require further research to fully understand its potential. Given the lack of multicultural competency and LGBTQ + specific training among mindfulness and other behavioral health providers, identified principles and techniques of MBQR may also serve as important guidelines for serving LGBTQ + individuals. Third, the acceptability, feasibility, and efficacy of MBQR, informed by emerged principles and techniques, are yet to be examined in a future trial. Fourth, future MBQR trials also need to test the hypothesized mechanisms of change, and whether minority stress reduction is key to improvement in health behaviors and well-being. At last, if proven to be feasible, acceptable, and efficacious, through training and collaboration, researchers and community stakeholders will need to work together to implement this approach in real-world settings to maximize health promotion and ultimately move the population bell-curve of mental and sexual health of sexual minority men toward better health and well-being.

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## Declarations

**Ethics Statement** This study was performed in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Brown University Institutional Review Board (protocol number: 2004002698).

**Informed Consent** Study participants evidenced their consent to participate by reviewing informed consent document online and selecting the commensurate button, as well as providing oral consent during phone screening.

**Conflict of Interest** The authors declare no competing interests.

## References

American Psychological Association. (2012). Guidelines for psychological practice with lesbian, gay, and bisexual clients. *American Psychologist, 67*(1), 10–42. https://doi.org/10.1037/a0024659

Babel, R. A., Wang, P., Alessi, E. J., Raymond, H. F., & Wei, C. (2021). Stigma, HIV Risk, and access to HIV prevention and treatment services among men who have sex with men (MSM) in the United States: A scoping review. *AIDS and Behavior, 25*(11), 3574–3604. https://doi.org/10.1007/s10461-021-03262-4

Boroughs, M. S., Bedoya, C. A., O'Cleirigh, C., & Safren, S. A. (2015). Toward defining, measuring, and evaluating LGBT cultural competence for psychologists. *Clinical Psychology: Science and Practice, 22*(2), 151–171. https://doi.org/10.1111/cpsp.12098

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77–101. https://doi.org/10.1191/1478088706qp063oa

Cardona, N. D., Madigan, R. J., & Sauer-Zavala, S. (2022). How minority stress becomes traumatic invalidation: An emotion-focused conceptualization of minority stress in sexual and gender minority people. *Clinical Psychology: Science and Practice, 29*(2), 185–195. https://doi.org/10.1037/cps0000054

Carrico, A. W., Gómez, W., Jain, J., Shoptaw, S., Discepola, M. V., Olem, D., Lagana-Jackson, J., Andrews, R., Neilands, T. B., Dilworth, S. E., Evans, J. L., Woods, W. J., & Moskowitz, J. T. (2018). Randomized controlled trial of a positive affect intervention for methamphetamine users. *Drug and Alcohol Dependence, 192*, 8–15. https://doi.org/10.1016/j.drugalcdep.2018.07.029

Carrico, A. W., Neilands, T. B., Dilworth, S. E., Evans, J. L., Gómez, W., Jain, J. P., Gandhi, M., Shoptaw, S., Horvath, K. J., Coffin, L., Discepola, M. V., Andrews, R., Woods, W. J., Feaster, D. J., & Moskowitz, J. T. (2019). Randomized controlled trial of a positive affect intervention to reduce HIV viral load among sexual minority men who use methamphetamine. *Journal of the International AIDS Society*, *22*(12). https://doi.org/10.1002/jia2.25436

CDC. (2019). *HIV among Gay and Bisexual Men*. https://www.cdc.gov/msmhealth/HIV.htm

Cochran, S. D., Sullivan, J. G., & Mays, V. M. (2003). Prevalence of mental health disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology, 71*(1), 53–61. https://doi.org/10.1038/jid.2014.371

Cvetkovich, A. (2003). *An archive of feelings: Trauma, sexuality, and lesbian public cultures*. Duke University Press.

Fish, J. N., Williams, N. D., McInroy, L. B., Paceley, M. S., Edsall, R. N., Devadas, J., Henderson, S. B., & Levine, D. S. (2022). Q chat space: Assessing the feasibility and acceptability of an internet-based support program for LGBTQ+ youth. *Prevention Science, 23*(1), 130–141. https://doi.org/10.1007/s11121-021-01291-y

Gayner, B., Esplen, M. J., DeRoche, P., Wong, J., Bishop, S., Kavanagh, L., & Butler, K. (2012). A randomized controlled trial of mindfulness-based stress reduction to manage affective symptoms and improve quality of life in gay men living with HIV. *Journal of Behavioral Medicine, 35*(3), 272–285. https://doi.org/10.1007/s10865-011-9350-8

Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review, 59*, 52–60. https://doi.org/10.1016/j.cpr.2017.10.011

Goldberg, S. B., Riordan, K. M., Sun, S., & Davidson, R. J. (2022). The empirical status of mindfulness-based interventions: A systematic review of 44 meta-analyses of randomized controlled trials. *Perspectives on Psychological Science, 17*(1), 108–130. https://doi.org/10.1177/1745691620968771

Grant, S., Colaiaco, B., Motala, A., Shanman, R., Booth, M., Sorbero, M., & Hempel, S. (2017). Mindfulness-based relapse prevention for substance use disorders: A systematic review and meta-analysis. *Journal of Addiction Medicine, 11*(5), 386–396. https://doi.org/10.1097/ADM.0000000000000338

Haldeman, D. C. (1994). The practice and ethics of sexual orientation conversion therapy. *Journal of Consulting and Clinical Psychology, 62*(2), 221–227.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707–730.

Iacono, G., Craig, S. L., Crowder, R., Brennan, D. J., & Loveland, E. K. (2022). A qualitative study of the LGBTQ+ youth affirmative mindfulness program for sexual and gender minority youth. *Mindfulness, 13*, 222–237. https://doi.org/10.1007/s12671-021-01787-2

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*(2), 144–156. https://doi.org/10.1093/clipsy/bpg016

Keating, L., & Muller, R. T. (2020). LGBTQ+ based discrimination is associated with PTSD symptoms, dissociation, emotion dysregulation, and attachment insecurity among LGBTQ+ adults who have experienced trauma. *Journal of Trauma and Dissociation, 21*(1), 124–141. https://doi.org/10.1080/15299732.2019.1675222

Kerridge, B. T., Pickering, R. P., Saha, T. D., Ruan, W. J., Chou, S. P., Zhang, H., Jung, J., & Hasin, D. S. (2017). Prevalence, sociodemographic correlates and DSM-5 substance use disorders and other psychiatric disorders among sexual minorities in the United States. *Drug and Alcohol Dependence, 170*, 82–92. https://doi.org/10.1016/j.drugalcdep.2016.10.038

Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research, 78*(6), 519–528. https://doi.org/10.1016/j.jpsychores.2015.03.009

Kroenke, K., Spitzer, R. L., Williams, J. B. W., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: The PHQ–4. *Psychosomatics, 50*(6), 613–621. https://doi.org/10.1016/s0033-3182(09)70864-3

Lyons, A. (2016). Mindfulness attenuates the impact of discrimination on mental health of middle-aged and older gay men. *Psychology of Sexual Orientation and Gender Diversity, 3*(2), 227–235. https://doi.org/10.1037/sgd0000164

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697. https://doi.org/10.1097/MCA.0000000000000178

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology, 69*(1), 28–44. https://doi.org/10.1002/jclp.21923

Newcomb, M. E., & Mustanski, B. (2010). Internalized homophobia and internalizing mental health problems: A meta-analytic review. *Clinical Psychology Review, 30*(8), 1019–1029. https://doi.org/10.1016/j.cpr.2010.07.003

Operario, D., Sun, S., Bermudez, A. N., Masa, R., Shangani, S., van der Elst, E., & Sanders, E. (2022). Integrating HIV and mental health interventions to address a global syndemic among men who have sex with men. *The Lancet HIV, 9*(8), e574–e584. https://doi.org/10.1016/S2352-3018(22)00076-5

Pachankis, J. E., Rendina, H. J., Restar, A., Ventuneac, A., Grov, C., & Parsons, J. T. (2014). A minority stress — Emotion regulation model of sexual compulsivity among highly sexually active gay and bisexual men. *Health Psychology, 34*(8), 829–840. https://doi.org/10.1037/hea0000180

Pachankis, J. E., Hatzenbuehler, M. L., Hickson, F., Weatherburn, P., Berg, R. C., Marcus, U., & Schmidt, A. J. (2015). Hidden from health: Structural stigma, sexual orientation concealment, and HIV across 38 countries in the European MSM Internet Survey. *AIDS, 29*(10), 1239–1246. https://doi.org/10.1097/QAD.0000000000000724

Pachankis, J. E., Hatzenbuehler, M. L., Rendina, H. J., Safren, S. A., & Parsons, J. T. (2015). LGB-affirmative cognitive-behavioral therapy for young adult gay and bisexual men: A randomized controlled trial of a transdiagnostic minority stress approach. *Journal of Consulting and Clinical Psychology, 83*(5), 875–889. https://doi.org/10.1037/ccp0000037

Pachankis, J. E., Sullivan, T. J., Feinstein, B. A., & Newcomb, M. E. (2018). Young adult gay and bisexual men's stigma experiences and mental health: An 8-year longitudinal study. *Developmental Psychology, 54*(7), 1381–1393. https://doi.org/10.1037/dev0000518

Pachankis, J. E., Mahon, C. P., Jackson, S. D., Fetzner, B. K., & Bränström, R. (2020). Sexual orientation concealment and mental health: A conceptual and meta-analytic review. *Psychological Bulletin, 146*(10), 831–871. https://doi.org/10.1037/bul0000271

Palta, P., Page, G., Piferi, R. L., Gill, J. M., Hayat, M. J., Connolly, A. B., & Szanton, S. L. (2012). Evaluation of a mindfulness-based intervention program to decrease blood pressure in low-income African-American older adults. *Journal of Urban Health, 89*(2), 308–316. https://doi.org/10.1007/s11524-011-9654-6

Platero, R. L., & López-Sáez, M. Á. (2021). Community responses to LGBT+ adults with intellectual and developmental disabilities during the COVID-19 confinement in Madrid. *International Social Work. (online First Publication).* https://doi.org/10.1177/00208728211044741

Ramchandani, M. S., & Golden, M. R. (2019). Confronting rising STIs in the era of PrEP and treatment as prevention. *Current HIV/AIDS Reports, 16*, 244–256. https://doi.org/10.1007/s11904-019-00446-5

Roberts, A. L., Austin, S. B., Corliss, H. L., Vandermorris, A. K., & Koenen, K. C. (2010). Pervasive trauma exposure among US sexual orientation minority adults and risk of posttraumatic stress disorder. *American Journal of Public Health, 100*(12), 2433–2441.

Russell, S. T., & Fish, J. N. (2016). Mental health in lesbian, gay, bisexual, and transgender (LGBT) youth. *Annual Review of Clinical Psychology, 12*(1), 465–487. https://doi.org/10.1146/annurev-clinpsy-021815-093153

Sibinga, E. M. S., Perry-Parrish, C., Thorpe, K., Mika, M., & Ellen, J. M. (2014). A small mixed-method RCT of mindfulness instruction for urban youth. *Explore: The Journal of Science and Healing, 10*(3), 180–186. https://doi.org/10.1016/j.explore.2014.02.006

Siegel, D. J. (1999). *The Developing Mind*. Guilford Press.

Storholm, E. D., Satre, D. D., Kapadia, F., & Halkitis, P. N. (2016). Depression, compulsive sexual behavior, and sexual risk-taking among urban young gay and bisexual men: The P18 cohort study. *Archives of Sexual Behavior, 45*(6), 1431–1441. https://doi.org/10.1007/s10508-015-0566-5

Sun, S., Nardi, W., Loucks, E. B., & Operario, D. (2021). Mindfulness-based interventions for sexual and gender minorities: A systematic review and evidence. *Mindfulness, 12*, 2439–2459. https://doi.org/10.1007/s12671-021-01710-9

Sun, S., Lin, D., Goldberg, S., Shen, Z., Chen, P., Qiao, S., Brewer, J., Loucks, E., & Operario, D. (2022). A mindfulness-based mobile health (mHealth) intervention among psychologically distressed university students in quarantine during the COVID-19 pandemic: A randomized controlled trial. *Journal of Counseling Psychology, 69*(2), 157–171. https://doi.org/10.1037/cou0000568

Teasdale, J. D., Segal, Z. V., Williams, J. M., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology, 68*(4), 615–623. https://doi.org/10.1037//0022-006x.68.4.615

Toomey, R. B., & Anhalt, K. (2016). Mindfulness as a coping strategy for bias-based school victimization among Latina/o sexual minority youth. *Psychology of Sexual Orientation and Gender Diversity, 3*(4), 432–441. https://doi.org/10.1037/sgd0000192

Toplu-Demirtaş, E., Kemer, G., Pope, A. L., & Moe, J. L. (2018). Self-compassion matters: The relationships between perceived social support, self-compassion, and subjective well-being among LGB individuals in Turkey. *Journal of Counseling Psychology, 65*(3), 372–382. https://doi.org/10.1037/cou0000261

Treleaven, D. A. (2018). *Trauma-sensitive mindfulness: Practices for safe and transformative healing*. WW Norton & Company.

Wingood, G. M., & Diclemente, R. J. (2008). The ADAPT-ITT model: A novel method of adapting evidence-based HIV interventions. *Journal of Acquired Immune Deficiency Syndromes, 47*(SUPPL. 1), 40–46. https://doi.org/10.1097/QAI.0b013e3181605df1

Witkiewitz, K., & Bowen, S. (2010). Depression, craving, and substance use following a randomized trial of mindfulness-based relapse prevention. *Journal of Consulting and Clinical Psychology, 78*(3), 362–374. https://doi.org/10.1037/a0019172

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