Reducing Daily Stress Among Sexual and Gender Minorities (the REDUCE Study)

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List of Abbreviations and Definition of Terms

Abbreviation	Meaning
BS-11	Barratt Impulsiveness Scale
EA	Emerging Adult
CASI	Computer Assisted Self-Interview
CDS	Coping with Discrimination Scale
CES-D	Center for Epidemiological Studies Depression Scale
DISE	Daily Inventory of Stressful Events
FOA	Funding Opportunity Announcement
GCP	Good Clinical Practice
HIPAA	Health Insurance Portability and Accountability Act
HMI	Healthy Minds Innovations
HMP	Healthy Minds Program
MOST	Multiphase Optimization Strategy
NIH	National Institutes of Health
NYU	New York University
NYU IRB	New York University Institutional Review Board
PANAS	Positive and Negative Affect Schedule
PAR	Program Announcement Reviewed in an Institute
PID	Participant Identification Number
PSQW	The Penn State Worry Questionnaire
PSS	Perceived Stress Scale
REDUCE	Reducing Daily Stress Among Sexual and Gender Minorities
SGM	Sexual and Gender Minorities
SLS	Satisfaction with Life Scale
SMS	Sexual Minority Stress
WEMWBS	Warwick-Edinburgh Mental Well-being Scale

Study Abstract

Design:	Emerging adult (EA) sexual and gender minorities (SGM), especially SGM of color, experience a disproportionate burden of mental health disparities as compared to their older SGM and non-SGM counterparts. Sexual minority stress (SMS) theory posits that mental health disparities among SGM arise through exposure to a number of distal and proximal stressors related to their sexual minority identity, such as daily experiences with sexual orientation-related and/or racial discrimination. Moreover, emerging research shows that EA SGM of color who possess multiple, intersecting minority identities (e.g., racial/ethnic minority SGM) are at greater risk for poor mental health outcomes as compared to their White EA SGM counterparts due to experiences with intersectional discrimination. Recent research has shown that mindfulness interventions may be a relevant method through which to reduce the impact of stress among SGM of color and increase well-being. However, it is unknown which components of mindfulness-based interventions are the most effective at reducing stress and promoting well-being. Thus, the proposed study (N = 80) will utilize the innovative daily diary multiphase optimization strategy (MOST), which employs an 8-arm factorial experiment to determine the most effective, efficient, and immediately scalable combination of the mindfulness intervention components of awareness, purpose, and connection. Linear regression and linear mixed modeling analyses will be conducted to assess the study aims.
Sample Size:	Approximately 80 participants will be enrolled.
Population:	Participants will consist of underrepresented racial/ethnic sexual minorities aged 18-29 recruited via convenience sampling from social media websites and community-based organizations.
Eligibility Criteria:	Eligibility criteria is as follows: (a) be between the ages of 18 and 29 years; (b) identify as a racial/ethnic minority (i.e., non-White); (c) identify as a sexual minority (e.g., lesbian, gay, or bisexual); and (d) reside in the New York metropolitan area
Study Duration:	The study is comprised of a 30-minute baseline survey, 5 days of meditation exercises of between 5-15 minutes per day, 15-minute daily assessments for 5 days, and a 15-minute follow-up survey. The total duration is about 180 minutes.

Data Collection:	Data will be collected using Computer-Assisted Self-Interview (CASI) via an online survey platform hosted by NYU (REDCap)
Specific Aims:	To use an innovative optimization design to evaluate different components of mindfulness interventions and the interaction between the components to build an effective, efficient, feasible, cost-effective, and scalable intervention to reduce the impact of daily stress from discrimination on mental health among SGM of color.

Study Schema

Screening (Online via REDCap)

- Eligibility:
  - Racial/ethnic sexual minority (e.g., lesbian, gay, bisexual) aged 18-29 who resides in the New York metropolitan area
  - Provide interest by completing the online (REDCap) screener

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Enrollment (Meeting 1 via Zoom and REDCap)

- If fully eligible, complete consenting process
- Complete baseline CASI assessments
- Provide introduction to mindfulness and Healthy Minds Innovation (HMI) App
- Randomize into intervention arm

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Days 1-5 (via HMI App and REDCap)

- Participant completes daily diaries and momentary surveys
- Participant completes mindfulness intervention as directed
- Text message or email reminders sent each day to participants, depending on participant preference

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Follow-Up (Meeting 2 via Zoom and REDCap)

- Complete follow-up CASI assessments
- Review study compensation
- Study debriefing interview

1.0 INTRODUCTION

Minority Stress and SGM Health

The term sexual and gender minority (SGM) comprises a broad range of identities related to sexual orientation and gender identity including, but not limited to, lesbian, gay, bisexual, and transgender individuals.[1] Much research documents that SGM are faced with a multitude of health disparities particularly within the emerging adulthood (EA) period (i.e., ages 18-29).[2,3] In particular, depression, anxiety, and suicidality continues to be disproportionately high throughout the EA period among SGMs relative to older SGMs and non-SGMs.[3] Moreover, EA is a key developmental period in which interventions designed to buffer the negative effects of stress on health may be particularly relevant, as EA is characterized by rapid changes in psychological, social, and familial environments (e.g., college) that greatly affect the development and maintenance of stress coping mechanisms.[4] Researchers utilizing daily diary methodologies have found that EA SGM who report more daily discriminatory experiences have more negative mood, poorer emotional states, as well as report more depressive symptoms and suicidal ideation on average than those who report less daily discriminatory experiences.[5] In addition, young SGM of color who experience intersectional discrimination based on racial/ethnic identity and sexual orientation report more negative mood than young white SGM.[5]

One pathway through which mental health disparities are posited to arise among SGM is through that of sexual minority stress (SMS).[6] SMS theory posits that sexual minority individuals experience a number of distal and proximal stressors related to the negative social valuation of sexual minority identity, resulting in exacerbated stress beyond the levels that people generally experience.[6] Over time, individuals may internalize minority stressors (e.g., internalized homophobia) which, in turn, may contribute to poor mental health among SGM over time.[6] Further, SGM who experience intersectional discrimination (e.g., gender-based, racial/ethnic-related, and sexual orientation-related discrimination) are more likely to report poorer mental health as compared to their white SGM and non-SGM counterparts.[7-9] While SMS theory also suggests that endemic structural-level processes contribute to the perpetuation of poor mental health among SGM, it is imperative that interventions not only focus on reducing mental health inequalities at the societal-level, but also focus on reducing the *impact* of discrimination in the day-to-day lives of SGM of color in particular.

Mindfulness and SGM Mental Health

Research suggests that increasing the practice of mindfulness may be useful for reducing the impact of daily stress on poor mental health among EAs who experience discrimination.[10] Mindfulness meditation is a practice that focuses an individual's attention on the present moment, leading to reduced levels of stress.[11] Online mindfulness interventions among SGM have been associated with lowered levels of perceived stress compared to before the intervention in both men and women and reduced sexual minority stress in SGM women.[12] Mindfulness interventions can also lead to increased individual resilience towards discriminatory experiences.[13,14] By allowing the SGM individual to disengage with the discriminatory experience through focus on the present moment,

rumination and/or negative feelings are less likely to occur which can lead to improved psychological well-being.[13] SGMs are more prone to the perception of discrimination, which may lead to negative psychological outcomes such as anxiety, depression and higher perceived stress. Past research provides evidence for mindfulness acting as a protective factor against the negative psychological effects of school-based victimization based on sexual orientation and age-based discrimination.[14,15] In particular, higher levels of mindfulness buffered the association between events discrimination events and negative psychological outcomes such as anxiety and depression.[14,15] Although there is critical mass of observational and intervention studies showing the effectiveness of mindfulness in reducing stress from discrimination and promoting well-being, it remains unclear the key features of mindfulness interventions that are the most effective, efficient, and immediately scalable.

2.0 STUDY OBJECTIVE

2.1 Primary Objective

To use an innovative optimization design (i.e., MOST) to evaluate different components of mindfulness interventions and the interaction between the components to build an effective, efficient, and scalable intervention to reduce daily stress from discrimination among SGM of color.

3.0 STUDY DESIGN

3.1 Methods

Recruitment and Study Initiation

80 participants will be recruited through flyers and posts on social media as well as through email listservs with the screening survey attached. If respondents are deemed eligible for the survey, they will be prompted to provide their name, email and phone number if interested. If respondents are not deemed eligible, they will receive a message that explains this and thanks them for their time. An online Zoom meeting will then be scheduled to confirm eligibility and provide additional information concerning study parameters. The Zoom will be between a trained research assistant and a single participant. This meeting will take 10 to 15 minutes depending on questions the individuals may have. In addition, this meeting will be an informational assessment to assure that the individual can effectively use and have access to the materials used in the study, the online surveys/assessments, and interventions. After providing online informed consent through REDCap, the participant will be randomized into one of the 8 conditions, complete a 45-minute baseline survey via REDCap, and be provided training on study protocols. The participant will take part in one of the eight interventions and follow directions given to them through REDCap.

Interventions and Study Design

The interventions will be administered using the MOST. The participants will be randomized to at least one of the 3 intervention components of Awareness, Connection, and Purpose for this optimization study, which make up the 8 conditions. Each of these components is known to be effective in reducing stress and promoting well-being among populations that experience a high rate of discrimination (e.g., SGM). All 3 components are administered via the Healthy Minds Program (HMP), which is a smartphone app-based mindfulness intervention developed through the research of Dr. Richard Davidson and his team at the University of Wisconsin-Madison's Center for Healthy Minds in affiliation with the non-profit Healthy Minds Innovations (HMI). The app provides an average of 5 and 10-minute meditations that can be completed while sitting, walking, or exercising that focus on the modules of awareness, and connection. Participants will log into the app using their unique code and listen to the meditations that correspond to their selected randomization each of the 5 days. The app's methodology aligns with constituents of psychological well-being that are trainable and measurable as evidenced by the Center for Healthy Minds: awareness, connection, and purpose. The components are as follow: 1) **Awareness** through meditation promotes self-awareness, reducing the mind's ability to be distracted and instead be present in the moment. Awareness promotes well-being by bringing attention to the present moment, not allowing the mind to wander to negative thoughts that cause stress; 2) **Connection** through meditation supports empathy, compassion, and kindness in daily activities; 3) **Purpose** through meditation encourages daily meaning in life. Emotions are better regulated when an individual acknowledges the meaning in their life leading to clearer values and persistence in the face of adversity. By shifting to this positive mindset, individuals are able to cultivate social support networks which research has found to decrease risk for depression.

Participants can be randomized into one of the following conditions:

1) **No intervention (i.e., control group)**: This group receives an introduction to mindfulness on day 1. This introduction is expected to last about 10 to 15 minutes. Those assigned to the control condition do not complete any mindfulness exercises over the 5-day period.
2) **Purpose only**: In this condition, participants complete mindfulness activities pertaining to purpose only. These exercises are expected to last 10 minutes a day for 5 days.
3) **Connection only**: In this condition, participants complete mindfulness activities pertaining to connection only. These exercises are expected to last 10 minutes a day for 5 days.
4) **Awareness only**: In this condition, participants complete mindfulness activities pertaining to awareness only. These exercises are expected to 10 minutes a day for 5 days.
5) **Purpose and connection**: In this condition, participants complete mindfulness activities pertaining to purpose and connection only. These exercises are expected to last 20 minutes a day for 5 days
6) **Awareness and purpose**: In this condition, participants complete mindfulness activities pertaining to awareness and purpose only. These exercises are expected to last 20 minutes a day for 5 days.

7) **Awareness and connection**: In this condition, participants complete mindfulness activities pertaining to awareness and connection only. These exercises are expected to last 20 minutes a day for 5 days.
8) **Purpose, awareness, and connection**: In this condition, participants complete mindfulness activities pertaining to all three conditions (purpose, awareness, and connection). These exercises are expected to last 20 minutes per day for 5 days.

5-Day Daily Diary Assessment
Each night the participants will be sent a REDCap survey (via text message or email, depending on preference) to complete a nightly diary, which will take about 5 minutes to complete.

Follow-up Survey and Debrief Assessment
After completion of the 5-day protocol, participants will be scheduled for an online Zoom meeting where they will complete a 45-minute follow-up survey via REDCap, a debrief interview and be remunerated. The Zoom meetings will be between a research assistant and a single participant each. To improve retention RA's will monitor participants' RedCap activities and check-in with participants at least twice over the study period if they are not compliant. A final Zoom meeting will take place after the 5-day period. The participant will be sent a follow-up survey, which will take approximately 45 minutes to complete as well as a debriefing interview. Financial incentives will also be distributed at this time.

3.2 Study Population

SGM between the ages of 18 and 29 with access to active cell phone and Internet service.

3.3 Sample Size

Approximately 80 participants will be enrolled into this study.

3.4 Outcome Measures

3.4.1 Primary Outcome Measures

3.4.1.1 The overall objective of this study is to identify which combination of three components (i.e., purpose, connection, and awareness) meaningfully contribute to improvement in the primary outcomes of interest, which are stress reduction and increased well-being. First, to assess efficacy, multiple linear regression will be used to estimate effects of components on the mean change of stress (mean change in the Perceived Stress Scale [PSS] from baseline to follow-up) and well-being (mean change in the Satisfaction with Life Scale [SLS]). Intervention components will be effect coded to estimate main effects and two-way interactions of all three components. Second, to select the optimized intervention, the research team will meet to determine the intervention components that demonstrate empirical evidence of efficacy, as outlined above, will be considered candidates for the optimized intervention package based on procedures described by Collins et al.[16] Briefly, a component may be un-selected if it interacts with

another component to the extent that it undermines the effect of the second component. Alternatively, a component not originally considered for the optimized package may be included if it interacts with another component in a manner that enhances its effect.

3.4.1.2 We will perform multiple post-hoc analyses examining the effectiveness of the intervention at the daily level. First, most research suggest that mindfulness interventions take daily focus to be effective, thus, we will used linear mixed modeling techniques to understand how changes in the intervention effects may operate on the daily level. Second, we will examine the moderating effects of key sociodemographic characteristics (i.e., sex, race, etc.) and their intersection (i.e., race and sex) utilizing multi-level modeling techniques. All quantitative analyses we be completed in Stata v15.

4.0 SELECTION AND ENROLLMENT OF STUDY PARTICIPANTS

4.1 Inclusion Criteria

To be considered eligible for the proposed study, an individual must meet the following criteria:

1) Between 18–29 years

2) Must identify as a sexual minority (e.g., gay, bisexual, sexually fluid, etc.)

3) Must identify as an under-represented racial/ethnic minority

4) Have an active cell phone service and be able to access the cell phone 7 days a week between 6 p.m. and 6 a.m. the next morning

5) Be willing and able to receive up to 6 text messages per day

6) Have consistent Internet access 7 days a week between 6 p.m. and 6 a.m.

7) Have the ability to understand, read, and speak English

8) Willing to provide written informed consent.

4.2 Exclusion Criteria

Criteria for exclusion includes those outside the following criteria:

1) Not between 18–29 years

2) Does not identify as a sexual minority (e.g., gay, bisexual, sexually fluid, etc.)

3) Does not identify as an under-represented racial/ethnic minority

4) Does not have an active cell phone service and or ability to access the cell phone 7 days a week between 6 p.m. and 6 a.m. the next morning

5) Not willing and able to receive up to 6 text messages per day

6) Does not have consistent Internet access 7 days a week between 6 p.m. and 6 a.m.

7) Does not have the ability to understand, read, and speak English

8) Not willing to provide written informed consent.

4.3 Recruitment and Screening
Participants for this study will be identified via advertisement posted on social media platforms (e.g., Facebook, Instagram, etc.) and through emails containing the advertisement sent through listservs within NYU and LGBT community partners. These advertisements will direct interested persons to take the online survey screener via REDCap. If deemed eligible from the online screener, a member of the research staff will call or email, depending on preference, the potential participant to schedule a time to schedule a Zoom meeting to confirm eligibility and answer any questions regarding the study.

4.4 Retention Efforts
To increase the likelihood of retaining participants, automated text message reminders or emails, depending on participant preference, will be sent to participants every day during the course of the study as a reminder to complete their meditations and the nightly diary survey. Participants will be able to use their phone, computer, or tablet to complete their daily assessments.

4.5 Informed Consent
Once it is determined that the individual may qualify for the study, study details will be discussed, and all questions will be answered during the informed consent process. Signed informed consent from the individuals will be obtained before any study related procedures are performed via REDCap. See Appendix XVII for sample informed consent form.

Those individuals who refuse to provide signed consent to participate in the study will be asked if they are willing to provide their reason for declining participation, and if answered, the responses will be recorded in an anonymous manner.

4.6 Locator/Contact Information
Once it is determined that the participant is eligible and has consented for study participation, designated study staff will take the participant's contact information. The study staff member will then update this information in the Participant Identification Number (PID) Assignment Log. Information will be collected in the PID Assignment Log to allow the study staff to contact the participant. Research staff will confirm the

participant's working phone number and/or valid email address through which they can be reached. In addition, the participants will be asked if messages/text messages can be left at the numbers provided. Study staff will not leave messages unless expressly permitted to do so by the participant, which will also be documented on this form. If permission is given to leave messages site staff will assure participants that messages will contain no PHI information.

The PID Assignment Log will not contain any study data and will be maintained under double locks at the study site, separate from all study records, with access limited to designated site research personnel.

REDCap will also contain all study data and will be password-protected so only the designated study staff may access it.

5.0 STUDY PROCEDURES AND EVALUATION

See Appendix I
for a tabulated summary of the evaluations described below and their schedule of completion.

5.1 Screening via REDCap

The following evaluations will be performed at the Screening Visit to determine eligibility to participate in the study:

5.1.1 Demographics / Medical History

Demographics (date of birth, sex assigned at birth, self-identified gender at time of enrollment, race/ethnicity, and location of residence).

5.1.2 Determine access to cell phone and Internet services

Participants must verify that they have a personal cell phone and access to the Internet that they will be able to use during the hours between 6:00 PM until 6:00 AM the next morning for a total of 6 days. Participants must also be willing and able to use approximately 10 minutes of talk time and receive two text messages per day via cell phone.

5.2 Enrollment (Study Visit via Zoom #1)

Prior to the Zoom call, results of the screening evaluations will be reviewed by trained research assistants to confirm that the participant meets all eligibility requirements. The eligibility assessment must be done online before meeting with a study staff member. During the first visit, after a participant has consented, they will be assigned a Participant Identification Number (PID). The assignment will be recorded in the PID Assignment Log located on NYU Box. In the Participant Tracking log, their first and last names, email address, phone number, preferred method of contact (email, or text), and address are recorded as identification measures. This information will also be stored in REDCap under the participant's surveys. Following the completion of the consent form, the participant will also be randomized into one of the 8 interventions. This information will be recorded

in an Intervention Assignment Log as well as through a randomization form on REDCap. The following evaluations will be performed at the Enrollment Visit:

5.2.1 Baseline Assessment – CASI

After providing informed consent, the participants engage in the initial Baseline Assessment via CASI (see section 6.1 for specific measures included). This measure takes an average of 30 minutes to complete.

5.2.2 Daily Diary Completion and Healthy Minds App Training

Following the baseline measure, the participants are introduced to the Healthy Minds App where the meditation interventions will be administered. Participants are instructed on how to flow through the app and access their meditations.

The follow-up appointment (Visit 2, see section 5.4) is scheduled. Finally, the participant is asked if they have any remaining questions and provided with methods of contact if questions do arise during the course of the study.

The participant will begin the nightly daily diary and meditation(s) on the day after the enrollment visit. Research staff will send nightly diaries through email and daily reminders via text messaging or email, depending on participant preference.

5.3 Follow-up (Study Visit via Zoom #2) and Debrief

The following will be performed at Visit 2:

5.3.1 Debrief/follow-up assessment

The research staff will assess the participant's completion of the intervention and nightly diaries as well as determine whether there have been problems, reactivity, or untoward events as a result of completing the diary. See Appendix XV for the Debriefing Interview. Management of untoward events will be conducted per site-specific standards. See Section 8.2.3 for the monitoring and reporting requirements of untoward events.

5.3.2 Review "bank account" and provide compensation

The participant will receive the amount earned to compensate for their completion of the study, noted in their "bank accounts" or compensation log kept by the research staff. Participants will be paid through electronic cash transfer applications such as GiftBit. See section 8.3 for further details on compensation of participants.

5.4 Premature Discontinuation from the Study

Participants who discontinue from the study prior to Visit 2 will return for a premature discontinuation visit, preferably as close to the time the decision was made, either by the participant or the PI, to discontinue from the study. All evaluations scheduled for the Visit 2, including the debriefing interview, will be completed at the Premature Discontinuation Visit. At this time participants will also receive any money earned in their "bank accounts".

5.5 HMI Account Set Up

The following steps will be taken to get participants signed up for their HMI pp accounts:

1) Research assistant navigates to the proper URL:
    a. https://portal.hminnovations.org/activate/invitecodehere&participantId=participantidhere (capital I is important)
2) Replace the following with the correct information in the URL
    a. Participant ID
    b. Invite code (based on their randomization)
3) Paste the link in the web bar and fill in the requested information
    a. Participant name
    b. Participant email (PID@mailinator.com)
    c. Password
4) Research Assistant will be guided to enter a confirmation code, which they will receive on the Mailinator account (https://www.mailinator.com/).
5) Research assistant will download the Healthy Minds Program (HMP) app on their mobile device to double check the credentials they just created.
6) User will download the HMP app and enter the credentials given to them by the Research Assistant during the informed consent.
7) User will then be prompted to navigate through some sign-up steps. They will need to:
    a. Read and accept the Terms of Service & Privacy Policy

6.0 MEASURES

Measures are divided into four sections: (1) Baseline measures and follow-up, (2) Nightly diary measures, and (3) Process measure and (4) in-app Healthy Minds questions.

6.1 Baseline and Follow-Up Assessment

The following measures will be incorporated into the baseline assessment, which will be given to participants as part of the CASI on REDCap at Visit 1, and the follow-up assessment, which will be given to participants at Visit 2. This baseline assessment will also collect basic demographic and health information.

6.1.1 Primary constructs

The LGBT People of Color Micro-Aggressions Scale (Balsam, Molina, Beadnell, Simoni & Walters, 2011): To assess microaggressions specific to LGBT racial/ethnic minorities. Assessed with groups of LGBT young adults and adult aged 18 and up using a self-reported 18 item scale. Internal consistency overall was 0.92. The scale consists of 3 subscales with the following internal consistency: LGBT Racism: 0.89, POC Heterosexism: 0.81, and LGBT. See Appendix II.

Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977): Mental health related to self-reported depression symptoms will be assessed using 20 items from the CES-D. Across various studies, the CES-D has been shown to be a reliable measure (Knight, Williams, McGee & Olaman, 1997; Radloff, 1977; Roberts, Vernon, &

Rhoades, 1989). Internal consistency reliability was between 0.85 and 0.99 for this scale. See Appendix III.

Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983): Validity has been demonstrated among various groups of college students, and is designed to measure the degree to which one perceives specific life events as stressful. This item is administered through a self-report scale format and consists of 14 questions. There has been a demonstrated internal consistency reliability of between .84 and .86. See Appendix IV.

***Satisfaction with Life Scale* (SLS) (**Diener, Emmons, Larsen, & Griffin, 1985): Validity has been demonstrated among various groups of college students as well as one group of elderly individuals. The measure is designed to measure global satisfaction as well as subjective well-being through a self-report scale format consisting of 5 questions. Internal consistency reliability was 0.87. See Appendix V.

Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant, Hiller, Fishwick, et al., 2007): This self-reported scale measures positive mental health and well-being with 14 questions. Validity has been demonstrated among various groups of students as well as the general population in Scotland. Internal consistency reliability was between 0.89 and 0.91 for this scale. See Appendix VI.

Subjective Happiness Scale (Lyubomirsky & Lepper, 1999): This self-reported scale consists of 4 items that assess subjective happiness. The measure was validated in groups of students and adults within the United States. Internal consistency reliability was between 0.79 and 0.94. See Appendix VIII.

Distress Tolerance Scale (Simons & Gaher, 2005): This scale is being used to assess emotional distress tolerance with subscale breakdowns, consisting of 15 items. It was validated among groups of college students. The overall internal consistency was 0.82. The internal consistency of the subscales are as follows: Tolerance: 0.72, Absorption: 0.82, Appraisal: 0.78, and Regulation: 0.70. See Appendix VIII.

Barratt Impulsiveness Scale (BS-11) (Patton, Standford & Barratt, 1995): This self-reported scale assesses impulsivity related to personality and anxiety related traits using 30 items. Validity has been demonstrated using a variety of groups including: undergraduate students, prison inmates, psychiatric patients, and substance-abuse patients. Internal consistency was between 0.79 and 0.82. See Appendix IX.

The Penn State Worry Questionnaire (PSQW) (Meyer, Miller, Metzger, & Borkovec, 1990): The degree to which trait to worry is expressed is measured in this 16 item scale. Validity has been demonstrated using groups of undergraduates, psychiatric patients, and a sample of those with depression and/or anxiety. Internal consistency was between 0.94 and 0.96. See Appendix X.

Coping with Discrimination Scale (CDS) (Wei, Alvarez, Ku, Russel, & Bonnet, 2010): This self-reported scale assesses coping strategies utilized by those who experience

discrimination using 25 items. Validity was demonstrated using focus groups of minority college students and general population of racial/ethnic minority adults. The scale has several subcategories with varying internal consistencies: education: 0.91, internalization: 0.91, drug and alcohol use: 0.64, resistance: 0.80, and detachment: 0.63. See Appendix XI.

6.2 Nightly Diary Measures

The nightly diary assessment has been developed to measure mood and stressful events as part of the CASI on REDCap. The following measures are included in each daily diary:

Daily Inventory of Stressful Events (DISE) (Almeida, Wethington, & Kessler, 2002): This item is designed to measure the number of encounters with specific stree-inducing events on a daily basis. It has displayed validity with a national sample of adults and consists of 7 self-reported questions. See Appendix XIII.

Positive and Negative Affect Schedule (PANAS) (Watson, Clark, Telegen, 1988): Mood will be assessed using the 20 items from the PANAS. The sample was validated using groups of undergraduates and adults. Internal consistency for positive affect ranged from 0.86 to 0.90. Internal consistency for negative affect ranged from 0.84 to 0.87. See Appendix XIV.

6.3 Debriefing Interview

This assessment will be given to participants during Visit 2. The debriefing interview consists of items regarding the experience of the participant in the study. The debriefing interview would be part of the CASI on REDCap and research staff will review collected responses. See Appendix XV.

6.4 In-App Healthy Minds Questions

Three questions will be asked to participants as they flow through their daily meditations. The questions can be found in Appendix XVI.

7.0 DATA COLLECTION AND SITE MONITORING

All data collection and monitoring will be done remotely. This study is internet-based.

7.1 Data Records

Participant-related study information will be identified through the PID, CASI, and debriefing interview files. Participant names or other personally identifying information will not be used on any study documents. All study-related information will be kept in double-locked, limited access areas at each study site. A log that links the names of participants to their PID numbers will also be kept under double locks separate from all other research

records, accessible only to the study staff. As described in Section 4.6, the PID Assignment Log and REDCap information will also be stored in the same manner, accessible only to those personnel noted above. Original source documents for individual participants will be maintained in the locked office of the PI and will be accessible only to the study staff.

7.2 Data Collection

7.2.1 Nightly diary data

The nightly structured diary will be completed after all assigned daily meditations are complete and before participants go to bed during the 5-day period. The measurements will take 10-15 minutes to complete a day. For the diary component of the study, all measurements are validated and consistently used in daily diary studies. The diaries will be collected through REDCap. REDCap was designed to satisfy the standards of social science IRBs regarding online data collection. Participants will be provided an email and/or text message that contains a unique URL in order to log into their daily diary survey. A reminder text/email will be sent daily to participants, which will not disclose the nature of the study or any PHI. The unique URL will link the participant's responses with their assigned PID and unique record in REDCap. Only participants that have provided their email address and phone number can receive the link and email/text reminders.

7.2.2 Computer Assisted Self-Interview (CASI)

All data collected using a CASI will be installed on a portable laptop computer. The CASI responses will remain confidential; no personal identifying information will be collected during the computer session. The participant's unique PID number will be used in order to link the interview responses to the participant's meditation data

8.0 PARTICIPANT MANAGEMENT

8.1 Tracking Participants/Follow-Up

All participants are required to complete their daily diaries prior to the end of the day, before the participant goes to bed. The assigned meditations must be completed prior to the diary completion. Email and/or text reminders will be sent to participants daily. Diaries completed after the assigned period will not be included in the final analysis.

Participants who lose cell phone or Internet access after beginning the study will be instructed to inform study staff immediately. The participant may continue on study if access to services is restored by the next check-in. If at the next check-in study visit, access to services is not yet restored, the participant will be prematurely discontinued from the study.

If a participant misses two consecutive days of diary completion, the Study Coordinator should contact the participant on the third day. If the Study Coordinator is not able to reach the participant within 24 hours of the first contact attempt (i.e., by the fourth day),

he/she will notify the PI. The Study Coordinator will include the number of days missed and the reason(s) the participant reported for not completing the daily diary. The PI will provide guidance to the site whether the participant should be prematurely discontinued from the study.

All study participants will be contacted before each study visit (the enrollment visit and the debriefing visit). Multiple contact methods will be used or youth who are difficult to reach (e.g., mail, alternate phone numbers, email, text message). Participants will be asked whether messages can be left for each of the phone numbers that they provide. They will be informed that messages will not contain any information regarding the nature of the project.

8.2 Study Zoom Meeting Management

8.2.1 Scheduling zooms and study visit windows

Study visits via Zoom will be arranged through email contact with the participant. A list of appointment times will be sent to those eligible as well as current study participants for enrollment and debriefing study visits. The study staff member will attempt to contact the participant up to three times. If the participant was unable to be reached after three attempts, they will no longer be contacted.

All study visits will be conducted according to the study schedule in Appendix I. There should be no more than 14 days between screening and enrollment processes. It is acceptable to complete the screening and enrollment processes in the same day. Participants must be re-screened if there is more than 14 days between screening and potential enrollment.

If any of the follow-up Zoom visits cannot be arranged on the target date, the preferred timeframe for these visits would be within three calendar days of the target visit date (Day 6).

8.2.2 Completing the CASI

The participant is reminded of their right to discontinue at any point in time with no penalty and the right to leave without any questions unanswered. The study staff can assist with CASI tutorials. The participant is sent a unique URL link to complete all CASIs on their own personal devices, e.g., laptop or smartphone, through the secure REDCap interface. If the CASI is discontinued for any reason, the participant can plan to return to finish the survey at another time within 14 days of the screening visit. If the CASI is not completed at that time, the participant will be prematurely discontinued form the study.

8.2.3 Debriefing and referral procedures for CASI participants

The participant will be debriefed about possible reactions to answering questions of a sensitive nature, such as short-term feelings of sadness or anxiety. Participants will be instructed to contact study personnel or to consult the list of referrals provided if feelings persist or worsen after several days. Referrals for mental health services will be provided to all participants, if warranted. See Appendix XV for sample of debriefing interview form.

At the completion of the CASI, the study staff member present during the session will ask the following question: *"Is there anything else about the interview that you would like to discuss?*" If the respondent says "*no,*" they should be thanked for their participation. The respondent will be given contact information for mental health personnel and informed that they can also contact study personnel in the event that issues or concerns arise later.

8.3 Compensation

Participants will be paid $10 for each assessment completed following a Zoom meeting (baseline and follow-up surveys). Additionally, participants will be compensated $3 for each nightly diary completed over the 5-day period. If they complete at least four of the nightly diaries, they will be compensated an additional $12. If they recruit another participant into the study, they will be given $5 for each eligible individual that enrolls in the study. If the participant choses to leave or are withdrawn from the study for any reason before finishing the entire study, they will be paid for what they had accrued up to the point of withdrawal. Participants will be paid using GiftBit Visa digital gift cards, which will function like cash. Not including participant recruitment, the total amount a participant can receive is $47 (($10 x 2) + ($3 x 5) + $12 = $47).

8.4 Intervening on "Social Harms"

While participants will be informed that they may refuse to answer any question at any time, responses or reactions to certain questions may indicate distress on the part of the participants. If at any time during the study, a participant divulges that they are at risk for harm, including but not limited to being abused or experiencing violence, if harm is suspected or likely, or if the participant states they are suicidal/homicidal, measures will be taken to ensure their safety. Reporting will be done as appropriate to the situation and the legal statutes, including reporting to child protection agencies or other appropriate agencies and referrals will be provided to appropriate support, counseling, or treatment resources.

Refer to Section 8.2.3 for debriefing and referral procedures after the participant completes the CASI.

8.5 Criteria for Premature Discontinuation

Participants may be discontinued prematurely from the study if any of the following occurs:

- Participant does not complete diary entry protocol for more than 2 days, except under extenuating circumstances.

- Participant fails to comply with the study requirements in such a way that interferes with the validity of the study results, as deemed by the PI in consultation with the team.

- Investigator determines that further participation would be detrimental to the health or well-being of the subject.

- Participant develops a health problem and needs treatment that would affect the results of this study (e.g., hospitalization or other conditions that interfere with usual daily activities).

- Participant withdraws consent.

- Participant is lost to follow-up.

- Study is stopped by a government agency such as the Institutional Review Board (IRB)

- Study has to stop for other administrative reasons.

8.5.1 Premature Study Discontinuation

If a participant meets any of the above premature discontinuation criteria before Visit 2, a Premature Study Discontinuation Visit will be conducted, preferably as close to the time the decision was made, either by the participant or the PI, to discontinue from the study.

9.0 HUMAN SUBJECTS

This study will be conducted in compliance with the protocol, New York University Institutional Review Board (NYU IRB), ICH Good Clinical Practice (GCP) guidelines, and 45 CFR Part 46.

9.1 Participants' Confidentiality

All questionnaires, including the CASI, evaluation forms, reports, and other research-related records will be identified by a coded number only, to maintain participant confidentiality. All computer entry and networking programs will be done with coded numbers only. Clinical information will not be released without written permission of the participant

9.2 Risks and Benefits

9.2.1 Risks

Risks to participants in this research include:
Risk Category: Research not involving greater than minimal risk (45 CFR §46.404 and 21 CFR §50.51)

Participation in this study poses no more harms or discomforts to research participants than they may experience in normal daily life or during routine physical or psychological examinations or tests.

Participation in this study does not involve any physical risk. However, there is some risk of emotional discomfort or distress due to the personal nature of some of the CASI questions, which will be completed at the Enrollment Visit. Participants will be informed that they are free to decline to answer any questions or withdraw from participation at any time without penalty. Participants will be instructed to contact study personnel or to consult the list of referrals provided if feelings persist or worsen after several days.

Participants may express distress when completing the daily diary. Participants must be informed to contact study personnel or to consult the list of referrals provided if they are in distress so that appropriate assistance can be provided.

Every effort will be made to keep the participants' study and personal information private and confidential, but absolute confidentiality cannot be guaranteed.

9.2.2 Benefits

There is no specific direct benefit to be gained through participation in this study. There is indirect benefit in that the information gained from participation in the study might provide increased knowledge to the scientific community and clinical practice.

9.3 Institutional Review Board and Constitutional Consent

This protocol, the informed consent documents and any subsequent modifications will be reviewed and approved by the IRB responsible for the oversight of the study (the NYU IRB). The informed consent will describe the purpose of the study, the procedures to be followed, and the risks and benefits of participation.

Signed informed consent will be obtained from the participant. The signed original consent form will be kept on file at the site and a copy of the consent form will be given to the participant. A sample informed consent form is included in Appendix XVII.

9.4 45 CFR Parts 160 and 164 Standards for Privacy of Individually Identifiable Health Information ("Privacy Rule" Pursuant to the Health Insurance Portability and Accountability Act [HIPAA])

Each site is responsible for adherence to the individual institutions' HIPAA policies and procedures.

10.0 Statistical Analysis Plan

10.1. Main analyses. The overall objective of the proposed study is to identify which combination of four components meaningfully contributes to improvement in the primary outcome, stress reduction and increased well-being. First, to assess efficacy, multiple linear regression will be used to estimate effects of components on the mean change of stress (mean change in the PSS from baseline to follow-up) and well- being (mean change in the SLS). Intervention components will be effect coded to estimate main effects and two-way interactions of all four components. Second, to select the optimized intervention, the research team will meet to determine the intervention components that demonstrate empirical evidence of efficacy, as outlined above, will be considered candidates for the optimized intervention package based on procedures described by Collins et al.[16] Briefly, a component may be unselected if it interacts with another component to the extent that it undermines the effect of the second component. Alternatively, a component not originally considered for the optimized package may be included if it interacts with another component in a manner that enhances its effect.

10.2. Additional analyses. We will perform multiple post-hoc analyses examining the effectiveness of the intervention at the daily level. First, most research suggest that mindfulness interventions take daily focus to be effective, thus, we will used linear mixed modeling techniques to understand how changes in the intervention effects may operate on the daily level. Second, we will examine the moderating effects of key sociodemographic characteristics (e.g., sex, race, etc.) and their intersection (e.g., race and sex) utilizing multi-level modeling techniques. All quantitative analyses we be completed in Stata v15.

10.3. Statement of potential results. The results of this optimization study will inform our full scale MOST daily diary study aimed at reducing stress and improving well-being among SGM of color. Conducting this study will result in the development of an optimized intervention as well as inform a larger NIH grant (FOA: PAR-19-384).

10.4. Power analysis. For the primary outcomes of stress reduction and increased well-being at the follow-up, we used FactorialPowerPlan[17] package in R software package to estimate the sample size needed for individual main effects of intervention components corresponding to a pretest-posttest correlation of .6, a medium effect size as standardized mean difference (d = .5), given α=.05, a sample size of 80 provides 78% power.

10.5. Main study measures. At baseline and follow-up validated scales will be utilized to measure LGBT People of Color Microaggressions Scale, mental health (CES-D), and the primary outcomes of perceived stress (PSS), and well-being (SLS). Momentary assessments will ask about current mood and stress states on a Likert-scale ranging from 1 = *Very Poor* to 5 = *Very Good*. The momentary assessment will ask participants if they experienced an instance of discrimination between the time of the current prompt and the last prompt. If they report an instance of discrimination, they will be prompted to select what they think the main reason for this experience was (e.g., race/ethnicity, race, AND sexual orientation). Lastly, nightly diaries will include a modified version of the discrimination measures used in baseline as well as the DISE to measure the impact of daily stressful events and the PANAS to assess mood. Lastly, the debrief survey administered during the follow-up interview will assess acceptability of the intervention (e.g., pros and cons of the application and module, time commitment, etc.).

10.6. Multidisciplinary research team. The quality and feasibility of this study is greatly improved by the interdisciplinary nature of the team. Dr. Stephanie Cook is an early-stage investigator and is a new affiliate of IHDSC. She is also an expert in intensive longitudinal designs (e.g., daily diaries) to assess the associations between minority stressors and health among racial/ethnic sexual minority EAs. Dr. Erin Godfrey provides expertise in community/developmental psychological theories around youth's experience and justification of inequity and intersectionality that will inform an understanding of how the components are particularly useful among young SGM of color. Dr. Shabnam Javdani provides insight from counseling/clinical psychology theories on connections between mindfulness, stress and wellbeing and her experience intervening using mindfulness skills in juvenile justice-involved youth. The team representatives of Healthy Minds Innovations include Dr. Cortland Dahl, PhD, who is an expert in mindfulness intervention design and implementation and is the Chief Contemplative Officer at Healthy Minds as well as a Research Scientist at the University of Wisconsin-Madison and Andrew Burroughs who is VP of Customer Engagement and the lead engineer on the project (responsible for modifying the application).

10.7. Feasibility and timeline. Dr. Cook has successfully conducted three daily diary studies with samples ranging from 35-113 SGM of color. Further, Dr. Cook has successfully adhered to strict study timelines over short timeframes (e.g., 3-6 months). In addition, Drs. Godfrey and Javdani have experience conducting community-based interventions with potentially vulnerable populations. Thus, the proposed intervention and timeline are feasible. Much of the study set up including the IRB application (e.g. CASI programming, Healthy Minds app modification) is currently in progress. At the start of the study, we plan to have 6-months of data collection with an average enrollment of 27 participants per month. We will start cleaning and formatting the data in month 3 and will conduct the overall analysis of the optimization study in months 7-8. All post-hoc analyses will be completed in months 8-9. We will disseminate our findings through a peer reviewed publication and community-based organization events between months 8-10. Lastly, the team will hold bi-weekly meetings starting in month 8 to prepare for the March 2021 NIH submission (FOA: PAR-19-384) based on this preliminary work.

APPENDIX I: SCHEDULE OF EVALUATIONS

	Online Screening	**Zoom Visit 1**	**Text 1 Follow-up (Day 1)**	**Text 2 Follow-up (Day 2)**	**Text 3 Follow-up (Day 3)**	**Text 4 Follow-up (Day 4)**	**Text 5 Follow-up (Day 5)**	**Zoom Visit 2 (Day 6)**
Screening questionnaires -Demographics -Internet/phone access	X							
Screening results reviewed for eligibility		X						
Consent form sent and signed		X						
Baseline assessment via CASI		X						
Follow-up Visit 2 Scheduled		X						
Meditations and Daily Diary completion reminders			X	X	X	X	X	
Contact information confirmed by participant		X						
Assessment of completion of daily diaries and meditations during the course of the study				X			X	X
Send follow-up assessment								X
Review bank account / make payment								X
Semi-structured debriefing interview								X

APPENDIX II: The LGBT People of Color Micro-Aggressions Scale
Balsam, Molina, Beadnell, Simoni & Walters, 2011

Response Categories

0	1	2	3	4	5
Did not happen/not applicable to me	It happened, and it bothered me *not at all*	It happened and it bothered me *a little bit*	It happened, and it bothered me *moderately*	It happened, and it bothered me *quite a bit*	It happened, and it bothered me *extremely*

For each statement, indicate if you have had this experience since completing your last daily structured diary and if so, how much it bothered you.

1. Not being accepted by other people of your race/ethnicity because you are LGBT.
2. Not being able to trust White LGBT people.
3. Feeling misunderstood by White LGBT people.
4. Feeling misunderstood by people in your ethnic/racial community.
5. Having to educate White LGBT people about race issues.
6. Being the token LGBT person of color in groups or organizations.
7. Feeling invisible because you are LGBT.
8. Being rejected by other LGBT people of your same race/ethnicity.
9. Being rejected by potential dating or sexual partners because of your race/ethnicity.
10. Being seen as a sex object by other LGBT people because of your race/ethnicity.
11. Reading personal ads that say “White people only.”
12. Feeling like White LGBT people are only interested in you for your appearance.
13. Difficulty finding friends who are LGBT and from your racial/ethnic background.
14. Being told that “race isn’t important” by White LGBT people.
15. Being discriminated against by other LGBT people of color because of your race.
16. White LGBT people saying things that are racist.
17. Feeling unwelcome at groups or events in your racial/ethnic community.
18. Not having any LGBT people of color as positive role models.

APPENDIX III: The Center for Epidemiological Studies Depression Scale
Radloff, 1977

Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way since your last nightly survey.

1 RARELY OR NONE OF THE TIME	2 SOME OF A LITTLE OF THE TIME	3 OCCASIONALLY OR A MODERATE AMOUNT OF TIME	4 MOST OR ALL OF THE TIME

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.
20. I could not "get going."

APPENDIX IV: Perceived Stress Scale
Cohen, Kamarck, & Mermelstein, 1983

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:
1. Never
2. Almost never
3. Sometimes
4. Fairly often
5. Very often
6. Refuse to answer

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you dealt successfully with irritating life hassles?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

APPENDIX V: Satisfaction with Life Scale
Diener, Emmons, Larsen, & Griffin, 1985

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number for each item. Please be open and honest in your responding.

The 7-point scale is: 1= strongly disagree, 2= disagree, 3=slightly disagree, 4= neither agree nor disagree, 5= slightly agree, 6= agree, 7= strongly agree.

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

APPENDIX VI: Warwick-Edinburgh Mental Well-being Scale
Tennant, Hiller, Fishwick, et al., 2007

Below are some statements about feelings and thoughts. Please select what best describes your experiences of each over the last two weeks.

Response Categories

1 None of the time	2 Rarely	3 Some of the time	4 Often	5 All of the time

1. I've been feeling optimistic about the future
2. I've been feeling useful
3. I've been feeling relaxed
4. I've been feeling interested in other people
5. I've had energy to spare
6. I've been dealing with problems well
7. I've been thinking clearly
8. I've been feeling good about myself
9. I've been feeling close to other people
10. I've been feeling confident
11. I've been able to make up my own mind about things
12. I've been feeling loved
13. I've been interested in new things
14. I've been feeling cheerful

APPENDIX VII: Subjective Happiness Scale
Lyubomirsky & Lepper, 1999

For each of the following statements and/or questions, please select the point on the scale that you feel is most appropriate in describing
you.

1. In general, I consider myself:
1, Not a very happy person
2, 2
3, 3
4, 4
5, 5
6, 6
7, A very happy person

2. Compared to most of my peers, I consider myself:
1, Less happy
2, 2
3, 3
4, 4
5, 5
6, 6
7, More happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterize you?
1, Not at all
2, 2
3, 3
4, 4
5, 5
6, 6
7, A great deal

4. Some people are generally not happy. Although they are not depressed, they never seem as happy as they might be. To what extend does this characterization describe you?
1, Not at all
2, 2
3, 3
4, 4
5, 5
6, 6
7, A great deal

APPENDIX VIII: Distress Tolerance Scale
Simons & Gaher, 2005

Think of times that you feel distressed or upset. Select the item from the menu that best describes your beliefs about feeling distressed or upset.

1. Strongly agree
2. Mildly agree
3. Agree and disagree equally
4. Mildly disagree
5. Strongly disagree

1. Feeling distressed or upset is unbearable to me.
2. When I feel distressed or upset, all I can think about is how bad I feel.
3. I can't handle feeling distressed or upset.
4. My feelings of distress are so intense that they completely take over.
5. There's nothing worse than feeling distressed or upset.
6. I can tolerate being distressed or upset as well as most people.
7. My feelings of distress or being upset are not acceptable.
8. I'll do anything to avoid feeling distressed or upset.
9. Other people seem to be able to tolerate feeling distressed or upset better than I can.
10. Being distressed or upset is always a major ordeal for me.
11. I am ashamed of myself when I feel distressed or upset.
12. My feelings of distress or being upset scare me.
13. I'll do anything to stop feeling distressed or upset.
14. When I feel distressed or upset, I must do something about it immediately.
15. When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels.

APPENDIX IX: Barratt Impulsiveness Scale (BS-11)
Patton, Standford & Barratt, 1995

People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and select the correct option. Do not spend too much time on any statement. Answer quickly and honestly.

Response Categories

1 Rarely/Never	2 Occasionally	3 Often	4 Almost Always/Always

1. I plan tasks carefully.
2. I do things without thinking.
3. I make-up my mind quickly.
4. I am happy-go-lucky.
5. I don't "pay attention."
6. I have "racing thoughts".
7. I plan trips well ahead of time.
8. I am self-controlled.
9. I concentrate easily.
10. I save regularly.
11. I "squirm" at plays or lectures.
12. I am a careful thinker.
13. I plan for job security.
14. I say things without thinking.
15. I like to think about complex problems.
16. I change jobs.
17. I act "on impulse".
18. I get easily bored when solving thought problems.
19. I act on the spur of the moment.
20. I am a steady thinker.
21. I change residences.
22. I but things on impulse.
23. I can only think about one thing at a time.
24. I change hobbies.
25. I spend or charge more than I earn.
26. I often have extraneous thoughts when thinking.
27. I am more interested in the present than the future.
28. I am restless at the theater or lectures.
29. I like puzzles.
30. I am future oriented.

APPENDIX X: The Penn State Worry Questionnaire
Meyer, Miller, Metzger, & Borkovec, 1990

Rate each of the following statements on a scale of 1 (“not at all typical of me”) to 5 (“very typical of me”).

Response Categories

1 Not at all typical of me	2	3	4	5 Very typical of me

1. If I do not have enough time to do everything, I do not worry about it.
2. My worries overwhelm me.
3. I do not tend to worry about things.
4. Many situations make me worry.
5. I know I should not worry about things, but I just cannot help it.
6. When I am under pressure, I worry a lot.
7. I am always worrying about something.
8. I find it easy to dismiss worrisome thoughts.
9. As soon as I finish one task, I start to worry about everything else I have to do.
10. I never worry about anything.
11. When there is nothing more I can do about a concern, I do not worry about it any more.
12. I have been a worrier all my life.
13. I notice that I have been worrying about things.
14. Once I start worrying, I cannot stop.
15. I worry all the time.
16. I worry about projects until they are all done.

APPENDIX XI: Coping with Discrimination Scale
Wei, Alvarez, Ku, Russel, & Bonnet, 2010

This is a list of strategies that some people use to deal with their experiences of discrimination. Please respond to the following items as honestly as possible to reflect how much each strategy best describes the ways you cope with discrimination. There are no right or wrong answers.

Response Categories

1 Never like me	2 A little like me	3 Sometimes like me	4 Often like me	5 Usually like me

1. I try to educate people so that they are aware of discrimination.
2. I do not talk with others about my feelings.
3. I try to stop thinking about it by taking alcohol or drugs.
4. I respond by attacking others' ignorant beliefs.
5. I wonder if I did something to provoke this incident.
6. I educate myself to be better prepared to deal with discrimination.
7. I've stopped trying to do anything.
8. I use drugs or alcohol to take my mind off things.
9. I get into an argument with the person.
10. I wonder if I did something to offend others.
11. I try to stop discrimination at the societal level.
12. It's hard for me to seek emotional support from other people.
13. I do not use drugs or alcohol to help me forget about discrimination.
14. I do not directly challenge the person.
15. I wonder if I did something wrong.
16. I help people to be better prepared to deal with discrimination.
17. I do not have anyone to turn to for support.
18. I do not use alcohol or drugs to help me deal with it.
19. I try not to fight with the person who offended me.
20. I believe I may have triggered the incident.
21. I educate others about the negative impact of discrimination.
22. I have no idea what to do.
23. I use drugs or alcohol to numb my feelings.
24. I directly challenge the person who offended me.
25. I do not think that I caused this event to happen.

APPENDIX XII: Momentary Assessments Measures

1. Since your last momentary survey, have you consumed an alcoholic beverage? If so, how long, in minutes and/or hours, has it been since you consumed an alcoholic beverage?
1 = Yes
0 = No

1a. If so, how long, in minutes and/or hours, has it been since you consumed an alcoholic beverage?
Fill in the blank

2. Since your last momentary survey, have you used any recreational drugs (e.g. marijuana, ecstasy, speed, cocaine, heroin, etc.)?
1 = Yes
0 = No

2a. If so, how long, in minutes and/or hours, has it been since you used recreational drugs?
Fill in the blank

3. Since your last momentary survey, have you smoked?
1 = Yes
0 = No

3a. If so, how long, in minutes and/or hours, has it been since you smoked?
Fill in the blank

4. How is your mood?
1 = Poor
2
3
4
5 = Good

5. How stressed do you feel?
1 = Not very stressed
2
3
4
5 = Very stressed

6. Did you experience an instance of discrimination based on your race/ethnicity between now and the last time you provided momentary survey?
1 = Yes
0 = No
2 = *Not sure*

7. Did you experience an instance of discrimination based on your sexuality between now and the last time you provided momentary survey?
1 = Yes
0 = No
2 = *Not sure*

8. Are there any other things that have occurred between now and the time you completed your last momentary survey?
Fill in the blank

APPENDIX XIII: Daily Inventory of Stressful Events
Almeida, Wethington, & Kessler, 2002

RESPONSE CATEGORIES

1 YES	2 NO	3 DON'T KNOW	4 REFUSE TO ANSWER

1. Did you have an argument or disagreement since filling out your nightly survey last night?
2. Since filling out your nightly survey last night, did anything happen that you could have argued about but you decided to let pass in order to avoid a disagreement?
3. Since filling out your nightly survey last night, did anything happen at work or school (other than what you already mentioned) that most people would consider stressful?
4. Since filling out your nightly survey last night, did anything happen at home (other than what you already mentioned) that most people would consider stressful?
5. Many people experience discrimination on the basis of such things as race, sex, or age. Did anything like this happen to you since filling out your nightly survey last night?
6. Since filling out your nightly survey last night, did anything happen to a close friend or relative (other than what you've already mentioned) that turned out to be stressful for you?
7. Did anything else happen to you since filling out your nightly survey last night that people would consider stressful?

If yes to any of the above, the following question would be prompted each time.

Response Categories

1 Not at all	2 Not very	3 Somewhat	4 Very	5 Don't Know

If yes, how stressful was this for you?

APPENDIX XIV: Positive and Negative Affect Schedule
Watson, Clark, Tellegen, 1988

Response Categories

1 Very slightly or not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

1. _____ interested
2. _____ irritable
3. _____ distressed
4. _____ alert
5. _____ excited
6. _____ ashamed
7. _____ upset
8. _____ inspired
9. _____ strong
10. _____ nervous
11. _____ guilty
12. _____ determined
13. _____ scared
14. _____ attentive
15. _____ hostile
16. _____ jittery
17. _____ enthusiastic
18. _____ active
19. _____ proud
20. _____ afraid

APPENDIX XV: Debriefing Survey

1. How would you describe the experience of documenting your instances of discrimination on a daily basis? Was it a good experience? A bad experience? Why?
Fill in the blank

2. How would you describe documenting your mood on a daily basis? Was it easy to assess your mood at the time?
Fill in the blank

3. Did you experience any stress, anxiety, or other problems during the 5-day study period? These issues did not have to result specifically from participating in the study, although we are particularly interested if the study caused any stress or anxiety to you.
Fill in the blank

4. Was being called two times during the course of the study an obnoxious or annoying experience?
Fill in the blank

5. Did your perceptions of **discrimination** change (increase or decrease) as a result of participating in the study? If so, why do you think it changed?
Fill in the blank

6. Did your **mood** change (increase or decrease) as a result of participating in the study? If so, why do you think it changed?
Fill in the blank

7. What did you think of the incentive structure in the study? Did the incentive increase your willingness to take the calls?
Fill in the blank

APPENDIX XVI: Pre and Post In-App Meditation Questions

The following questions are asked to participants before and after each meditation practice within the Healthy Minds smartphone application.

Pre-Meditation Questions

How is your mood?
1 = Poor
2 = Fair
3 = Good
4 = Very Good
5 = Excellent

How stressed do you feel?
1 = Not at all stressed
2 = Slightly stressed
3 = Somewhat stressed
4 = Very stressed
5 = Extremely stressed

Post-Meditation Questions

On a scale of 1 (low) to 10 (high), how would you rate the overall quality of your meditation during the practice?
1 (low)
2
3
4
5
6
7
8
9
10 (high)

How is your mood?
1 = Poor
2 = Fair
3 = Good
4 = Very Good
5 = Excellent

How stressed do you feel?
1 = Not at all stressed
2 = Slightly stressed
3 = Somewhat stressed
4 = Very stressed
5 = Extremely stressed

APPENDIX XVII: Consent Form

IRB IRB-FY2020-4338: INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES: Reducing Daily Stress Among Sexual and Gender Minorities (the REDUCE Study)

WHAT IS THE PURPOSE OF THIS STUDY?

You have been invited to take part in a study to learn more about which components of mindfulness-based interventions are the most effective at reducing stress and promoting well-being in emerging adult (EA) sexual and gender minorities (SGM): awareness, connection and purpose. This study will be conducted by Dr. Stephanie H. Cook, Department of Biostatistics and Department of Social Behavioral Science, School of Global Public Health, New York University. If you agree to be in this study, you will be asked to do the following:

1. Attend an online meeting to be randomized into one of 8 conditions, complete a 45-minute confidential survey, and protocol training
2. Complete 5-day daily diaries along with the randomized mindfulness interventions
3. Attend a online meeting after the 5-day protocol to complete a 45-minute follow-up confidential survey and debrief interview

Participation in this study is voluntary. You may refuse to participate or withdraw at any time without penalty. Please read the rest of this consent form for more information about the study. Please reference the study # (IRB-FY2020-4338) when contacting the IRB (UCAIHS).

WHAT IS INVOLVED?

You are being asked to take part in this study because you are between the ages of 18-29, identify as a sexual minority, identify as an under-represented racial/ethnic minority, have active cell phone service, consistent internet access and feel comfortable completing the study in English.

Participation in this study will involve 2 online visits and participation in a 5-day protocol utilizing the mindfulness interventions and daily diaries.

During the first online visit, you will complete an 45-minute online survey. You will receive information on how to complete the daily diaries and mindfulness intervention (awareness, connection and purpose).

During each of the 5 days, you will be asked to log into the Healthy Minds app and listen to meditations that correspond to your selected randomization. The Health Minds app will deliver a 10-minute guided meditation focused on awareness, connection and/or purpose. Nightly daily diaries will be collected each day.

During the second online visit, you will complete 45-minute follow-up online survey and a 15-minute debriefing interview.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS OF PARTICIPATING IN THIS STUDY?

The risks involved in this study are believed to be minimal. Although every effort will be made to prevent it, you may find the sensitive nature of some of the questions upsetting. In that event, the investigator will provide you with a referral to a counselor with whom you may discuss your feelings.

ARE THERE ANY BENEFITS TO YOU PARTICIPATING IN THIS STUDY?

Although you will receive no direct benefits, this research may help the investigator understand which components of mindfulness-based interventions are the most effective at reducing stress and promoting well-being in SGM.

DO YOU HAVE TO TAKE PART IN THIS STUDY?

Participation in this study is voluntary. You may chose to participate or withdraw at any time without penalty. You have the right to skip or not answer any questions you prefer not to answer.

WILL INFORMATION YOU PROVIDE BE KEPT CONFIDENTIAL?

Confidentiality of your research records will be strictly maintained by using unique identification numbers instead of your name on all forms required for this study. Your name or any other identifying information will never be linked to your survey data or your daily diaries. The Principal Investigator will ensure that all data will be securely stored electronically. The unique identification code will not be used to link the information back to you without your permission. You will not be identified in any publications or presentations. Information not containing identifiers may be used in future research, shared with other researchers, or placed in a data repository without your additional consent.

WILL YOU RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?

You will be paid $10 at for completing the baseline and follow-up assessments. Additionally, you will be compensated with $3 for each nightly diary completed over the 5-day period. Further, if you complete at least four of the nightly diaries, you will be compensated an additional $12. If you recruit a participant, you will be given $5 for each eligible individual that enrolls in the study. If you chose to leave or are withdrawn from the study for any reason before finishing the entire study, you will be paid for what was completed prior to withdrawal. Compensation will be paid through cash applications such as Giftbit.

WHAT SHOULD YOU DO IF YOU HAVE ANY QUESTIONS?

If there is anything about the study or your participation that is unclear or that you do not understand, or if you have questions or wish to report a research-related problem, you may contact Dr. Stephanie Cook at (212) 992-5635. For questions about your rights as a research participant, you may contact the University Committee on Activities Involving Human Subjects, New York University, 665 Broadway, Suite 804, New York, NY 10012 at 212-998-4808 or ask.humansubjects@nyu.edu. Please reference the study # (IRB-FY2020-4338) when contacting the IRB (UCAIHS).

CONSENT

I understand that my survey responses will be stored in a password-protected computer database. I also understand that I will be given information about mental health and health services if I request it. Being in this study does not mean that there is an employee/employer relationship between me and NYU, or me and the researchers. Being in this study will not affect my being a student, volunteer, or employee at New York University now or in the future. If you have any questions or want any further clarification, call the New York University Office of Human Subjects at (212) 998-4808 or ask.humansubjects@nyu.edu.

I also understand that I can be taken out of the study by the researchers if my behavior threatens the study (for example, if I threaten the safety of project staff).

I have read this consent form. I have had the chance to ask questions and my questions have been answered. I have been emailed a copy of this form. I agree to be in this study.

Please type your full name to confirm that you have read the above consent and agree to take part in this study.
Fill in the blank

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