Research Study Title: Physiological Augmentation of Mindfulness Meditation (PAMM)

Principal Investigators: Negar Fani, PhD

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Scientific Protocol

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Background

Specific Aims:

The purpose of the present study is to test the efficacy of implementing breath-focused mindfulness-based interventions (MBIs) to reduce symptoms of dissociation that are associated with posttraumatic stress disorder (PTSD). We will test this intervention in a low-income sample by training increased attention to physiological sensations and basic emotion regulation skills. Additionally, we are interested in whether attentional control can be enhanced in this population via physiological feedback. We propose to evaluate the effectiveness of a breath-focused mindfulness meditation augmented with physiological feedback. This feedback will be given via a vibrating device that will be placed on a participant's sternum that vibrates in proportion to their breathing. Because we are interested in how attention and emotion regulation skills may change as a result of treatment in a real-world setting, such as outpatient clinics of public hospitals, we propose minimal exclusionary criteria and flexible treatment plans.

Supporting Research:

People exposed to chronic trauma face devastating effects to the brain and body. Chronically traumatized people become highly distressed when attending to emotional stimuli (Lanius et al. 2010), which can lead to feelings of detachment from their bodies, a phenomenon termed depersonalized dissociation. It is difficult to engage highly dissociative traumatized patients in trauma-focused treatment; however, these patients benefit from acquiring basic emotion regulation skills, including present-centeredness, which is a core feature of mindfulness meditation (Cloitre et al. 2012). Recently, mindfulness meditation practices which include body- and breath-focus elements have been shown to demonstrate short-term and long-term improvement in emotion regulation and clinical symptoms in people with PTSD (Earley et al. 2014, Seppala et al. 2014). Dissociation is characterized by deficits in accessing interoceptive states (Lanius et al. 2010), and dissociative states are shown to be incompatible with attending to aspects of one's physiological state, including the breath, since people with dissociation symptoms tend to feel immobile, paralyzed, and detached from their bodies (Galliano et al. 1993).

In order to address this issue, we will evaluate the effectiveness of a breath-focused exercise augmented with physiological feedback consisting of a vibrating element on the participant's sternum that vibrates in proportion to their breathing. The physiological feedback will provide bottom-up influences to augment cortical top-down influences. This feedback will act to enhance ability to attend to breath in people who otherwise cannot do that. This type of intervention has been useful in treating depressed and anxious patients to train attention away from threat stimuli (Bar-Haim 2010) towards environmental stimuli and towards positive stimuli amidst threat (Waters et al. 2012). Assessments for this project will be done in the context of

stressful tasks, emotional stimuli, and non-ideal conditions in order to resemble the patients' chaotic lives. Breath-awareness will be examined in isolation for the following reasons: 1) we are working to optimize an aspect of mind-body connection that could benefit from this specific technique, 2) we are examining whether targeting a specific mechanism with a specific theory-driven intervention is possible, and 3) breath focus appears to have specific health-positive effects that extend beyond philosophical tenets which we would like to test.

Research suggests that there exists an "interoceptive network" of brain structures that are involved with the perception of phenomena internal to the body (Craig 2002, Craig 2009). The central node of this network is the insula and it includes motor and somatosensory cortices (SMA), as well as regions associated with attention and representation of the self (Frontal pole; Anterior cingulate cortex, ACC). Connectivity between ACC and insular regions is also proposed to play a role in the proper detection of physiological and corresponding emotional states (Taylor et al. 2009). We will examine connectivity between additional nodes of the interoceptive network, the orbitofrontal cortex (OFC) and somatosensory cortex (SSC), as participants engage in a heartbeat counting task and an attention to emotion task (the Affective Number Stroop) as they attend to their breath. We anticipate that the physiologically-augmented meditation intervention will produce greater connectivity between nodes of the interoceptive network during exposure to emotional distractors in this task.

As part of the physiological feedback, we will stimulate nerve fibers in the sternum. The nerve fibers in intercostal regions of the thorax convey pain, itch, sensual touch, and temperature to the thoracolumbar spinal cord. These neurons project to limbic regions such as the amygdala, yielding affective reactivity, as well as the thalamus., which automatically access thalamic-insula networks. The insula has reciprocal connections with cortical regions associated with attention and emotion regulation such as the orbitofrontal cortex (Cavada et al. 2000) and pregenual anterior cingulate (Taylor et al., 2009). We predict that explicit somatic cuing will restore insular function and increase insula-mediated activation of cortical areas associated with emotion recognition and regulation. Increasing attention to bodily states using somatic stimuli will generalize to other domains. Brain regions such as the cingulate, which are involved in all attention, are preferentially recruited to process high intensity somatosensory stimuli (Alkire et al. 2004). By the end of the physiologically augmented intervention, our participants will be better able to attend to their breath.

To understand the extent to which the training is effective at a neural level, we will examine electroencephalography (EEG) measures of attention system engagement as well as meditative focus. For attention system engagement, we will use temporo-parietal gamma band EEG activity. Gamma band (30-45 Hz) EEG is associated with effortful control, selective attention (Ray et al. 2008). For meditative focus we will use theta band EEG. Increases in theta (4-7 Hz) activity correspond with awareness of emotional states and an overall desire to maintain focus on a specified task (Lagopoulos et al. 2009). We anticipate that higher levels of engagement in the meditative practice will produce increases in theta wave activity, and this increase will be significantly higher during physiological augmented meditation vs. meditation without augmentation.

Significance:

The goal of the present study is to offer a non-pharmacological intervention for traumatized people with dissociative symptoms for whom traditional interventions have been

ineffective. We hope to achieve this through the implementation of mindfulness-based interventions for people with psychiatric disorders, particularly PTSD. More specifically, we will measure attentional control, physiological functioning, and dissociative symptoms pre- and post-intervention to assess the relative usefulness of breath-focused mindfulness in reducing feelings of detachment from the self and increasing emotion regulation skills in chronically traumatized individuals. Attention control and emotional regulation will be measured in 3 ways: 1) through a breath meditation task during psychophysiological assessment with EEG, 2) through neuropsychological and interoception tasks using functional magnetic resonance imaging (fMRI), and 3) through self-report measures. These approaches will allow the examination of our associations of interest using both objective and subjective measures of attention and focus to gain a better understanding of whether dissociative symptoms of PTSD and trauma may be enhanced through mindfulness-based interventions. The intervention will be conducted with a low-income, African American sample with PTSD and dissociation as a result of trauma.

Design

Sample:

Population

Participants will be a total of 110 women between the ages of 18 and 65, recruited from Grady Memorial Hospital, an inner-city hospital in downtown Atlanta, GA.

Inclusion/Exclusion

Inclusion into the study will be dependent upon 1) experience of at least one Criterion A trauma, 2) presence of current symptoms of PTSD that are significantly interfering with functioning, 3) an MDI depersonalization score of 7 and fulfilling at least two of the four CAPS subscale criteria (clinically significant re-experiencing, avoidance, alterations in mood and cognitions, hyperarousal), and 4) willingness to participate in the study. Actively psychotic and cognitively compromised individuals will be excluded, in addition to alcohol or substance dependence and imminent risk of physical violence to self or others. Those who are determined to be at imminent risk of harm to themselves or others will be referred to a more appropriate treatment.

Setting:

The interventions will take place at the Glenn Building on Grady Hospital Campus. The Glenn Building is an Emory building where all of our research offices are located on the basement level. The interventions will occur at an EEG recording booth. The pre- and post-interventions, including MRI scans, will be completed at Wesley Woods Health Center on the Emory University campus and the Georgia Tech/Georgia State University Center for Advanced Brain Imaging (CABI).

Recruitment:

Participant identification and recruitment will follow several steps. First, participants will be randomly selected from people sitting in the waiting rooms of the primary care clinics, diabetes, and obstetric/gynocologist clinics of Grady Memorial Hospital. This selection process is for participation in the Grady Trauma Project (IRB00002114 and IRB00009375). Only women will be recruited in this setting and they will be recruited in the same manner as at Grady

Hospital, by randomly selecting people sitting in the waiting room and asking them if they would be interested in participating in the Grady Trauma Project. If the participant is consented and participates in the Grady Trauma Project and during the course of his or her participation is found to be exhibiting serious untreated (or under-treated) symptoms of PTSD or depression as a result of trauma, our study will be briefly described, and participants will be given the option of whether or not to allow a study coordinator to contact them. The participants may have the option to be consented electronically via REDcap. Agreeing to be contacted does not require agreeing to participate in the study. If a participant expresses interest in this study, agrees to be contacted, and provides contact information, a study researcher will contact him or her by phone to assess whether the participant is still interested and to set up an initial clinical interview to determine appropriateness for the study.

We will also recruit people from the community, including treatment-seeking individuals (such as patients at the Emory Clinic). A study flyer, containing basic information on study requirements and exclusions, was created to assist in participant recruitment. This flyer will be distributed to the community via social media and to the Emory Clinic as well as Grady Hospital.

Procedure:

Once participants express interest in the study, a study coordinator will contact them to assess whether they are still interested and administer a brief phone screen to confirm eligibility. The phone screen will ask about general physical health, identify potential contraindications of having an MRI scan, and assess if the participant is experiencing any PTSD symptoms. The interviewer will assess potential PTSD symptoms using the Modified PTSD Symptom Scale (MPSS) and the Primary Care PTSD Screen (PC-PTSD) (described more in depth in the measures section). If the participant is deemed eligible after the phone screen, they will be scheduled for an initial interview. The interview will be conducted by trained research assistants and will ask more in depth questions regarding psychiatric symptoms and life experiences.

If participants agree to be in the study and are determined to be appropriate for inclusion, they will begin to meet with their study clinician twice a week for three weeks after an initial assessment. A follow-up assessment will be conducted one month after the participant's treatment to examine any gains in attention, mindful focus, and interoceptive ability. To further assess any residual effects of the study intervention, an additional follow-up MRI session will be conducted between 1 month to 5 years after the final intervention session; this session will include additional assessments related to attention, learning, and subjective feedback about the intervention. The participants will receive instructions on a computer screen on how to conduct breath-focused mindfulness. Additionally, they will complete functional magnetic resonance imaging (fMRI) scans during the first session and the second follow-up session. Continuous EEG and psychophysiology data will also be collected during sessions 1-7. If participants are dissatisfied, they may withdraw from the study at any time.

During the pre-intervention assessment, participants will complete clinical, neuropsychological, and interoception measures as well as EEG, psychophysiology, and fMRI. This session will last approximately 60 minutes and the participant will be compensated $50. Visits 2-5 will involve breath-focused meditation for both augmented and non-augmented groups and concurrent measurements of EEG and psychophysiology. During visits 6-7, the non-augmented group will continue breath-focused meditation, whereas the augmented group will receive tapering levels of feedback, such that no physiological feedback will be present by the end of each session. Visit 8 will require the participant to complete the same tasks and surveys

completed during the first visit, as well as the MRI scan. These intervention visits will last 50 minutes each and the participant will be compensated $20 per session for up to 7 sessions. The one-month follow-up will include only relevant self-report measures. This session will last approximately 60 minutes and the participant will be reimbursed $50. Finally, the second follow up visit will last approximately 2 hours; this session will include 2 computer tasks completed inside the MRI scanner and self-report questionnaires. Compensation in the amount of $50 will be provided for this follow-up.

Google Voice texting, a free texting service will be used to assist in study retention. Participants can miss intervention sessions due to forgetting their appointment times and missing reminder calls. The use of this texting service will allow participants to receive text message reminders of their appointments in addition the reminder calls.

Reimbursement to participants will be given via e-gift card. Participants will be emailed the e-gift card following each visit. E-gift cards will be purchased through Emory Express.

Measures:

Data from this study will be based on self-report measures and behavioral tasks to be completed by participants. The self-report measures include the *Multiscale Dissociation Inventory* (MDI; Briere et al. 2005), the *Clinician Administered PTSD Scale* (CAPS) and *PTSD symptom Scale* (PSS), the *Kentucky Mindfulness Scale* (KIMS), the *Multidimensional Assessment of Interoceptive Awareness* (MAIA), and the *Kreek-McHugh-Schluger-Kellogg scale* (KMSK). The behavioral tasks include the breath focus task, rumination task, Affective Number Stroop task, Penn Computerized Neuropsychological Battery (Penn CNP). All self-report measures as well as the behavioral tasks will be administered during the pre- and post-interventions and the one-month follow-up session. During the last follow-up session, we will administer Affective Number Stroop and Visual Statistical Learning behavioral tasks as well as *Barriers to Needs Questionnaire* (BTNQ) self-report measure.

MDI. The MDI is a 30-item self-report test of dissociative symptomology and it measures six different types of dissociative response. The scales of the MDI are disengagement, depersonalization, derealization, emotional constriction/numbing, memory disturbance, identity dissociation, and total dissociation.

CAPS. The CAPS is a 30-item structured interview that can be used to make current and lifetime diagnosis of PTSD as well as assess PTSD symptoms over the past week. Questions also examine the onset and duration of symptoms, subjective distress, impact of symptoms on social and occupational functioning, improvement in symptoms since a previous CAPS administration, overall response validity, overall PTSD severity, and specifications for the dissociative subtype (depersonalization and derealization). The identification of an index traumatic event to serves as the basis for symptom inquiry. The full interview takes approximately 45-60 minutes to administer.

MINI Neuropsychiatric Interview is a semi-structured interview that will be used to assess for concurrent mood, substance, and psychotic disorders (Sheehan et al., 1998). The interview takes 30 minutes - 1 hour to administer.

PSS. The PTSD Symptom Scale (PSS (Foa et al., 1993) is an 18-item self-report measure that assesses the presence and severity of PTSD symptoms related to specific traumatic events in individuals with a known trauma history. PTSD symptomatology over the prior 2 weeks is assessed, yielding a continuous measure of PTSD symptom severity ranging from 0 to 51.

Kentucky Mindfulness Scale. The Kentucky Mindfulness Scale is a 39-item scale that assesses skills related to what one does while practicing mindfulness. This is measured based on the following criteria: 1) Noticing or attending to current experience, 2) describing the experience with words, 3) participating in the activity, 4) being accepting and non-judgmental, 5) using undivided attention, and 6) being effective.

Multidimensional Assessment of Interoceptive Awareness. This is a clinical measure that assesses various aspects of interoception, including ability to attend to body sensations, regulate distress by attending to body sensations, and experiencing body sensations as safe and trustworthy.

Kreek-McHugh-Schluger-Kellogg scale. This is a clinical measure designed to quickly assess the nature and extent of recreational substance use, including opioids, alcohol, tobacco, and cannabis. It assesses frequency, amount and duration of exposure to each substance during the person's period of greatest use and in the past 30 days. The full measure will be administered at the beginning of study participation, and one question about drug use in the past day (if applicable) will be administered on study intervention days.

Affective Number Stroop task. In this Affective Number Stroop (ANS) task, participants are instructed to rapidly identify the number of numbers in a given display while ignoring evocative distractor images (trauma-relevant scenes). In these trials, the number of numbers presented is either consistent or inconsistent with the actual number displayed, such that there are both congruent and incongruent trials. The participants will be presented with positive and neutral pictures in addition to the negative trauma-relevant images. The task will be completed in the MRI scanner during both the pre- and post-treatment sessions. This task is meant to evoke the attentional problems that many GTP participants encounter while performing daily tasks by engaging attentional control resources and including images that are relevant to participants' traumas.

Penn Computerized Neuropsychological Battery. This is a computerized neuropsychological assessment that is designed to examine different domains of cognitive functioning. The executive functioning and memory components of this battery will be administered, which take approximately 30 minutes to complete.

Posttraumatic Avoidance Behaviour Questionnaire (PABQ): Will be given at post-treatment and follow-up time points to capture participants' avoidance behaviors during this time.

Chesney's Coping Self-Efficacy (CSES) Scale. This will be administered at the pre-treatment, post-treatment and follow-up data collection time points. The CSE is a 26-item scale that measures one's perceived ability to cope with life's difficulties. The CSE has demonstrated strong internal consistency and test-retest reliability, as well as concurrent and predictive validity (see Chesney *et al*., 2006).

State Self Efficacy Scale (Zawadzki, Danube & Shields, 2012). This is a 7 Item measure using a 1-7 likert scale that will examine changes over time in self-efficacy on a state level.

Moral Injury Events Scale for Civilians (MIES-C). This is a 10-item scale that is currently under development. This scale assesses for the presence of potentially morally injurious events and feelings of distress that can emerge in the aftermath of these events. This measure will be administered at pre- and post-treatment.

Attentional Control Scale (ACS; Derryberry & Reed, 2002). This is a 20-item self-report measure that assesses attentional control a 1-5 Likert scale. This will be administered at the pre-treatment, post-treatment and follow-up data collection time points.

Difficulties in Emotion Regulation (DERS). The DERS is a 36-item self-report measure that evaluates 6 different facets of emotion dysregulation capabilities. This will be administered at the pre-treatment, post-treatment and follow-up data collection time points.

State Trait Anxiety Inventory (STAI). The STAI is a 40-item self-report measure that uses a 4-point Likert scale to evaluate both state and trait anxiety. This is administered at the pre-MRI and post-MRI data collection points for every MRI visit.

Visual Analogue Scale (VAS). This is a 6-item self-report measure that indicates how intense one is feeling certain emotions using a 10-point Likert scale. This is administered during the MRI session before the intervention and again during the last MRI session after the intervention.

Motivation and Pleasure –Self Report (MAP-SR). The MAP-SR is an 18-item self-report measure that assesses the motivation and pleasure domain of negative symptoms. This will be administered at the pre-treatment, post-treatment and follow-up data collection time points.

State Mindfulness Scale (SMS). This is a 21-item self-report measure that uses a 5-point Likert scale to assess one's perceived level of awareness and attention to the present moment and environment within a given frame of time (i.e. the last 10 minutes). This is administered before and after each intervention session.

Client Satisfaction Questionnaire (CSQ). The CSQ is an 11-item self-report measure to assess how the intervention satisfied the participant's expectations and/or if it helped their daily lives in any way. The measure is administered once at the end of the treatment.

The Coronavirus Health Impact Survey V0.1 (CRISIS). The CRISIS is a 96-item short form self-report measure assessing changes in normative behavior effected by the SARS-COV-2 pandemic. This measure is administered once.

The Epidemic-Pandemic Impacts Inventory (EPII). The EPII is a 92-item self-report measure assessing the impact of an epidemic/pandemic on different aspects of a person's lifestyle. The measure is administered once.

Barriers to Needs Questionnaire (BTNQ; Davis et al., 2008). The BTNQ is a 16-item self-report measure assessing unmet healthcare and social needs. This measure is administered once.

Visual Statistical Learning task. Inside the MRI scanner, participants will be instructed to complete a computerized learning task that is approximately 30 minutes in length. The purpose of this task is to measure learning of patterns underlying visual sequences. This task will involve visual presentation of individual abstract stimuli on the screen. We ask participants to passively view these visual sequences presented, using a computer program, and to respond by using the button box available inside of the scanner. Participants will be presented a series of items and asked to recall items from the sequences by selecting from available response options. Similar visual learning tasks have been used inside of the scanner in studies conducted with adult participants (e.g., Bahlmann et al., 2009; Schapiro, et al.,2014).

Risks to Participation:

During the MRI scan, there is the possibility that participants may feel frustrated about playing the game in the fMRI scans, or that the pictures will make them nervous. There are no risks of physical injury. Magnetic resonance imaging uses magnetism and radio waves (not x-rays) to make pictures. MRI is thought to be safe, although no one can guarantee that there are no long-term negative health effects to individuals undergoing scans or to fetuses in pregnant women undergoing scans. The only risks are to individuals with cardiac pacemakers and certain types of metallic implants. Participants may become tired from lying in the scanner, or may become uncomfortable from lying in one position for a long period of time. Some individuals experience mild anxiety or claustrophobia while lying in the scanner. If this happens, participants may ask to leave the scanner at any time. The MRI machine makes loud metallic popping sounds that participants may find irritating while it takes pictures. Ear plugs are provided to help lessen this loud noise, but participants will still be able to hear some noise during the scan. The investigators for this project are not trained to find medical problems. However, the investigator may see something on a scan that seems unusual. If this happens, a medical doctor will be asked if more tests should be done. If so, the investigator will call the participant and tell her about it. The scans done in this study are not for a medical exam.

The EEG assessment may cause headaches if used for long periods of time; however, they go away upon removal of the apparatus. If participants report pain, they may remove the mobile EEG unit temporarily or permanently. Participants could have skin allergies to the chemicals in the electrode paste. Participants will be asked about skin allergies prior to application of any abrasives or gels, and these products will not be used if participants have any relevant allergies.

Benefits to Subjects:

One potential benefit is that the participants will see a decrease in PTSD and/or dissociation symptoms and will be better able to function day-to-day. Additionally, this study may provide insight into how mindfulness-based interventions can help people who experience feelings of dissociation as a result of trauma.

Data Analysis:

We have designed this study to have a final sample of 80 participants. The sample size of 80 was determined using a power analysis. Power was calculated using theoretical maximum detectable effect sizes given our samples. The proposed design, involving 40 completers in the active intervention arm and 40 completers in the control arm will yield sufficient power to detect effects at $d>.5$ for Aim 1) effects of the intervention of $d>.6$ and Aims 2 and 3) change in mechanism within the active group ($d>.6$) and across groups ($d>.6$). Although 80 is the minimum number needed to achieve statistically significant effects for our conditions of interest, we will enroll a higher number (110) with the expectation of attrition for some of these individuals.

All electronic data will be secured via an Emory secure network and password protection. Data will be managed electronically using REDcap. All participant data will be de-identified and all participants will be given a subject ID. Data gathered at each session will then be entered into REDcap with previous data and a hard copy of all data will be saved in a participant's folder. All hard copy data will be secured by storing it in a de-identified folder in a locked office in a locked

filing cabinet. Documentation regarding each session will also be kept as a hard copy in a participant's folder after being signed by both study researcher and licensed supervisor.

Statistical analyses will not be conducted until the conclusion of the study when all measures and data have been collected. Analyses of behavioral data will be conducted using SPSS software. For analyses of fMRI activity, first-level, fixed-effect models will be created for each participant based on responses to each event of interest, which will be convolved with the hemodynamic response function. Events of interest include: breath-focus vs no breath focus; number congruent/number incongruent; error/missed responses. Motion regressors will be included in first-level models. Functional connectivity analyses will be conducted for affective challenge conditions including the incongruent trials from the Affective Number Stroop and rumination condition on the Rumination task. Within these conditions we will examine global connectivity indices (correlation of every voxel with every other voxel above and beyond physiological artifacts including respiration) within the proposed interoceptive network. These correlations will be transformed into standardized (z') indices for which the mean will be preserved per participant for group-level analyses.

Group (augmented vs non-augmented breath-focus mindfulness) by time (pre-post) mixed-effects analyses will be conducted on voxel-wise activity and mean global connectivity in the interoceptive network to examine intervention-related differences ($p<.05_{corrected}$). Functional relationships between different brain regions acquired over time, e.g., different brain regions, before and after intervention will be examined using Bayesian Belief networks (BNs). Mixed effects analysis [group x time (pre/post/follow-up)] will be used to examine clinical effects in 1) PTSD symptoms, measured by the CAPS (at 1 month) and PSS (immediately post-treatment); 2) Dissociative symptoms, measured by the MDI; 3) Mindfulness skills, measured by the Kentucky Mindfulness Scale.

Training:

All research assistants will be trained in all measures being used in the study and will fully understand the goals and purpose of the research proposed. These research personnel will be under the supervision of Dr. Fani.

Data Management and Monitoring:

There are a number of ways in which we will monitor for safety in the proposed study. First, all measures and notes completed for each session will be entered by the study research assistant on the same day as the appointment and will be completely reviewed by one of the licensed supervisors each week.

Since the participants will be coming in on a weekly basis, regular evaluation of psychological evaluation and progress in treatment will be done. Study researchers will be available for necessary consultation over the phone with participants if something urgent comes up between study sessions.

Finally, the IRB will be immediately informed of any unanticipated adverse events that might occur. Once an unanticipated event is recognized and reported, the event will be investigated to determine if the event represents an unreasonable risk to the participant so as to terminate all or part of the study.

Confidentiality:

Confidentiality will be protected throughout the study and following completion of the study. This will be done in a number of ways. First, all participants will be assigned a subject ID and all data gathered and session notes will only contain de-identified information and their subject ID. Also, participants will be informed of the confidential nature of the study and informed of the limitations of confidentiality. Also, all participant information will be kept in a locked desk drawer in a locked office or stored on a password protected and secured electronic network.

The only linkage between identifiable information about participants and their subject IDs will be kept on the informed consent forms, which will be separated from all other data and study materials and kept in a locked drawer in a locked office.

Informed Consent:

To obtain informed consent for the study, participants will receive a written description of the study, including risks, benefits, privacy, etc. In addition, a study co-investigator or research fellow will verbally describe the contents of the document and answer any questions. If the participant agrees to be in the study, he or she will indicate consent by signing the consent form. Only participants who can give full authorized self-consent will be included in the study. We will not enroll any individual for whom consent needs to be obtained by a legally authorized individual.

Consent will be obtained in a private office room with both the participant and a study co-investigator or research fellow present or research staff will obtain consent via e-consent. Participants will be emailed the e-consent document via Redcap while on Zoom with a research staff member. Research staff will confirm receipt of the document before going over the document. The e-consent document will have all information on one page to ensure participants receive all intended information. After discussing the consent document with the participant and answering any questions, the participant will be instructed to electronically sign and time stamp the document if they still consent to taking part in the study. The participant will them submit the form back to the research assistant who will electronically sign and time stamp the document as well. A PDF document of the signed e-consent will be available for the participant to download for their records. A PDF document of the signed e-consent will be saved to Redcap in the PDF survey archive. Consent will be obtained during the initial interview for the study, at least 24 hours prior to the first session of treatment. Consent will be obtained by co-investigators or research fellows that have been fully trained in obtaining informed consent.

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