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The Efficacy of Cognitively-Based Compassion Training for African American Suicide Attempters

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Abstract

This study is a pilot Randomized Controlled Trial (RCT) that compares the effectiveness of a Cognitively-Based Compassion Training (CBCT) group treatment to a support group in reducing depressive symptoms and suicidal ideation and increasing self-compassion and mindfulness in low-income African Americans who had attempted suicide ($n = 82$). After completing several measures, including the Beck Scale for Suicide Ideation (BSS), Beck Depression Inventory—II (BDI-II), Self-Compassion Scale (SCS), and Five Facet Mindfulness Questionnaire (FFMQ), participants were assigned randomly to attend either a 6-session CBCT group or a 6-session support group. Although following intervention participants randomized to both groups had comparable reductions in levels of depressive symptoms and suicidal ideation and no significant changes in their levels of mindfulness, improvements in levels of self-compassion were found only for those receiving the CBCT intervention. In addition, for individuals in the CBCT group but not in the support group, the degree of improvement in self-compassion predicted the level of reduction in depressive symptoms and suicidal ideation and the degree of improvement in mindfulness predicted the level of reduction in depressive symptoms. Taken together, the results indicate that CBCT is potentially valuable for this population and its emphasis on self-compassion and mindfulness is associated with improved psychological functioning.

Keywords African American · Self-compassion · Mindfulness · Suicidal ideation · Depressive symptoms

Introduction

Death by suicide, a major public health problem in the United States (Office of the Surgeon General (US); National Action Alliance for Suicide Prevention (US) 2012), was the tenth leading cause of death in 2015 (Heron 2017). Rates of death by suicide are on the rise in this country (Curtin et al. 2016) and have increased at a greater rate among African Americans than among European Americans (Joe and Kaplan 2002; Willis et al. 2003). Yet, few interventions have been designed to improve the mental health of African Americans who attempt suicide (Kaslow et al. 2010). Compassion- and mindfulness-based intervention, newer interventions that target depressive symptoms and suicidal ideation, are becoming popular; yet, despite this, few studies have specifically examined such interventions with African Americans. Nevertheless, it has been argued that mindfulness-based interventions may be valuable and acceptable to African Americans (Woods-Giscombé and Black 2010). Cognitively-Based Compassion Training (CBCT), a form of compassion meditation that uniquely incorporates both self-compassion and mindfulness (Mascaro et al. 2013), is of interest, and its benefit to this population is worthy of investigation.

Recent years have witnessed a burgeoning of attention to the construct of self-compassion, an adaptive form of self-to-self relating comprised of self-kindness, common humanity, and mindfulness (Neff 2003b). Self-kindness involves being kind and understanding, rather than critical, toward oneself when encountering pain or failure. Common humanity entails connecting one's experiences to the larger human experience rather than experiencing them as separating and isolating oneself from others. Mindfulness involves purposefully attending to emotionally difficult thoughts and feelings, without becoming overly identified with them. Higher levels of self-compassion are associated with better psychological

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functioning as evidenced by the motivation to initiate positive changes in one's life; greater concern for others as reflected in a greater capacity for empathy, perspective taking, being forgiving, and altruism; and higher levels of happiness, optimism, and positive affect (Neff and Pommier 2013; Neff et al. 2007b; Neff and Vonk 2009). Recent meta-analyses of 79 and 20 samples, respectively, found a large positive correlation between self-compassion and well-being (Zessin et al. 2015) and large negative correlation between self-compassion and psychopathology (i.e., depression, anxiety, and stress) (MacBeth and Gumley 2013). Improvements in self-compassion over time are linked to increases in psychological well-being and resilience to mental health problems (Neff et al. 2007a).

Due to the association between self-compassion and an array of positive outcomes, researchers have begun examining the impact of participation in intervention programs intended to cultivate self-compassion. Compassion-Focused Therapy (CFT) (Gilbert 2010) has demonstrated both increased self-compassion and improved psychopathology in clinical samples (Gilbert 2010; Goss and Allan 2010; Lowens 2010; Pepping et al. 2017) and in the general public (Sommers-Spijkerman et al. 2018). Other self-compassion interventions have been shown to be effective in nonclinical samples (Smeets et al. 2014). A recent meta-analysis and recent systematic review of studies on kindness-based interventions, such as loving-kindness meditation, and compassion meditation, found that kindness-based interventions are moderately effective in improving self-compassion, psychological well-being, and depressive symptoms in clinical and nonclinical samples (Galante et al. 2014). In addition, forms of meditation training that do not directly target self-compassion increase self-compassion nevertheless. For example, positive gains in self-compassion are highly correlated with enhanced mindful awareness associated with mindfulness-based interventions and meditation training (Proeve et al. 2018; Shapiro et al. 2007), mediate increases in quality of life and decreases in general distress and perceived stress after Mindfulness-Based Stress Reduction (MBSR) (Shapiro et al. 2005), and predict enhanced emotional well-being after an intensive mindfulness retreat (Gallla et al. 2016). Nevertheless, we are not aware of any studies that have directly examined the impact of a self-compassion intervention on suicidal ideation.

Mindfulness has garnered attention as an independent construct, though it is often viewed as a component of self-compassion (Neff 2011). It refers to a quality of consciousness involving present-centered attention and awareness that is accepting and non-judgmental (Bishop et al. 2004). A robust literature demonstrates a connection between trait mindfulness and increased life satisfaction, self-esteem, empathy, competence, and optimism as well as decreased depression, neuroticism, dissociation, rumination, and anxiety (Keng et al. 2011). Mindfulness-based interventions have demonstrated clear positive impact on physical and psychological issues across a variety of populations and conditions (Van Dam et al. 2014). For example, participation in mindfulness-based meditation interventions is associated with increases in positive affect and decreases in negative affect (Hofmann et al. 2011). A meta-analytic review revealed that mindfulness-based interventions show promising effects with regard to treating anxiety and mood symptoms (Hofmann et al. 2010). Among community and clinical samples, participation in a Mindful Self-Compassion (MSC) program results in higher levels of self-compassion, mindfulness, and well-being which are maintained over time (Neff and Germer 2013).

The past decade has witnessed mounting interest in incorporating mindfulness-based approaches for suicide prevention and intervention (Hepburn et al. 2009; Williams and Kuyken 2012; Williams and Swales 2004). These strategies have been used in treatments for individuals at high risk for suicidal behavior, including Dialectical Behavior Therapy (DBT) for individuals with borderline personality disorder (Linehan 1993) and Mindfulness Based Cognitive Therapy (MBCT) for reducing relapse risk in depressed individuals (Ma and Teasdale 2004; Teasdale et al. 2000). A recent study found that MBCT as an adjunctive treatment for high-suicide risk outpatients showed promising effects with regard to improving executive attention, increasing the ability to act with awareness, and decreasing rumination, hopelessness, and cognitive reactivity to suicidality (Chesin et al. 2016). Mindfulness interventions may help reduce psychological pain in suicidal individuals and those at risk by interrupting maladaptive cognitive patterns and emotional states.

Despite the robust literature supporting self-compassion and mindfulness, there is a lack of research evaluating if an intervention culturally adapted for African Americans with a focus on self-compassion and mindfulness may be a good fit. Culturally adapted interventions are important as low-income African Americans, who typically do not seek formal mental health services, are most likely to participate if the intervention is Afrocentric (Bhui et al. 2015; Kaslow et al. 2010). A self-compassion and mindfulness focused approach may be helpful given that African Americans report that meditation is an accepted form of complementary and alternative medicine (Cushman et al. 1999) and it has been argued that mindfulness-based interventions may facilitate stress reduction and bolster strengths in African American women (Dutton et al. 2013; Woods-Giscombé and Black 2010). Further, interventions that are group-based may enhance a sense of social connectedness and belongingness, which is key to this population (Davis et al. 2009). In addition, a culturally adapted compassion intervention that enhances a sense of belongingness within one's support system and community may be particularly beneficial for suicidal individuals given that thwarted belongingness often in combination with perceived burdensomeness and the acquired capability for suicide

predicts suicidal behavior (Anestis and Joiner 2011; Joiner et al. 2009; Van Orden et al. 2008), including in African Americans (Allbaugh et al. 2017; Davidson et al. 2010; Gaskin-Wasson et al. 2016).

Although no studies outside of our laboratory have investigated the role of self-compassion or mindfulness in the mental health of African American suicide attempters, prior data from our sample of low-income African Americans reveal that in this population higher levels of self-compassion are associated with lower levels of self-criticism and depressive symptoms and self-compassion mediates the self-criticism–depressive symptom link (Johnson et al. 2017; Zhang et al. 2017). In addition, higher levels of mindfulness are associated with higher levels of self-compassion and lower levels of self-criticism (Watson-Singleton et al. 2017). Nevertheless, compassion must be addressed in a culturally relevant manner, one that emphasizes the stress-, strength-, and ecologically-relevant factors (Woods-Giscombé and Black 2010). With African American women, this might include a focus on cultivating compassion and forgiveness for those who have harmed them and developing greater compassion and forgiveness toward themselves with permission to nurture themselves and not always be bound to caregiver roles (Woods-Giscombé and Black 2010). For African American men and women, this may entail integrating a spiritual focus with an emphasis on compassion, given the centrality of spirituality in this population (Woods-Giscombé and Gaylord 2014). The addition of a focus on compassion must involve affirming relevant positive cultural and spiritual traditions and highlighting the ways in which integrating compassion with these traditions can be empowering (Cook and Wiley 2014).

A therapy worthy of evaluation for use among African Americans seeking services after a suicide attempt given the information above is CBCT. CBCT incorporates motivation and self-compassion components in addition to mindfulness strategies (Germer 2009). It is designed to help people to become less vulnerable to excessive emotional reactivity by recognizing they can regulate their own emotions. This in turn enhances their self-esteem, empathic capacity, and self- and other-compassion, which may create strong feelings of social connectedness and reduce social isolation, important for reducing suicidal behavior (Joiner 2005; Stellrecht et al. 2006). CBCT was chosen for several reasons. First, it targets both self-compassion and mindfulness (along with compassion for others), both of which are associated with better mental health in African American suicide attempters (Watson-Singleton et al. 2017). This contrasts with programs stemming from Buddhist traditions that focus primarily on self-compassion (e.g., CFT), mindfulness (e.g., MBCT), or compassion for others (e.g., Compassion Cultivation Training; CCT) (Jazaieri et al. 2013). Second, it aims to provide the sense of options and connectedness that are likely to enhance self-compassion and mindfulness, which are associated with decreased depressive symptoms and suicidal ideation and other enhancements to psychological well-being (Baer et al. 2012; Germer 2009; Gilbert and Procter 2006; Halifax 2011; Hofmann et al. 2011; Mascaro et al. 2013; Pace et al. 2008). Third, CBCT was developed and has been studied at our institution, which facilitated collaboration with experts during the adaption and implementation process. Though in its infancy, CBCT has begun to gain empirical support as a treatment associated with biological changes and is found helpful by participants (Desbordes et al. 2012; Mascaro et al. 2013; Pace et al. 2008; Pace et al. 2013; Reddy et al. 2013). There is initial evidence that it is associated with improved levels of depression in breast cancer survivors (Dodds et al. 2015).

To evaluate the value of CBCT with a population not yet studied, we conducted a pilot randomized controlled trial (RCT) of a support group versus a culturally-adapted group-based version of CBCT that has been designed and implemented with low-income African American suicide attempters at a large public hospital. The specific goals of this study with this population were the following: (1) to ascertain if CBCT provides more significant improvements in depressive symptoms, suicidal ideation, self-compassion, and mindfulness than does a support group and (2) to determine if changes in levels of self-compassion and/or mindfulness interact with group status (treatment vs. control) to differentially predict degree of improvement in levels of depressive symptoms and suicidal ideation. Although CBCT targets self-compassion, mindfulness, and other-compassion, we chose to focus only on self-compassion and mindfulness given the wealth of literature reviewed in the previous texts and their empirical relevance to mental health in this population specifically (Johnson et al. 2017; Watson-Singleton et al. 2017). It was predicted that compared to those in the support group, those in the CBCT group would show greater decreases in depressive symptoms and suicidal ideation and greater increases in self-compassion and mindfulness. Further, it was expected that the degree of reduction in depressive symptoms and suicidal ideation would correlate with the degree of improvement in self-compassion and mindfulness among individuals in the CBCT group but not in the support group.

Method

Participants

Participants included 82 African American females and males from a public hospital that provides medical and behavioral health treatment to low-income individuals. Those who self-identified as African American and who had attempted suicide within the previous year were invited to participate. Demographic information on the sample is shown in Table 1.

Table 1 Sample demographic information

Demographic variable	Descriptive statistic
Age	42.4 (10.9)
Gender	53% female
Number of children	2.9 (2.2)
Homelessness	60% homeless
Currently employed	6% currently employed
Monthly income $0–$249	68.3%
Monthly income $250–$499	6.1%
Monthly income $500–$999	20.2%
Monthly income $1000–1999	2.4%
Self-reported lifetime number of suicide attempts	4.8 (5.4)

Procedure

This study is registered on ClinicalTrials.gov as "Compassion Meditation and ReliefLink App for Suicidal, Low-Income, African Americans." A participant flow diagram is available in Fig. 1. Participants were recruited by research assistants from the psychiatric emergency room, inpatient facilities, and outpatient clinics in an urban, university-affiliated public hospital. Individuals were excluded if they exhibited high levels of psychotic symptoms or low levels of cognitive functioning, as measured by the Mini-Mental State Examination (Folstein et al. 2001). Individuals who provided written informed consent and who met the inclusion criterion were scheduled for a pre-intervention assessment scheduled at a mutually convenient time, held on the psychiatric service, and conducted by a trained and supervised graduate student. Following this pre-intervention assessment, which included 11 measures (data from only five measures were used in the current study) and lasted 2 h, participants were randomized to a six-week CBCT group or a six-week general support group. This randomization was done using a 1:1 allocation with a random numbers table as described by Schulz et al. (2010). They were re-assessed upon completion of the six-week protocol, even if they did not attend the group sessions (intent-to-treat design), but only individuals who completed the study were included in this report. Due to the pilot RCT nature of this project, recruitment and interventions were conducted on an ongoing basis such that once enough participants had been recruited to hold a group meeting (e.g., 4–6 participants), the six-week protocol began with those participants so that those recruited did not have to wait for the full sample to be recruited before receiving treatment. Participants were paid $20 for each assessment and $5 for attending each of the six control or intervention groups.

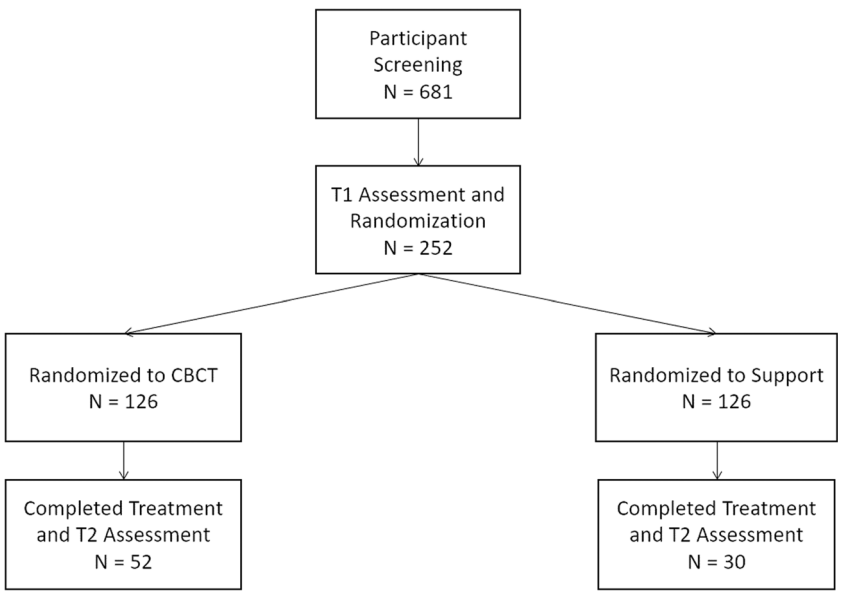

Fig. 1 Participant flow chart. This figure illustrates how participants flowed through the study

Measures

Demographic Data Questionnaire

The Demographic Data Questionnaire includes basic questions regarding current family life and living situation, medical diagnoses and psychiatric history, relationship status, socio-economic status, and religious affiliation.

Beck Scale for Suicide Ideation (BSS)

The BSS, the primary outcome measure, is a 21-item self-report questionnaire that measures levels of suicidal intent and assesses reasons for living (Beck and Steer 1991). Participants answer each question on a three-point scale (0–2), and total scores range from 0 to 42. One item reads: "(0) I would try to save my life if I found myself in a life-threatening situation; (1) I would take a chance on life or death if I found myself in a life-threatening situation; (2) I would not take the steps necessary to avoid death if I found myself in a life-threatening situation." A recent review and evaluation of measures of suicidal ideation and behaviors in population-based research showed that the BSS had considerable evidence to support its psychometric robustness (Batterham et al. 2015). More specifically, it has been shown to demonstrate good internal consistency reliability and construct, concurrent, and predictive validity in clinical outpatient and inpatient samples (Beck et al. 1997; Beck et al. 1988). Longitudinal research reveals a high level of measurement invariance for the scale, which suggests that changes in BSS scores over time reflect genuine changes in suicidal ideation (de Beurs et al. 2015). The BSS has demonstrated good internal consistency in other African American samples (Houry et al. 2006). In this sample, it has a Cronbach's alpha of 0.85.

Beck Depression Inventory—II (BDI-II)

The BDI-II, a secondary outcome measure, assesses the intensity of depressive symptoms participants experienced over the previous 2 weeks (Beck and Steer 1991). On this 21-item, self-report questionnaire, people rate their experience of symptoms on a scale of 0 (no experience) to 3 (high experience). Total scores range from 0 to 63. An example item reads as follows: "Sadness: (0) I do not feel sad, (1) I feel sad much of the time, (2) I am sad all of the time, (3) I am so sad or unhappy that I can't stand it." A recent review found that the BDI-II has high internal consistency reliability, as well as discriminant, concurrent, content, and structural validity across 118 varied samples (Wang and Gorenstein 2013). Further, previous studies have found the BDI-II to have good internal consistency in African American, low-income, and suicidal populations (Carr et al. 2013; Grothe et al. 2005; Joe et al. 2008). In this sample, the BDI-II has a Cronbach's alpha of 0.90.

Self-Compassion Scale (SCS)

The SCS, also a secondary outcome measure, is a 26-item, self-report questionnaire that measures six key components of self-compassion (Neff 2003a). These components include the following: self-kindness (e.g., "I try to be loving towards myself when I'm feeling emotional pain"), self-judgment (e.g., "When times are really difficult, I tend to be tough on myself"), common humanity (e.g., "When things are going badly for me, I see the difficulties as part of life that everyone goes through"), isolation (e.g., "When I'm feeling down, I tend to feel like most other people are probably happier than I am"), mindfulness (e.g., "When something upsets me I try to keep my emotions in balance"), and over-identification (e.g., "When I fail at something important to me I become consumed by feelings of inadequacy"). Participants rate their identification with each item by using a five-point Likert scale, ranging from 1 (almost never) to 5 (almost always). The SCS has shown good internal consistency, predictive validity, convergent validity, interrater reliability, and discriminate validity, and acceptability of using a total score across diverse samples (Neff 2016). Recent research has provided evidence supporting the reliability and validity of both the SCS total score and the six-factor structure, recommending that the SCS can be used in a flexible manner depending on research interest (Neff 2016). No other psychometric data on this measure could be located with African Americans. In this sample, the SCS total score has a Cronbach's alpha of 0.88. The Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-identification subscales have Cronbach's alphas of 0.74, 0.77, 0.72, 0.71, 0.70, and 0.72, respectively.

Five Facet Mindfulness Questionnaire (FFMQ)

The FFMQ is a 39-item, self-report measure that taps the five facets of mindfulness by ratings on a five-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true); higher overall scores represent higher levels of mindfulness (Baer et al. 2006). The five facets include the following: observe (e.g., "When I'm walking, I deliberately notice the sensations of my body moving"), describe (e.g., "I'm good at finding words to describe my feelings"), act with awareness (e.g., "When I do things, my mind wanders off and I'm easily distracted"), nonjudge (e.g., "I criticize myself for having irrational or inappropriate emotions"), and nonreact (e.g., "I perceive my feelings and emotions without having to react to them"). The factor structure and multiple forms of reliability and validity have been documented in clinical and nonclinical samples (Baer et al. 2006; Baer et al. 2008;

Bohlmeijer et al. 2011; Christopher et al. 2012; Paul et al. 2013; Tran et al. 2013). We conducted a study that provided evidence of the strong internal consistency, factor structure, concurrent and convergent validity among low-income, African American suicide attempters (Watson-Singleton et al. 2017). In the current sample, the reliability coefficients for each facet are as follows: Observing ($\alpha = 0.74$), Describing, ($\alpha = 0.83$), Acting with Awareness ($\alpha = 0.84$), Nonjudging ($\alpha = 0.80$), and Nonreacting ($\alpha = 0.72$). In addition, for the total score, the internal consistency reliability is 0.83.

Interventions

CBCT Group

The therapists who conducted this intervention participated in CBCT training through the Emory-Tibet Partnership based in Atlanta. The Emory–Tibet partnership, founded in 1998, is a mutual endeavor to bring together the best of Western and Tibetan Buddhist intellectual traditions and explore the convergence of science and inner values. More information is available at http://tibet.emory.edu. One of the co-leaders of every session of the CBCT group is a professor of pedagogy and longtime expert participant and instructor in meditation. All other co-leaders graduated from an eight-week training course in CBCT taught by certified CBCT trainers. The CBCT protocol was secular in content and provided in six weekly sessions. It incorporated the standard meditative practices of developing focused/sustained attention and mindfulness as precursors to using meditative concentration to the compassionate analysis of oneself and others (Ozawa-de Silva et al. 2012). Each weekly session included a check-in regarding participants' levels of suicidal ideation and a discussion of their current life stress and weekly meditation practice. This was followed by a didactic portion that introduced the meditative technique and incorporated content shared during check-in, as well as a guided meditation (Ozawa-de Silva et al. 2012). Participants were encouraged to meditate for at least 5 min every day and complete practice assignments following each session. The intervention was culturally adapted for this population based on participant feedback and the research literature (Woods-Giscombé and Black 2010; Woods-Giscombé and Gaylord 2014). Adaptations included providing enhancements to understandability and relevance by altering language used to describe concepts and providing relevant examples and metaphors, altering the original CBCT protocol from eight weeks to six weeks to match norms in the hospital group intervention culture, and drawing connections between meditation and mindfulness practices to the Christian tradition (e.g., Christian contemplative tradition) and others, among other minor alterations. The following is a brief description of the training.

Session 1 (Attention and Mindfulness) focused on developing attention and mindfulness; cultivating insight into the nature of mental experience; and learning basic meditation techniques, including an attention-to-breathing meditation exercise and a mindful walking exercise for focusing attention and using the breath for longer periods of time. Session 2 (Self-Compassion) involved nurturing compassion for oneself through mindfulness of one's sensations, feelings, and emotions; recognizing one's desires for happiness, well-being, and freedom from suffering; learning strategies to develop awareness of how thoughts and action contribute to subjective experiences of happiness or suffering; recognizing how choices influence emotions and how self-care can increase well-being; and learning techniques to increase the identification of habitual, conditioned reactions. Session 3 (Equanimity) focused on promoting equanimity and an appreciation and gratitude for others; recognizing the limitations and instabilities of categories or labels (e.g., friends, enemies, and strangers) in a manner that highlights our shared humanity; and developing the perspective that all people are alike in wanting to be happy and reduce suffering, that people are interdependent, and that appreciation for others benefits oneself. Session 4 (Appreciation) targeted fostering undifferentiated affection for others in order to relate to others with a deeper sense of connectedness and affection and becoming empathic toward others by identifying with their happiness and suffering alike. Session 5 (Empathy) helped individuals progress from *wishing* that all beings might be happy and free of suffering (wishing compassion) to *aspiring* that all beings might be happy and free from suffering (aspirational compassion)—the former is a more passive form of compassion (e.g., "How wonderful it would be if they were free from suffering") and the latter is associated with a more spontaneous, profound and urgent sense of desiring happiness and freedom from suffering in others (e.g., the deeply felt aspirational prayer "May they be free from suffering"). Session 6 (Compassion) emphasized showing active compassion for others through actions and a commitment to assisting others in their pursuit of happiness and freedom from suffering; and generating active compassion, where the wish to help others evolves into a firm commitment to become personally involved in enhancing the well-being of others. The goal of this training was for this state of mind to become ingrained and unprompted, leaving the participant feeling an enhanced connectedness to others and more internal happiness. At the end of training, participants were asked for input on ways to enhance the protocol's cultural relevance.

Support Group

The non-CBCT support group sessions were also 90 min in length. However, they were unstructured and did not include any elements of compassion-based meditation. Groups began with a check-in with each member regarding their general

well-being. Group leaders elicited topics of discussion from group members and guided discussion toward those topics without providing direct suggestions or interventions to group members. Common topics included coping techniques, healthy behavior, social support, and problem solving. Group leaders also provided general support and encouraged group members to provide support and guidance for each other. Group leaders intervened in discussions to ensure all group members had equal chances to contribute to discussions, to ensure that discussion remained focused on appropriate topics, and to diffuse any serious conflicts.

Patient Safety Protocol

In both groups, an extensive safety planning process and protocol was in place. Each group had at least one co-leader who was a psychology intern or postdoctoral resident with clinical experience with suicide risk assessment. If suicidal or homicidal risk were detected during the group session, the intern or resident conducted a risk assessment in collaboration with the PI and/or program Clinical Director (both licensed psychologists) during or immediately after the session to determine level of risk and need for hospitalization. Regardless of the outcome, detailed safety planning was conducted during this meeting and appropriate follow-ups were planned and enacted.

Data Analyses

Although the current report describes a pilot RCT, we conducted a power calculation to determine the necessary sample size for the overall trial. Calculating the sample size needed to demonstrate associations between variables is complex and varies in relation to several parameters, as well as the nature of the statistical procedure used. Using the G*Power software program (Faul et al. 2007), we determined what the study's power would be when using a repeated measures analysis of variance approach to test group × time interactions. Based on a sample size of 40, two groups, three time points, alpha set at 0.05, and a hypothesized medium effect size ($f = 0.25$), the estimated achieved power would be 0.93 (power > 0.80 is a standard level of power). The analyses were conducted using SPSS (version 23), and sex and age were controlled for in all analyses due to their potential confounding effects.

To address the first study aim, we conducted one 2 × 2 repeated measures ANOVA to evaluate the main and interactive effects of group (CBCT vs. support) and time on depressive symptoms as measured by the BDI-II and a second 2 × 2 repeated measures ANOVA to evaluate the main and interactive effects of group and time on levels of suicidal ideation as measured by the BSS total score. Given that we predicted that individuals in the CBCT group would demonstrate greater improvements than individuals in the support group, we used one-tailed p values when evaluating the significance of the interaction between time and group. Next, we conducted two 2 × 2 repeated measures ANOVAs to evaluate the main and interactive effects of group and time first on self-compassion and then on mindfulness as measured by the SCS and FFMQ total scores, respectively. Again, we predicted that individuals in the CBCT group would demonstrate greater improvements than individuals in the support group; thus, we used one-tailed p values when evaluating the significance of the interaction between time and group.

To address the second specific aim, we first calculated difference scores for the BDI-II, BSS, SCS, and FFMQ to represent change between T1 and T2. Subsequent to this, we conducted a series of multiple regression analyses to evaluate whether changes in SCS and/or FFMQ scores predicted changes in BDI-II and/or BSS scores and whether these relations differed by group.

Results

Before conducting inferential analyses, we generated descriptive statistics on the measures used in the study at Time 1 and Time 2 (see Table 2). Of note, there were large differences in pre-intervention scores in both groups compared to reported scores of nonclinical populations for the BDI-II (33.6 in this sample vs. 12.5 in a nonclinical sample) (Osman et al. 2008), the BSS (24.3 vs 0.86) (Chioqueta and Stiles 2007), the SCS (68.6 vs 80.4) (Neff 2016), and the FFMQ (115.6 vs 129.6) (de Bruin et al. 2012). These differences indicate the high level of distress and lack of self-compassion and mindfulness in this sample compared to the general population.

The first aim of the study focused on between group differences at post-intervention (see Table 2). With regard to this specific aim, the 2 × 2 repeated measures ANOVA revealed a significant main effect of time on BDI-II scores, such that individuals in both groups became less depressed between time points, $F(1,80) = 21.8$, $p = 0.000013$. But, there was no significant interaction between time and group, $F(1,80) = 0.54$, one-tailed $p = 0.23$. Similarly, a 2 × 2 repeated measures ANOVA found a main effect of time on BSS scores such that individuals in both group became less suicidal between time points, $F(1,80) = 20.6$, $p = 0.00002$. Again, there was no significant interaction between time and group $F(1,80) = 0.014$, one-tailed $p = 0.45$. Thus, contrary to what was predicted, the CBCT group did not appear to yield additional reductions in depressive symptoms or suicidal ideation beyond those found for participants in the treatment as usual condition. Subsequent 2 × 2 ANOVAs using self-compassion and mindfulness scores as the outcome variables found that the main effect of time on both self-compassion, $F(1,80) = 0.11$, $p = 0.74$, and mindfulness, $F(1,80) = 0.040$, $p = 0.84$, and the interaction between group and time for mindfulness, $F(1,80) =$

Table 2 Pre- and post-intervention means, standard deviations, and test statistics for key study variables

	Support group		CBCT group		Main effect			Group × Time		
	T1 *M* (*SD*)	T2 *M* (*SD*)	T1 *M* (*SD*)	T2 *M* (*SD*)	*F*	*p*	η^2	*F*	*p*	η^2
BDI-II	32.07 (13.07)	25.58 (14.35)	34.37 (11.95)	25.45 (15.36)	21.8	0.000013	0.222	0.54	0.23	0.007
BSS	24.69 (7.28)	20.08 (6.60)	22.50 (6.15)	18.79 (7.51)	20.6	0.000020	0.266	0.01	0.45	0.001
SCS	72.67 (19.08)	73.29 (14.57)	71.42 (15.75)	77.30 (17.47)	0.11	0.74	0.034	0.71	0.20	0.022
Self-kindness	14.51 (4.30)	15.10 (3.43)	13.63 (4.03)	14.33 (4.07)	1.42	0.24	0.017	0.01	0.41	.0.001
Self-judgment	13.29 (4.85)	12.19 (3.92)	10.73 (3.54)	13.58 (4.96)	0.53	0.47	0.007	8.21	0.002	0.092
Common humanity	12.90 (3.94)	12.77 (3.60)	12.21 (3.45)	14.29 (3.64)	1.08	0.30	0.013	1.74	0.10	.0.021
Isolation	9.58 (4.14)	9.58 (3.93)	8.92 (2.76)	9.50 (3.94)	0.49	0.49	0.006	0.49	0.49	0.006
Mindfulness	12.19 (3.70)	13.45 (2.98)	12.0 (3.21)	13.34 (3.41)	3.17	0.08	0.038	1.09	0.15	0.013
Over-identification	10.20 (4.17)	10.19 (4.10)	11.92 (3.22)	12.79 (3.29)	1.16	0.29	0.014	1.16	0.29	0.014
FFMQ	118.80 (21.14)	117.37 (16.89)	113.83 (14.02)	116.15 (17.68)	0.04	0.84	0.001	2.90	0.046	0.041
Observe	26.97 (6.23)	26.47 (5.97)	27.29 (5.95)	27.34 (6.24)	0.09	0.76	0.001	0.15	0.35	0.002
Describe	26.53 (8.62)	25.90 (5.40)	24.46 (6.08)	25.04 (5.25)	0.01	0.97	0.001	0.49	0.24	0.006
Act with awareness	22.57 (8.87)	22.67 (6.38)	21.81 (5.86)	22.00 (7.19)	0.04	0.85	0.001	0.01	0.42	0.001
Nonjudge	21.83 (6.36)	22.30 (5.33)	20.63 (4.56)	21.75 (5.36)	1.40	0.24	0.017	2.10	0.07	0.032
Nonreact	20.90 (5.17)	20.03 (4.00)	19.63 (4.76)	20.02 (5.36)	0.13	0.72	0.002	0.85	0.18	0.010

All variables represent total scores

Main effect ANOVA results represent the main effect results over time

T1, time 1; T2, time 2; BDI-II, Beck Depression Inventory—II; BSS, Beck Scale for Suicide Ideation; SCS, Self-Compassion Scale; FFMQ, Five Facet Mindfulness Questionnaire

0.714, one-tailed $p = 0.20$, were nonsignificant. However, consistent with what was predicted, there was a significant group and time interaction for self-compassion, such that at post-intervention, individuals randomized to the CBCT group had significantly greater increases in self-compassion than those randomized to the support group, $F(1,80) = 2.9$, one-tailed $p = 0.046$. Pairwise comparisons revealed that in the support group there was no significant change in self-compassion ($t(30) = -1.80$, $p = 0.082$), whereas in the CBCT group self-compassion scores increased significantly over time ($t(51) = 2.62$, $p = 0.011$).

The second aim addressed whether changes in self-compassion (overall and specific components) or mindfulness (overall and specific facets) significantly predicted changes in levels of depressive symptoms and suicidal ideation and if this relation differed by group. We found that the degree of improvement in self-compassion negatively predicted the degree of change in depressive symptoms $F(1,81) = 21.4$, $p = 0.000016$, R^2 change = 0.268. Also, as hypothesized, the degree of improvement in overall levels of self-compassion (total score) interacted with group to predict levels of depressive symptoms $F(1,80) = 5.21$, $p = 0.025$, R^2 change = 0.061. Further, whereas the degree of improvement in self-compassion did not have a main effect on the degree of change in suicidality, $F(1,81) = -1.56$, $p = 0.15$, R^2 change = 0.040, there was a significant interaction between degree of improvement in self-compassion and group to predict change in suicidal ideation $F(1,80) = 4.52$, $p = 0.037$, R^2 change = 0.056. More specifically, increases in levels of self-compassion predicted the degree of decrease in depressive symptoms and suicidal ideation in the CBCT group only. That is, individuals randomized to the CBCT group were more likely to become less depressed and suicidal if they increased in self-compassion, but this relation did not exist in the support group. Consistent with this, a similar pattern of results extended to decreases in depressive symptoms for individuals randomized to the CBCT group only vis-à-vis increases in all of the components of self-compassion as reflected in the SCS subscales: Self-Kindness ($F(1,80) = 5.50$, $p = 0.009$), Self-Judgment ($F(1,80) = 4.42$, $p = 0.03$), Common Humanity ($F(1,80) = 6.61$, $p = 0.002$), Isolation ($F(1,80) = 4.52$, $p = 0.03$), Mindfulness ($F(1,80) = 5.53$, $p = 0.02$), and Overidentification ($F(1,80) = 4.12$, $p = 0.045$). The pattern also emerged regarding decreases in levels of suicidal ideation for participants in the CBCT group only being predicted by increases in Common Humanity ($F(1,80) = 5.16$, $p = 0.013$) and Mindfulness ($F(1,80) = 5.40$, $p = 0.01$). No significant findings emerged related to suicidal ideation and the other components of self-compassion, namely Self-Kindness, Self-Judgment, Isolation, and Overidentification.

We also found that the degree of improvement in overall levels of mindfulness (total score) had a main effect on improvements in levels of depressive symptoms ($F = (1,81) = 8.98$, $p = 0.0002$, R^2 change = 0.220) interacted with group

to predict improvements in levels of depressive symptoms ($F(1,80) = 7.20$, $p = 0.001$, R^2 change = 0.083), but not suicidal ideation. Consistent with the self-compassion findings, increases in mindfulness predicted the degree of decrease in depressive symptoms in the CBCT group only. This same pattern of results extended to decreases in depressive symptoms for those in the CBCT group only. Specifically, these improvements were predicted by increases in three of the five facets of mindfulness as reflected in the FFMQ subscales of Observe ($F(1,80) = 5.10$, $p = 0.014$), Act with Awareness ($F(1,80) = 4.56$, $p = 0.027$), and Nonjudge ($F(1,80) = 5.24$, $p = 0.012$). Degree of improvement in the facets of mindfulness did not interact with group assignment to predict changes in levels of suicidal ideation.

Discussion

This investigation examined the efficacy of CBCT and potential mechanisms of change for African Americans and for suicide attempters. The results are promising and, as a pilot RCT, highlight the positive association of CBCT with the development of self-compassion. More specifically, the primary findings of interest in this pilot RCT are that although following intervention African American suicide attempters randomized to both CBCT and a support group demonstrated comparable reductions in levels of depressive symptoms and suicidal ideation and no significant changes in their levels of mindfulness, improvements in levels of self-compassion were found for those receiving the CBCT intervention. In addition, for individuals in the CBCT group but not in the support group, the degree of improvement in self-compassion predicted the level of reduction in depressive symptoms and suicidal ideation and the degree of improvement in mindfulness predicted the level of reduction in depressive symptoms. Taken together, the results indicate that CBCT is potentially valuable to this population and its emphasis on self-compassion and mindfulness is associated with improved psychological functioning.

Unfortunately, CBCT did not have as differential an effect compared to a support group on this population as expected. Contrary to predictions, depressive symptoms and suicidal ideation decreased roughly equivalently in the two groups, suggesting that CBCT did not provide incremental utility for decreasing these symptoms in low-income, African American suicide attempters. This finding is in contrast to results from other studies of compassion- or mindfulness-based interventions in general (Hofmann et al. 2010) and CBCT specifically (Desbordes et al. 2012; Mascaro et al. 2013; Pace et al. 2008; Pace et al. 2013; Reddy et al. 2013). There are several potential explanations for this lack of superiority of CBCT for this sample and for the discrepancy in results. First, with only 82 total participants, we may not have had the power to detect small interaction effects that would reveal modest benefits of the CBCT group relative to the support group (McClelland and Judd 1993). This effect may be evident in a full-scale RCT. Second, CBCT may not provide additional benefits beyond what is provided by a support group for this sample, which differs from samples in other studies in racial makeup and clinical symptomology. For example, both groups may have provided a sense of belongingness, an important protective factor for suicidal behavior (Joiner 2005; Stellrecht et al. 2006). In fact, changes in the Common Humanity subscale of the SCS were one of the two components of self-compassion that predicted changes in suicidality in this sample (albeit only in the CBCT group), which may indicate the importance of belongingness. Although belongingness is an important factor among many suicidal groups (Chu et al. 2017), it may be that this factor is even more important among African Americans that may feel additionally marginalized by race, thus increasing isolation. More research is needed in this understudied population to determine the role of increased belongingness in reducing suicidality. Third, it is possible that the intervention was too brief (six sessions) to more significantly impact psychological symptoms in this high-risk population. There is evidence that longer-term mindfulness interventions are more efficacious and the same may be true for CBCT (Hopwood and Schutte 2017).

Of considerable significance, however, individuals randomized to the CBCT group did have markedly greater improvements in their levels of self-compassion as compared to individuals randomized to the support group, who did not evidence such enhancements. Other compassion interventions have more positive effects than a variety of control conditions on self-compassion. This has been found to be the case in various samples of adults (Albertson et al. 2015; Birnie et al. 2010; Gilbert and Procter 2006; Jazaieri et al. 2013; Neff and Germer 2013; Shapiro et al. 2007; Smeets et al. 2014). As previously mentioned, the benefits of self-compassion extend beyond its negative correlation with mood symptoms to other aspects of psychological well-being.

These benefits, in turn, may provide symptom relief in the long term. This hypothesis is supported by the finding that changes in self-compassion were associated with changes in depressive symptoms and suicidal ideation in the CBCT group only. Thus, CBCT may provide continued improvement or stability compared to support groups, even though participants in both groups had similar levels of depressive and suicidal ideation after treatment in this study. Other studies also have found that improvements in self-compassion are associated with reductions in level of stress, shame proneness, and mood disturbance and increases in levels of mindfulness and spirituality (Birnie et al. 2010; Dunn et al. 2012; Proeve et al. 2018; Shapiro et al. 2007).

Interestingly, we found that mindfulness was not increased in either group. This is not uncommon in the literature; a

recent review found that over half of reports on mindfulness-based interventions found no effects on self-reported mindfulness (Visted et al. 2015). The fact that self-compassion was a more robust contributor than mindfulness to positive responses to treatment is consistent with other findings. One study found that lack of self-compassion was a better predictor than lack of mindfulness of the severity of anxiety and depressive symptoms and quality of life in a community sample seeking self-help for anxious distress (Van Dam et al. 2011). Similarly, self-compassion was a stronger predictor than mindfulness of psychological health in undergraduates (Woodruff et al. 2014) and in adolescents (Gallla et al. 2016). Moreover, self-compassion, but not mindfulness, was found to mediate the effect of a yoga-based intervention on perceived stress (Gard et al. 2012). Together, these data are consistent with evidence that self-compassion and mindfulness make independent contributions to psychological well-being (Baer et al. 2012) and that self-compassion may be a better predictor of well-being and treatment response than mindfulness.

Limitations

Several limitations of this study should be noted. First, our sample size was relatively small, leading to limited power to detect interaction effects and an inability to examine potentially relevant mediators and moderators of treatment effects. For example, we did not have the power to compare our results between male and female participants, which may be an important distinction. Relatedly, we were unable to include data from the three-month follow-up assessment due to the marked sample size reduction. Second, we were not able to compare CBCT to other empirically supported treatments to determine if the benefits of CBCT are unique or if other treatments perform equally or more favorably for African American suicide attempters. Given the findings, Buddhist-derived programs that focus specifically on self-compassion may prove to be particularly effective in this population and should be evaluated. Third, we chose to focus on self-compassion and mindfulness given previous findings in this population but did not include a measure compassion for others even though it is a focus of CBCT. Compassion for others may in fact play an important role and we plan to measure this construct as part of future CBCT research. Fourth, one could argue that a feasibility study should have been conducted before starting a pilot RCT. Nevertheless, we chose to proceed with a pilot RCT, given the experience at our institution with the CBCT approach for a range of populations. Fifth, there was a significant attrition rate during this pilot RCT. Unfortunately, with this population we have found that a high attrition rate is common (Kaslow et al. 2010). Stated reasons for leaving the study are often that participants have barriers associated with homelessness, the participants are unreachable or have moved, or the participants have unstable financial situations making reliable transportation more difficult. These are significant hurdles that seem to be present regardless of what intervention is being implemented in this population (Kaslow et al. 2010); thus, a full-scale RCT implemented in this population should consider methods of easing participation and attendance.

Future Research

Despite these limitations, the results suggest several avenues for future study. More research is needed to determine how suicide attempters who receive CBCT fare after treatment and if intervention benefits are sustained over time and/or more evident with time. More examination is needed to determine if interventions designed to improve self-compassion (i.e., MSC, CFT) provide consistently stronger results than those that focus on mindfulness. Studies should be conducted that compare multiple forms of treatment in this population and address differential treatment outcomes, investigate factors that predict which individuals benefit most from the CBCT intervention, and ascertain which variables are associated with greater improvements with other interventions. For example is the capacity for interpersonal connectedness that is associated with greater improvements in related interventions (Shapira and Mongrain 2010) and better intervention attendance in suicidal African American women (Ilardi and Kaslow 2009) also a predictor of treatment response to CBCT including CBCT with African Americans and if so is it differentially related to progress in different interventions.

Finally, the findings that emerged highlight the potential value of incorporating a greater focus on compassion in interventions with African Americans. More research is needed to determine whether further cultural adaptions may provide benefit to this population. For example, researchers should evaluate whether there may be gains made by a greater focus at the outset and throughout the intervention on building trust between the therapist and client/patient, which will require the therapist to exhibit technical and interpersonal competence as manifested through reliable and dependable behavior, a commitment to patient-centered care including open communication, and expressions of authentic compassion (Jacobs et al. 2006). In addition, more empirical attention needs to be given to the extent to which a therapist demonstrates a multicultural orientation that includes cultural humility (i.e., accurate view of self, other- rather than self-focused interpersonal stance characterized by respect and compassion) is associated with a stronger working alliance and better outcomes in CBCT interventions with African Americans (Hook et al. 2013).

Author Contribution DL performed all data analyses and wrote the majority of the manuscript and made all requested edits from the editorial board. SAM coordinated a portion of data collection, wrote part of the "Methods" section of the manuscript, and provided proofreading and

edits. BP trained study therapists and conducted group therapy sessions and provided information used in crafting parts of the "Methods" section. LTN was a primary developer of CBCT and approved the manuscript. NJK is the primary investigator on the project and provided detailed editing and feedback on the manuscript.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Emory University IRB provided approval for this study.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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