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Outcomes of People of Color in an Efficacy Trial of Cognitive-Behavioral Treatments for Anxiety, Depression, and Related Disorders: Preliminary Evidence

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Abstract

Though evidence-based psychological treatments such as cognitive behavioral therapy (CBT) have strong empirical support for reducing anxiety and depression symptoms, CBT outcome research often does not report race and ethnicity variables, or assess how well CBT works for people from historically excluded racial and ethnic groups. This study presents post-hoc analyses comparing treatment retention and symptom outcomes for participants of color (n = 43) and White participants (n = 136) from a randomized controlled efficacy trial of CBT. Chi-square tests

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and one-way ANCOVA analyses showed no observable differences between the two samples on attrition or on clinician-rated measures of anxiety and depression at post-treatment and follow-up. Moderate to large within-group effect sizes on anxiety and depression were found for Black, Latinx, and Asian American participants at almost all timepoints. These preliminary findings suggest that CBT for anxiety and comorbid depression may be efficacious for Black, Asian American, and Latinx individuals.

Keywords

people of color; cognitive behavioral therapy; treatment outcomes; race; ethnicity

Introduction

Evidence-based psychological treatments (EBPTs) are the gold standard of care for common mental health conditions, such as anxiety, depressive, and related disorders (David et al., 2018; Rachman, 2009). However, empirical support is still being established for several EBPTs (e.g., cognitive-behavioral therapy (CBT), behavior activation, mindfulness-based interventions) with racially and ethnically marginalized adults (Huey et al., 2014), or, "people of color (POC)." In accordance with guidelines from National Institutes of Health (NIH; NIH, 2001), POC in this paper includes individuals identifying as either 1) any race other than White, 2) ethnically Latinx, or 3) more than one race. Historically, Black, Indigenous, Asian American, and Latinx individuals have not been adequately represented in clinical trials (Geller et al., 2011), and the consequence of White participants being overrepresented in clinical trials is that there is insufficient empirical evidence for the efficacy of standard EBPTs for POC.

In 1993, the NIH Revitalization Act passed by the U.S. Congress mandated inclusion of underrepresented groups, such as Black, Latinx, and Indigenous people, into clinical research. Eight years later, a U.S. Surgeon General report on mental health care highlighted that no clear guidelines for treating mental health in POC could be determined given the scarcity of research in this area (U.S. Department of Health and Human Services, 2001), and NIH issued a policy mandating the inclusion of POC in NIH-funded clinical research (NIH, 2001). Despite these mandates and other calls to action, reported numbers of POC in clinical trials for mental health treatments remain low (Benuto et al., 2020; DeLuca et al., 2018; Grau et al., 2021; Mendoza et al., 2012; Polo et al., 2019). For example, Benuto et al. (2020) conducted a systematic review of POC participants in clinical trials of prolonged exposure therapy for the treatment of post-traumatic stress disorder (PTSD) and found that, though Black/African-American individuals were overrepresented in many studies, only 4.9% of participants were Latinx and 0.6% were Asian American or Pacific Islander, with 4.7% selecting "other." Demographic information on race and ethnicity of treatment samples is still frequently omitted (Geller et al., 2018; Polo et al., 2019), and even when race and ethnicity are reported, few researchers examine outcomes of POC specifically (Geller et al., 2011). Consequently, NIH issued an amendment to the original mandate requiring analyses by race and ethnicity as well as "sex/gender" (NIH, 2017). As most EBPTs were developed and tested in academic institutions with predominantly White faculty and students, and

thus reflect the needs and values of White patient populations (which may vary from other groups), the question remains as to whether POC improve when they receive standard EBPTs, and whether improvements occur at similar rates in comparison to White patients.

The question of whether standard EBPTs are efficacious for POC is important for efficient identification of treatment options for members of these marginalized racial and ethnic groups, which is needed as part of the effort to meet the growing demand for services. Empirical support for standard EBPTs delivered to POC is a critical public health need as these patients comprise a growing portion of the U.S. population (Vespa et al., 2018). Unfortunately, mental health service utilization disparities for POC compared to White individuals have endured (De Luca et al., 2016), with Asian Americans seeking care at particularly low rates (Cook et al., 2014; Lipson et al., 2018; Yang et al., 2020). Research has shown that mismatches between interventions and patients, including low cultural sensitivity of treatments or providers, may lead to lower treatment engagement, irregular attendance, and limited overall effectiveness of care (Whaley & Davis, 2007). If standard EBPTs fail to produce equitable benefits for POC and White patients (i.e., if POC who do access treatment are systematically not improving at the same rate or to the same degree as White patients), it suggests that standard EBPTs may not be adequate for these patients (Huey et al., 2014; Sbrocco et al., 2005). As such, to avoid the negative effects of ineffective treatment, it is importance to advance knowledge on standard EBPTs for POC.

Empirical support for EBPTs from the last two decades continues to be limited for POC both in scope and scientific rigor (e.g., naturalistic studies that lack control groups; Carter et al., 2018; Horrell, 2008). Additionally, further disparity exists *between* POC racial and ethnic groups, with Indigenous people and Asian Americans having the least representation in scientific literature for standard treatment outcomes (Carter et al., 2012; Jackson et al., 2006; Liu et al., 2019). To our knowledge, there is only one report to date (see Markell et al., 2014) of EBPT for social anxiety or generalized anxiety disorder (GAD) in Black individuals. This disparity of evidence is important given the associations between racism, discrimination, and increased risk for mental health difficulties (Williams, 2018), such as social anxiety disorder (Levine et al., 2014).

Research has produced mixed findings on primary outcomes of symptoms of anxiety, depression, and traumatic stress, and also on rates of attrition in POC (Carter et al., 2012; Horrell, 2008). Some early studies found no differences in PTSD outcomes and attrition among Black, Latinx, and White veterans (Rosenheck & Fontana, 1996; 2002), and several cognitive behavioral therapy (CBT) studies reported no differences between White women and women of color (specifically Black and Asian American/Pacific Islander women) on treatment outcomes or attrition for PTSD and OCD treatments (Friedman et al., 2003; Kubany et al., 2003; Zoellner et al., 1999). Additionally, a more recent telephone-delivered CBT program for GAD and panic disorder found no differences in outcomes for Black patients (Rollman et al., 2017). However, other studies have found higher attrition in POC (Fortuna et al., 2010; Owen et al., 2012; Roberts et al., 2011; Spoont et al., 2015), and in some studies, this difference in attrition is present despite no differences in anxiety and depression outcomes (e.g., treatment for PTSD in Black and White Veterans, Rosenheck et al.,1995; CBT for PTSD in Black and White women, Lester et al., 2010). Other studies

have reported both higher attrition *and* lower anxiety and depression symptom improvement for POC compared to White patients (CBT for panic disorder and agoraphobia in Black women, Chambless & Williams, 1995; Friedman & Paradis, 1991; CBT for depression in low-income Black and Latinx individuals; Organista et al., 1994); yet, recent studies have found that Black veterans receiving PTSD treatment may have *lower* attrition rates (Maguen et al., 2019) but worse outcomes (Sripada et al., 2019) than non-Black veterans. Overall, the very limited research on EBPTs that report attrition and treatment outcomes by race and ethnicity is inconsistent and this work has, in general, failed to include Latinx, Asian American, or Indigenous people. In sum, EBPTs for common mental health disorders have not been sufficiently tested with POC; thus, evidence that EBPTs are efficacious and effective for Black, Indigenous, Asian American, and Latinx people has yet to be well-established.

Current Study

The present study reports data from a large randomized-controlled efficacy trial that compared two styles of CBT, transdiagnostic and single-disorder CBT, for anxiety and comorbid depressive disorders. In line with the NIH amendment (NIH, 2017), our analyses examine outcomes by race and ethnicity in this clinical trial. For the purposes of this post-hoc investigation, the authors aim to compare treatment retention and symptom outcomes for White and POC study participants. Based on the findings of previous, similar post-hoc studies (e.g., Lester et al., 2010), we hypothesize that no observable differences will be found across groups in outcomes for symptoms of anxiety and depression. However, given the variability in findings on treatment retention and that study protocols did not include targeted strategies to retain POC participants (Yancey et al., 2006), we hypothesize higher treatment drop-out rates for POC participants compared to White patients. Additionally, an exploratory aim of this study is to examine treatment effect size across timepoints for the three largest POC groups in this study (Black, Asian American, and Latinx participants) to clarify whether treatment may have been less efficacious for any particular group.

Method

Participants

Data were derived from a study examining transdiagnostic and single-diagnosis CBTs, described in detail in XX (blinded for review). Participants were enrolled in a clinical trial completed at an outpatient clinic at a large urban university. Individuals were included in the study if they were 18 years or older, fluent in English, able to attend all treatment sessions and assessments, and met criteria for a principal (most interfering and distressing) DSM diagnosis of any of the following: generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), social anxiety disorder (SOC), or panic disorder, with or without agoraphobia (PD/A). Exclusion criteria included diagnoses or psychological conditions that warranted immediate or simultaneous treatment (e.g., active psychosis, organic mental disorder, high suicide risk, acute substance use disorder) or a recent course of CBT (i.e., eight or more sessions within the past five years). If participants endorsed regularly taking any psychotropic medications during eligibility screening, they were asked

to remain stable on their medication dosage for the duration of treatment, and to report any medication changes to study personnel.

Information on race and ethnicity was collected from a study demographics form (see description of form in measures section). Participants self-reported race by selecting one or more of the following: (a) *American Indian or Alaska Native*, (b) *Asian,* (c) *Native Hawaiian or other Pacific Islander*, (d) *Black or African American*, (e) *White/Caucasian*, (f) *more than one race*, (g) *unknown or not reported* or by writing in their identification. Additionally, participants were asked to self-report between three categories for ethnicity: *Hispanic or Latino*, *Non-Hispanic or Latino*, or *Unknown*. These categories were listed on the demographics form in accordance with reporting policy from NIH (NIH, 2001).

As shown in Table 1, the mean age of White participants (n = 136; 52.9% female) was 31.04 (*SD* = 11.05). The mean age of POC participants (n = 43, 62.8% female) was 29.4 (*SD* = 9.9). Participants in the POC sample identified as: *Black or African American* (n = 13); *Asian* (n = 12); *Hispanic or Latino* (n = 15), 13 of which identified as both *White/Caucasian* and *Hispanic or Latino*; *Native Hawaiian or other Pacific Islander* (n = 1); and *more than one race* (n = 4).

Procedures

Written informed consent was obtained from participants prior to participation. Participants were randomized by principal diagnosis to receive either a transdiagnostic CBT intervention, a CBT intervention matched to their principal diagnosis, or to a waitlist control. For the purposes of this investigation, clinical outcomes from both CBT treatments were examined together and waitlist participants were excluded. Outcomes were not compared between treatment groups or to the waitlist because the sample size of POC participants when divided by study condition would be too small to allow for comparison. CBT treatment lasted 16 sessions, except for those with a principal diagnosis of PD/A, who received 12 sessions, in line with recommendations from protocol developers (see Barlow & Craske, 2007). Participants' symptoms were assessed at baseline, every four sessions, and at post-treatment. In the case of comorbid diagnoses, principal diagnosis was determined by team consensus. All participants in the treatment condition were also assessed 6-months and 12- months following the study. They were administered a battery of clinician-rated assessment for each clinical diagnosis they were assigned at baseline (for further detail see XX (blinded for review).

The study's clinical team (i.e., assessors and therapists) was comprised of clinical psychology doctoral students with 2 to 4 years, post-doctoral fellows with 5 to 6 years, and licensed clinical psychologists with 10 or more years of clinical experience. Assessors included one man and five women, and therapists included two men and five women. All assessors and therapists were White. Study assessors completed initial training procedures, then were selected at random to submit audiotaped assessments for rating by a second evaluator throughout the trial to ensure inter-rater reliability. Interrater agreement for principal diagnosis CSR was 98%. Additionally, 20% of study therapists' audiotaped treatment sessions were selected at random for adherence and competence ratings, to ensure treatment fidelity across conditions. Tapes were rated by an external team of expert

raters associated with the development of each treatment protocol, and used standardized assessment ratings. Fidelity scores across protocols were good to excellent.

Measures

The measures utilized for the current investigation are primary outcomes of the main study. Below we specify clinical cut-off scores and the psychometric properties of the measures, if any were found, for POC. For full details on measures' psychometric properties see XX (blinded for review).

Anxiety Disorders Interview Schedule (ADIS)—Participants were assessed for current anxiety, mood, trauma-related, OCD-related, and somatic symptom disorders with an Anxiety Disorders Interview Schedule (ADIS; Di Nardo et al., 1994; Brown & Barlow, 2014), a semi-structured diagnostic clinical interview with clinical severity rating (CSR) on a scale from *no symptoms* (0) to *extremely severe symptoms* (8), with a rating of 4 or above (*definitely disturbing/disabling*) indicating clinical levels of distress and interference. The ADIS has strong inter-rater reliability; however, no psychometric data on the ADIS have been published at the time of this writing.

Because the DSM-5 (APA, 2013) was published during the trial's data collection period, approximately two-thirds of the sample were assigned diagnoses based on the DSM-IV (APA, 1994) criteria, and approximately one-third received diagnoses based on DSM-5 criteria. To account for the DSM-5's separation of panic disorder and agoraphobia, and to standardize CSR assignments between the manuals, participants receiving panic disorder and/or agoraphobia diagnoses using DSM-5 were given an additional overall PD/A CSR rating.

Panic Disorder Severity Scale (PDSS)—The PDSS (Shear et al., 1997) was administered by study evaluators to measure panic disorder symptoms and their impact on participants' functional impairment. This clinician-rated measure consists of 7 items that fall on a 5-point Likert-scale (0–4), with higher scores indicating higher symptom severity and impairment. A clinical cut-off score of 8 has been indicated for PDSS and 40–74% improvement in scores indicates "much improved" (Furukawa et al., 2009). To the authors' knowledge, no data were available on the psychometric properties of this measure for POC samples.

Liebowitz Social Anxiety Scale (LSAS)—Study evaluators administered the LSAS, a 24-item, clinician-rated scale, which measures both avoidance and fear of social interactions and performances, with higher scores indicating higher severity (Fresco et al., 2001; Heimberg, et al., 1999; Liebowitz, 1987). A clinical cut off of a total score of 60 (sum of the two subscales fear and avoidance) has been found in some studies (Mennin et al., 2002). The LSAS has shown excellent internal consistency and temporal stability for Black patients (Beard et al., 2011) and Latinx patients (Beard et al., 2012), suggesting the measure may perform similarly for Black, Latinx, and White samples.

Generalized Anxiety Disorder Severity Scale (GADSS)—The GADSS (Shear et al., 2006) evaluates core symptoms of GAD and their impact on an individual's functioning. The

GADSS is a 6-item, clinician-rated measure with higher scores indicating higher symptoms severity and functional impairment; items fall on a 5-point scale, ranging from *none* (0) to *very severe* (4). To the authors' knowledge, no data were available on the psychometric properties of this measure for POC samples. One study evaluating the utility of the GADSS in older adult populations included 22% Black individuals and found that the measure demonstrated adequate internal consistency, strong interrater reliability, adequate convergent validity, poor diagnostic accuracy, and mixed discriminant validity (Weiss et al., 2009); however, such properties were not broken down by ethnicity.

Yale-Brown Obsessive-Compulsive Scale Interview, 2nd edition (Y-BOCS-II)— The Y-BOCS-II is a 10-item, clinician-rated interview designed to assess severity of OCD symptoms and resulting functional impairment (Goodman et al., 1989; Storch et al., 2010; Wu et al., 2016). Higher scores are indicative of higher severity of OCD and impairment, and items are scored from *none* (0) to *extreme* (5) on a Likert-scale. Studies of criterion validity have shown a clinical-cut off score of 13 indicates clinical levels of OCD (Storch et al., 2015). In addition, the Y-BOCS clinician-rated version has demonstrated concurrent validity across Black adults (Williams et al., 2013) and Black, Latinx, South Asian/East Indian, and Southeast Asian undergraduates (Washington et al., 2008).

Structured Interview Guide for the Hamilton Anxiety Rating Scale (SIGH-A)— The SIGH-A (Shear et al., 2001) is a 14-item, clinician-rated interview guide that was developed to provide specific instructions for administration and scoring of the Hamilton Rating Scale for Anxiety (Hamilton, 1959). To the authors' knowledge, no data were available on the psychometric properties of this measure for POC samples.

Structured Interview Guide for the Hamilton Depression Rating Scale (SIGH-D).—The SIGH-D (Williams, 1988) is a 17-item, clinician-rated interview guide that was developed to provide specific instructions for administration and scoring of the Hamilton Rating Scale for Depression (Hamilton, 1960). To the authors' knowledge, no data were available on the psychometric properties of this measure for POC samples.

Demographics Form—Study participants provided detailed demographic information regarding race and ethnicity, sex, age, household income, marital status, employment, and education. Sex was assessed as a binary variable (man or woman). Age and household income were continuous variables. Similar to other studies (e.g., DeRubeis, et al., 2014) marital status was defined as married or cohabitating versus single. Employment was divided into three categories: unemployed, full time student, or employed (including *full-time*, *part-time*, and "*other*" employment). Finally, education was defined as high school (including individuals whose highest level of education was some or the completion of high school), college (some college, Associate's degree, or Bachelor's degree), and advanced degree (Master's, doctoral student, doctorate, other [e.g., JD]).

Treatment

Study participants received CBT based on the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP; Barlow et al., 2018) or a single-diagnosis

protocol (SDP). The UP targets core, temperamental factors that are thought to lead to the development and maintenance of anxiety, depression, and related disorders; it has demonstrated good efficacy compared to SDPs (Barlow et al., 2017). SDPs included in this trial targeted SOC (Hope et al., 2006), PD/A (Barlow & Craske, 2007), GAD (Zinbarg et al., 2006); and OCD (Foa et al., 2012). For full details on treatments see XX (blinded for review).

Results

Analyses were conducted using SPSS versions 20 and 27. Data from both CBT conditions were collapsed to compare the effects of treatment on POC and White participants post-treatment as well as at 6- and 12-month follow-up. Missing data were imputed at the item-level when 30% or fewer of the items on a given scale were unanswered by substituting the mean of a participant's responses for missing values (Ake, 2005; Fox-Wasylyshyn & El-Masri, 2005; Roth et al., 1999). Listwise deletion was used when more than 30% of the items were missing. In addition, Shapiro-Wilk tests indicated that the data were normally distributed with the following exceptions: SIGH-D at post ($p = 0.001$), LSAS Avoidance ($p = 0.04$), SIGH-A ($p = 0.016$), and SIGH-D ($p = 0.015$) at six-month follow-up, and SIGH-D ($p = 0.022$) at 12-month follow-up. For all of these measures the data were significantly positively skewed.

Pre-treatment

Preliminary Analyses and Symptom Differences at Baseline—Differences between White participants and POC on several baseline variables were explored. Chi square test indicated no difference between these groups on the following demographic variables: sex, $\chi^2(1) = 1.28$, $p = 0.26$, employment, $\chi^2(5) = 2.48$, $p = 0.77$, education, $\chi^2(8) = 4.01$, $p = 0.85$, marital status, $\chi^2(1) = 2.19$, $p = 0.14$, and treatment condition, $\chi^2(1) = 2.10$, $p = 0.15$. Additionally, independent samples t-tests found no difference in age, $t(177) = -0.85$, $p = 0.40$) or household income, $t(152) = -1.68$, $p = 0.09$.

Regarding clinical characteristics at baseline, the most common principal diagnosis for POC was SOC (n = 20) and the average ADIS CSR across all principal diagnoses fell in the *moderate* to *severe* impairment range ($M = 5.5$, $SD = 0.8$), with an average of 2.6 comorbid diagnoses ($SD = 2.0$). When compared, independent samples t-tests showed no difference between POC and White participants on principal diagnosis CSR, $t(177) = 0.68$, $p = 0.50$, number of comorbid diagnoses, $t(177) = 0.61$, $p = 0.54$, GADSS, $t(85) = 1.00$, $p = 0.32$, PDSS, $t(53) = 0.83$, $p = 0.41$, LSAS total fear, $t(91) = 1.71$, $p = 0.09$, LSAS total avoidance, $t(91) = 1.53$, $p = 0.13$, SIGH-D $t(177) = 0.81$, $p = 0.42$, SIGH-A, $t(177) = 0.51$, $p = 0.61$, and Y-BOCS $t(47) = 0.15$, $p = 0.88$.

However, chi-square tests revealed that POC and White participants differed on use of medication for psychological disorders at baseline, $\chi^2(1) = 7.22$, $p = 0.007$, and their principal diagnosis, $\chi^2(3) = 13.27$, $p = 0.004$. While 42.9% of the overall sample was currently taking a psychoactive medication, a lower percentage of POC (39.5%) were taking medications compared to White participants (61.0%). A Cramer's V value of 0.20 ($p = 0.007$) indicated that this association represented a weak positive relationship. With regard

to principal diagnosis, an examination of adjusted residuals indicated significantly more POC were diagnosed with SOC and significantly fewer POC were diagnosed with PD/A. Furthermore, a Cramer's V value of 0.27 ($p = 0.004$) indicated a weak positive relationship.

Treatment Outcomes

Relationship between Race or Ethnicity and Treatment Outcomes—Descriptive statistics for measures at each time point are displayed in Table 2. A chi-square test indicated that there were no observable differences in rates of attrition between the two participant samples at post-treatment, $\chi^2(1) = 0.23$, $p = 0.63$. One-way ANCOVA analyses were conducted to examine differences in treatment outcomes at the post and follow-up assessments between participant groups while controlling for continuous and categorical covariates. The presence of psychoactive medications and principal diagnosis were controlled for in the analyses because these variables significantly differed between participant groups. Baseline scores of each measure were also controlled for in the analyses, to account for symptom severity. While some measures were not normally distributed, correlations between baseline and the measure of interest ranged from 0.30 – 0.46 and some have suggested that ANCOVA can still be appropriately utilized under these conditions (Vickers, 2005).

Levene's test indicated equal variance on all measures between the two groups at all time points (all p-values > .05). Results of the ANCOVA suggested that there was a significant difference in post-treatment SIGH-A scores, F (1, 114) = 4.52, $p = 0.04$, $\eta p2 = 0.04$. A comparison of the estimated marginal means indicated that POC had lower SIGH-A scores at post-treatment ($M = 6.90$, $SE = 1.10$) than White participants had ($M = 9.64$, $SE = 0.63$). No significant differences were found at post-treatment between White participants and POC on any of the remaining measures, including the principal diagnosis CSR, PDSS, GADSS, LSAS, Y-BOCS, and SIGH-D (see Table 2). Similarly, as shown in Table 2, no observable differences were found between the two groups on any of the outcome variables at either 6MFU and 12MFU.

Examination of Effect Sizes by Racial and Ethnic Group—An exploratory aim of this study was to further examine differences in treatment response among White participants and POC from different racial and ethnic groups. Analyses focused on the effect sizes of treatment outcomes of White participants and the three groups of POC with comparable sample sizes: Black, Asian American, and Latinx participants. The SIGH-A and SIGH-D (see means and standard deviations in Table 3) were used for these analyses because all participants received these measures regardless of principal diagnosis. Within-group standardized gain effect sizes were calculated and compared at post-treatment and follow-up (see Table 4). At post-treatment, the largest significant effect size for anxiety were found with Black participants (SIGH-A $ESsg = 1.29$) followed by Latinx participants (SIGH-A $ESsg = 0.99$), White participants (SIGH-A $ESsg = 0.72$), and then Asian American participants (SIGH-A $ESsg = 0.68$).

Similarly, the largest significant effect sizes for depression were found with Black participants (SIGH-D $ESsg = 1.24$) followed by Latinx participants (SIGH-D $ESsg = 0.97$),

and then White participants (SIGH-D *ESsg* = 0.55). However, the effect size for depression with Asian American participants was non-significant at post-treatment. By the 12-month follow-up point, all effect sizes across all groups for anxiety and depression were significant and moderate to large (see Table 4).

Discussion

This study adds to the limited literature on treatment outcomes of standard EBPTs for anxiety, depression, and other common mental health disorders in POC. Post-hoc analyses were used to examine treatment outcomes between POC and White study participants from a large randomized controlled trial of CBT protocols. As hypothesized, results from the present study evidenced no observable differences in symptoms of anxiety and depression between POC and White participants. Contrary to our hypothesis, there were also no observable differences in the rates of attrition between White participants and POC. Lastly, our exploratory analyses provided data on within-group treatment effect sizes for Black, Latinx, Asian American, and White participants.

At baseline, the POC and White participants demonstrated no differences on demographic and clinical characteristics with the exceptions of principal diagnoses and use of psychotropic medications. POC were more likely to have a principal diagnosis of social anxiety disorder and less likely to be on medications or have a principal diagnosis of panic disorder. Lower rates of medication for psychological conditions in POC compared to White participants have been previously reported (Coleman et al., 2016; Jung et al., 2014) as have lower rates of panic disorder (Marques et al., 2011). Higher rates of social anxiety for POC participants are unsurprising given research on the effects of discrimination and racism on social anxiety in Black individuals (Levine et al., 2014), as well as findings that Asian Americans, who are more likely to be culturally socialized toward interdependent self-construal and experience heightened sensitivity to social threat, score higher on measures of social anxiety (Krieg & Xu, 2018).

As hypothesized, treatment outcome differences were not observed for symptoms of anxiety and depression between White participants and POC. One exception to this was a better outcome for POC on one measure of anxiety at post-treatment only; however, no differences on any measure were found between groups on outcomes six- and twelve-months following treatment. Though some studies have found lower improvement rates for Black and Latinx individuals with anxiety and depression (e.g., Chambless & Williams, 1995; Friedman & Paradis, 1991; Organista et al., 1994) and better outcomes for culturally-adapted treatments compared to standard ones (Hall et al., 2016; Rathod et al., 2018), our findings support Huey et al., (2014)’s review on the effects of standard and culturally adapted psychological treatments for POC (total of 140 trials), which found that outcomes of POC were comparable to those of White individuals. In sum, our preliminary data suggest manualized CBT for anxiety and comorbid depression may be helpful for POC, as their outcomes aligned with those from the main study that showed clinically meaningful changes with treatment (blinded for review). At minimum, our study shows that EBPTs for anxiety were not iatrogenic for our POC subsample.

Our findings on attrition align with the those of Friedman et al. (2003), Kubany et al. (2003), Rosenheck & Fontana (1996; 2002), and Zoellner et al. (1999), in that we found no relationship between race or ethnicity and early treatment termination. Hypothesized reasons for high attrition rates among POC include limited cultural responsiveness of treatments or therapists delivering care (Whaley & Davis, 2007), and the intersecting factor of socioeconomic status, as individuals with lower incomes may have greater barriers to regular attendance (Wierzbicki & Pekarik, 1993). Indeed, of the participants who provided information on their income (81 white participants and 33 POC, including 10 Asian Americans, 8 Latinx, and 12 Black participants), POC had significantly lower mean income (M = 35,894.18, SD = 25,017.22) compared to White participants, $t(112) = -2.3$, $p < .01$. Despite this income disparity, there was still no significant difference between groups in attrition; this finding provides preliminary support for CBT's potential to retain POC with anxiety and related disorders in treatment.

Finally, exploratory analyses revealed large, significant effect sizes on both anxiety and depression for Black and Latinx participants, moderate, significant effect sizes on anxiety and depression for White participants with anxiety and depression, and moderate effect sizes on anxiety for Asian American participants at post-treatment and follow-up. However, the effect size for depression with Asian American participants was non-significant at post-treatment and significant one year later. These findings parallel extant reviews of CBT for POC; despite some studies showing preliminary efficacy for CBT on depression in Black and Latinx individuals, historically, it has been difficult to draw similar conclusions for Asian Americans, because Asian Americans have been so underrepresented in CBT research (Huey & Tilley, 2018; Horrell, 2008). One study found that culturally-adapted CBT may be more effective than standard CBT in reducing Asian Americans' symptoms, though in this study neither treatment achieved remission of severe depression (Hwang et al., 2015). Ultimately, more research is needed to determine whether Asian Americans benefit similarly to other groups from standard CBT.

Limitations

Findings from the present study should be understood within their limitations, many of which are not unique to our analyses, but endemic to the research in this area. First, the present study was conducted post-hoc, increasing the chances of a Type I error, where false effects may be found. Additionally, though this study failed to reject the null hypothesis of no differences between groups, not finding an effect is not the same as proving the effect does not exist and does not necessarily mean effects between groups are equivalent.

Another important limitation of the study is the measurement of symptoms. Some assessment measures used in the study had been validated with POC populations but others have not. Psychological measures may display different psychometric properties for different populations than the original one with which a measure was developed and calibrated (Dana, 1993; Hambrick et al., 2010); consequently, we cannot be certain that outcomes for POC can be interpreted the same as outcomes for White participants. Our study also reports clinician-administered measures; of note, all study clinicians were White, and their ratings of POC may have been influenced by their level of cultural responsiveness

and/or participants' comfort with disclosing fear and perceived threat related to their marginalized status (Hunter & Schmidt, 2010).

Possibly the greatest limitation of the study is that all POC were grouped into a single, heterogenous category for the purpose of conducting primary analyses. Black, Latinx, and Asian American individuals can strongly differ in terms of cultural values, immigration experiences and acculturation, specific minority stressors, and language; grouping them together may obscure meaningful differences among members of these groups. Furthermore, each subgroup may vary in their treatment response, and this study would be unable to detect these nuances in primary analyses (Miranda et al., 2003). Unfortunately, although the subsamples of POC were mostly representative of the state in which the research took place, each subgroup was too small to analyze in the primary analyses independently. Since we were unable to recruit any Indigenous participants, our study cannot contribute to the body knowledge on CBT for Indigenous people. We also have incomplete racial data for individuals who were ultimately ineligible for the study.

Finally, we did not have available data on the degree to which POC affiliated with their culture or with the cultural variables that are predominant in CBT (Hays, 2009), and so race and ethnicity were used as a limited proxy for culture. Our sample comprised individuals seeking specialized care at a single treatment center, who may overall differ in socioeconomic status from those visiting community mental health centers; similarly, we did not have data on immigration status, and participants who did not speak English were excluded from the trial. These variables may be important in moderating treatment responses for POC and may limit the generalizability of our findings. However, within these limitations, the present study makes a significant contribution to the literature on treatment and attrition outcomes of POC receiving CBT for anxiety, depression, and related disorders, given the high methodological rigor of the broader CBT trial and the paucity of research in this area.

Future Directions

Future studies examining the treatment outcomes of POC would benefit from more stringent, a priori methodology. More research is needed to validate psychometric properties of common symptom measures in POC, so that researchers using these measures can draw firmer conclusions about symptom outcomes; alternatively, measures that have been validated within a wide range of racial, ethnic, and cultural groups should be prioritized for use in clinical trials. Additionally, studies should increase the enrollment of POC to be sufficiently powered to look at differences through more sophisticated statistical analyses such as noninferiority or equivalence analyses. It is important that trials are designed to strengthen the conclusions we can draw for how well treatments are working for different populations. Furthermore, treatment outcome studies must deliberately plan to examine treatment effectiveness for various sections of the population, not only White patients. More inclusive study recruitment and design would strengthen this field of study; given the multitude of barriers for POC in utilizing treatment and/or participating in research studies, clinical researchers can attempt to improve recruitment of POC by cultivating trust and partnership with community health centers and organizations, being thorough and inclusive

of family members in informed consent procedures, and diversifying their own research teams (George et al., 2014).

Additional research on the effectiveness of standard EBPTs may also guide cultural adaptation efforts (Fuchs et al., 2013; Lau, 2006) by clarifying which groups are well-served by standard EBPTs and which groups can benefit from culturally-specific adaptation. Part of this work also requires understanding the impact of historic and continued discrimination against POC in clinical science and practice. The effects of racism and discrimination on attitudes toward research, medical, and mental health care are well-documented (Freimuth et al., 2001; George et al., 2014): POC are more likely to distrust mental health professionals (Thompson et al., 2004) and hesitate to participate in research studies (Williams et al., 2013). Variables related to the impact of racism or discrimination were not measured in the current study, and future research should more closely study the role of racism and discrimination on treatment outcomes and attrition.

Conclusion

The present study contributes to the very limited literature on the efficacy of standard EBPTs for POC. We examined treatment retention and symptom outcomes of POC compared to White participants in a randomized controlled trial of CBT for anxiety and comorbid depression. Overall, differences were not observed between groups on treatment attrition or outcomes, and moderate to large effect sizes on anxiety and depression were found at post-treatment for Black, Latinx, Asian American, and White participants, with the exception of depression for Asian Americans. Our findings indicate that standard EBPTs may work to alleviate symptoms of anxiety and depression for POC, and more research is needed to replicate these results. In addition, future research on standard EBPTs must focus on recruiting and retaining POC in order to more conclusively determine treatment efficacy for all racial and ethnic groups.

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Table 1

Baseline Demographic Characteristics for Treatment Sample

	POC (n = 43)	White (n = 136)
	Count (%)	Count (%)
Age – Mean (SD)	29.4 (9.9)	31.0 (11.0)
Sex		
Women	27 (62.8)	72 (52.9)
Men	16 (37.2)	64 (47.1)
Ethnicity/Race		
Asian American	12 (27.9)	
Black/African American	13 (30.2)	
Hispanic/Latinx	15 (34.9)	
More than one race	4 (9.3)	
Native Hawaiian/Other Pacific Islander	1 (2.3)	
White/European American		136 (100)
Marital Status		
Married or cohabitating	8 (18.6)	41 (30.1)
Single	34 (79.1)	81 (59.6)
Divorced or separated	1 (2.3)	6 (4.4)
Education		
Elementary		4 (2.9)
High School	4 (9.3)	7 (5.1)
College	25 (58.2)	81 (59.6)
Advanced degree	14 (32.7)	38 (27.9)
Current Psychotropic Medication	17 (39.5)	83 (61.0)
Principal diagnosis		
Obsessive compulsive disorder	5 (11.6)	30 (22.1)
Generalized anxiety disorder	12 (27.9)	37 (27.2)
Panic disorder with/without agoraphobia	6 (14.0)	41 (30.1)
Social anxiety disorder	20 (46.5)	28 (20.6)
Comorbid diagnoses	37 (86.1)	113 (83.1)
Number of diagnoses – Mean (SD)	2.56 (2.0)	2.18 (1.8)

Table 2

Descriptive Statistics at Each Timepoint for Clinician-Rated Measures

	Pre-treatment				Post-treatment				12MFU			
Measure	**POC**		**White**		**POC**		**White**		**POC**		**White**	
	n	**M (SD)**	**n**	**M (SD)**	**n**	**M (SD)**	**n**	**M (SD)**	**n**	**M (SD)**	**n**	**M (SD)**
CSR	43	5.53 (0.83)	136	5.44 (0.78)	30	3.03 (1.71)	90	2.96 (1.56)	33	2.52 (1.73)	85	2.65 (1.65)
PDSS	11	14.73 (4.94)	44	13.52 (4.16)	6	7.00 (5.18)	32	6.53 (4.18)	6	5.50 (6.16)	22	5.55 (5.08)
GADSS	22	14.23 (3.61)	65	13.43 (2.09)	15	7.33 (4.52)	44	7.80 (3.51)	14	6.69 (4.93)	43	9.14 (4.31)
LSAS Fear	29	39.41 (13.91)	64	34.36 (12.87)	24	22.83(12.22)	41	20.49 (11.81)	24	23.21 (13.57)	46	20.46 (11.59)
LSAS Avoidance	29	34.70 (17.92)	64	29.59 (13.38)	24	14.96 (10.89)	41	14.46 (12.16)	24	17.08 (13.43)	46	14.72 (12.10)
Y-BOCS-II	9	27.33 (8.37)	40	26.95 (6.82)	8	13.75 (9.98)	24	16.67 (6.18)	6	10.67 (8.82)	19	14.32 (8.79)
SIGH-D	43	12.23 (7.54)	136	11.52 (6.68)	30	5.92 (4.72)	90	7.10 (5.30)	32	5.16 (4.00)	84	6.84 (6.33)
SIGH-A	43	17.65 (10.50)	136	16.84 (8.58)	30	7.07 (5.51)	90	9.55 (6.46)	32	6.66 (5.83)	84	9.61 (8.63)

Note. Post-treatment for the PDSS used week 12 data given the fact that participants with a principal diagnosis of panic disorder completed a 12-session protocol; CSR = clinical severity rating; GADSS = Generalized Anxiety Disorder Severity Scale; LSAS = Liebowitz Social Anxiety Scale; PDSS = Panic Disorder Severity Scale; Y-BOCS-II = Yale Brown Obsessive Compulsive Scale; SIGH-A = Structured Interview Guide for Hamilton Anxiety Scale; SIGH-D = Structured Interview Guide for Hamilton Depression Scale.

Table 3

Means and Standard Deviations of SIGH-A and SIGH-D by Racial or Ethnic Group

Race or Ethnicity (n)	SIGH-A M(SD)	SIGH-D M(SD)
Pre-treatment		
Asian American (n = 12)	16.33 (11.59)	12.67 (8.52)
Black/African American (n = 13)	18.62 (11.53)	12.08 (7.81)
Latinx (n = 15)	16.60 (9.20)	12.07 (7.48)
White/European American (n = 136)	16.84 (8.58)	11.29 (6.40)
More than one race (n = 4)	21.50 (9.47)	12.00 (4.90)
Native Hawaiian/Pacific Islander (n = 1)	13.00	16.00
Post-treatment		
Asian American (n = 7)	9.29 (5.22)	9.14 (5.55)
Black/African American (n = 9)	4.67 (3.87)	4.28 (2.58)
Latinx (n = 13)	7.38 (6.50)	5.62 (4.96)
White/European American (n = 90)	9.55 (6.46)	7.10 (5.30)
More than one race (n = 2)	10.50 (2.12)	7.50 (7.78)
Native Hawaiian/Pacific Islander (n = 1)	8.00	6.00
12-MFU		
Asian American (n = 10)	5.10 (3.87)	5.30 (3.74)
Black/African American (n = 9)	6.67 (5.10)	5.33 (3.78)
Latinx (n = 12)	7.75 (7.79)	5.00 (4.81)
White/European American (n = 84)	9.61 (8.63)	6.84 (6.33)
More than one race (n = 2)	8.00 (1.41)	3.50 (0.71)
Native Hawaiian/Pacific Islander (n = 1)	3.00	4.00

Note. Only one participant identified as Native Hawaiian/Other Pacific Islander so no standard deviation is available for this group. Two participants identified as Latinx and another underrepresented group and are counted in both categories. SIGH-A = Structured Interview Guide for Hamilton Anxiety Scale; SIGH-D = Structured Interview Guide for Hamilton Depression Scale.

Table 4

Within-Condition Effect Sizes for CBT by Racial or Ethnic Group

Measure	Race or ethnicity	*n*	ES*sg* (95% CI) BL-Post	*n*	ES*sg* (95% CI) BL-12MFU
SIGH-A	White/European-American	90	−0.72* [−0.92, −0.52]	84	−0.77* [−1.43, −0.10]
	Black/African-American	9	−1.29* [−2.28, −0.31]	9	−0.92* [−1.58, −0.26]
	Latinx	13	−0.99* [−1.62, −0.36]	12	−1.04* [−1.94, −0.14]
	Asian American	7	−0.68* [−1.29, −0.08]	10	−1.31* [−2.27, −0.35]
SIGH-D	White/European-American	90	−0.55* [−0.74, −0.36]	84	−0.73* [−0.99, −0.47]
	Black/African-American	9	−1.24* [−2.22, −0.26]	9	−0.83* [−1.54, −0.13]
	Latinx	13	−0.97* [−1.59, −0.34]	12	−1.40* [−2.35, −0.44]
	Asian American	7	−0.71 [−1.69, 0.28]	10	−1.05* [−2.06, −0.04]

Note. ES = effect size. SIGH-A = Structured Interview Guide for Hamilton Anxiety Scale; SIGH-D = Structured Interview Guide for Hamilton Depression Scale.

* $p < .05$.