UNIVERSITY OF CINCINNATI

Date: 1-Mar-2010

I, LaTrice Montgomery,

hereby submit this original work as part of the requirements for the degree of:

Master of Arts

in Psychology

It is entitled:

Moderators of the Relation Between Motivational Enhancement Therapy and Outcomes for African Americans: Substance Use and Retention

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3/11/2010
Moderators of the Relation between Motivational Enhancement Therapy and Outcomes for African Americans: Substance Use and Retention

A thesis submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of

Master of Arts

in the Department of Psychology of the College of Arts and Sciences

2010

by

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Abstract

The absence of empirical evidence on the efficacy of substance abuse treatments among African Americans is a public health concern. The current study addresses this gap by examining the efficacy of Motivational Enhancement Therapy (MET) as compared to Counseling as Usual (CAU) for 194 African American adults seeking outpatient substance abuse treatment. MET was not more effective than CAU on drug use and retention outcomes overall. African Americans in MET reported using more drugs than those in CAU. However, other findings suggest that specific subgroups of African American substance users (i.e., alcohol users and females) might benefit from MET. Implications for future substance abuse treatment research with African Americans are provided.
ACKNOWLEDGEMENTS

First, I would like to acknowledge God for granting me the strength, determination and wisdom to complete this project. I would also like to acknowledge my mentor, Dr. Kathleen Burlew. Thanks for inviting me to join the National Institute of Drug Abuse (NIDA) research team and providing professional and personal guidance throughout this process. I would also like to thank Drs. Monica Mitchell and Giao Tran for providing invaluable feedback throughout this project and throughout my graduate school journey. I would like to extend a special thank you to my mother and father for their unyielding prayers and support. You, along with my siblings, nephew, extended family and friends, have kept me humble and encouraged me to pursue my dreams of becoming an academic researcher. I appreciate every person that has prayed for me and/or provided personal and professional (especially Dr. Andrzej Kosinski for statistical support) support as I worked to complete this project. It is my hope that this project contributes to the improvement of substance abuse treatments for African Americans.
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Moderators of the Relation between Motivational Enhancement Therapy and Outcomes for African Americans: Substance Use and Retention

Substance abuse is a major public health concern. It is a major contributor to excess morbidity, mortality, and homelessness among individuals of all ages and socioeconomic backgrounds, and across all races and ethnicities (Kennedy, Efremova, Frazier, & Saba, 1999). Although substance abuse affects all races and ethnicities, it disproportionately affects members of the African American community. For example, although African Americans report lower levels of alcohol and tobacco use than Whites, they are more likely to experience a disproportionate amount of mental, physical and social consequences from alcohol use (Wallace, 1999). In addition, African Americans made up 12% of the population, yet they represented 21% of admissions to publicly funded substance abuse treatment facilities in 2006 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2008). Unfortunately, this high percentage of admissions is also coupled with low retention rates among African Americans in substance abuse treatment (McCaul, Svikis, & Moore, 2001).

Several studies have shown that ethnic minority groups have lower retention, higher dropout rates and poorer compliance in substance abuse treatment (Agosti, Nunes, & Ocepeck-Wilson, 1996; Celeste, Milligan, Nich, & Carroll, 2004; Longshore, 1999; McCaul et al., 2001; Milligan, Nich, & Carroll, 2004; Sue, 1988). Increasing retention rates is important because research has suggested that length of time in treatment is one of the best predictors of treatment outcomes (Milligan et al., 2004; Simpson, 1981; Simpson, Joe, & Rowan-Sazl, 1997). Therefore, retention is particularly important among African Americans for whom consequences of substance abuse are greater (McCaul et al., 2001). Lower retention rates are further complicated and perhaps explained by the fact that many African Americans who are in substance abuse...
treatment do not describe the experience as effective (Heron, Twomey, Jacobs, & Kaslow, 1997; Jackson, Stephens, & Smith, 1997). There is a substantial need for research on effective substance abuse treatments for African Americans.

Generally, research on the efficacy of substance abuse treatment with ethnic minorities is sparse (Nagayma-Hall, 2001). This gap in the literature is a major concern because treatment outcomes from studies conducted on other racial/ethnic groups are often not applicable to African Americans (Burlew, Feaster, Brecht, & Hubbard, 2009). The brief intervention, Motivational Enhancement Therapy (MET), has gained a lot of attention in recent years as an effective substance abuse treatment (Burke, Arkowitz, & Menchila, 2003; Dunn, Daroo, & Rivaro, 2001; Hettema, Steele, & Miller, 2005; Vasilaki, Hosier, & Cox, 2006) that might be effective for African American substance users. MET is grounded in Motivational Interviewing (MI), a “client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence” (Miller & Rolnick, 2002, p. 25). The basic principles of MI are expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance and supporting self-efficacy. MI/MET are brief interventions that consist of two phases: building motivation for change and strengthening commitment to change (Miller & Rolnick). It is arguably one of the most widely used and influential brief interventions. Although research provides strong empirical support for MI/MET, there is limited research available on the efficacy of this treatment with African Americans who abuse substances.

Motivational Interviewing/Motivational Enhancement Therapy with African Americans

Although the research on the effectiveness of MI/MET among African Americans is scarce, it does provide promising results. For example, Resnicow et al. (2001) assigned 14 African American churches to either a comparison, self help with one telephone cue call or self
help with one telephone cue call and three counseling calls (using motivational interviewing techniques) group to determine which strategy worked best for increasing fruit and vegetable intake. They found that changes in fruit and vegetable intake among participants in the motivational interviewing group were significantly greater than those in the comparison and self help with one telephone cue call groups. Other studies suggest that MI, when delivered by a peer outreach worker, increases retention in health care services among African American youth living with HIV (Naar-King, Outlaw, Green-Jones, Wright, & Parsons, 2009) and increases medication adherence among African Americans with hypertension (Ogedegbe et al., 2006). Similar results have been found in a small number of studies investigating substance use and substance abuse treatment retention rates among African Americans and other ethnic minority groups in MI/MET interventions (Hetteema et al., 2005; Longshore, Grills & Annon, 1999; Winhusen et al., 2008).

A recent meta-analysis of MI literature (Hetteema et al., 2005) revealed that only six of the 72 studies reviewed were predominately (74% or higher) African American and drug use was assessed in only one of those studies (Longshore, Grills, & Annon, 1999). Longshore and Grills (2000) conducted a study to determine if a culturally congruent assessment-referral protocol (using motivational interviewing techniques) was more effective than treatment protocols as usual in promoting recovery among African Americans who abused substances. They found that African Americans who participated in the culturally congruent assessment-referral were more likely than those assigned to the Treatment as Usual group to report being abstinent from drugs 1 year later. In addition, other research has shown that the effect size for MI interventions is larger for ethnic minority populations than White populations (Hetteema et al., 2005; Winhusen et al., 2008). However, there has been no theoretical explanation for this finding (Hetteema et al., 2005).
Although the research in this area is promising, many gaps exist in the literature. First, there are no studies that address the efficacy of a generic version (i.e., not culturally tailored) of MI/MET for African Americans who abuse substances. Second, there are a limited number of studies that assess the efficacy of MET among African Americans over time (Longshore & Grills, 2000), although research consistently suggests that treatment outcomes for MI/MET vary across different phases of treatment (Hettema et al., 2005). Third, studies among African Americans and ethnic minorities in MI/MET do not address the heterogeneity among these populations. For example, Winhusen et al. (2008) found that, overall, an adaptation of MET for pregnant substance users (MET-PS) was not more effective than Counseling as Usual in reducing drug use. However, they found that pregnant ethnic minority substance users might benefit from MET-PS. Although this is an important finding, it does not reveal information about the heterogeneity among the ethnic minority groups represented in this study. One approach to addressing the heterogeneity gap is to consider how other variables (i.e., moderator variables) such as age (Moos, Mertens, & Brennen, 1995) and gender (Greenfield et al., 2007) interact with race when assessing substance abuse treatment outcomes (Burlew, Feaster, Brecht, & Hubbard, 2009). This approach to substance abuse treatment research might also help explain some of the inconsistent findings present in the existing literature on MI/MET and help to determine the full range of efficacy of MI/MET among African Americans.

Hetereogeneity Among Substance Abusing Populations

Although many studies support the efficacy of MI/MET (Hettema et al., 2005; Lincourt et al., 2002; Noonan & Moyers, 1997; Ogedegbe et al., 2006; Saunders, Wilkinson & Phillips, 1995; Winhusen et al., 2008) in the treatment of many problem behaviors and health issues, there has been variability in outcomes of MI/MET interventions. For example, Miller, Yahne and
Tonigan (2003) found that MI as an adjunct to Counseling as Usual (CAU) was not more effective than CAU alone in decreasing substance use among individuals in outpatient and inpatient substance abuse treatment. Other studies also suggest that MI exerts no effect on substance use (Miller, 2004) or retention (Ball et al., 2007). Hettema et al. (2005) recommended that more studies should be aimed at identifying factors that moderate the relationship between MI/MET and treatment outcomes to help understand the variability in findings. Some of the inconsistent findings in the literature might be attributed to other moderator variables, such as age, gender, drug type and use of ancillary services.

**Age.** Research has consistently suggested that older patients are at least as likely to experience positive treatment outcomes than younger patients (Rice, Lonabaugh, Bettie, & Noel, 2006). For instance, Lemke and Moos (2003) found that older patients with alcohol disorders responded to age integrated substance abuse treatment as well as younger patients did and were also equally involved in formal and informal continuing substance abuse care. However, the literature also suggests that different types of treatment are more effective for certain individuals based on age. Moos, Mertens, and Brennen (1995) found that an intensive, directive treatment approach might be more effective for younger substance abuse clients, while a more supportive treatment protocol with an outpatient aftercare program might be more effective for older clients. Therefore, the age of substance abusing clients has important implications for determining the most appropriate and effective intervention.

**Gender.** A comprehensive review of the literature on gender differences (Greenfield et al., 2007) revealed that gender is not a specific predictor of treatment outcomes. However, gender specific predictors of outcomes (i.e., co-occurring psychiatric disorders, history of victimization, treatment retention and completion, and therapist-patient gender matching)
Motivational Enhancement Therapy 6

associated with substance abuse treatment outcomes do exist. Therefore, it was suggested that examining gender as a predictor outcome is no longer an effective research method. Greenfield et al. (2007) suggested that future treatment outcome studies should investigate the role of gender-specific treatment outcomes, as well as how gender interacts with other variables, such as race and age. Findings from this review reveal that the interaction between gender and other baseline characteristics has important implications when determining the efficacy of substance abuse treatment. The interaction between gender and race has not yet been explored among African American substance users in MET.

**Drug Type.** A recent meta-analysis of MI revealed that the strongest support for its efficacy is the significant reduction of alcohol use (Hettema et al., 2005). MI has also been used effectively with individuals who abuse amphetamine (Bakers, Boggs, & Lewin, 2002), opioids (Kidorf, Disney, King, Kolodner, Beilenson, & Brooner, 2005), cocaine (Stotts, Schmitz, Rhoades, & Grabowski, 2005), and marijuana (Stephens, Roffman, Fearer, Williams, & Burke, 2007). However, a meta-analysis (Hettema et al., 2005) revealed that evidence does not support the efficacy of MI/MET in smoking cessation. Taken together, these studies suggest that drug type should be taken into consideration to determine the efficacy of motivational interventions.

**Ancillary Services.** Research suggests that both men and women benefit from ancillary services (Friedman, D’Aunno, Jin, & Alexander, 2000; Marsh, Cao, Guerrero, & Shin, 2009). Marsh, Cao, and D’Aunno (2004) found that educational, housing and income support services were related to reduced post treatment substance use among men and women. Case management (Laken & Ager, 1996) and wrap around services (Pringle, Edmonston, Holland., Kirisci, Emptage, Balvage et al., 2002) have also been shown to enhance treatment. Although research favors the availability of ancillary services in substance abuse treatment, it is not clear whether
these outcomes hold for ethnic minorities. Thus, it is necessary to investigate the role of ancillary services in substance abuse treatment among African Americans.

Further research is needed to assess the efficacy of a generic version of MET with an African American substance using sample over time. In addition, moderator variables (e.g., age, gender, drug type and use of ancillary services) should be considered in research on MI/MET among African Americans. The current study is the first to address these gaps in the literature.

Current Study

The Clinical Trial Network (CTN) 0004 protocol (Motivational Enhancement Treatment to Improve Treatment Engagement and Outcome in Individuals Seeking Treatment for Substance Abuse; Carroll et al., 2001) from the National Institute of Drug Abuse (NIDA) provided an opportunity for a secondary analysis of these issues among African Americans seeking outpatient substance abuse treatment. In the original multi-site clinical trial (Ball et al., 2007), 461 adults who abused substances were randomized to receive either MET as adjunct to Counseling as Usual (CAU) or CAU alone (i.e., standard treatment). The findings for the overall sample did not reveal group differences in substance use or retention outcomes between MET and CAU participants. However, research suggests that it would be useful to examine separately whether the MET group differs from the comparison group specifically for ethnic minorities (Hettema et al., 2005; Winhusen et al., 2008). Therefore, the current study was designed as a secondary analysis of the 194 African Americans in CTN 0004 on substance use and retention outcomes.

The study was designed to determine the efficacy of MET on substance use outcomes and retention rates and the role of moderator variables (i.e., age, gender, primary drug type and the use of ancillary services). The first hypothesis was that African Americans who participated in
MET would use fewer substances (i.e., urine screens and self-reported drug use) than African Americans in counseling-as-usual (CAU; standard treatment). The second hypothesis was that African Americans in MET would have higher retention rates than African Americans in CAU. This study was also designed to explore the role of potential moderators on the relationship between treatment type and substance use (i.e., urine screens and self-report) and retention outcomes. This aim was exploratory due to the inconsistent findings about the moderator variables in the literature and because the efficacy of MET with African Americans has not yet been clearly defined. This study investigated if client characteristics (i.e., age, gender and drug type) or treatment characteristics (i.e., ancillary service utilization) moderated the relationship of treatment type to substance use and retention outcomes. In addition, substance use was measured longitudinally to determine if treatment outcome changed over time.

Method

Participants

The current study is designed to assess outcomes among the 194 African Americans who participated in the trial. (Further information on the demographics of all participants [461 adults] in this trial can be found in Ball et al.’s (2007) paper.) Figure 1 outlines eligibility, enrollment, randomization, treatment and follow-up rates for African American participants in the current study. Individuals who were eligible for this protocol were patients who were seeking outpatient treatment for any substance use disorder and had used substances within 28 days prior to the study, were 18 years of age or older, were willing to participate in the protocol and were able to understand and provide written informed consent. Table 1 provides demographic characteristics of the 194 African Americans who participated in this study.
Five community based treatment programs (CTPs) that delivered treatment in an outpatient, non-methadone maintenance setting participated in this study. CTPs eligible for this protocol were programs that had adequate numbers of new patients seeking treatment to meet target recruitment for the original study (i.e., 100 participants per CTP, with 50 participants per treatment group) and had at least six clinicians willing to participate in the protocol. Three research-practice partnerships in the NIDA CTN, the New England Node, the Delaware Valley Node and the Pacific Region Node, participated in this multi-site clinical trial. Further information on the CTPs who participated in this study can be found in the CTN 0004 protocol (Carroll et al., 2001).

Clinicians who participated in this study had to be currently employed at participating CTPs, willing to learn a manualized version of MET, willing to be randomly assigned to either MET or standard treatment, willing to have their sessions audiotaped for review by clinical supervisors and approved by the CTPs administrative/supervisory staff as appropriate for the study. Clinicians in this study did not have a prior allegiance to MET. Further information on the clinicians who participated in this study can be found in the CTN 0004 protocol (Carroll et al., 2001).

Measures

*Urine Monitoring Result Form.* Data collected from the urine drug analyses were recorded on the Urine Monitoring Result Form. The OnTrak TesTcups (Roche Diagnostic Systems, Basel, Switzerland) were used at each CTP to test for amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine metabolites, methadone, methamphetamine, opiates/morphine, and phencyclidine. The OnTrak TesTcup is a clinically accurate test that is
used in many clinical trials and allows for a rapid assessment of several drugs of abuse (Birnbach, Browne, Kim, Stein & Thys, 2001).

**Substance Use Calendar (SUC).** The SUC is a self-report measure of substances (marijuana, cocaine, alcohol, methamphetamine, benzodiazepines, opioids and other illicit drugs) used daily. The daily assessment of substance use allows a continuous evaluation of substance use. The Substance Use Calendar is similar to the Form-90 and Timeline Followback (TLFB), which are two widely used self-report measures of substance use in calendar form (i.e., day to day). The Form-90 (Miller & DelBoca, 1994) and TLFB (Ehrman & Robbins, 1994; Fals-Stewart, O’Farell, Freitas, McFarlin, & Rutigliano, 2000) both have good reliability and validity in assessing substance use.

**Client Disposition-End of Trial Status Form.** The Client Disposition-End of Trial Status Form assesses participants’ response and disposition. Items on this form include questions about the date of the last treatment session and the reason for ending treatment.

**Demographic Form.** The demographic form was used to characterize the sample. The self-report measure includes information about age, ethnicity, education level, employment and marital status, and information about substance use.

**Treatment Utilization Form (TUF).** The TUF records “the number and duration of scheduled treatment sessions and post-study treatment involvement after completion of study treatment” (Carroll et al., 2001). This 11 item self-report interview measures the type and amount of participants’ involvement in ancillary services (i.e., non-study related counseling, child care, medical, psychiatric, vocational, legal and medication services) at the participating CTPs or other community services. The TUF was adapted and shortened from the Treatment Services Review (TSR; McLellan, Alterman, Cacciola, Metzger, & O’Brien, 1992), which has
shown to be a reliable and valid assessment of additional services received in substance abuse treatment. Studies on the TSR reveal that the measurement has good test-retest reliability when administered in person and does an adequate job of differentiating between different levels of services (McLellan et al., 1992).

**Procedure**

Individuals seeking outpatient substance abuse treatment at one of the five CTPs were referred to a research assistant for screening and consent. Uninterested and ineligible individuals were returned immediately to appropriate treatment, while research assistants collected baseline information from interested and eligible individuals. Following a baseline assessment, participants were then randomly assigned to receive either three sessions of CAU or MET via urn randomization. Urn randomization is an algorithm that maximizes the equivalence of treatment groups (Stout, Wirtz, Carbonari, & DelBoca, 1994). This randomization process ensured that both treatment groups were balanced on gender, race, education, motivation, primary drug of abuse and criminal justice status.

After randomization, participants began individual sessions in their assigned conditions and also participated in treatment services as offered routinely in their outpatient program. During the four week active phase, research assistants met with participants to collect information on substance use and treatment utilization. Research assistants also collected substance use and treatment utilization data at the end of the four-week active phase and again at an eight and 16 week follow up.

**Counseling as Usual (CAU).** Participants in this condition attended three sessions (45-55 minutes each) during the four week active phase. Clinicians “collected information on substance use and psychosocial functioning, explained treatment program requirements, discussed the
Motivational Enhancement Therapy (MET). Participants in this condition attended three sessions (45-55 minutes each) during the four week active phase. Clinicians in this condition used the MET manual (Farentinos, Obert, & Woody, 2000) which “consists of three carefully planned sessions, with the first session focused on reviewing an individualized Personal Feedback Report (i.e., summarizes objective and personal information on participants substance use), and the second two focused on discussing plans for changing substance use” (Carroll et al., 2001). The clinician’s goal was to create the condition to enhance the client’s own motivation and commitment to change. Clinicians in this condition were trained by local expert MET trainers on MET-consistent strategies. Further details are provided in Ball et al.’s (2007) paper and the CTN 0004 protocol (Carroll et al.).

Data Analysis Methods

The outcome measures included (a) substance use (i.e., the probability of receiving at least one positive urine screen during the four week active phase and the number of self-reported days per week of substance use for each of the 16 study weeks) and (b) treatment retention (i.e., the number of days between the day of enrollment and the last day the participant received services at the clinic). All analyses were performed via Statistical Analysis Software (SAS) or S-plus with the intent-to-treat ($n = 194$) sample. Logistic regression analyses were performed to
determine treatment group differences (i.e., MET vs. CAU) on urine screens. Generalized linear mixed modeling (GLMM) was performed to determine treatment differences (i.e., MET vs. CAU) in self-reported drug use. GLMM permitted a longitudinal analysis of days per week of substance use from baseline throughout the 16 week study period. Kaplan-Meier (KM) survival curves were used to display retention (percent enrolled) over time. The Log-Rank test was used to compare KM curves.

Age, gender, primary drug type and the use of ancillary services were also analyzed to determine if these variables moderate the relationship between treatment type and outcomes (i.e., urine screens, self-reported drug use and retention rates). Logistic regression analyses for urine screen outcome, GLMM for self-reported drug use outcome, and Cox proportional hazard modeling for retention outcome were used to determine the impact of age, gender, drug type and the use of ancillary services on outcomes among participants in MET and those in CAU. Three separate analyses were conducted for each moderator variable. Using age as an example, the first analysis consisted of determining if there was an interaction between treatment type and age on treatment outcomes (i.e., urine screens, self-reported drug use and retention). This analysis helped to determine if age moderated the relationship between treatment type and outcomes. The second analysis consisted of comparing treatment outcomes for individuals 39 and younger in MET with those in CAU (the median age of individuals in this study is 39). The third analysis consisted of comparing treatment outcomes for individuals 40 and older in MET with those in CAU. Gender (i.e., male vs. female), primary drug type (i.e., drugs/drugs and alcohol vs. alcohol only), and ancillary service (i.e., at least one group session vs. no group sessions and at least one self-help group vs. no self-help groups) outcomes were also analyzed following this format.

Results
**Preliminary Analyses.** Table 1 outlines demographic variables (i.e., age, gender, primary drug type of individuals in MET and those in CAU, the percentage of positive urines received and the number of days in treatment) of African American participants in CTN 0004. The sample consisted of 48 African American females and 146 African American males with an average age of 38. Participants commonly used alcohol \( n = 51 \), cocaine \( n = 50 \), or two or more drugs \( n = 47 \) as their primary drug. 27% of the participants in this study had at least one positive urine screen. Individuals in MET and CAU heavily utilized group sessions and self help groups and therefore are the only two ancillary services included in the analyses, as shown in Table 2. Figure 2 displays the self-reported days of use per week. The overall percent retained at 4, 8, 12 and 16 weeks was 81.1%, 62.9%, 54.1% and 28.9%, respectively.

**Hypothesis One.** The first hypothesis was that African Americans who participated in MET would use fewer substances (i.e., urine screens and self-reported drug use) than African Americans in counseling-as-usual (CAU; standard treatment). Logistic regression analyses revealed that the probability of positive urines did not significantly differ among African Americans in MET and those in CAU \( p = 0.52 \). Generalized linear mixed modeling revealed that African Americans in MET reported using more drugs than those in CAU \( p < 0.001 \). Figure 2 displays the treatment effect of MET and CAU on self-reported drug use.

**Hypothesis Two.** The second hypothesis was that African Americans in MET would have higher retention rates (i.e., the number of days between the day of enrollment and the last day the participant received services at the clinic) than African Americans in CAU. Log-rank test revealed that retention rates did not significantly differ among African Americans in MET and those in CAU \( p = 0.10 \). Figure 3 displays retention rates among African Americans in MET and those in CAU.
**Moderator Variables.** This study also examined the role of potential moderators (i.e., age, gender, primary drug type and ancillary services) on the relationship between treatment type and urine screen outcomes. Logistic regression analyses revealed that the relationship between treatment type and urine screens did not significantly differ based on age ($p = 0.82$), gender ($p = 0.68$), the number of group sessions attended ($p = 0.29$) or the number of self help groups attended ($p = 0.24$). However, the relationship between treatment type and urine screens did significantly differ based on primary drug type ($p = 0.04$). African American alcohol users in MET were less likely to have a positive urine screen than those in CAU.

GLMM revealed that the relationship between treatment type and self-reported drug use significantly differed on gender ($p = 0.01$), age ($p = 0.02$), the number of group sessions attended ($p < 0.001$) and the number of self-help groups ($p = 0.02$) attended, but not based on primary drug type ($p = 0.66$). African Americans self-reported more days of drug use per week than those in CAU overall and when investigating gender, age and ancillary service differences. The relationship between treatment type and self-reported drug use was stronger for females, individuals 39 and younger, and individuals who do not attend any group sessions or self-help groups. Figures 4, 5, 6, and 7 display the trajectories of African Americans in MET and CAU based on gender, age, the number of group sessions attended and the number of self-help groups, respectively.

Cox proportional hazard modeling revealed that the relationship between treatment type and retention did not significantly differ based on age ($p = 0.48$ for 16 week data), gender ($p = 0.28$ for 16 week data) primary drug type ($p = 0.85$ for 16 week data), the number of group sessions attended ($p = 0.30$ for 16 week data) or the number of self help groups ($p = 0.33$ for 16 week data) attended.
**Additional Findings.** Logistic regression analyses revealed that African American alcohol users in MET were less likely to have a positive urine screen than those in CAU ($p = 0.05$, OR $= 0.28$, 95% CI [0.08 – 1.01]). In addition, a log-rank test comparing Kaplan-Meier survival curves of females revealed that there was significantly better retention in females (log-rank $p = 0.05$) assigned to MET than CAU when the initial 12 weeks were considered (log-rank $p = 0.09$ for 16 week data). No treatment differences in retention were evident for males (log-rank $p = 0.86$ for 12 weeks and log-rank $p = 0.43$ for 16 weeks). Figure 8 displays the Kaplan-Meier survival curves for women in MET and in CAU, as well as men in the two conditions. A log-rank test comparing Kaplan Meier survival curves also revealed a trend suggesting that African American MET participants who were alcohol users had better retention than alcohol users in CAU when the first 13 weeks were considered (log-rank $p = 0.09$ for 13 week data, log-rank $p = 0.24$ for 16 week data).

**Discussion**

This multi-site randomized clinical trial evaluated the efficacy of MET in comparison with CAU among African Americans in five community treatment based programs. It was hypothesized that African Americans in MET would use fewer drugs, as measured by urine screens and self-report, and have higher retention rates than African Americans in standard treatment. This study also explored the role of potential moderator variables (i.e., age, gender, drug type and the use of ancillary services) on substance use (i.e., urine screens and self-report) and retention outcomes among African Americans in MET and standard treatment. The hypothesis that MET would be more effective than standard treatment for African Americans was not supported. African Americans in MET self-reported using more drugs per week than African Americans in standard treatment, even when investigating differences on age, gender,
and the number of group sessions and self-help groups participants attended. No treatment differences were found on urine screens overall. However, African American alcohol users in MET were less likely to receive a positive urine screen than those in standard treatment. The hypothesis that retention rates would be higher among African Americans in MET than those in standard treatment was not supported. However, results revealed that African American females in MET had higher retention than those in standard treatment during the initial 12 weeks of the study. No group differences were observed among males. A trend also emerged suggesting that alcohol users in MET had better retention than those in standard treatment.

Although there were no overall treatment differences on urine screen outcomes, there was a positive subgroup finding for African American alcohol users in MET. In addition, a trend emerged suggesting that retention rates were higher for African Americans in MET. MET was originally developed for alcohol users in substance abuse treatment (Miller & Rollnick, 2002) and its efficacy is consistently supported in the literature (Carroll et al., 2009; Hettema et al., 2005). Therefore, the positive findings for African American alcohol users in MET are consistent with the existing literature.

Similar to Miller, Yahne, and Tonigan’s (2003) findings, MET was not more effective than standard treatment in reducing substance use (i.e., cocaine, marijuana, 2 or more drugs and other drugs) on urine screens or the weekly self-report of drug use outcomes among African Americans overall. It is possible that the structure of MET is not effective in decreasing substance use among African Americans. For example, cocaine was one of the most commonly used drugs among African Americans in this study. Petry (2003) found that African American cocaine users may respond well to education-oriented programs that provide vocational skills. MET does not provide an educational component or vocational training. Although vocational
training was provided as an ancillary service in the current study, it was not heavily utilized among African American participants. In addition, brief interventions might not be effective in treating certain drugs (i.e., cocaine) because they require greater treatment structure and time to explore other issues besides motivation for change. For example, research suggests that an individual’s underlying motivation for abusing drugs has implications for substance abuse treatment. Roberts (2000) found that African Americans are more likely than Whites to use drugs in response to socioeconomic factors (e.g., attempting to function in an environment with few economic opportunities) and may therefore benefit from more intensive education-oriented programs that provide skills necessary to succeed in society (e.g., vocational and interpersonal).

Despite the positive findings on intensive substance abuse treatments among African Americans, several other studies cast some doubt on the ineffectiveness of MET for African Americans (Bakers, Boggs, & Lewin, 2002; Kidorf, Disney, King, Kolodner, Beilenson, & Brooner, 2005; Stephens, Roffman, Fearer, Williams, & Burke, 2007). Many methodological factors may have contributed to the negative findings (Ball et al., 2007). The non-significant MET finding for substance users might be explained by the fact that substances are detected on urine screens, while alcohol is not; thus explaining the positive findings for alcohol users but not for substance users. In addition, some drugs (e.g., marijuana), due to the variable detection windows, may have been detected although participants had stopped or reduced their substance use.

Although there were no overall treatment differences on retention outcomes, there was a positive subgroup finding for African American females in MET. This finding is consistent with growing evidence suggesting that substance abuse outcomes vary by gender (Ellis et al., 2008; Greenfield et al., 2007). The fact that differences are evident within 12 weeks but not for all 16
weeks may reflect site and participant variability in the actual date of treatment completion. Hence, some participants may not be active at the 16 week point because they completed treatment.

Although MET was not effective in decreasing substance use and increasing retention among African Americans overall, it might be an effective intervention for increasing retention among African American women. Limited research on African American women in treatment suggests that behavioral approaches are compatible with their therapeutic issues. For example, McNair (1996) suggested that interventions that are most successful in treating African American women emphasize changing behaviors with the aim of achieving a greater sense of self-efficacy and control, a collaborative relationship between the client and therapist and an active, present orientation of behavior. These qualities are reflected in the spirit of MI/MET and might therefore explain the positive finding among African American women. In addition, a recent review of the literature (Sun, 2006) revealed that effective substance abuse treatments for women are non-judgmental and nonconfrontational. These values are also consistent with MET and may have contributed to the success of MET with this subgroup. Future studies on MET should continue to investigate within-group gender differences (i.e., females in MET vs. females in the comparison group and males in MET vs males in the comparison group) and across gender differences (i.e., females in MET vs. males in MET) to determine the full range of efficacy for the African American population.

There were no significant treatment differences on retention for men in MET and those in standard treatment. One possible explanation to note is that there were fewer females than males in the current study (not statistically significant), which may have contributed to the findings. Another explanation for a lack of significant findings among African American males is that they
are more likely to report experiencing racism and other problems in health encounters than women that negatively influence the effectiveness of substance abuse treatment (Royster, Richmond, Eng, & Margolis, 2006). In addition, Royster, Richmond, Eng, and Margolis suggested that men are socialized to exhibit traditionally masculine behaviors, especially African American men who are often marginalized in society. Marginalized men are often more likely to demonstrate their dominance in other areas, such as violence and substance abuse. They are also less likely to seek treatment and more likely to enter treatment with high levels of ambivalence and skepticism about treatment. These findings might explain why MET was not effective for African American males. Future research should explore these and other possibilities.

This study has several strengths. First, this is the first multi-site randomized clinical trial of MET examining substance use and retention outcomes among an African American sample. Second, this is the first study to examine a generic (i.e., not culturally tailored) version of MET for African Americans. Third, this is one of the few studies that have examined substance use longitudinally among African Americans in MET. Fourth, the scientific yield of this project was preserved by key design features such as random assignment of participants to treatment conditions, use of objective measures, and the inclusion of therapists without prior allegiance to MET. These design features are explained further elsewhere (Carroll et al., 2002). Nonetheless, this study has several limitations. The major limitation of the current study is a small sample size. Other limitations (i.e., lack of generalizability, inconsistencies in treatment delivery, inconsistencies in training, and the possible contamination of therapy conditions) of the randomized trial are discussed in further detail in Ball et al.’s (2007) paper. Despite these limitations, this study provides valuable clinical and research implications for substance abuse treatment for African Americans.
The findings from the current study suggest that combining ethnic minorities into one group is not an effective approach when examining the role of race/ethnicity on substance abuse treatment outcomes. For example, preliminary findings with ethnic minority populations in MET revealed that the effect size for ethnic minorities is larger than non-ethnic minority groups (Hettema et al., 2005; Winhusen et al., 2008). These findings suggest that MET is an effective approach for all ethnic minority groups. However, findings from this study revealed that, overall MET might not be an effective treatment for African Americans. The literature (Buka, 2002; Burlew et al., 2009; Turner & Wallace, 2003), including this study, suggests that the heterogeneity across and within ethnic groups should be considered to determine the most effective treatments.

Findings also provide support for a new theory called “personalized substance abuse treatment.” This notion is based on a term widely used in the field of medicine, “personalized medicine” (the right drug for the right patient). The President’s Council of Advisors on Science and Technology (as cited by Bates, 2010) described personalized medicine as tailoring medical treatments to the individual characteristics of patients. In other words, personalized medicine focuses on the ability to classify individuals into subpopulations that will benefit from specific treatments to effectively treat those subpopulations and to spare the negative side effects for subpopulations for which treatments do not work. The field of substance abuse might benefit from this approach. Research consistently suggests that substance abuse treatment outcomes vary by factors such as race (Chisolm, Mulatu, & Brown, 2009), socioeconomic status (Buka, 2002) and drug type (Hettema et al., 2005). Therefore, including moderator variables in studies, particularly among ethnic minorities, on substance abuse treatment might be the first step in identifying personalized substance abuse treatments for substance users.
Culturally tailored interventions can be viewed as personalized substance abuse treatment for ethnic minority groups, especially when moderator variables are considered in effectiveness/efficacy studies of treatment. Previous research on African Americans in culturally tailored versions of MI/MET are promising. For example, Resnicow et al. (2005) conducted a multicomponent intervention to increase fruit and vegetable intake among African Americans. He randomly assigned sixteen churches in one of three intervention conditions: (1) standard educational materials, (2) culturally specific self-help and physical activity materials or (3) culturally specific self-help and physical activity materials and four counseling calls based on MI. Although intervention two and three had positive effects on increasing fruit and vegetable intake, fruit and vegetable intake was significantly higher for those who had the culturally specific materials and four counseling calls based on MI. Therefore, MI had a clear additive effect to the cultural components of the intervention. In addition, Longshore and Grills (2000) created a culturally congruent protocol for African American substance users that produced promising findings (i.e., participants in the motivational intervention were less likely to use illegal drugs 1 year later). This intervention included an emphasis on communalism, group process, traditional African American meals, peers and photos of African Americans in the video clips for the intervention.

In summary, results from this study revealed that African Americans alcohol users and African American females might benefit from MET on substance use and retention outcomes, respectively. These findings highlight the importance of considering the heterogeneity among ethnic groups when studying treatment outcomes and provides support for “personalized substance abuse treatment.” Future research in this area should include projects that continue to investigate the efficacy of MET specifically for African Americans, an examination of subgroup
differences, the development and testing of a culturally tailored MET intervention and efforts to improve the generic version of MET for African Americans. In continued efforts to reduce racial and ethnic health disparities, research and clinical practice among African American substance users should continue to inform each other in order to improve the quality of substance abuse treatments.
References


Substance Abuse and Mental Health Services Administration (SAMHSA) (2007). Results from the 2006 National Survey on Drug Use and Health: National findings (Office of Applied
Studies, NHDUS Series H-32, DHHS Publication no. SMA 074293). Rockville, MD.


Table 1

Demographic Characteristics of African American Participants in CTN 0004

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>MET</th>
<th>CAU</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 85</td>
<td>n = 109</td>
<td>n = 194</td>
</tr>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>21 (24.7)</td>
<td>27 (24.8)</td>
<td>48 (24.7)</td>
</tr>
<tr>
<td>Male</td>
<td>64 (75.3)</td>
<td>85 (75.2)</td>
<td>146 (75.3)</td>
</tr>
<tr>
<td>Primary Drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td>16 (18.8)</td>
<td>34 (31.2)</td>
<td>50 (25.8)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>28 (32.9)</td>
<td>23 (21.1)</td>
<td>51 (26.3)</td>
</tr>
<tr>
<td>Marijuana</td>
<td>17 (20.0)</td>
<td>18 (16.5)</td>
<td>35 (18.0)</td>
</tr>
<tr>
<td>2 or more</td>
<td>17 (20.0)</td>
<td>30 (27.5)</td>
<td>47 (24.2)</td>
</tr>
<tr>
<td>Other</td>
<td>7 (8.2)</td>
<td>4 (3.6)</td>
<td>11 (5.6)</td>
</tr>
<tr>
<td>Age</td>
<td>M (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36.6 (10.5)</td>
<td>38.3 (9.5)</td>
<td>37.5 (9.9)</td>
</tr>
</tbody>
</table>

Note. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Table 2  
*Means and Standard Deviations of Ancillary Service Utilization by Therapy Condition*

<table>
<thead>
<tr>
<th>Ancillary service</th>
<th>MET  (n=85)</th>
<th>CAU  (n=109)</th>
<th>Total  (n=194)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Group Sessions</td>
<td>6.77 (5.18)</td>
<td>8.94 (5.15)</td>
<td>7.96 (5.26)</td>
</tr>
<tr>
<td>Number of Self-help groups</td>
<td>3.32 (6.44)</td>
<td>3.89 (6.14)</td>
<td>3.63 (6.26)</td>
</tr>
</tbody>
</table>

28 day active phase

<p>| Number of Group Sessions | 16.14 (14.64) | 23.70 (17.24) | 20.31 (16.51) |
| Number of Self-help groups | 12.59 (25.14) | 12.49 (22.55) | 12.54 (23.66) |</p>
<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Assessed for Eligibility (N = 309)</th>
<th>Excluded (n = 115)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1) Did not meet inclusion/exclusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>criteria = 103</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Failed to complete baseline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>assessments= 12</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Randomized (n = 194)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Allocation</th>
<th>Allocated to CAU n = 109</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completed Baseline Assessment n = 107</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allocated to MET n = 85</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed Baseline Assessment n = 78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Follow-up</th>
<th>Completed Post-Therapy Interview n = 93</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completed Week 8 Follow-up Interview n = 85</td>
</tr>
<tr>
<td></td>
<td>Completed Week 16 Follow-up Interview n = 79</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Follow-up</th>
<th>Completed Post-Therapy Interview n = 74</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completed Week 8 Follow-up Interview n = 70</td>
</tr>
<tr>
<td></td>
<td>Completed Week 16 Follow-up Interview n = 64</td>
</tr>
</tbody>
</table>

*Figure 1.* CONSORT diagram of eligibility, enrollment, randomization, treatment, and follow-up rates. CAU = Counseling as Usual; MET = Motivational Enhancement Therapy.

*Note.* The highest number of participants providing data at any time point was recorded as the total n for each time point.
Figure 2. Therapy Condition X Weeks for days per week of primary substance use across the active phase (Weeks 0-4) and follow-up (Weeks 5-16) phases. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.

Figure 3. Therapy Condition X Days from Randomization for the proportion of participants enrolled in the active phase (0-28 days) and follow up phase (29 – 112 days). MET = Motivational Enhancement Therapy; CAU = Counseling as Usual; CTP = Community based treatment programs.
Figure 4. Therapy Condition X Weeks X Gender for days per week of primary substance use across the active phase (Weeks 0-4) and follow-up (Weeks 5-16) phases. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Figure 5. Therapy Condition X Weeks X Age for days per week of primary substance use across the active phase (Weeks 0-4) and follow-up (Weeks 5-16) phases. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Figure 6. Therapy Condition X Weeks X Group Sessions for days per week of primary substance use across the active phase (Weeks 0-4) and follow-up (Weeks 5-16) phases. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Figure 7. Therapy Condition X Weeks X Self-help groups for days per week of primary substance use across the active phase (Weeks 0-4) and follow-up (Weeks 5-16) phases. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Figure 8. Therapy Condition X Gender for the proportion of participants enrolled in the active phase (0-28 days) and follow up phase (29 – 112 days). MET = Motivational Enhancement Therapy; CAU = Counseling as Usual; CTP = Community based treatment program.