I, LaTrice Montgomery M.A., hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Psychology.

It is entitled:
The Influence of Change Talk and Decisional Balance on Treatment Outcomes among African American Substance Users

Student's name: LaTrice Montgomery M.A.

This work and its defense approved by:

Committee chair: Ann Kathleen Hoard Burlew, PhD
Committee member: Monica Mitchell, PhD
Committee member: Giao Tran, PhD
The Influence of Change Talk and Decisional Balance on Treatment Outcomes among African American Substance Users

A dissertation submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology of the College of Arts and Sciences by

LaTrice Montgomery
M.A., University of Cincinnati
March 2010

Committee Chair: Ann Kathleen Burlew, Ph.D.
ABSTRACT
A limited number of studies are available on the components that lead to behavior change in substance abuse treatments, especially among African Americans. The present study examined the relationship of the frequency of change talk and decisional balance techniques elicited by therapists to treatment outcomes among African Americans seeking outpatient substance abuse treatment. This study was a secondary analysis of 83 African Americans who participated in a multi-site randomized clinical trial of Motivational Enhancement Therapy (MET) conducted by the Clinical Trials Network of the National Institute of Drug Abuse. The frequency of change talk and decisional balance techniques elicited across audiotaped MET and Counseling as Usual therapy sessions was rated by independent tape raters. Findings revealed that higher levels of change talk elicited by therapists were associated with fewer days of self-reported primary substance use over time. A separate analysis of men and women revealed a stronger association between higher levels of change talk and reduced primary substance use outcomes among men than women. Implications for clinical practice and future research 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. Thank you Dr. Burlew for allowing me to live out my dreams! 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 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.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Change Talk in Substance Abuse Treatment</td>
<td>2</td>
</tr>
<tr>
<td>Decisional Balance in Substance Abuse Treatment</td>
<td>4</td>
</tr>
<tr>
<td>MET Techniques, Change Talk and Decisional Balance among African Americans</td>
<td>5</td>
</tr>
<tr>
<td>Present Study</td>
<td>8</td>
</tr>
<tr>
<td>Method</td>
<td>8</td>
</tr>
<tr>
<td>Participants</td>
<td>8</td>
</tr>
<tr>
<td>Participating CTP’s</td>
<td>9</td>
</tr>
<tr>
<td>Participating Clinicians</td>
<td>9</td>
</tr>
<tr>
<td>Measures</td>
<td>10</td>
</tr>
<tr>
<td>Substance Use Calendar</td>
<td>10</td>
</tr>
<tr>
<td>Client Disposition-End of Trial Status Form</td>
<td>10</td>
</tr>
<tr>
<td>Demographic Form</td>
<td>11</td>
</tr>
<tr>
<td>Independent Tape Rating Scale</td>
<td>11</td>
</tr>
<tr>
<td>Procedures</td>
<td>11</td>
</tr>
<tr>
<td>Counseling as Usual</td>
<td>12</td>
</tr>
<tr>
<td>Motivational Enhancement Therapy</td>
<td>12</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>14</td>
</tr>
<tr>
<td>Results</td>
<td>15</td>
</tr>
<tr>
<td>Sample Characteristics</td>
<td>15</td>
</tr>
<tr>
<td>Substance Use Outcomes</td>
<td>15</td>
</tr>
<tr>
<td>Retention Outcomes</td>
<td>16</td>
</tr>
</tbody>
</table>
Discussion..................................................................................................................................................16
References......................................................................................................................................................24
Appendixes....................................................................................................................................................31
  Table 1. Demographic Characteristics.........................................................................................................31
  Table 2. Active Phase Treatment Sessions....................................................................................................32
  Figure 1. Change Talk and Substance Use Outcomes......................................................................................33
  Figure 2. Low Levels of Change Talk and Substance Use Outcomes by Gender.................................34
  Figure 3. Higher Levels of Change Talk and Substance Use Outcomes by Gender...............................35
Introduction

Despite the promise of many evidence-based treatments (such as Motivational Interviewing [MI]) for substance users, the components that lead to behavior change are not fully understood in general and specifically for African Americans. For example, several studies support the efficacy of MI in reducing the use of substances, such as alcohol (Murphy, Chen, Naar-King et al., 2012) cocaine (Stein, Herman, & Anderson, 2009) and marijuana (Stein, Hagerty, Herman, Phipps, & Anderson, 2011). Furthermore, some studies suggest that MI is a promising treatment for African American substance users (Montgomery, Burlew, Kosinski, & Forcehimes, 2011; Montgomery, Burlew, Wilson, & Hall, 2011). However, few studies are available on the ingredients of MI that either cause or influence treatment outcomes (Apodaca & Longabaugh, 2009). More studies identifying the specific components of interventions that lead to behavior change are needed for theory development and to improve treatment delivery, especially among African Americans. The present study is designed to address this gap by examining the influence of the frequency of change talk (i.e., talk in favor of a behavior change) and decisional balance (i.e., examining the pros and cons of substance use) techniques elicited by therapists on treatment outcomes among African American substance users participating in a randomized trial of Motivational Enhancement Therapy (MET; a manualized version of MI).

MI and MET, brief interventions aimed at reducing addictive and other maladaptive behaviors (Miller & Rollnick, 2002), are widely used treatments for many behavioral domains. MI/MET is a directive, client-centered therapeutic approach in which clients explore and resolve ambivalence around behavioral changes. The basic MI principles are developing discrepancy between current maladaptive behaviors and future goals, avoiding argumentation, rolling with resistance, expressing empathy and supporting self-efficacy. The task of the therapist is to
facilitate the process of change naturally inherent in the client. MI therapists often use several strategies to help elicit motivation for change from clients, such as affirming and reflective listening (i.e., MI-consistent behavior; Carroll, Ball, Nich, Martino, Frankforter, Farentinos et al., 2006) and expressing empathy, warmth and genuineness in the therapeutic relationship (i.e., MI-spirit; Baird, Longabaugh, Lee, Nurenberg, Woolard, Mello et al., 2007). However, a recent meta-analysis found that change talk and decisional balance techniques were associated with the best treatment outcomes (Apodaca & Longabaugh, 2009).

The eliciting of change talk and use of decisional balance exercises are two techniques commonly used in MI/MET to increase client motivation and strengthen commitment to behavior change (Miller & Rollnick, 2002). However, since these techniques are also used effectively in other interventions such as Cognitive-Behavioral Therapy (CBT; Aharanovich, Amrhein, Bisaga, Nunes & Hasin, 2008), counselors may be using these techniques regardless of their therapeutic approach. Therefore, the present study will examine the influence of change talk and decisional balance among participants in both MET and standard treatment.

**Change Talk in Substance Abuse Treatment**

Change talk, defined as talk in favor of making a behavior change (e.g., reducing substance use), has been identified as a critical factor leading to behavior change (Miller & Rollnick, 2002). Miller and Rollnick hypothesized that what people say in therapy about change (i.e., change talk) is directly related to whether behavior change will actually occur. Several empirical studies support the positive relationship between change talk and treatment outcomes (Baer, Beadnell, Garrett, Hartzler, Wells, & Peterson, 2008; Campbell, Adamson, & Carter, 2010; Magill, Apodaca, Barnett, & Monti, 2010; Moyers, Martin, Houck, Christopher, & Tonigan, 2009; Vader, Walters, Prabhu, Houck, & Field, 2010). For example, Amrhein, Miller,
Yahne, Palmer, and Fulcher (2003) found that client change talk (referred to as commitment language in this study), particularly during the end of the MI session, was a strong predictor of the proportion of days abstinent among illicit substance abusers. Another study found that change talk was associated with reduced marijuana use in a sample of adolescent and young adult substance users (Strang & McCambridge, 2004). Change talk has also been associated with improved retention outcomes among cocaine-dependent adults participating in CBT (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008).

Recent research also suggests that therapists play an integral role in eliciting change talk from clients. For example, Houck and Moyers (2008) evaluated audiotaped therapy sessions from substance abuse therapists prior to and following their attendance at a MI training workshop. They found a significant relationship between MI consistent therapist behaviors (e.g., affirming and reflective listening) and the frequency of client change talk in sessions recorded both before and after the training. The effect was stronger after training and persisted through the 12-month follow-up period. Other studies support the strong association between therapist behaviors and change talk (Glynn & Moyers, 2010; Moyers & Martin, 2006; Moyers, Martin, Christopher, Houck, Tonigan, & Amrhein, 2007).

Martin, Houck, Christopher, and Tonigan (2009) extended this area of research by not only examining the link between specific therapist behaviors and the frequency of client change talk, but also assessing the relationship between therapist behavior, client change talk and treatment outcomes. Results revealed that higher frequencies of MI-consistent therapist behavior caused higher frequencies of client change talk, which subsequently led to reduced drinking among individuals in the MET outpatient and aftercare treatment arms of Project MATCH (i.e., a
federally-funded multisite clinical trial of alcohol treatment). These findings underscore the strong influence of therapist behavior and client change talk on treatment outcomes.

Despite the promise of change talk in reducing substance use and improving retention, only one study to date has examined the relationship between change talk both within and across sessions and treatment outcomes (Campbell, Adamson, & Carter, 2010). The authors demonstrated that change talk varies within and across sessions and that the variation in change talk influences treatment outcomes. Therefore, additional studies are needed to examine the relationship between the frequency of change talk within and across sessions and treatment outcomes. Further, more studies in general are needed to develop a better understanding of the relationship between change talk and treatment outcomes.

**Decisional Balance in Substance Abuse Treatment**

Another effective strategy commonly used in substance abuse treatment is the decisional balance technique, which is the examination of pros and cons of substance use. Strang and McCambridge (2004) found that the use of decisional balance exercises significantly predicted reduced cannabis use in a sample of young adults and adolescents. Moreover, another study (Labrie, Pedersen, Earleywine, & Olsen, 2006) demonstrated that the decisional balance exercise might serve as an effective intervention by itself. The authors found that after using the decisional balance exercise as a stand-alone intervention, high-risk male college drinkers experienced meaningful increases in their motivation to reduce risky drinking behaviors and displayed significant reductions in their alcohol use (i.e., less drinks consumed per month and per occasion).

Despite the promising findings, several gaps exist in the literature on decisional balance exercises in substance abuse treatment. First, no studies have examined the influence of
decisional balance techniques on retention. Given that the length of time in treatment is one of the best predictors of positive treatment outcomes (Milligan, Nich, & Carroll, 2004), more research is needed to determine if the decisional balance intervention is effective in increasing retention. Second, no studies have included independent tape ratings of the frequency of decisional balance exercises utilized by therapists in audiotaped therapy sessions. Current studies only include decisional balance ratings from participants and study therapists (Labrie et al., 2006; Strang et al., 2004). Independent tape raters (i.e., observers who assess the therapists’ treatment integrity from audiotaped sessions using process rating measures) are often viewed as being less biased due to their lack of knowledge about the trial (i.e., blind to the type of treatment used in the session and the hypotheses being tested). More studies using independent tape raters are needed to reduce the amount of potential bias in ratings of the frequency of decisional balance exercises in therapy sessions. Further, more studies in general are needed to gain a better understanding of the influence of the decisional balance techniques on substance abuse treatment outcomes.

**MET Techniques, Change Talk and Decisional Balance among African Americans**

Few studies examine the relationship between therapeutic techniques and treatment outcomes specifically among African American substance users in MET. The lack of research in this area is a huge concern given that findings for African Americans in MET are inconsistent with existing literature on the general population. For instance, Ball, Martino, Nich, Frankforter, Horn, Crits-Cristoph, et al. (2007) conducted a multi-site clinical trial in which adult substance users were randomized to receive either MET as an adjunct to Counseling as Usual (CAU) or CAU alone (i.e., standard treatment that varied across sites, but typically consisted of a substance abuse assessment, case management, substance use counseling and referrals to other community
services, such as AA and 12 step meetings). The overall findings did not reveal intervention
group differences in substance use or retention outcomes between MET and CAU participants.
However, a separate analysis of the African Americans in this trial (Montgomery, Burlew,
Kosinski, & Forcehimes, 2011) revealed that African American women had higher retention
rates in MET than those in CAU. No differences were observed among African American men.
Furthermore, African Americans in MET self-reported using *more* drugs than those in CAU.
This study not only suggested that treatment outcomes were different for African Americans, but
outcomes also varied based on gender.

Another study (Burlew, Montgomery & Kosinski, under review) found that findings on
the role of readiness to change (RTC; level of readiness to quit using substances) on treatment
outcomes among African Americans in MET were also inconsistent with existing literature.
Evidence suggested that among African Americans in the high RTC group, those in MET
reported *fewer* days of substance use than the CAU group. However among participants in the
low RTC group, those in MET reported *more* days of substance use than participants in CAU.
These findings do not support the conclusions of studies that suggest MI is more effective among
individuals low in readiness than those high in readiness (Heather, Rollnick, Bell, & Richmond,
1996) or those that did not find any evidence of the level of readiness influencing treatment
outcomes (Maisto, Conigliaro, McNeil, Kraemer, Conigliaro, & Kelley, 2001). In addition,
research has found racial/ethnic differences in the pathway to treatment (Daley, 2005), type of
drug use (Galea & Rudenstein, 2005), utilization of treatment services (Wu, El-Bassel, Gilbert,
Piff, & Sanders, 2004), access to services (Marsh, Cao, Guerrero, & Shin, 2009), and treatment
retention (Celeste, Nich, & Carroll, 2004). Taken together, these findings suggest that if treatment
outcomes are different for African Americans, the specific components that influence the
effectiveness of MI/MET (e.g., change talk and decisional balance) might also be different for this group.

Although change talk and decisional balance techniques have garnered support in the recent literature, few studies examine outcomes among African American substance users (Catley, Harris, Mayo, Hall, Okuyemi, Boardman, & Ahluwalia, 2006; Longshore, Grills, & Annon, 1999). Longshore et al. (1999) examined intention to change (a term used synonymously with change talk) among African American substance users in MI. The authors found that a culturally-congruent (i.e., included traditional African American meals, a community peer, and 15 minute video clip of success stories from African Americans who abused substances in the past) MI intervention led to higher levels of intention to change. Catley et al. (2006) demonstrated that MI-consistent therapist behaviors (e.g., affirming, and reflective listening) were associated with higher levels of change talk among African American smokers. However, these studies did not assess if higher levels of change talk were associated with better substance use or retention outcomes.

Further, no research examining the role of change talk and decisional balance separately among African American men and women is available. Montgomery et al.’s (2011) study on African American substance users in MET revealed gender differences in retention outcomes. Moreover, other studies have revealed different findings among substance abusing men and women (Greenfield, Brooks, Gordon, Green, Kropp, McHugh et al., 2006; Hser, Huang, Teruya, & Anglin, 2003). These differences suggest that more studies are needed to determine if there are gender-specific variations in how change talk and decisional balance as elicited by their therapist influence treatment outcomes.
Present Study

This study was designed to fill gaps in the literature by (1) contributing to the limited number of studies available on effective techniques (i.e., change talk and decisional balance) used in MET and other substance use treatments, (2) contributing to the even smaller amount of studies available on effective treatment techniques specifically among African American substance users, and (3) determining if gender-specific variations exist in the relationship between treatment techniques and treatment outcomes (i.e., substance use and retention). Further, the present study also utilized independent tape ratings to assess the frequency of change talk and decisional balance elicited by therapists across sessions.

The Clinical Trials Network (CTN) 0004 (Motivational Enhancement Treatment to Improve Treatment Engagement and Outcome in Individuals Seeking Treatment for Substance Abuse; Carroll, Ball, Crits-Cristoph, Farentinos, McLellan, Morgenstern et al., 2001) protocol of the National Institute of Drug Abuse (NIDA) provided an opportunity for a secondary analysis to address these gaps among African American adults seeking outpatient substance abuse treatment. The following questions were examined: Irregardless of treatment type,(1) Does the level of change talk and decisional balance exercises elicited by therapists influence treatment outcomes (i.e., primary substance use and retention)?(2) Does the level of change talk and decisional balance exercises elicited by therapists influence treatment outcomes (i.e., primary substance use and retention) differently for men and women?

Method

Participants

The original sample of African Americans in CTN 0004 includes 194 participants. However, only those 83 participants who had at least one of their therapy sessions rated by an
independent tape rater were included in the present study. Further details on the entire African American sample are provided elsewhere (Montgomery et al., 2011)). A total number of 191 treatment sessions from the 83 participants were recorded and rated. Individuals who were eligible for the present study 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, self-identified as African American, were willing to participate in the protocols and were able to understand and provide written informed consent.

**Participating CTPs.** The ten participating community treatment programs (CTPs) provided outpatient treatment in non-methadone maintenance settings. CTPs eligible for both protocols enrolled adequate numbers of new patients to meet the recruitment targets for the parent study (i.e., 100 participants per CTP, with approximately 50 participants per treatment group) and had at least six clinicians willing to participate in the protocol. The CTPs were affiliated with the following regional research nodes of the NIDA CTN: the New England Node, the Delaware Valley Node, Pacific Region Node, Western States Node, Mid-Atlantic Node and the Greater New York Node. Further information on the CTPs participating in this study can be found in publications by Ball et al. (2007) and Caroll et al. (2006).

**Participating clinicians.** Eligible clinicians were currently employed at the participating CTPs, and were willing to utilize a manualized version of MET to accept an assignment to either MET or standard treatment and were approved by the CTPs administrative/supervisory staff as appropriate for the study. Clinicians with prior training in MI or MET were ineligible. Further information on staff eligibility criteria and training plans can be found in the CTN 0004 (Carroll et al., 2001) protocol.
Measures

The following measures from CTN 0004 were used for the present study:

**Substance Use Calendar (SUC).** The first outcome measure, substance use (i.e., average number of self-reported days of primary substance use per week for each of the 16 study weeks), was assessed using the Substance Use Calendar (SUC). The SUC is a self-report measure of substance use (marijuana, cocaine, alcohol, methamphetamine, benzodiazepines, opioids and other illicit substances) in which participants are asked to recall their substance use on each of the 30 days preceding the data collection session. Participants reported their primary and other substance use at baseline. The number of days per week of primary substance use reported on the SUC was used to assess treatment outcomes over time. The SUC is adapted from the Form-90 and Timeline Followback (TLFB), two widely used self-report measures of substance use in calendar form (i.e., day to day). Both the Form-90 (Miller & DelBoca, 1994) and TLFB (Ehrman & Robbins, 1994; Fals-Stewart, O’Farell, Freitas, McFarlin, & Rutigliano, 2000; Sobell & Sobell, 1992) have good reliability and validity in assessing substance use. The SUC and TLFB provided memory prompts to enhance recall of substance use behaviors within the 30-day window.

**Client Disposition-End of Trial Status Form.** Retention (i.e., the number of days between the day of study enrollment and the last day the participant received treatment during the 112 day study), the second outcome measure, was assessed with the Client Disposition-End of Trial Status Form. The form includes information on the date of the last treatment session and the reason for ending treatment.
**Demographic Form.** A demographic form was used to collect participant characteristics such as age, frequency of use, race, primary substance type at baseline and other demographic variables.

**Independent Tape Rater Scale (ITRS).** The independent variables, frequency of client change talk and decisional balance exercises elicited by therapists, were assessed by the Independent Tape Rater Scale (ITRS; Ball, Martino, Corvino, Morganstern, & Carroll, 2002). The ITRS, adapted from the Yale Adherence Competence Scale (Carroll, Nich, Sifry, Frankforter, Nuro, Ball et al., 2000), is a 30 item scale assessing the adherence and competence of strategies used in therapeutic interventions. Independent tape raters were trained to rate the extent to which therapists elicited therapeutic strategies (i.e., MI-consistent behavior, MI-inconsistent behavior, and general substance abuse counseling intervention techniques) on a 7-point Likert scale ranging from not at all to extensively in MET and Counseling as Usual (CAU). The independent ratings of the extent to which therapists elicited self-motivating statements (designed to evoke client change talk, such as “Why would you want to reduce your substance use?”) and explored or addressed pros and cons of substance use (statements designed to evoke the use of decisional balance, such as “What are the pros and cons of reducing substance use?” and “Why is quitting important to you?”) were used in the present study.

**Procedures**

Participants in the CTN study were recruited across five CTPs as they enrolled for treatment. After providing written consent, those willing to participate were randomly assigned to receive either three sessions of MET prior to CAU or three additional sessions of CAU during a four week active phase. Following the active phase, participants were referred to CAU as
provided by their CTP. Participants were assessed at baseline, at the end of the four week active phase, and at an eight and 16 week follow up.

Another component of the study included an evaluation of a random subset of MET and CAU audiotapes from sessions delivered in the active phase. Sessions were evaluated by independent tape raters for adherence and competence to the behavioral intervention assigned to the therapists. Independent tape raters were blind to the treatment assignment of the audiotaped sessions to reduce any potential bias. The raters attended seminars on the ITRS rating system, practiced rating the items in limited therapist-client transactions, and received feedback on their ratings from MET experts. Raters received a total of 44 hours of training including the seminars and calibration tape components. See Martino, Ball, Nich et al.’s (2008) paper for a full discussion of the ITRS training.

**Counseling as Usual (CAU).** Participants were offered three CAU sessions (45 – 55 minutes each) during the four week active phase as an adjunct to standard treatment. Clinicians “collected information on substance use and psychosocial functioning, explained treatment program requirements, discussed the participant’s goals for treatment, provided early case management and substance use counseling, encouraged attendance at 12-step meetings, promoted abstinence, and emphasized follow through with treatment at the clinic” (Ball et al., 2007, p. 559). All clinicians met monthly with a supervisor to review individual patient treatment progress and audiotaped CAU sessions were later rated to assess fidelity to adherence and competence. Further details are provided elsewhere (Ball et al., 2007; Carroll et al., 2006).

**Motivational Enhancement Therapy (MET).** Participants in the MET condition were offered three sessions (45-55 minutes each) during the four week active phase as an adjunct to standard treatment. Clinicians used a MET manual (Farentinos & Obert, 2000) developed for the
CTN study. The manual describes “three carefully planned sessions, with the first session focused on reviewing an individualized Personal Feedback Report (i.e., summarizes objective and personal information on participant’s substance use), and the other two focused on discussing plans for changing substance use” (Carroll et al., 2001, p. 12). The clinician’s goal was to enhance the client’s own motivation and commitment to change.

Drs. William Miller and Theresa Moyers trained the local expert MET trainers who subsequently trained and supervised the MET study clinicians. After 16 hours of didactic training, each MET study clinician conducted audiotaped practice sessions with outpatients for review by the local MET expert trainers. MET therapists were certified when they received at least adequate or average adherence and competence ratings on the structured tape rating system. Ball et al. (2007) and Carroll et al. (2006) provide more detail on the demographics, training, supervision and certification of therapists.

**Data Analysis**

The primary outcome measures were substance use (i.e., average number of self-reported days of primary substance use per week for each of the 16 study weeks) and retention (i.e., the number of days between the day of study enrollment and the last day the participant received treatment during the 112 day study). Participants who received an average rating of 2 or less on the ITRS were classified as low change talk in this study. All other participants who had an average rating greater than 2 were classified as higher change talk. The same classification system was used for decisional balance. Treatment type was not a variable of interest in the present study; therefore, primary outcome data from participants in the MET and CAU conditions were combined in the data analyses. All analyses were performed via Statistical Package for Social Sciences (SPSS) Version 20.
Longitudinal analysis with Linear Mixed Modeling (LMM) was performed with days of primary substance use per week as the outcome (the dependent variable) and frequency of change talk elicited by therapists (low change talk vs. higher change talk), time, and interactions as the independent variables. A similar model was conducted for the frequency of decisional balance elicited by therapists (low decisional balance vs. higher decisional balance). A random intercept in the model accounted for the correlation of outcome over time for each patient. Separate models were also conducted to compare the frequency of change talk (low vs. higher) and decisional balance (low vs. higher) elicited by therapists on substance use outcomes among men and women. Missing data was handled under an assumption commonly used in the literature, the missing at random (MAR) assumption (Shu & Blozis, 2011), which assumes that missingness is unrelated to any unobserved variable.

Linear regression analyses were conducted for the retention outcome. The independent variables were the average amount of change talk in one model and the average amount of decisional balance elicited by therapists across sessions in another model. Separate models were also conducted with gender as a fixed factor.

Results

Sample Characteristics

Approximately 72.3% of the sample was male. The average age of the sample was 38 years ($SD = 9.6$). Alcohol (31%) was the most common primary drug reported in this sample. Participants’ average number of self-reported days of primary substance use per week for each of the 16 study weeks was 2.6 days ($SD = 2.2$). Participants were enrolled in treatment for an average of 73.9 days ($SD = 38.3$) out of 120 days (i.e., 16 weeks) of the study. Table 1 summarizes the demographic characteristics of the 83 African American participants in the
present study. Approximately 55% of the audiotaped sessions were from participants who had all three of their therapy sessions rated by an independent tape rater. Table 2 provides further details about the 191 audiotaped sessions that were included in the present study. Independent tape ratings revealed that the MET and CAU sessions were discriminable in the predicted directions. MET sessions received higher ratings on MET-consistent behavior, while CAU sessions received higher ratings on MI-inconsistent behavior (Ball et al., 2007).

Substance Use Outcomes

In the LMM model for change talk and substance use, the overall time by change talk interaction was significant \((F = 5.3, df = 33, 103, p < .05)\), suggesting that participants with higher levels of change talk reported less substance use than those with a low level of change talk elicited by their therapist, especially during weeks 11-16. The findings are displayed in Figure 1.

As shown in Figure 2, substance use outcomes did not significantly differ among men and women who had low levels of change talk elicited by their therapists \((F = 2.3, df = 33, 99.7, p = .25)\). Among participants who had higher levels of change talk elicited by their therapists, there was a significant difference between the substance use outcomes for men and women \((F = 3.5, df = 34, 99.7, p < .05)\). Specifically, there was a stronger association between higher levels of change talk elicited by therapists and reduced substance use among men than women during weeks 11-16, as shown in Figure 3.

In the LMM model for decisional balance and substance use, the overall time by decisional balance interaction was not significant \((F = 2.7, df = 32, 96, p = .26)\). Similar non-significant findings emerged when examining gender differences among men and women with low levels of decisional balance \((F = 3.9, df = 31, 96, p = .56)\) and men and women with higher
levels of decisional balance ($F = 2.4$, $df = 32, 96, p = .43$).

**Retention Outcomes**

The frequency of change talk elicited by therapists did not significantly predict retention ($R^2 = .11$, $F (1, 247) = 24.3, p = .91$). Similar non-significant findings emerged when examining gender differences on retention ($R^2 = .64$, $F (2, 246) = 21.2, p = .64$). The frequency of decisional balance exercises elicited by therapists did not significantly predict retention overall ($R^2 = .31$, $F (1, 247) = 15.2, p = .69$) or when gender was added to the model ($R^2 = .22$, $F (2, 246) = 41.6, p = .72$).

**Discussion**

The present study examined if the frequency of change talk and decisional balance techniques elicited by therapists influenced treatment outcomes for African American substance users. Further, this study also assessed gender-specific variations in the relationship between treatment techniques and treatment outcomes. Findings from the study revealed that higher levels of change talk elicited by therapists significantly influenced substance use outcomes during follow-up. However, additional analyses revealed that the positive relationship between higher levels of change talk and substance use outcomes at follow-up was stronger among men than women.

The overall positive relationship between high levels of change talk and substance use outcomes at follow-up is consistent with existing literature (e.g., Apodaca & Longabaugh, 2009; Baer et al., 2008; Moyers et al., 2009). However, a separate analysis by gender revealed that higher levels of change talk as elicited by therapists were associated with reduced substance use among men, but not among women. Gender-specific variations in the relationship between change talk elicited by therapists and treatment outcomes have not been examined in other
studies. This finding suggests that gender is an important variable that should be considered when examining the link between the level of change talk elicited by therapists and treatment outcomes. This finding also provides preliminary evidence for change talk as an ingredient of change among African American male substance users. Further, this outcome provides preliminary support for research suggesting that therapists play a substantial role in shaping client’s language about change (Glynn & Moyers, 2010). Clinicians working with African American clients, especially males, can draw from several available resources on how to effectively elicit change talk (e.g., open-ended questions and reflections) to help improve outcomes among African American substance users (e.g., Glynn & Moyers, 2010; Miller & Rollnick, 2002; Rosengren, 2009).

Further, the positive relationship between change talk and substance use outcomes provides a great foundation for additional research among African American males. For example, the research on change talk has recently expanded and now includes specific categories of change talk. The categories include client statements about their desire, ability, reason, need and commitment to change (referred to as DARN-C; Amrhein et al., 2003). Future studies examining change talk among African Americans should consider the specific type of change talk that therapists are attempting to elicit from clients. Research also suggests that change talk, particularly at the end of the session, predicts better treatment outcomes (Amrhein et al., 2003). The present study did not have available data to assess the specific timing of when change talk was elicited in the sessions. Future studies should include an analysis of data collected on the frequency of change talk elicited within different time points throughout the individual sessions.
Two possibilities might explain, at least in part, why higher levels of change talk elicited by therapists significantly influenced substance use outcomes for men, but not for women. First, low statistical power might have contributed to the marginally significant difference in the small sample of women in this study. Future studies should include a larger sample of women with varying change talk experiences in session to determine if the findings are consistent with the present study. Second, gender differences in communication style might contribute to what men and women say in treatment, regardless of the therapists’ effort to elicit change talk. For example, research suggests that men are more likely to use communication to problem-solve, while women are more likely to use communication to share their experiences and establish an interpersonal connection (Tannen, 1994). Perhaps change talk is more effective among men because talk in favor of making a behavior change, especially during the first few sessions, supports their communication style of wanting to actively solve the problem quickly. It is plausible that women prefer to spend time connecting and sharing their experience with the therapist during the first few sessions and therefore might not be as interested in change talk early on in the relationship. Therefore, future studies should examine the influence of client change talk on treatment outcomes among African American substance users. Future studies should also examine the relationship between treatment techniques, gender differences in communication style and treatment outcomes among African Americans in substance abuse treatment. Similarly, future studies should examine differences in communication styles (Finn, 1994; Freimuth & Quinn, 2004) specifically among African American men and women to improve the effectiveness of healthcare delivery in this population.

Decisional balance was not a significant predictor of substance use or retention outcomes during the active phase or at follow-up. This finding is consistent with a study demonstrating the
lack of an effect for the decisional balance technique as a stand-alone intervention for at-risk college drinkers (Collins & Carey, 2008). One possibility for the lack of an effect of decisional balance among African Americans might be the nature in which the decisional balance technique is often delivered in therapy sessions. For example, it is possible that some therapists had an extensive discussion with their clients about the pros and cons of substance use in the first session in an effort to elicit more change talk across the other two sessions. Research suggests that decisional balance techniques are most effective in eliciting change talk (Miller & Rollnick, 2002), which in turn improves treatment outcomes. It is also possible that efforts to utilize the decisional balance were coded as eliciting change talk by the independent tape raters. For example, if a therapist asked a client “Why is quitting important to you?”, that question has the potential of being coded as eliciting change talk or utilizing the decisional balance technique. Therefore, the frequency of decisional balance technique ratings across sessions might not be well represented in the data analysis. Nevertheless, several studies support the effectiveness of decisional balance techniques in reducing substance use (Apodaca & Longabaugh, 2009; Labrie, Pedersen, Earleywine, & Olsen, 2006; Strang and McCambridge, 2004). Therefore, future studies with data from more therapy sessions and a wider range of variability in decisional balance techniques among African American substance users are warranted.

The lack of significant findings between change talk and decisional balance and retention are unexpected. However, a recent study (Montgomery et al., 2011) using the entire sample of African Americans in CTN 0004 found higher retention rates among women in MET than those in CAU. Therefore, the promising retention findings for African American women suggest that researchers should continue to examine other specific therapeutic techniques and values (Kazdin, 2007) that may have contributed to this positive outcome. Also, the present study examined
treatment techniques that are commonly used across different treatments. The significant retention finding among women in MET suggests that there might be some MET-specific therapeutic factors (e.g., MI-spirit and MI-consistent behaviors; Apodaca & Longabaugh, 2009) that are worth examining in future research. Future studies should also include more robust operational definitions of retention (Wakim, Rosa, Kothari, & Michel, 2011).

The present study has several strengths. First, the study addressed an important gap in the literature on the relationship between specific therapeutic techniques (i.e., change talk and decisional balance) and treatment outcomes for African American substance users. This is the first study providing preliminary evidence for change talk serving as an ingredient of behavior change in therapy specifically among African Americans (especially men). Second, findings are from a multi-site randomized clinical trial sponsored by the CTN of NIDA. Third, the trial has many strong features that add validity to the data, including the extensive training of therapists and the use of tape ratings from independent raters. Further, the longitudinal design of the study allowed for analyses of treatment retention and substance use outcomes over time.

However, there are some limitations to be considered. First, findings from the present study were based on a small sample of participants’ self-report data. Biological markers of substance use were not available for each of the 16 study weeks. However, it is important to note that previous research on the relation of self-report data to physiological data is quite promising (Shillington et al., 1995; Vitale, van de Mheen, van de Wiel, & Garretsen, 2006). Another limitation of the present study was an analysis that focused only on the level of adherence demonstrated in eliciting change talk and utilizing the decisional balance technique. Future studies should not only examine the extent to which therapists adhere to therapeutic interventions, but also focus on the competence level in which the strategies were delivered.
Further, the average amount of change talk and decisional balance elicited over time was low in the present study. Future research should include data from sessions with more variability in the use of therapeutic techniques. Similarly, we were particularly interested in whether participants with higher levels of change talk and decisional balance would respond differently to treatment. Therefore, we classified participants with higher levels of change talk/decisional balance elicited by their therapists into one group and compared them to participants with low levels of change talk/decisional balance. Future studies should examine if alternate ways of splitting the data or perhaps utilizing continuous measures of change talk and decisional balance yield different results. Despite these limitations, this study provides valuable implications for clinical practice and fruitful avenues for additional research.

Several important conclusions about clinical practice and research can be drawn from this study. First, the findings add to the promise of MET for African American substance users given the strong emphasis on change talk in MET as compared to other therapeutic approaches (e.g., CBT). Further, findings suggest that clinicians should focus more of their therapeutic efforts on eliciting change talk and less on utilizing decisional balance techniques with their African American clients, especially men. Second, findings underscore the importance of examining outcomes specifically among racial/ethnic groups. This conclusion supports the recommendation made by other research teams (Burlew, Feaster, Hubbard, & Brecht, 2009; Burlew et al., 2011; Montgomery et al., 2011) to not assume that the results from the overall sample are generalizable to the ethnic minorities in the sample. Further, it also supports the notion of considering the heterogeneity within racial/ethnic groups (e.g., gender differences) in statistical analyses (Burlew et al., 2011). Third, assessing the effectiveness of specific strategies used in evidence-based interventions is an important way to address many issues in clinical practice and research. For
example, one major issue in community treatment programs is the lack of resources and time available for evidence-based trainings for clinicians (Ager, Roahen-Harrison, Toriello et al., 2011). More studies that examine the effectiveness of specific strategies (e.g., eliciting change talk) will allow clinicians to employ those specific stand-alone strategies with their clients when funding and/or time does not allow for hours of training on evidence-based interventions. Another issue is the lack of a strong theory about why and under what set of conditions MET and other treatments work, especially among African Americans. More studies on the effectiveness of specific therapeutic strategies will enhance theory development and advance the science behind psychotherapy. Fourth, this study highlights the importance of gaining a further understanding of potential gender differences in communication styles, especially among African Americans, as it relates to substance abuse treatment and psychotherapy in general. More broadly, this project accentuates the critical need for more research designed to reduce racial/ethnic health disparities in substance abuse treatment, especially among African Americans.

**Summary**

The present study was designed to ascertain if the frequency of change talk and decisional balance techniques elicited by therapists influenced treatment outcomes among African Americans in outpatient substance abuse treatment. Findings revealed that higher levels of change talk elicited by therapists was associated with reduce substance use, especially during the end of the follow-up phase of the study. Separate analyses examining gender differences revealed a stronger relationship between change talk and substance use outcomes among men than women. However, the frequency of change talk elicited by therapists did not significantly predict retention for the overall sample or separately among African men or women. The
frequency of decisional balance techniques elicited by therapists did not significantly influence substance use or retention outcomes. Findings suggest that eliciting change talk is an effective technique for reducing substance use among African Americans, especially African American men. This study highlights the need to further examine racial/cultural and gender differences in response to substance abuse treatment.
References


Table 1. Demographic Characteristics of African American Participants with Independent Tape Ratings

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>MET</th>
<th></th>
<th>CAU</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 37</td>
<td>n = 46</td>
<td>N = 83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>9</td>
<td>24.3</td>
<td>14</td>
<td>30.4</td>
<td>23</td>
<td>27.7</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>75.7</td>
<td>32</td>
<td>69.6</td>
<td>60</td>
<td>72.3</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>37.5</td>
<td>11.2</td>
<td>38.4</td>
<td>8.3</td>
<td>38.0</td>
<td>9.6</td>
</tr>
<tr>
<td>Primary Substance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td>4</td>
<td>10.8</td>
<td>12</td>
<td>26.1</td>
<td>16</td>
<td>19.3</td>
</tr>
<tr>
<td>Alcohol</td>
<td>15</td>
<td>40.5</td>
<td>11</td>
<td>23.9</td>
<td>26</td>
<td>31.3</td>
</tr>
<tr>
<td>Marijuana</td>
<td>7</td>
<td>19.0</td>
<td>8</td>
<td>17.4</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>2 or More</td>
<td>9</td>
<td>24.3</td>
<td>13</td>
<td>28.3</td>
<td>21</td>
<td>25.3</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>5.4</td>
<td>2</td>
<td>4.3</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Treatment Retention (days)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>74.1</td>
<td>38.0</td>
<td>73.7</td>
<td>38.9</td>
<td>73.9</td>
<td>38.3</td>
</tr>
<tr>
<td>Years of Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>30</td>
<td>81.1</td>
<td>28</td>
<td>60.9</td>
<td>58</td>
<td>69.8</td>
</tr>
<tr>
<td>13-15</td>
<td>6</td>
<td>16.2</td>
<td>15</td>
<td>32.6</td>
<td>21</td>
<td>25.3</td>
</tr>
<tr>
<td>16-18</td>
<td>1</td>
<td>2.7</td>
<td>3</td>
<td>6.5</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Employment (past 30 days)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>17</td>
<td>45.9</td>
<td>11</td>
<td>23.9</td>
<td>28</td>
<td>33.7</td>
</tr>
<tr>
<td>Part-time</td>
<td>2</td>
<td>5.4</td>
<td>3</td>
<td>6.5</td>
<td>5</td>
<td>6.0</td>
</tr>
<tr>
<td>Retired/Disabled</td>
<td>3</td>
<td>8.1</td>
<td>4</td>
<td>8.7</td>
<td>7</td>
<td>8.4</td>
</tr>
<tr>
<td>Unemployed</td>
<td>15</td>
<td>40.5</td>
<td>21</td>
<td>45.7</td>
<td>36</td>
<td>43.4</td>
</tr>
<tr>
<td>Controlled Environment</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
<td>15.2</td>
<td>7</td>
<td>8.4</td>
</tr>
<tr>
<td>Mandated to Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>32.4</td>
<td>13</td>
<td>28.3</td>
<td>25</td>
<td>30.1</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td>67.6</td>
<td>33</td>
<td>71.1</td>
<td>58</td>
<td>69.9</td>
</tr>
</tbody>
</table>

Note. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual.
Table 2. Characteristics of Active Phase Treatment Sessions for African Americans with Independent Tape Ratings in CTN 0004

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>MET</th>
<th></th>
<th>CAU</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Number of Sessions Rated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>24.3%</td>
<td>12</td>
<td>22.0%</td>
<td>21</td>
<td>25.3%</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>10.8%</td>
<td>12</td>
<td>22.0%</td>
<td>16</td>
<td>19.3%</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>64.9%</td>
<td>22</td>
<td>47.8%</td>
<td>46</td>
<td>55.4%</td>
</tr>
<tr>
<td>Lengths of Sessions (minutes)</td>
<td>43.1</td>
<td>9.7%</td>
<td>44.8</td>
<td>7.9%</td>
<td>43.9</td>
<td>8.8%</td>
</tr>
<tr>
<td>Amount of Change Talk Elicited</td>
<td>3.0</td>
<td>1.2%</td>
<td>1.1</td>
<td>0.4%</td>
<td>1.9</td>
<td>1.2%</td>
</tr>
<tr>
<td>Amount of Decisional Balance Elicited</td>
<td>3.1</td>
<td>1.3%</td>
<td>1.5</td>
<td>0.7%</td>
<td>2.2</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Note. MET = Motivational Enhancement Therapy; CAU = Counseling as Usual. The average amount of change talk and decisional balance elicited by therapists are based on the following Likert scale: 1 = not at all, 2 = a little (once), 3 = infrequently (twice), 4 = somewhat (3-4 times), 5 = quite a bit (5-6 times), 6 = considerably (> 6 times/more depth in intervention), 7 = extensively (high frequency/characterizes entire session). Further details on the scale are provided in Martino, Ball, Nich, Frankforter, and Carroll’s (2008) paper.
Figure 1. The influence of the average amount of change talk elicited by therapists (low change talk vs. higher change talk) on the average number of days of primary substance use per week. The average amount of change talk and decisional balance elicited by therapists are based on the following Likert scale: 1 = not at all, 2 = a little (once), 3 = infrequently (twice), 4 = somewhat (3-4 times), 5 = quite a bit (5-6 times), 6 = considerably (> 6 times/more depth in intervention), 7 = extensively (high frequency/characterizes entire session). Sessions that received an average rating of 2 or less on the Independent Tape Rating Scale (ITRS) were categorized as “low change talk” and sessions that received an average rating greater than 2 were categorized as “higher change talk.”
Figure 2. The influence of low levels of change talk elicited by therapists on the average number of days of primary substance use per week by gender. The average amount of change talk and decisional balance elicited by therapists are based on the following Likert scale: 1 = not at all, 2 = a little (once), 3 = infrequently (twice), 4 = somewhat (3-4 times), 5 = quite a bit (5-6 times), 6 = considerably (> 6 times/more depth in intervention), 7 = extensively (high frequency/characterizes entire session). Sessions that received an average rating of 2 or less on the Independent Tape Rating Scale (ITRS) were categorized as “low change talk” and sessions that received an average rating greater than 2 were categorized as “higher change talk.”
Figure 3. The influence of higher levels of change talk elicited by therapists on the average number of days of primary substance use per week by gender. The average amount of change talk and decisional balance elicited by therapists are based on the following Likert scale: 1 = not at all, 2 = a little (once), 3 = infrequently (twice), 4 = somewhat (3-4 times), 5 = quite a bit (5-6 times), 6 = considerably (> 6 times/more depth in intervention), 7 = extensively (high frequency/characterizes entire session). Sessions that received an average rating of 2 or less on the Independent Tape Rating Scale (ITRS) were categorized as “low change talk” and sessions that received an average rating greater than 2 were categorized as “higher change talk.”

Difference between trajectories:
\[ F = 3.5, \ df = 34, 99.7, p < .05 \]