# The Alliance in Motivational Enhancement Therapy and Counseling as Usual for Substance Use Problems

**Paul Crits-Christoph**,
Department of Psychiatry, University of Pennsylvania

**Robert Gallop**,
Department of Mathematics, West Chester University

**Christina M. Temes**,
Department of Psychiatry, University of Pennsylvania

**George Woody**,
Department of Psychiatry, University of Pennsylvania

**Samuel A. Ball**,
Department of Psychiatry, Yale University

**Steve Martino**, and
Department of Psychiatry, Yale University

**Kathleen M. Carroll**
Department of Psychiatry, Yale University

## Abstract

Data from a community-based multicenter study of Motivational Enhancement Therapy (MET) and counseling as usual (CAU) for outpatient substance users were used to examine questions about the role of the alliance in MET and CAU. Most (94%) of the sample met diagnostic criteria for abuse or dependence (primarily alcohol and/or cocaine). Sixteen therapists for CAU and 14 for MET participated. No reliable differences in patient ratings ($n = 319$) on the Helping Alliance Questionnaire-II (HAq-II) were evident for MET compared to CAU, but significant differences between therapists were found within each condition in mean patient-rated HAq-II scores. Overall, average levels of alliance were high. The between-therapist component of the alliance, but not the within-therapist component, was significantly associated with self-reported days of primary substance use during the follow-up period from Weeks 4 to 16 (Cohen's $d = 0.39$; $n = 257$). Therapists with either low or very high alliances had relatively poorer average outcomes (quadratic effect: $d = 0.44$). For therapists in both MET and CAU, increased use of MET fundamental techniques and MET advanced techniques during treatment sessions were associated with higher levels of alliance. Implications of the findings for conceptualization of the alliance and for training of therapists are discussed.

## Keywords

alliance; motivational enhancement; motivational interviewing; substance use

## The Alliance in Motivational Enhancement Therapy and Counseling as Usual for Substance Use Problems

Motivational Enhancement Therapy (MET; Miller, Zweben, DiClemente, & Rychtarik, 1992), a manual-based version of Motivational Interviewing (MI; Miller & Rollnick, 1991, 2002), is a brief psychotherapy designed to enhance motivation to change addictive behaviors. A meta-analysis of clinical trials of MI or MET for addictive disorders has found moderate between-group effect sizes for the efficacy of this therapy at posttreatment (Cohen's $d = 0.41$ for 32 studies of alcohol use problems; 0.51 for 13 studies of illicit drug use problems) (Hettema et al., 2005). These average effects, however, mask substantial variability across studies, with some studies showing no effects for MI/MET (Hettema et al., 2005). This variability in effects across studies may have to do with differences in settings, patient populations, outcome measures, study procedures, nature of control groups, and heterogeneity in the implementation of MI/MET.

Variable outcomes from MET were recently found in a National Institute on Drug Abuse (NIDA) Clinical Trials Network multicenter study that examined the effectiveness of a three-session MET versus counseling as usual (CAU) (Ball et al., 2007). Although the overall results indicated that MET reduced drug use significantly more than CAU, results varied considerably by program site, with MET better than CAU at two sites, little difference between treatments at two sites, and CAU better than MET at one site.

The successful implementation of MET may depend on therapist skill in general, or skill with certain patients, in creating the type of in-session climate that is central to the theory of this form of therapy. Some of the core clinical features of MET are borrowed from client-centered therapy as described by Rogers (1957). These features include a focus on listening to the client and the importance of therapist empathy, acceptance, respect, and positive regard for the client. MET, however, is not identical to Rogerian therapy. Unlike client-centered therapy, MET employs strategies to motivate clients to achieve specific behavior change goals within its overall collaborative and supportive stance (Miller, 1995). For example, therapists actively focus the client's attention on discrepancies between where they are and where they want to be, and to channel these discrepancies toward behavior change (Miller, 1983). In addition, therapists ask questions and reflectively listen to clients to specifically support client statements that favor change (Miller & Rollnick, 2002). Overall, MET is a more directive approach than client-centered therapy.

Although there are several other ways in which MET goes beyond traditional client-centered therapy, the emphasis on therapist empathy and acceptance, respect, and positive regard for the patient capture the essence of the therapeutic climate of the approach. These same features of therapy are highlighted in Orlinsky, Grawe, and Parks' (1994) empirical analysis of factors that are associated with a positive therapeutic alliance in psychotherapy. The alliance has been defined by Bordin (1979) as composed of three interrelated components: the emotional bond between patient and therapist, agreement on therapy tasks, and agreement on therapy goals. Because of the clear overlap of some MET techniques and factors associated with a positive alliance, it would be expected that the alliance would be one of the central elements of the process of MET. Indeed, one investigation of the relation of therapist techniques in a MI treatment of smokers found that a MI-consistent style was positively related to the alliance (Boardman et al., 2006). Similarly, therapist interpersonal skills (acceptance, egalitarianism,

empathy, warmth, spirit) that are consistent with the "spirit" of MI have been found to predict client cooperation and involvement (alliance-related constructs) in the MI treatment of substance abusers (Moyers et al., 2005).

Because the alliance has been extensively researched in diverse psychotherapies, with meta-analyses showing a consistent relation between a positive alliance and relatively more favorable treatment outcomes (Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000), and the close conceptual connection between the alliance and the therapy process involved in MET, it would be expected that the alliance should be associated with treatment outcome within this form of therapy. Despite this close conceptual connection between the alliance and core features of MET and the relatively large number of studies that have been conducted on MET (see bibliography at http://www.motivationalinterview.org/library/biblio.html), few studies have investigated the role of the alliance as a predictor of outcome in this approach. A notable exception is Project MATCH (Connors et al., 1997). In the outpatient arm of this study, ratings on the alliance were positively related to percentage of days abstinent and negatively related to drinks per drinking day for both the 12-week treatment period and the posttreatment follow-up period (Connors et al., 1997). However, the alliance only explained a small percentage of variance in the outcomes (ranging from 0.8% to 1.5% for client alliance ratings and 1.3% to 3.4% for therapist alliance ratings), and there were no significant interactions between alliance and treatment condition (MET, cognitive-behavioral therapy, twelve-step facilitation) in predicting outcome. Another study involving a single-session MI for problem drinking among college students found high alliance ratings, on average, by both clients and therapists, but no significant relations between the alliance and drinking outcomes were apparent (Feldstein & Forcehimes, 2007).

Baldwin, Wampold, and Imel (2007) recently argued that studies of the relation of the alliance to outcome should conduct separate tests of the potential link between (1) therapist variability in the alliance and outcome, and (2) patient variability in the alliance and outcome. As explained by Baldwin et al. (2007), the within-therapist test examines whether patients with high alliance scores achieve relatively better outcomes than patients, treated by the same therapist, who have low alliance scores. The between-therapist test examines the relation of therapists' average alliance (averaging over all patients treated by a therapist) to the average outcome achieved by each therapist (again, averaging over patients treated by each therapist). These authors describe how a relation at one level (e.g., therapist) could be positive and at the other level (e.g., patient) could be negative, with such effects canceling out when these sources of variability are incorporated into the statistical model and tested. In their own study, therapist variability in the alliance was found to relate to outcome for students in university counseling centers, but patient variability did not relate to outcome (Baldwin et al., 2007). In a treatment like MET, where there is a high focus on therapist actions that might foster a positive alliance, it would be particularly important to model both patient and therapist variability in alliance in relation to outcome in order to understand whether aspects of the therapist, or patient, are primarily responsible for the relation of the alliance to outcome.

In addition to predicting outcome, it might also be expected that, given the high focus on empathy, acceptance, respect, and positive regard in MET, average levels of alliance in MET would be higher than in therapies that do not emphasize these processes as much. However, in Project MATCH, no differences were found between MET, cognitive-behavioral therapy, and twelve-step facilitation in average alliance scores (Carroll et al., 1998). Similarly, in a study of MET compared to cognitive-behavioral therapy for bulimia nervosa, there was also no mean difference between MET and cognitive-behavioral therapy in mean alliance scores (Treasure et al., 1999).

Although the alliance would be theoretically expected to be especially high in MET, the alliance would also be expected to be high in other types of therapies investigated in randomized clinical trials for which extensive effort has been put into the selection, training, monitoring, and supervision of the therapists implementing the treatments. Thus, not surprisingly, MET has not been found to produce higher alliances than other psychotherapies within the context of studies that carefully select, train, and supervise therapists. A better test of this hypothesis might be to compare MET to a counseling as usual comparison group for which no special efforts at training, supervising, and monitoring have been implemented (although therapist experience should be controlled). In addition, because therapist interpersonal skills have been linked to alliance-like processes in MET, it might be expected that therapists will differ, on average, in their alliances formed with patients based on therapist differences in these interpersonal skills and/or ability to adhere to MET and use it competently. These issues have not been explored empirically to date.

The purpose of the current article is to examine several questions about the role of the alliance in MET and counseling as usual (CAU) for outpatient substance use problems. These questions include: (1) Are patient-reported alliance ratings higher in MET compared to CAU for outpatient substance use problems? (2) Do therapists providing CAU and those trained in MET vary in their average levels of patient-reported alliances? (3) What is the relation of variability in the alliance at the patient and therapist levels to MET and CAU treatment outcome? (4) Are there differences in the relation between alliance and self-reported days per week of use of the primary substance of abuse in MET compared to CAU? (5) How do ratings of MET techniques employed in sessions relate to alliance scores?

## Method

Data from the Ball et al. (2007) study of MET compared to CAU in the treatment of substance abuse were used. The Ball et al. (2007) study was a multicenter randomized clinical trial implemented in five outpatient substance abuse treatment programs within three research-practice partnerships in the NIDA Clinical Trials Network.

The study protocol and informed consent procedures were approved by the respective Institutional Review Boards affiliated with each site. Recruitment of participants occurred from June 2001 to July 2004.

### Participants

**Patients**—All patients were screened for participation in the current study as part of the intake process at the participating clinics (see Ball et al., 2007 for details). Of 683 individuals screened for the study, 222 were ineligible and 461 were randomized (see Figure 1) to either MET ($n = 216$) or CAU ($n = 245$) at their outpatient program site. Of the randomized patients, 75 (16%) never attended their first study MET or CAU session. Of those who began the treatment protocol, 69% completed all three protocol sessions, 15% completed two, and 16% completed one session. There were no significant differences between MET and CAU in the number of sessions completed. The termination outcome assessment was administered on Day 28 and completed by 68% of the 461 randomized patients (81% of therapy initiators). There were no significant differences between MET and CAU in the presence or frequency of missing data points.

Of the randomized sample, only patients who attended the first treatment session and had an alliance assessment were included in the data analysis (MET, $n = 147$; CAU, $n = 172$) that related to therapist and treatment differences in the alliance. All of these participants were current substance users, with most meeting criteria for either current substance abuse (6%) or dependence (88%) based on the Substance Dependence Severity Scale (Miele, Carpenter,

Cockerham et al., 2000). Although 6% of the sample did not have a substance use disorder, such subjects were included in the study in order to generalize findings to the full range of clinic patients. The most common substances meeting DSM-IV criteria for abuse or dependence were alcohol (62%) and cocaine (60%), followed by marijuana (27%), opiates (19%), and other drugs (11%).

To be included in analyses of alliance in relation to outcome, only the subset of patients that had at least one postbaseline assessment of drug use were included (MET, $n = 119$; CAU, $n = 138$). These 257 patients were, on average, 35.4 ($SD = 10.5$) years of age and were predominantly male (71.6%) and single (80.5%). The ethnic/racial composition of the sample of 257 patients was 42.0% African American, 40.9% Caucasian, 11.3% Hispanic American, and 5.8% Other. The average years of education completed was 12.7 ($SD = 2.2$) and 49.0% were employed full-time.

The randomized patients excluded ($n = 204$) for the analysis of the alliance in relation to outcome were not significantly different from those included ($n = 257$) on any demographic variable (age, race, gender, marital status, employment status). Compared to those excluded, those included in the analysis had significantly ($p = 0.0024$) greater average years of use of primary substance of abuse ($M = 12.4$, $SD = 9.6$ vs. $M = 9.6$, $SD = 9.5$) and were significantly more likely to have alcohol as their primary drug of abuse (37.8% vs. 17.2%, $p < 0.0001$). No significant difference was apparent between those included ($M = 9.6$, $SD = 8.3$) and those excluded ($M = 8.7$, $SD = 8.7$) in regard to the number of days within the past 28 using primary substance at baseline.

**Therapists**—Therapists were clinical staff at the participating treatment programs who agreed to be randomized to either MET or CAU and to have their counseling sessions audiotaped. Randomization of therapists was conducted so that the treatment groups had comparable levels of therapist interest and commitment to the protocol and prior knowledge (presence vs. absence) of motivational interviewing. Written informed consent was obtained from the therapists when required by local Institutional Review Boards. Most of the therapists had no prior training exposure to MI or MET, and almost none reported use of therapy manuals in practice (Ball, Bachrach, DeCarlo et al., 2002).

There were a total of 16 therapists in the CAU condition and 14 in the MET condition who were included in the analyses provided in this report; one additional CAU therapist participated in the Ball et al. (2007) trial but was excluded from the current analysis because no alliance data were available for that therapist. Overall, the sample of therapists was 61% female, mostly (74%) Caucasian (12% African American; 10% Hispanic; 3% other), and averaged 41 years of age ($SD = 12.1$, range = 22–63). Therapists had, on average, 8.8 years ($SD = 6.7$, range = 0–20) of counseling experience and had worked for a mean of 3.9 years ($SD = 4.5$, range = 0–16) at the program site. A total of 44% had masters' degrees, 36% had certification as substance abuse therapists, and 39% were in personal recovery. On average, each MET therapist treated 8.5 ($SD = 6.37$, range = 2–25) patients in the study; each CAU therapist treated 8.6 ($SD = 5.59$, range = 3–20) patients on average. The MET and CAU therapists were not significantly different on any of the above background characteristics.

## Treatment Procedures

**Randomization**—After the baseline assessment, patients were randomly assigned to three sessions of either individual CAU or MET. An urn allocation procedure (Stout, Wirtz, Carbonari, & DelBoca, 1994) was used to ensure balance within sites on gender, ethnicity, primary substance used, employment, and criminal justice status. After randomization, participants began individual MET or CAU sessions and also began participating in the group counseling offered routinely at their outpatient program. On average, patients received 8.0

(*SD* = 5.8) group counseling sessions in the 28 days following randomization. MET and CAU therapists also potentially served as group counselors at the participating clinics.

**Treatment**—The three (45-55 minutes each) study therapy sessions for both MET and CAU were delivered within a 28-day time window from the day of randomization. CAU sessions were conducted as the regular individual counseling practiced within each outpatient program. The interventions of CAU therapists consisted primarily of obtaining information on substance use and psychosocial functioning, discussing problems and giving feedback about the problems for which clients sought treatment, often exploring these areas with open questions and reflections, and giving unsolicited advice and direction, including promotion of 12-step group attendance (Santa Ana et al., 2008). CAU therapists did not receive formal clinical supervision focused on the delivery of techniques within their individual counseling sessions. Rather, they continued to meet with their supervisors as usual for general supervision of their client caseloads.

MET followed a therapy manual (Farentinos & Obert, 2000) adapted for this study from several sources, principally Miller et al.'s (1992) Project MATCH manual, and emphasized the use of both client-centered counseling techniques and strategies for eliciting client self-motivational statements and for handling resistance skillfully (see Ball et al., 2007 for details). In addition, MET and CAU clients participated in weekly non-protocol group therapy that was offered at each program. Details of MET training, certification, supervision, and adherence monitoring are given in Ball et al. (2007).

### Assessment Procedures

Following the initial contact with the outpatient program, prospective patients were screened for the study by a research assistant. If a patient was eligible and interested, written informed consent was obtained and baseline assessments were performed. After randomization, three assessment visits were conducted by the research assistant during the 28-day therapy window. At these visits, both self-report and biological (urine and breath) substance use measures were obtained. At 4 and 16 weeks postrandomization, follow-up assessment visits were conducted to collect substance use outcomes.

**Substance Use Calendar (SUC)**—Self-report of substance use (marijuana, cocaine, alcohol, methamphetamine, benzodiazepines, opioids, other drugs) at all assessment visits was measured using the SUC. The SUC is an interview, administered by a trained research assistant, which asks the patient to report on substance use over a period of time. The SUC is similar to the Time Line Follow-Back interview (Sobell & Sobell, 1992) that has been shown to be a reliable and valid instrument for monitoring substance use (Fals-Stewart, O'Farrell, Freitas et al., 2000). A calendar is used to obtain a continuous and reliable evaluation of daily substance use (Carroll, Fenton, Ball et al., 2004). The primary outcome measure was days per week using the primary substance of abuse, extracted from the SUC. Days of use during each of the 16 weeks of the therapy and follow-up periods were recorded. The accuracy of these self-reports was checked against urine and breathalyzer test results conducted weekly during the four-week treatment period; high correspondence was evident (Ball et al., 2007). Urine/breathalyzer data during the first two weeks of treatment were also used as a covariate (see Data Analysis).

**Alliance assessment**—The therapeutic alliance was measured using the patient version of the 19-item Helping Alliance Questionnaire (HAq-II; Luborsky et al., 1996). A total score is derived from the HAq-II by summing the 19 items (each rated on a 1 to 6 scale), after reversing the scoring of negatively worded items. The range of possible scores is therefore 19 to 114 with higher scores indicating a more positive alliance. The patient version of the HAq-II has demonstrated excellent internal consistency (Cronbach's $\alpha$ = .90 to .94) and good test-retest

reliability over a period of three weeks (.79) (Luborsky et al., 1996). The HAq-II was administered after Session 2 in both the MET and CAU conditions. In the current study, the internal consistency reliability of the patient version was 0.90. The HAq-II forms were collected by research assistants and were not seen by the therapists. Analysis of variance revealed no significant difference on mean patient-reported HAq-II scores between the group of patients who had postbaseline outcomes ($n = 257$) and those who did not have postbaseline outcomes ($n = 62$), $F(1, 317) = 0.04$, $p = 0.84$; nor was there a significant treatment group (MET vs. CAU) by presence/absence of postbaseline outcome assessment interaction, $F(1, 315) = 1.38$, $p = 0.24$.

The patient-rated version of the HAq-II was the focus of the current study, rather than the therapist-rated version, because patient ratings of the alliance have shown stronger links to treatment outcome (Martin et al., 2000) and because therapist ratings would be difficult to interpret when broken down into patient and therapist variability in relation to outcome (therapist variability may be confounded with a "rater" effect whereby some therapists tend to rate things more positively than others). Moreover, MET therapists in the current trial might be biased to report higher alliances to document that they are successfully achieving the therapeutic process expected in successful MET. However, because a therapist-rated version of the HAq-II was included in the data collection, parallel exploratory analyses were conducted using the therapist version of the HAq-II and are briefly reported.

**Adherence/competence ratings—**All therapy sessions in both conditions were audiotaped. Treatment fidelity to MET was promoted by the review and rating of MET tapes by local expert MET trainers and clinical supervisors. Independent ratings of adherence and competence using the Independent Tape Rater Scale (ITRS) were also conducted (see Martino et al., 2008 for details) on a sample of sessions so that most patients who completed all three sessions had all sessions rated and each therapist and participant had at least one session rated. A total of 15 independent raters were trained in the use of the ITRS. Of particular interest for the current study were ten items that assessed therapist behaviors consistent with the MET manual. Each item was rated on a 7-point Likert scale on adherence (i.e., frequency and extensiveness) (1 = *not present* to 7 = *extensively*) and competence (i.e., skillfulness) (1 = *very poor* to 7 = *excellent*).

Based on an a priori model confirmed by factor analyses, the MET adherence/competence items were found to comprise two subscales, one of which consisted of five items related to MET fundamental techniques and the other consisting of five items related to MET advanced techniques (Martino et al., 2008). The fundamental subscale included items that address fostering collaboration, positive affirmations, use of open-ended questions, use of reflective statements, and general motivational interviewing style. The advanced scale included items on problem discussion and feedback, exploring pros/cons/ambivalence, heightening discrepancies, enhancing motivation for change, and discussing a plan for change. Interjudge reliability (*ICC* [3, 1]) of these subscales was good (adherence: fundamental = .91, advanced = .95; competence: fundamental = .89, advanced = .89). Martino et al. (2008) reported that the fundamental and advanced adherence scores were highly correlated ($r = 0.69$, $p < 0.001$) in the full sample of ratings, as were the fundamental and advanced competence scores ($r = 0.65$, $p < 0.001$). The fundamental adherence and competence scores were highly correlated ($r = 0.78$, $p < 0.001$), but the advanced adherence and competence scores were only moderately correlated ($r = 0.39$, $p < 0.001$). These rating scores were discriminable between the MET and CAU conditions in predicted ways and were significantly related to some treatment outcomes (percent negative drug urine screens) (Martino et al., 2008).

## Data Analysis

To accommodate the multiple levels of data (i.e., patients nested within therapists nested within treatments), the data were analyzed using a multilevel modeling approach adjusting for the hierarchy of clustering with nested random effects (Goldstein, 1987; Bryk & Raudenbusch, 1992). Thus, treatment (as fixed effect) and therapist (as random effect) were included in the multilevel model. In addition, site was included as a covariate in these analyses. These multilevel linear models were implemented using SAS Procedure Proc Mixed using REML estimation (Littell et al., 1996).

The relation between alliance and treatment outcome was also examined using a multilevel model. Following the lead of Baldwin et al. (2007), we included both patient and therapist level effects in the model in order to determine the extent to which both patient and therapist variability in the patient-rated HAq-II scores was related to outcome. This modeling allows for examining the extent to which (1) patient differences in alliance scores within a therapist predict outcome (thereby controlling for therapist differences in average alliances in relation to outcome), and (2) therapist differences in average alliance (averaging across patients within a therapist) are predictive of therapists' average patient outcomes (thereby controlling for patient differences in alliances in relation to outcome). We implemented centering with respect to each component of the alliance effect. The difference between patients within the same therapist was evaluated by patient differences from their respective therapist's mean (i.e., group mean centering). The difference between therapists was evaluated by therapist differences from the overall mean (i.e., grand mean centering). Grand mean centering allows the between-therapist effect to be interpreted more easily; the regression coefficient indicates the direction of the effect for better than average therapists or below average therapists.

Whether (1) differences between patients within therapist, or (2) differences between therapists significantly predict outcome is determined by the statistical significance of the regression coefficients corresponding to the two parts, within-therapist portion and between-therapist portion, respectively. Effect sizes (converted to Cohen's *d*), derived from the *F*-test for the compound symmetry design, were calculated as $d = 2\sqrt{\frac{F}{df}}$, where *F* is the *F*-test statistic for the regression coefficients in repeated measures and other multilevel designs (Rosenthal & Rosnow, 1991; Verbeke & Molenberghs, 2000).

The primary outcome measure was the self-report measure of substance use derived from SUC. This weekly measure permitted a longitudinal analysis of days per week of each participant's primary substance use from baseline through 16 continuous weekly data points. The analyses of efficacy differences between the MET and CAU conditions (Ball et al., 2007) found that outcome effects consisted of two discrete patterns that corresponded to the two phases of the study: (1) a 4-week window during which the three study sessions were occurring, and (2) a 12-week window during which the follow-up assessments were obtained. During the first four weeks, both treatment groups decreased substance use substantially to close to zero, with no significant difference between the treatment groups. Treatment group differences then emerged during the second phase (Weeks 4 to 16), when, on average, patients in CAU began to increase usage while patients in MET maintained a relatively low amount of use (Ball et al., 2007). Given this distinct pattern of change for the two study phases, it was appropriate to include alliance prediction of change within each phase.

To predict outcome during each phase, a piecewise hierarchical linear regression model was implemented. In this statistical model, tests of alliance as a predictor of linear change during the treatment phase and follow-up phase were incorporated by including an HAq-II by Time interaction term for each leg of the piecewise model (with a Time main effect also included in the model; Time and Treatment by Time effects on substance use outcomes are presented in

Ball et al., 2007). The model implemented specified that the two phases were connected. In the connected model, patient's performance at the end of the first phase is their starting value at the beginning of the second phase (Cudeck & Klebe, 2002). This results in a continuous profile of the on-average change over time.

The modeling framework used here followed the model implemented in Ball et al. (2007) in that the outcome was treated as a continuous measure. However, due to the nature of the data (i.e., count of days using primary drug of abuse), the outcome may be susceptible to positive skew. This is especially true over the course of therapy when patients are recovering and more patients achieve lower scores (zeros), which was the case in this study. We therefore also conducted analyses in which the continuous outcome was (1) replaced by a binary outcome (any vs. no use), and (2) assumed to follow a Poisson distribution to accommodate the count nature of the outcome. These analyses produced the identical pattern of findings reported here.

An important issue in research on the alliance in relation to treatment outcome is whether such relations are confounded by patient's clinical improvement up to the point the alliance is assessed (i.e., patients who have been improving during the early part of treatment are more likely to rate their therapists positively and are also more likely to be improved at treatment termination and follow-up) (Barber et al., 2000; Crits-Christoph, Gibbons, & Hearon, 2006). To control for this potential confound, we implemented the following: (1) the dependent variable during the treatment period (first four weeks) included only assessments that followed the alliance assessment (i.e., Weeks 3 and 4), and (2) prior substance use (i.e., assessed at Weeks 1 and 2), as determined by urine/breathalyzer assessment of primary drug of abuse, was used as a covariate in all analyses, as was baseline use (past month) of primary drug of abuse and site. Thus, we examined the alliance as a predictor of subsequent drug/alcohol use, controlling for prior drug/alcohol use. Both linear and quadratic functions were examined for the relation of the alliance to outcome.

## Results

### Treatment Variability in Alliance

There was no statistically significant difference between the MET and CAU conditions in HAq-II scores, $F(1, 310) = 1.08$, $p = 0.30$. The mean (*SD*) HAq-II score for MET was 97.4 (10.1) and for CAU was 96.2 (9.5). These means correspond to a high alliance level: dividing the total score by the number of items yields an overall mean (*SD*) alliance item rating of 5.1 (0.52) on the 6-point scale where 5 = *agree* and 6 = *strongly agree*.

### Therapist Variability in Alliance

There was statistically significant variability in HAq-II patient-rated scores due to differences between therapists ($Z = 1.7$, $p = 0.04$; variance explained = 12.5%). However, this therapist effect did not differ between the two treatments, $\chi^2(1) = 0.10$, $p = 0.75$ (variance explained within MET: 10.8%; CAU: 13.9%). In the MET condition, mean caseload HAq-II scores (averaging across all patients treated for each therapist to arrive at a single score for each therapist) ranged from 84.1 ($SD = 15.4$, $n = 13$) for patients assigned to one therapist to 106.2 ($SD = 3.7$, $n = 8$) for the highest scoring therapist. In the CAU condition, therapist mean alliance scores ranged from 92.3 ($SD = 5.0$, $n = 3$) to 113.0 ($SD = 1.4$, $n = 4$).

### Relation of Alliance to Outcome in MET and CAU

Table 1 provides the results of the multilevel analyses relating the patient-rated alliance to outcome. The variance components (*SE*) for the random effects in the model were as follows: within-patient residual error: 0.529 (0.014); between-patient intercept: 0.135 (0.101); between-patient variability in slopes for Weeks 1 to 4: 0.040 (0.008); between-patient variability in

slopes for Weeks 4 to 16: 0.006 (0.001). The variance components for the within-patient residual error and both slopes were significantly ($p < 0.01$) different from zero.

The test of the linear relation of patient-rated alliance to outcome during the treatment phase of the piecewise model revealed no statistically significant effects for within-therapist or between-therapist parameters. A significant effect ($t[247] = -3.09$, $p = 0.002$, $d = 0.39$) was evident for variability in patient-rated alliance in relation to variability in linear change (slopes) in drug use during the follow-up phase (Weeks 4 to 16) for the between-therapist test, but not the within-therapist test. This indicates that patient to patient variability in the alliance (within therapist) was not significantly associated with outcome; therapist to therapist variability in their average alliances (averaging across all patients treated by each therapist) was significantly related to variability (at the therapist level) in the slope coefficients for drug use during Weeks 4 to 16. This linear effect, however, was qualified by a significant curvilinear (quadratic) effect, $t(247) = 3.43$, $p = 0.0007$, $d = 0.44$ (described below). No statistically significant interactions with treatment group were evident for either the linear or quadratic tests.

The quadratic relation of the patient-rated alliance to drug use outcomes during the follow-up phase is shown in Figure 2 for the between-therapist effect. Alliance scores are displayed as deviations from the overall grand mean (averaging over all therapists, adjusting for site, primary drug/alcohol use during treatment but prior to the alliance assessment, and baseline primary drug/alcohol use). This overall grand mean was an adjusted score of 95.1 on the HAq-II. As can be seen, when alliances are relatively low or high compared to the average, there is a strong positive linear change (slope) in drug use outcomes from Weeks 4 to 16, reflecting increases in drug/alcohol use. For therapists who have levels of alliance that are near the overall mean, the slope coefficients are near zero, indicating drug/alcohol use outcomes are flat over time (reflecting low levels of usage from Weeks 4 to 16). Exploratory analyses of the therapist-rated HAq-II measure revealed no significant treatment or therapist differences, and no significant within-therapist or between-therapist relations of the alliance to substance use during either the treatment period or follow-up period.

## Adherence Ratings in Relation to Alliance

Our goal with these ratings was to examine whether the therapist differences in alliance were related to between-therapist differences in the use of MET fundamental (alliance-fostering) versus MET advanced techniques. Ratings for the MET fundamental and MET advanced adherence and competence subscales across all available sessions (161 first sessions, 135 second sessions, 129 third sessions) for each patient were first averaged. These scores were then averaged across patients within each therapist's caseload to create final scores for each of the 30 therapists. Mean (*SD*) scores for these 30 therapists were: fundamental adherence: 3.6 (1.1); advanced adherence: 2.1 (0.7); fundamental competence: 4.5 (0.7); advanced competence: 4.5 (0.7).

Between-therapist alliance scores were estimated from the above multilevel models adjusting for site and treatment. We then computed semipartial correlation coefficients (covarying site and treatment group), relating the adherence and competence subscales to HAq-II scores using therapist as the unit of analysis ($n = 30$).

A significant semipartial correlation ($sr = 0.36$, $p = 0.029$) was found for the advanced MET skills adherence subscale in relation to the alliance (better adherence was associated with better alliance). Although not significant with the limited sample sizes within the two treatment groups, semipartial correlations showed that this effect was stronger in the MET group ($sr = 0.45$) than in the CAU group ($sr = 0.20$). Similar correlations were evident for the MET fundamental adherence subscale ($sr = 0.32$, $p = 0.05$ for all therapists; $sr = 0.44$ for MET therapists; $sr = 0.29$ for CAU therapists). Tests for a curvilinear (quadratic) effect were not

significant for either the advanced ($p = 0.49$) or fundamental adherence subscales ($p = 0.59$) in relation to the alliance across treatment groups. The advanced ($sr = 0.10$, $p = 0.57$) and fundamental ($sr = 0.11$, $p = 0.54$) competence scales were not significantly related to alliance scores for the sample of therapists as a whole (within MET, semipartial correlations were 0.18 for advanced and 0.05 for fundamental; within CAU, semipartial correlations were 0.34 for advanced and 0.21 for fundamental). No significant curvilinear effects were found for advanced ($p = 0.15$) or fundamental ($p = 0.32$) competence subscales in relation to alliance across treatment groups.

To assess whether use of fundamental or advanced MET techniques was responsible for the relation between the alliance and outcome, we included the adherence scores as additional predictors within the model displayed in Table 1. Including the advanced MET technique score, and separately the fundamental MET technique score, in the predictive model had little impact on the effect size for the curvilinear relation of the alliance to substance use outcomes during Weeks 4 to 16. With the fundamental adherence score in the model, the regression coefficient was 0.0004 ($SE = 0.0002$), and the effect size was $d = 0.41$ (compared to $\beta = 0.0005$, $SE = 0.0001$, $d = 0.44$ without it in the model). -With the advanced adherence score in the model, the regression coefficient was 0.0004 ($SE = 0.0002$), and the effect size was $d = 0.40$ (compared to $\beta = 0.0005$, $SE = 0.0001$, $d = 0.44$ without it in the model).

## Discussion

The primary results of this analysis of patient-rated alliance in MET for substance use problems were that (1) contrary to our hypothesis, there was no significant difference between MET and CAU therapists in mean alliance scores, (2) therapists did vary significantly in their mean alliances, both for MET and CAU, (3) variability in the alliance at the patient level (within therapist) was not significantly related to outcome during Weeks 4 to 16, but variability at the therapist level evidenced a curvilinear (quadratic) relation to drug/alcohol use outcomes during Weeks 4 to 16, (4) there was no significant difference in the relation between alliance and outcome in MET compared to CAU, and (5) across therapists, fundamental and advanced MET techniques were significantly associated with the between-therapist alliance scores.

The fact that MET did not produce higher alliances than CAU was surprising. The extensive focus in MET on empathy, acceptance, and positive regard, as well as clear discussion about goals, would be expected to produce higher alliances in MET compared to CAU. The lack of a treatment difference was especially surprising given that MET adherence ratings were significantly related to the alliance, and MET adherence scores were substantially higher in MET compared to CAU sessions (Martino et al., 2008). Thus, one conclusion is that forming a positive alliance is not unique to MET; very positive average alliance can occur in CAU among therapists never trained in MET.

There are several potential explanations, however, why a treatment difference related to ratings of alliance did not occur. For one, the alliance has been shown to be related to patient pretreatment characteristics, such as expectations for improvement and certain types of interpersonal problems (Gibbons et al., 2003; Muran et al., 1994). To the extent that these patient characteristics are relatively stable over time, the aspect of the alliance that is related to these patient characteristics would not be expected to change depending on type of therapy, particularly when alliance is measured after the second treatment session, as it was here. Studies that have shown that the alliance can change as a function of treatment typically measure alliance multiple times later in treatment (Crits-Christoph et al., 2006; Hilsenroth et al., 2002).

Second, CAU therapists (like the MET therapists) were mostly highly experienced, averaging 8.5 years working with these kinds of patients. Experienced therapists might be expected to typically form relatively high alliances, leaving little room for MET to improve upon CAU. Consistent with this possibility, the average alliance score (dividing the total score by the number of items) was 5.1 on a 1 to 6 scale for both MET and CAU. If MET (adequately implemented) and CAU were compared using inexperienced therapists, the alliance-enhancing potential of training in MET might be more likely to be evident.

A third reason may be that the CAU therapists in the current study frequently used open questions and reflections, and were rated close to an average level of MI style in their sessions (Martino et al., 2008). While MET and CAU were discriminable, there may have been enough of the client-centered counseling skills happening in CAU to result in good alliances. Increasing empathy and reflections above a basic level may have little incremental impact on the alliance.

Our study adds to existing findings that report therapist effects on the alliance. Like Baldwin et al. (2007), we found that the therapist variability in the alliance, but not the patient variability, was associated with outcome (reduced drug/alcohol use). This is an important distinction because it suggests that something that therapists are doing in sessions (e.g., differences in interpersonal style, abilities to learn and implement alliance-fostering techniques, or identify and repair alliance ruptures) determines, at least in part, the alliance. As reported in Ball et al. (2007), there were no overall significant therapist effects on outcome in the current study, suggesting that the between-therapist alliance-outcome relation found here is not part of a more general therapist effect for which the alliance is simply a marker. Furthermore, the effect size for the alliance-outcome relationship found in the present study is comparable to that in the literature. The Cohen's $d$ effect size of 0.39 found here converts to an $r$ of 0.191 for the linear between-therapist effect of the alliance on outcome; the $d = 0.44$ for the quadratic effect converts to an $r$ of 0.215. These effects are similar to the average $r$ of 0.22 reported by Martin et al. (2000) in their meta-analysis of studies examining the relation of the alliance to outcome, despite the fact that, unlike the studies in the meta-analysis, our effect size is specific to the between-therapist relation and controls for improvement up to the assessment of the alliance.

To the extent that the between-therapist component of the alliance is related to treatment outcome, but not the within-therapist component, conceptualizations of the alliance as primarily an interactional variable (e.g., Henry & Strupp, 1994) may need to be modified. If the alliance is primarily a function of interpersonal processes unique to each dyad, then one would expect meaningful variation between patients who are treated by the same therapist, and that this variation between patients should be related to treatment outcome. The fact that the between-therapist variability, but not the between-patient variability, was found to relate to outcome suggests that relative differences between therapists in skill level, or personal qualities, are leading to a tendency for patients within a therapist's caseload to be reacting in a similar and meaningful way to a given therapist. While patient variables also impact the alliance (Gibbons et al., 2003; Muran et al., 1994), the variability between therapists in their ability to form a relatively more positive or negative alliance appears to be a more important determinant of outcome, as least as evidenced from the two studies (the current study and Baldwin et al., 2007) that have examined both patient and therapist variability in the alliance in relation to outcome.

Assuming the alliance plays a direct or indirect causal role in psychotherapy or drug counseling, the current findings suggest that efforts to train therapists in ways that might enhance the alliance are justified. Recent training studies have provided preliminary evidence that such training can be accomplished (Crits-Christoph et al., 2006; Hilsenroth et al., 2005). However, it is also possible that innate personality characteristics of therapists determine the alliance, at least in part, and these characteristics may not be teachable. In addition, treatments that do not

have a special, explicit, MET-like focus on empathy and positive affirmations, such as cognitive-behavioral therapy (e.g., Bouchard et al., 2004) or the CAU in the current study, often display very high average alliance scores; therefore, training in the use of MET-like techniques does not appear to be the only vehicle for achieving a positive alliance. Thus, it seems likely that only a subset of therapists, those of any orientation who have a relatively impaired ability to form positive alliances, might benefit from training in how to enhance the alliance.

Furthermore, the relation between the alliance and outcome with alcohol and substance abusing populations may be complicated by the fact that many patients can readily become abstinent from drugs and alcohol early in treatment. Sustaining such abstinence, or reducing the severity and frequency of relapses, is more difficult, and it is in this treatment phase when alliance may most impact treatment outcomes. Many studies, however, measure outcome in a way that confounds reductions in drug use and prevention of slips and relapses. In the current study, assessing outcome in two phases, the first of which largely captured the initial reduction in drug use to near zero (Weeks 1 to 4) and the second that potentially captured slips and relapses (Weeks 4 to 16), revealed that the alliance was primarily related outcomes during the follow-up period.

In the current study, a more positive alliance was not necessarily a good thing: A curvilinear (quadratic) relation between the alliance (between-therapist component) and rate of change in primary drug/alcohol use during Weeks 4 and 16 was found. This indicates that deviations from the average alliance in both directions (relatively low and relatively higher than the average) were associated with relatively poorer outcomes. This type of finding was reported early in the history of alliance research by Saunders, Howard, and Orlinsky (1989), but has largely been overlooked since then, with investigators assuming a linear relation of the alliance to outcome. Further research is needed to understand the basis of this quadratic effect of alliance and outcome, and whether such an effect is evident across different types of therapies, patients, and settings.

High levels of therapist use of both MET fundamental techniques and MET advanced techniques were associated with high levels of alliance. Caution is warranted in interpreting the adherence data given the relatively high correlation between the fundamental and advanced adherence subscales, incomplete data (not all sessions were rated), and the standard limitations of correlational findings (i.e., reverse causation, influence of third variables). Within the constraints of these limitations, we can speculate that both fundamental techniques (e.g., positive affirmations, use of open-ended questions, use of reflective statements) and advanced techniques (e.g., problem discussion and feedback, exploring pros/cons/ambivalence, heightening discrepancies, discussing a plan for change) contribute to the fostering of the alliance. It may be that fundamental techniques are useful for strengthening the bond component of the alliance while advanced techniques help move the dyad towards greater agreement on goals and tasks. The findings with the adherence scale also suggest that the negative impact of high alliance on outcome is not a function of high levels of use of MET fundamental or advanced techniques. When these variables were included in the statistical model predicting substance use from the alliance, the curvilinear relation did not change, suggesting that some other factors are likely to be producing the finding of very high alliances being associated with relatively poorer drug use outcomes. Therapists implementing MET should therefore not be concerned that high use of these techniques has a detrimental effect on outcome by fostering an overly positive alliance. The MET adherence scale, however, was not designed to measure all alliance-fostering techniques. Thus, other alliance-fostering techniques not measured in the MET adherence scale may be responsible for the curvilinear relation that we found.

Several other limitations are important to consider in understanding this study's results. First, alliance was measured only after Session 2. This was done because the treatment was only three sessions long and it was important to assess the alliance early in treatment before most clinical improvement had occurred. Some previous studies of the alliance, however, have measured it later in treatment, giving more time for a bond to develop or for alliance ruptures and repairs to occur. It is possible that different results would be obtained if alliance was assessed after Session 3 or if treatment had been longer. Second, restricting CAU to three sessions limits the generalizabilty of the results to clinical settings where CAU is typically longer. Third, the fact that patients across conditions also participated in group counseling sessions, potentially led by MET or CAU counselors, is a limitation that may have attenuated our findings. Fourth, a substantial portion of patients randomized did not have alliance scores or did not have outcome measures. The lack of data on some randomized patients may have introduced bias in the comparison of treatments. Fifth, the time spent in training was not balanced across treatment conditions. Therapists assigned to MET received regular supervision based on tape reviews throughout the trial. This supervision difference between the treatments may have impacted the results in unknown ways. Sixth, although therapists were randomly assigned to treatment conditions, random assignment of patients to therapists was not performed. If systematic biases existed at clinics in regard to which therapists received which patients, such biases could create the therapist differences in the alliance that were found, and also be responsible for the between-therapist effect for the alliance in relation to outcome (assuming patient factors are related to the alliance and outcome). Seventh, both the predictor variable (alliance) and outcome measure (drug use) were self-report measures. The study's findings should be confirmed using an observer measure of the alliance. Finally, during this period of time in which alliance predicted drug use (Weeks 4 to 16), patients may have been receiving additional non-study treatment services at the original clinic or another clinic, with patients who were increasing their drug use being more likely to receive such services. Increased additional services during follow-up is associated with drug use outcomes (Worley et al., 2008), and this might have attenuated the relation of the alliance to outcome during Weeks 4 to 16.

Research on the relation of the alliance has evolved significantly in recent years. Early studies almost always examined only simple correlations between the alliance and outcome. More recently, there has been attention to the unpacking of the multiple levels of analysis, particularly patient and therapist (Baldwin et al., 2007) as well as site, in multicenter trials. Other issues including the effects of early improvement in symptoms on the alliance–outcome correlation (Barber et al., 2000; Crits-Christoph, Gibbons, & Hearon, 2006), the possibility of curvilinear effects (Saunders et al., 1989), and the role of patient factors that might cause good alliances (Gibbons et al., 2003), all have added to an awareness of the complexity of research on the alliance in relation to outcome.

## Acknowledgments

## References

Ackerman SJ, Hilsenroth MJ. A review of therapist characteristics and techniques positively impacting the therapeutic alliance. Clinical Psychology Review 2003;23:1–33. [PubMed: 12559992]

Baldwin SA, Wampold BE, Imel ZE. Untangling the alliance-outcome correlation: Exploring the relative importance of therapist and patient variability in the alliance. Journal of Consulting and Clinical Psychology 2007;75:842–852. [PubMed: 18085902]

Ball S, Bachrach K, DeCarlo J, Farantinos C, Keen M, McSherry T, et al. Characteristics, beliefs and practices of community clinicians trained to provide manual-guided therapy for substance abusers. Journal of Substance Abuse Treatment 2002;23:309–318. [PubMed: 12495792]

Ball SA, Martino S, Nich C, Frankforter TL, Van Horn D, Crits-Christoph P, et al. Site matters: motivational enhancement therapy in community drug abuse clinics. Journal of Consulting and Clinical Psychology 2007;75:556–567. [PubMed: 17663610]

Barber JP, Luborsky L, Crits-Christoph P, Thase M, Weiss R, Frank A, et al. Therapeutic alliance as a predictor of outcome in treatment of cocaine dependence. Psychotherapy Research 1999;9:54–73.

Barber JP, Connolly MB, Crits-Christoph P, Gladis M, Siqueland L. Alliance predicts patients' outcome beyond in-treatment change in symptoms. Journal of Consulting and Clinical Psychology 2000;68:1027–1032. [PubMed: 11142536]

Barber JP, Luborsky L, Gallop R, Crits-Christoph P, Frank A, Weiss RD, et al. Therapeutic Alliance as Predictor of Outcome and Retention in the NIDA Collaborative Cocaine Treatment Study. Journal of Consulting and Clinical Psychology 2001;69:119–124. [PubMed: 11302268]

Boardman T, Catley D, Grobe JE, Little TD, Ahluwalia JS. Using motivational interviewing with smokers: Do therapist behaviors relate to engagement and therapeutic alliance? Journal of Substance Abuse Treatment 2006;31:329–339. [PubMed: 17084786]

Bouchard S, Paquin B, Payeur R, Allard M, Rivard V, Fournier T, et al. Delivering cognitive-behavior therapy for panic disorder with agoraphobia in videoconference. Telemedicine Journal & E-Health 2004;10:13–25. [PubMed: 15104911]

Bordin ES. The generalizability of the psycho-analytic concept of the working alliance. Psychotherapy: Theory, Research, and Practice 1979;16:252–260.

Bryk, AS.; Raudenbush, SW. Hierarchical linear models: Applications and data analysis methods. Sage Press; Newbury Park, CA: 1992.

Carroll KM, Connors GJ, Cooney NL, DiClemente CC, Donovan DM, Kadden RR, et al. Internal validity of Project MATCH treatments: Discriminability and integrity. Journal of Consulting and Clinical Psychology 1998;66:290–303. [PubMed: 9583332]

Carroll KM, Fenton LR, Ball SA, Nich C, Frankforter TL, Shi J, Rounsaville BJ. Efficacy of disulfiram and cognitive behavior therapy in cocaine-dependent outpatients: A randomized placebo-controlled trial. Archives of General Psychiatry 2004;61:264–272. [PubMed: 14993114]

Connors GJ, Carroll KM, DiClemente CC, Longabough R, Donovan DM. The therapeutic alliance and its relationship to alcoholism treatment participation and outcome. Journal of Consulting and Clinical Psychology 1997;65:588–598. [PubMed: 9256560]

Crits-Christoph P, Connolly Gibbons MB, Hearon B. Does the alliance cause good outcome? Psychotherapy: Theory, Research, Practice, Training 2006;43:280–285.

Crits-Christoph P, Connolly Gibbons MB, Crits-Christoph K, Narducci J, Schamberger M, Gallop R. Can therapists be trained to improve their alliances? A pilot study of Alliance-Fostering Therapy. Psychotherapy Research 2006;13:268–281.

Cudeck R, Klebe KJ. Multiphase mixed-effects models for repeated measures data. Psychological Methods 2002;7:41–63. [PubMed: 11928890]

Fals-Stewart W, O'Farrell TJ, Freitas TT, McFarlin SK, Rutigliano P. The timeline followback reports of psychoactive substance use by drug-abusing patients: psychometric properties. Journal of Consulting and Clinical Psychology 2000;68:134–144. [PubMed: 10710848]

Farentinos, C.; Obert, JL. CTN Motivational Enhancement Treatment Manual. 2000. Unpublished manuscript

Feldstein SW, Forcehimes AA. Motivational interviewing with underage college drinkers: A preliminary look at the role of empathy and alliance. The American Journal of Drug and Alcohol Abuse 2007;33:737–746. [PubMed: 17891666]

Gibbons MB, Crits-Christoph P, de la Cruz C, Barber JP, Siqueland L, Gladis L. Pretreatment expectations, interpersonal functioning, and symptoms in the prediction of the therapeutic alliance across supportive-expressive psychotherapy and cognitive therapy. Psychotherapy Research 2003;13:59–76.

Goldstein, HI. Multilevel models in educational and social research. Oxford University Press; London: 1987.

Henry, W.; Strupp, HH. The therapeutic alliance as interpersonal process.. In: Horvath, A.; Greenberg, L., editors. The working alliance: Theory, research, and practice. John Wiley & Sons; New York: 1994.

Hettema J, Steele J, Miller WR. Motivational interviewing. Annual Reviews of Clinical Psychology 2005;1:91–111.

Horvath AO, Symonds BD. Relation between working alliance and outcome in psychotherapy: A meta-analysis. Journal of Counseling Psychology 1991;38:139–149.

Hilsenroth MJ, Ackerman SJ, Clemence AJ, Strassle CG, Handler L. Effects of structured clinician training on patient and therapist perspectives of alliance early in psychotherapy. Psychotherapy 2002;39:309–323.

Hilsenroth MJ, Blagys MD, Ackerman SJ, Bonge DR, Blais MA. Measuring Psychodynamic-Interpersonal and Cognitive-Behavioral Techniques: Development of the Comparative Psychotherapy Process Scale. Psychotherapy: Theory, Research, Practice, Training 2005;42:340–356.

Littell, RC.; Milliken, GA.; Stroup, WW.; Wolfinger, RD. SAS System for Mixed Models. SAS Institute; Cary, N.C.: 1996.

Luborsky L, Barber JP, Siqueland L, Johnson S, Najavits L, Frank A, et al. The Revised Helping Alliance Questionnaire (HAq-II): Psychometric properties. Journal of Psychotherapy Practice and Research 1996;5:260–271.

Martin DJ, Garske JP, Davis MK. Relation of the therapeutic alliance with outcome and other variables: A meta-analytic review. Journal of Consulting and Clinical Psychology 2000;68:438–450. [PubMed: 10883561]

Martino S, Ball SA, Nich C, Frankforter TL, Carroll KM. Community program therapist adherence and competence in motivational enhancement therapy. Drug and Alcohol Dependence 2008;96:37–48. [PubMed: 18328638]

Miele GM, Carpenter KM, Cockerham MS, Trautman KD, Blaine J, Hasin DS. Substance Dependence Severity Scale (SDSS): Reliability and validity of a clinician-administered interview for DSM-IV substance use disorders. D*rug and Alcohol Dependence* 2000;59:63–75. [PubMed: 10706976]

Miller, WR. Handbook of alcoholism treatment approaches: Effective alternatives. 2nd ed.. Allyn & Bacon; Needham Heights, MA: 1995.

Miller WR. Motivational interviewing with problem drinkers. Behavioural Psychotherapy 1983;11:147–172.

Miller, WR.; Rollnick, S. Motivational interviewing: Preparing people to change addictive behavior. Guilford Press; New York: 1991.

Miller, WR.; Rollnick, S. Motivational interviewing: Preparing people for change. 2nd ed. Guilford Press; New York: 2002.

Miller, WR.; Zweben, A.; DiClemente, CC.; Rychtarik, RG. Motivational enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse and dependence. National Institute on Alcohol Abuse and Alcoholism; Rockville, MD: 1992. NIAAA Project MATCH Monograph Series Volume 2, DHHS Publication No. (ADM) 92-1894

Moyers TB, Miller WR, Hendrickson S. How does motivational interviewing work? Therapist interpersonal skill predicts client involvement within motivational interviewing sessions. Journal of Consulting and Clinical Psychology 2005;73:590–598. [PubMed: 16173846]

Muran JC, Segal ZV, Samstag LW, Crawford CE. Patient pretreatment interpersonal problems and therapeutic alliance in short-term cognitive therapy. Journal of Consulting and Clinical Psychology 1994;62:185–190. [PubMed: 8034822]

Orlinsky, DE.; Grawe, K.; Parks, BK. Process and outcome in psychotherapy.. In: Bergin, AE.; Garneld, SL., editors. Handbook of Psychotherapy and Behavior Change. 4th ed.. Wiley; New York: 1994. p. 270-376.

Rogers CR. The necessary and sufficient conditions of therapeutic personality change. Journal of Consulting Psychology 1957;21:95–103. [PubMed: 13416422]

Rosenthal, R.; Rosnow, RL. Essentials of behavioral research: Methods and data analysis. 2nd ed.. McGraw Hill; New York: 1991.

Santa Ana EJ, Martino S, Ball SA, Nich C, Frankforter TL, Carroll KM. What is usual about 'treatment as usual'? Data from two multisite effectiveness trials. Journal of Substance Abuse Treatment 2008;35:369–379. [PubMed: 18337053]

Saunders SM, Howard KI, Orlinsky DE. The Therapeutic Bond Scales: Psychometric characteristics and relationship to treatment effectiveness. Psychological Assessment 1989;1:323–330.

Sobell, LC.; Sobell, MB. Timeline followback: A technique for assessing self-reported alcohol consumption.. In: Litten, RZ.; Allen, J., editors. Measuring alcohol consumption: Psychosocial and biological methods. Humana; New Jersey: 1992. p. 41-72.

Stout RL, Wirtz PW, Carbonari JP, DelBoca FK. Ensuring balanced distribution of prognostic factors in treatment outcome research. Journal of Studies on Alcohol. Special Issue: Alcoholism treatment matching research: Methodological and clinical approaches 1994;12:70–75.

Treasure JL, Katzman M, Schmidt U, Troop N, Todd G, de Silva P. Engagement and outcome in the treatment of bulimia nervosa: first phase of a sequential design comparing motivation enhancement therapy and cognitive behavioral therapy. Behaviour Research and Therapy 1999;37:405–418. [PubMed: 10228313]

Verbeke, G.; Molenberghs, G. Linear Mixed Models for Longitudinal Data. Springer; New York: 2000.

Worley M, Gallop R, Connolly Gibbons MB, Ring-Kurtz S, Present J, Weiss R, Crits-Christoph P. Additional treatment services in a cocaine treatment study: Level of services obtained and impact on outcome. American Journal on Addictions 2008;17:209–217. [PubMed: 18463998]
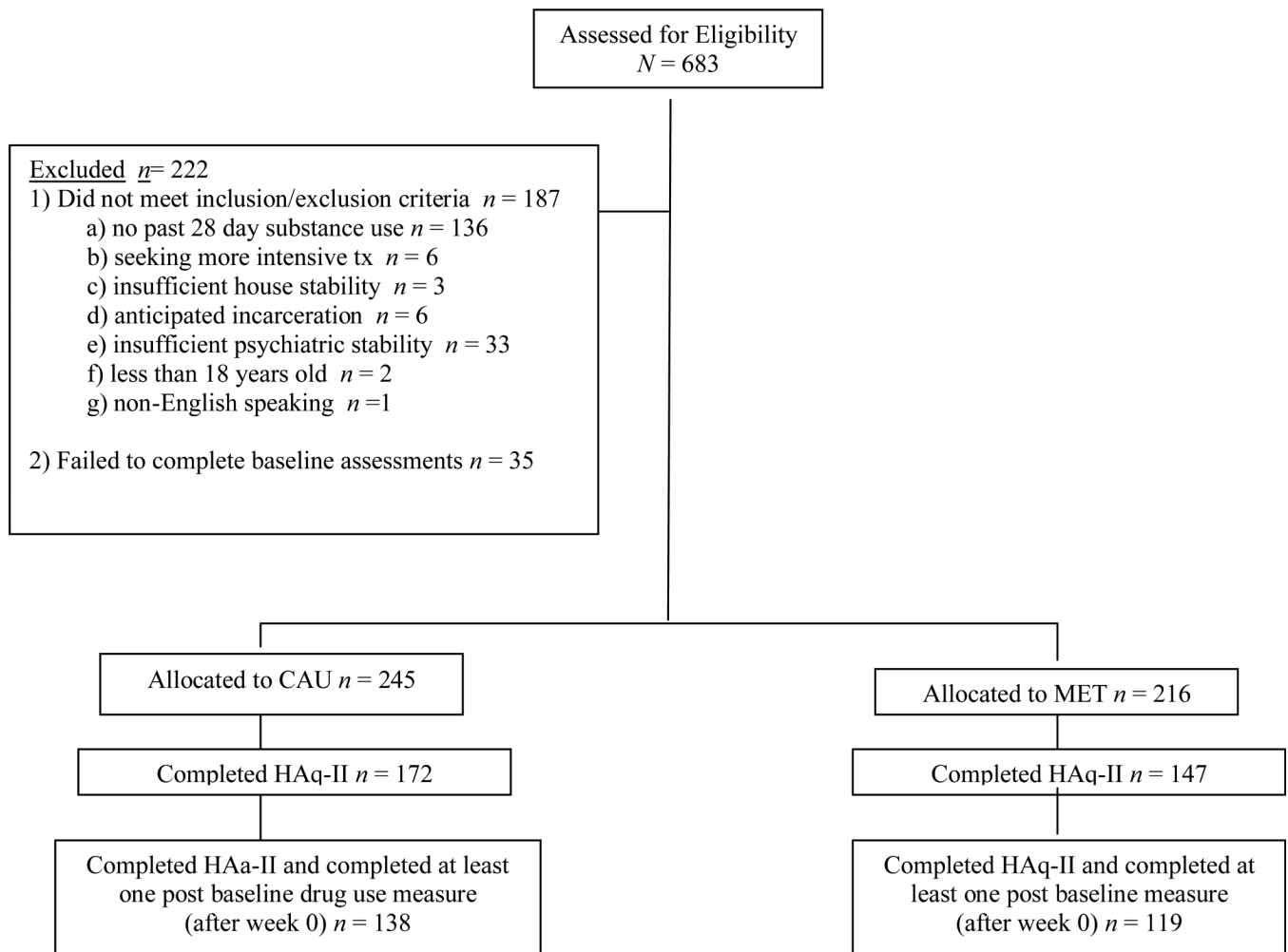
Assessed for Eligibility
*N* = 683

Excluded  *n*= 222
1) Did not meet inclusion/exclusion criteria  *n* = 187
        a) no past 28 day substance use *n* = 136
        b) seeking more intensive tx  *n* = 6
        c) insufficient house stability  *n* = 3
        d) anticipated incarceration  *n* = 6
        e) insufficient psychiatric stability  *n* = 33
        f) less than 18 years old  *n* = 2
        g) non-English speaking  *n* =1

2) Failed to complete baseline assessments *n* = 35

Allocated to CAU *n* = 245

Completed HAq-II *n* = 172

Completed HAa-II and completed at least
one post baseline drug use measure
(after week 0) *n* = 138

Allocated to MET *n* = 216

Completed HAq-II *n* = 147

Completed HAq-II and completed at
least one post baseline measure
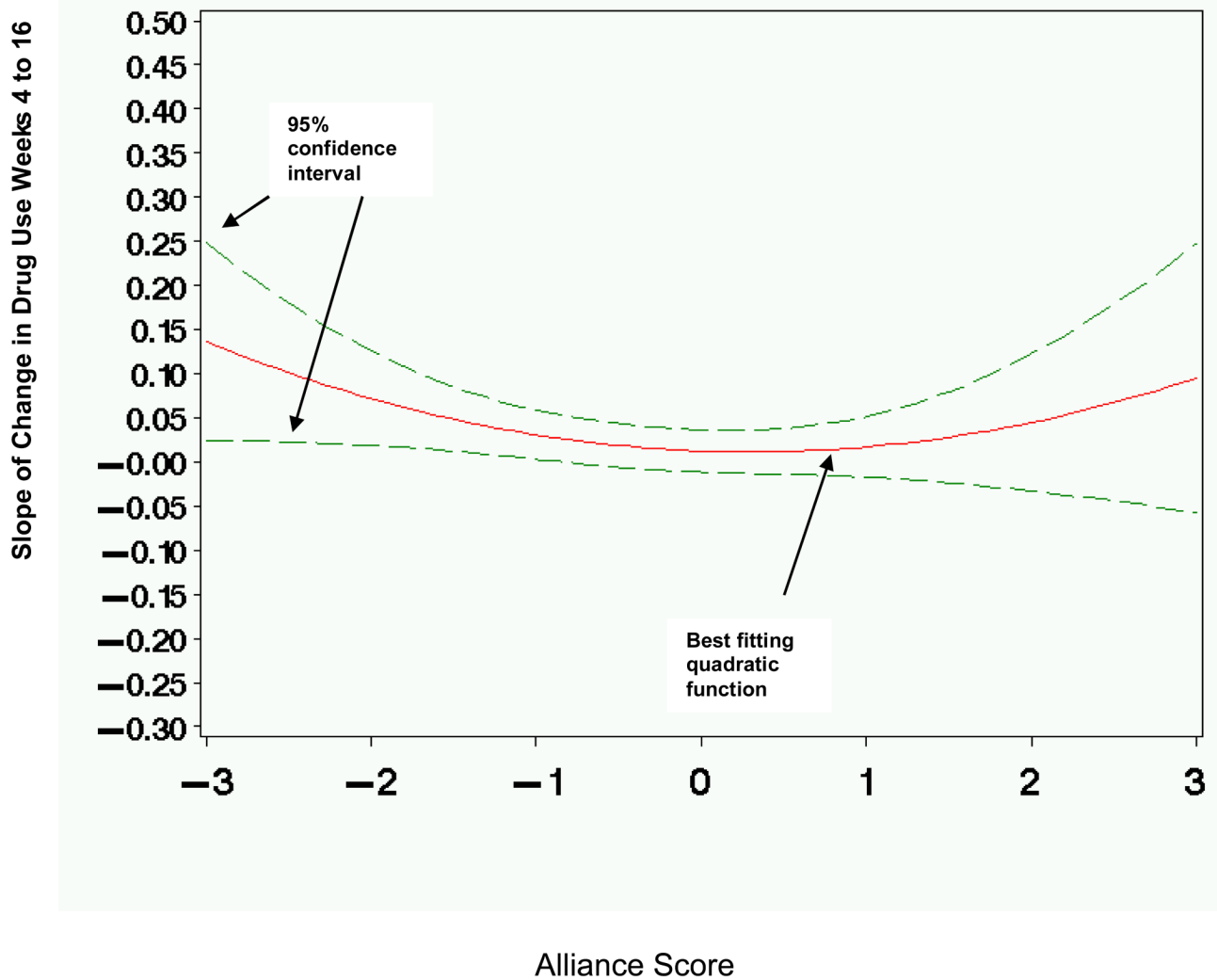(after week 0) *n* = 119

**Figure 1.**
Screening, enrollment, randomization, treatment completion, and assessment information for
the current study sample. HAq-II = Helping Alliance Questionnaire; CAU = counseling as
usual; MET = motivational enhancement therapy.

## Alliance Score

(Deviation from therapist grand mean on HAq-II in standard deviation units)

**Figure 2.**
Relation between alliance and change in drug use outcomes (Weeks 4 to 16) for between-therapist effects. HAq-II = Helping Alliance Questionnaire. The alliance scores are given as deviations from the overall therapist grand mean and range from −2.91 to 3.66 *SD* units.

**Table 1**

Results of Multilevel Model Relating Patient-Reported Alliance to Drug Use Outcomes

| Variable | Drug Use Outcomes: Weeks 1 to 4 | | | | | Drug Use Outcomes: Weeks 4 to 16 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | F | df | p | B | SE | F | df | p |
| Intercept | −0.13 | 0.290 | 0.21 | 1, 255 | 0.65 | | | | | |
| Site (5 sites; one used as reference) | −0.31 | 0.197 | 1.95 | 4, 243 | 0.10 | | | | | |
| | −0.28 | 0.174 | | | | | | | | |
| | −0.16 | 0.261 | | | | | | | | |
| | 0.15 | 0.220 | | | | | | | | |
| Baseline drug use (average weekly use past 90 days) | −0.07 | 0.011 | 37.60 | 1, 248 | <0.0001 | | | | | |
| Week 1 urine-breathalyzer results for primary drug of abuse | 0.88 | 0.067 | 166.65 | 1, 255 | <0.0001 | | | | | |
| HAq-II - linear effects (HAq-II by Time interaction) | | | | | | | | | | |
| Within therapist | 0.08 | 0.155 | 1.28 | 1, 255 | 0.58 | 0.011 | 0.014 | 0.61 | 1, 246 | 0.44 |
| Between therapist | 0.26 | 0.229 | 1.44 | 1, 255 | 0.26 | −0.09 | 0.028 | 9.55 | 1, 247 | 0.002 |
| HAq-II - quadratic effects (HAq-II$^2$ by Time interaction) | | | | | | | | | | |
| Within therapist | −0.0004 | 0.0008 | 0.29 | 1, 255 | 0.59 | −0.00005 | 0.00008 | 0.44 | 1, 246 | 0.51 |
| Between therapist | −0.001 | 0.001 | 1.25 | 1, 255 | 0.26 | 0.0005 | 0.0001 | 11.76 | 1, 247 | 0.0007 |
| HAq-II by Treatment (linear) (HAq-II by Treatment by Time interaction) | | | | | | | | | | |
| Within therapist | 0.04 | 0.176 | 0.05 | 1, 255 | 0.82 | −0.02 | 0.018 | 0.86 | 1, 245 | 0.35 |
| Between therapist | −0.33 | 0.269 | 1.54 | 1, 255 | 0.22 | 0.02 | 0.036 | 0.20 | 1, 246 | 0.65 |
| HAq-II by Treatment (quadratic) (HA1-II$^2$ by Treatment by Time interaction) | | | | | | | | | | |
| Within therapist | −0.0002 | 0.0009 | 0.07 | 1, 255 | 0.79 | 0.00007 | 0.00009 | 0.61 | 1, 245 | 0.43 |
| Between therapist | 0.002 | 0.001 | 1.64 | 1, 255 | 0.20 | −0.0001 | 0.0002 | 0.53 | 1, 246 | 0.46 |

*Note.* HAq-II = Helping Alliance Questionnaire. Drug use at baseline and outcome is self-report of days per week using primary drug of abuse. $N = 257$.