Teaching Community Program Clinicians Motivational Interviewing Using Expert and Train-the-Trainer Strategies

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Abstract

Aims—The effectiveness of expert-led (EX) and train-the-trainer (TT) strategies was compared to a self-study approach (SS) for teaching clinicians motivational interviewing (MI).

Design—Twelve community treatment programs were randomly assigned to the three conditions. EX and TT conditions used skill-building workshops and three monthly supervisions sessions guided by treatment integrity ratings, performance feedback and coaching techniques. Trainers in TT were first trained and certified in MI and then carefully prepared to deliver the workshops and supervise MI at their programs. Clinicians in SS only received the training materials.

Setting—Licensed outpatient and residential addiction and mental health treatment programs in the U.S. State of Connecticut were involved in the study.

Participants—Ninety-two clinicians who provided addiction treatment within these programs and had limited experience with MI participated in the study.

Measurements—Primary outcomes were the clinicians' MI adherence and competence and the percentage of clinicians meeting clinical trial standards of MI performance. Assessments occurred at baseline, post-workshop, post-supervision, and a 12-week follow-up.

Findings—The study found EX and TT, in comparison to SS, significantly improved clinicians' adherence and competence, with higher percentages of clinicians reaching clinical trial standards of MI performance and few differences between EX and TT.

Conclusions—This study supports the combined use of workshops and supervision to teach community program clinicians MI and suggests training-the-trainer may be a feasible and effective strategy for disseminating empirically supported treatments.

INTRODUCTION

International and U.S. policymakers have strongly encouraged clinicians to learn empirically supported mental health and addiction treatments to improve client care [1-4]. How to best train clinicians to use these practices with adherence and competence (i.e., how much and how well clinicians use specific strategies) has begun to be systematically evaluated [5-7]. This study evaluates the effectiveness of expert-led and train-the-trainer approaches for

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teaching motivational interviewing (MI) [8], an empirically supported treatment for addictions [9].

Two common strategies for training clinicians in empirically supported treatments include self-study materials and workshops. Clinical trials of psychotherapies usually add post-workshop supervision using feedback and coaching based on performance ratings [10-12]. Experts in those therapies typically conduct workshops and subsequently supervise clinicians. Self-study, a common way clinicians learn new treatments [3], has been found to be ineffective [13,14]. Similarly, workshops are of limited value in developing or sustaining counselors' therapeutic skills [13,15-20]. In contrast, several studies [13,14,21-24] have demonstrated that expert-delivered workshops, coupled with post-workshop supervision that employs rating-based feedback and coaching, improves clinicians' ability to implement empirically supported approaches.

While effective, expert-driven training approaches are limited as technology transfer vehicles. Experts often are few in number, expensive to employ, and not readily available to support on-site practice. Treatment implementation models emphasize establishing program-based advocates who first become knowledgeable and committed to an empirically supported treatment, and then actively champion its use within their agencies [25-28]. One method for establishing program-based advocates is to use a train-the-trainer (TT) approach [32-49] in which an expert trains practitioners how to teach a designated intervention to others. Subsequently, the practitioners return to their settings and then train, supervise, and monitor staff members' treatment implementation. This approach is popular in the medical education [29-35], primary/secondary prevention [36-42], and mental health and addiction fields [43-46].

No prior controlled randomized trial of TT for training clinicians in empirically supported treatments has been conducted. In this report, we describe a controlled randomized trial of expert and TT strategies, using workshop training and post-workshop supervision, to teach community program clinicians MI. Relative to a self-study condition, we hypothesized that both the expert and TT conditions would: 1) improve community program clinicians' adherence and competence in using MI following workshop training and supervision; and 2) result in a higher percentage of clinicians performing MI adequately. In addition, by virtue of providing durable on-site resources and support, we expected the TT condition to sustain these gains through the 12-week follow-up, and the expert condition to show diminished MI performance in the absence of continuing expert consultation.

METHODS

Study design

Twelve outpatient substance abuse treatment programs within Connecticut (USA) were randomly assigned to either a 1) self-study (SS), 2) expert (EX), or 3) train-the-trainer (TT) condition using a random sample program to select 4 programs per condition.[1] Participating programs were licensed addiction treatment facilities and had not previously implemented MI workshop or supervision training. Clinicians completed baseline, post-workshop, post-supervision, and 12-week follow-up assessments. Primary outcomes were 1) clinician MI

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[1]One program initially randomized to the TT condition experienced a one-month employee strike during the time in which two program clinicians were being prepared as trainers, disrupting the trainer preparation process and delaying the study's implementation at this site. Subsequently, the agency experienced substantial staff turnover, which resulted in the trainers having their caseloads increased and no time to conduct supervision for the study. Because of these issues, this program was removed from the study. Another three programs interested in study participation were recruited. One of these programs was randomized to the TT condition as the replacement site.

adherence and competence in client and role-played sessions and 2) the percentage of clinicians performing MI adequately.

Participant clinicians

Clinicians were required to 1) be employed ≥ 20 hours/week, and 2) treat English-speaking substance-using clients. Clinicians who had received recent formal MI workshop training or supervision were excluded. Research assistants met with clinicians who expressed interest in the study and obtained written informed consent approved by Yale University School of Medicine Human Investigation Committee.

Training conditions

Self-Study (SS)—Clinicians were provided with the MI textbook [8], training videotapes [47], and a treatment manual.[2] They were asked to spend 20 hours reviewing these materials over the next 12 weeks.

Expert (EX)—One expert (first author) provided all EX training to clinicians. Training included a 15-hour workshop per Motivational Interviewing Network of Trainers recommendations [8]. Next, clinicians audiotaped client sessions in which they practiced MI. These were rated for MI adherence and competence using the Independent Tape Rater Scale (ITRS described below). Clinicians had 3 monthly individual face-to-face supervisions, which involved receiving rating-based feedback about their use of MI strategies and role-play practice.

Train-the-Trainer (TT)—Two clinicians per program (n = 8) became MI trainers and supervisors at their program. They all worked full-time, had master's degrees or higher, and were licensed professionals. Most were program directors/managers (75%) and had been supervising on average 14.0 years (*SD* = 9.4). None had received prior MI training.

Trainers learned MI using the workshop and supervision procedures described above. Trainers had to meet adequate standards of MI performance, consistent with those used to certify clinicians in prior clinical trials of MI [48-50]. Thereafter, they completed another 15-hour workshop in which they learned how to conduct the MI workshop and rating-based supervision. A TT manual guided their preparation.[2] Trainers received monthly consultation calls from the expert and received $25 per completed supervision session to support supervision implementation.

Assessments procedures

Client sessions—Clinicians submitted audiotaped 40-minute sessions in which they were instructed to conduct MI with clients who had substance use problems. Clinicians, not research staff, selected clients based on clinical judgment of the suitability of substituting MI for their standard practice and the client's willingness to be audiotaped (signed consent obtained). These audiotapes were rated to assess their MI skills in clinical practice.

Role-played sessions—To control for program-specific client populations and variations in clinical presentations, clinicians completed a 40-minute videotaped standardized role-played session with a client-actor. The same scenario (i.e., a client presenting in an intake as ambivalent about stopping marijuana and alcohol use) was used across assessment points. The 'client' in the assessment session was played by a project staff member who had

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previously enacted a "client" in a professionally produced training video. Similar methods have been shown to be reliable stimuli for MI skills assessment [17].

Independent tape rating—Twelve raters, blind to training condition, program and assessment points, rated the client and role-played sessions. All raters attended seminars in which they learned the ITRS system. Next, each rated an identical set of 18 calibration tapes randomly selected from the larger pool of session tapes, which were used to evaluate inter-rater reliability. Raters received approximately 44 hours of training.

Measures

Independent Tape Rater Scale—The ITRS assesses clinicians' adherence and competence using MI and other strategies inconsistent with MI (e.g., direct confrontation) or common to drug counseling (e.g., assessing substance use). This study used 15 ITRS items: ten evaluated strategies that characterize MI and five that were inconsistent with MI. For each item, raters evaluated the extent (*adherence*; 1 = not at all, to 7 = extensively) and skill (*competence*; 1 = very poor, to 7 = excellent) with which the clinician delivered the strategy. Confirmatory factor analyses have supported a two-factor model for the 10 MI consistent items (corresponding to "fundamental" and "advanced" MI strategies) [51,52]: five fundamental MI strategies that underpin the client-centered stance of MI and five items that involved advanced strategies for evoking client motivation for behavior change (e.g., heightening discrepancies). Each scale was averaged to obtain adherence and competence scores (see Table 1 for item descriptions). In addition, five MI inconsistent items (unsolicited advice, therapeutic authority, direct confrontation, emphasizing total abstinence, asserting disease concepts of addiction) were averaged to determine the impact of training on this area. Intra-class correlation coefficients (ICC) for the fundamental and advanced MI strategy adherence and competence scores showed good to excellent inter-rater reliability (adherence ICC: fundamental = .88 and advanced = .87; competence ICC: fundamental = . 87 and advanced = .68) [3] [53]. Interrater reliability estimates for the MI-inconsistent adherence items were excellent (ICC = .91).

To determine if clinicians' met adequate standards of MI performance based on the ITRS, the same threshold was used as in prior clinical trials of MI with community program clinicians, that is, the clinicians conducted sessions in which they were rated as having at least half of the MI consistent scale items rated average or above in terms of adherence and competence [48-50].

Evaluation Form (workshop and supervision versions)—This 12-item form asks clinicians to rate how much the workshop trainers or supervisors covered core MI skills/ principles and their overall skillfulness. Items used 7-point Likert-rating scales, with 1 = not at all, to 7 = extensive.

Data analysis

We used a random effects regression model approach, with two contrasts for training condition (EX vs. SS; TT vs. SS), inclusion of all assessment points, and condition by time interaction in the model. The prediction was that at each of the 3 time points, the MI scores would be higher for TT and EX than for SS compared to the baseline MI scores. Separate analyses were conducted for each of the five primary outcomes (fundamental and advanced MI strategies adherence and competence, MI inconsistent adherence). All models were

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[3]ICCs were calculated using Shrout and Fleiss [57] intraclass correlation coefficients (ICC's) two-way mixed model (3.1) with item ratings as the random effect and raters as the fixed effect. ICC reliabilities for the ITRS are reported for the mean adherence and competence ratings because the primary outcomes involve combinations of ratings across items.

initially run separately for each condition to assess differences in outcome by program site and time; because program effects were not significant within conditions, program site was dropped in the final models. The *d* formula by Raudenbush and Lui [54] was used for estimating effect magnitude in hierarchical linear regression models [55]. Chi-square likelihood ratios were conducted to test predicted differences in the percentage of clinicians meeting adequate standards of MI performance at each assessment time point. Chi-square and independent t-tests were used to evaluate baseline differences between conditions and satisfaction with workshop training/supervision.

RESULTS

Participants

Of the 97 clinicians screened, 5 were excluded (1 anticipated medical leave, 1 was leaving the agency, and 3 did not complete baseline assessments), leaving a total of 92 clinicians allocated to three conditions across programs (SS = 31; EX = 32; TT = 29) (see Figure 1). Clinicians were primarily Caucasian (83%) female (65%) alcohol/drug counselors (71%). About half had master's degrees and professional licenses. Most worked as frontline clinicians (83%) in outpatient settings (66%). A year prior to study involvement, clinicians had little MI training (see Table 2).

Randomization and baseline equivalence

Randomization at the program level resulted in equivalent groups of clinicians across conditions at baseline. Significant between-group baseline differences were only observed for fundamental MI competence within the role-play assessment ($F(2,87) = 4.70$, $p = .02$). *Post hoc* Tukey tests showed EX clinicians had significantly higher competence (but not adherence) ratings than TT clinicians, with SS clinicians falling in between the two. In addition, TT in comparison to SS or EX, had significantly fewer women ($X^2(2) = 7.97$, $p = .02$) and program managers/directors ($X^2(2) = 6.57$, $p = .04$).

Training exposure

All EX and TT clinicians attended the MI workshop. EX clinicians attended slightly more supervision sessions than those in TT (2.9 vs. 2.5; $t(59) = 2.62$, $p = .01$). Clinicians rated the expert trainer as significantly more skilled and more extensively covering several MI strategies during the workshops and supervision than TT trainers (see Table 3), though ratings were generally high in both conditions. SS clinicians indicated they had spent on average 6.7 hours ($SD = 7.9$) using the MI training materials. TT clinicians reported they continued to receive MI supervision on average 6.3 times ($SD = 5.4$) during the 12-week follow-up.

Completeness of Follow-up Data

Participant retention across study assessment points was: 98% post-workshop, 90% post-supervision, and 82% 12-week follow-up. For client sessions, the percentage of clinicians having samples was: 95% baseline, 92% post-workshop, 85% post-supervision, and 72% 12-week follow-up. For role-played sessions, the percentages were: 98% baseline, 89% post-workshop, 89% post-supervision, and 78% 12-week follow-up. There were with no significant differences across conditions for any follow-up data.

MI adherence and competence

Overall, across conditions, assessment points, and type of session, clinicians typically used fundamental MI strategies about twice as often as advanced ones and with adequate levels of

competence (see Table 4). MI inconsistent strategies seldom occurred. Table 5 presents the results of the random regression analyses.

Client sessions—EX compared to SS clinicians significantly increased their fundamental strategy competence from baseline to post-workshop ($d = 1.05$) and 12-week follow-up ($d = 1.06$) and advanced strategy competence from baseline to 12-week follow-up ($d = 1.19$). Across all conditions, clinicians showed increased fundamental strategy competence from baseline to post-supervision and decreased use of MI inconsistent strategies at each time point. EX clinicians used MI inconsistent strategies less frequently than SS clinicians. Significant differential training effects between TT and SS were absent.

Role-played sessions—EX clinicians showed significantly increased advanced strategy adherence from baseline to post-workshop ($d = .82$) and post-supervision ($d = .89$) and decreased use of MI inconsistent strategies from baseline to post-supervision ($d = -.78$) compared to SS clinicians. TT compared to SS clinicians showed significantly increased fundamental strategy adherence from baseline to post-workshop ($d = .95$) and post-supervision ($d = .63$) and competence from baseline to post-workshop ($d = .71$), post-supervision ($d = .76$), and 12-week follow-up ($d = .61$). TT relative to SS clinicians also showed significantly more use of advanced strategies from baseline to post-workshop ($d = .92$) and post-supervision ($d = 1.17$) and competence from baseline to post-supervision ($d = .72$) and 12-week follow-up ($d = .54$). Across all conditions, use of MI inconsistent strategies declined from baseline to 12-week follow-up.

MI performance standards

No significant baseline differences existed between conditions in the percentage of clinicians who met adequate standards of MI performance in client or role-played sessions. Accordingly, Chi-square likelihood ratios were conducted at each assessment point. However, to further rule out the potential of baseline performance affecting subsequent clinician achievement of adequate standards of MI performance, we also compared the rates of adequate standards of achievement for each time point for the subgroup of clinicians who did not meet this criterion at baseline.

Client sessions—A significantly higher percentage of EX clinicians achieved adequate standards of MI performance than SS clinicians post-supervision (68% vs. 42%, $X^2(1) = 3.72$, $p = .05$, $\phi = .26$) and 12-week follow-up (59% vs. 18%, $X^2(1) = 8.47$, $p = .01$, $\phi = .42$). A significantly higher percentage of TT than SS clinicians achieved adequate MI performance standards at the 12-week follow-up (53% vs. 18%, $X^2(1) = 5.21$, $p = .02$, $\phi = .37$) (see Figure 2). When these analyses were repeated only for clinicians who did not meet these standards at baseline, only the EX percentages remained higher than SS at the 12-week follow-up.

Role-played sessions—EX and TT, in comparison to SS, had significantly higher percentages of clinicians reach or surpass adequate MI performance standards post-workshop (76% vs. 33%, $X^2(1) = 9.96$, $p = .01$, $\phi = .43$; and 67% vs. 33%, $X^2(1) = 6.32$, $p = .01$, $\phi = .33$, respectively) and post-supervision (78% vs. 31%, $X^2(1) = 13.67$, $p = .00$, $\phi = .47$; and 71% vs. 31%, $X^2(1) = 7.96$, $p = .01$, $\phi = .40$, respectively) (see Figure 2). Significant difference were absent at the 12-week follow-up point. Repeating these analyses only for clinicians who fell below standards at baseline showed that the results remained unchanged.

Expert vs. train-the trainer

Analyses were re-run to explore differences between EX and TT conditions. No significant condition or condition by time effect was present for the clinicians' MI adherence and

competence ratings in the client sessions. In the role-played sessions EX, not TT, clinicians reduced their use of MI inconsistent strategies from baseline to post-supervision ($t(60) =$ -2.84, $p = .006$). EX clinicians used fundamental strategies more competently than TT clinicians ($t(60) = 3.11$, $p = .003$), although TT clinicians became more competent in their use of these strategies over time ($t(60) = -2.64$, $p = .011$). No differences occurred in the percentage of clinicians who met adequate standards of MI performance in client or role-played sessions.

DISCUSSION

The study's main finding is that EX and TT strategies, using the same clinician training methods, resulted in improvements in clinicians' MI performance at different assessment points when compared to a self-study approach. Consistent with its hypotheses, clinicians exposed to expert training 1) became more competent with fundamental and advanced MI strategies in client sessions, 2) used more advanced MI strategies and fewer MI inconsistent strategies in role-played sessions, and 3) performed MI adequately with clients and within role plays in percentages higher than clinicians studying MI on their own. Clinicians trained by program-based trainers, in comparison to those who self-studied, 1) improved their fundamental and advanced adherence and competence in role-played sessions, and 2) had a higher percentage performing MI adequately in role-played sessions. This study adds to the literature supporting the use of workshop training followed by rating-based feedback and coaching in supervision as a method for training clinicians in addiction treatments [13,14].

Contrary to the hypothesis that TT would continue to sustain these MI performance gains better than EX during the 12-week follow-up period, the predicted advantage did not occur. This was most surprising in the client sessions where the program-based trainers reported continued supervision of MI practice and yet, relative to SS, did not achieve significantly higher percentages of clinicians achieving adequate standards of MI performance among those who had not performed to this level at baseline. In retrospect, the expectation of better TT outcomes at follow-up was not well-founded given that program-based trainers had no prior MI training, were evaluated as less extensively and skillfully covering MI material in the workshops and supervision (albeit still positive), and had MI training activities added to their workloads rather than supplanting other tasks. Monthly consultation calls, financial incentives, and data collection during the study's supervision phase supported implementation. Once these supports ended, trainers may have returned to supervision-as-usual practices, excluding the critical techniques of observation, feedback, and coaching. At the 12-week follow-up, TT trainers and clinicians anecdotally confirmed this speculation. The challenge of sustaining program-based trainers' fidelity to empirically supported training methods parallels the challenge of sustaining clinicians' proficiency using empirically supported treatments. How to best select, prepare, certify, and support TT trainers requires future investigation.

Nonetheless, this study suggests that rigorously trained program-based trainers may be able to achieve clinician training effects consistent with those of experts and supports the use of a TT strategy for disseminating MI [8]. Direct comparison of TT to EX across time points showed similar levels of clinician MI adherence and competence and percentage meeting adequate standards of performance. Moreover, relative to EX, TT clinicians significantly improved their competence using fundamental MI strategies over time. These training gains were achieved using a systematic and intensive process for preparing the trainers and suggests that a substantial amount of training and implementation resources may be required to adequately prepare program-based trainers to teach clinicians MI. Similarly, clinicians may need more supervision over time to improve upon the less than 60% rate at which EX and TT clinicians met adequate standards of MI performance at the 12-week follow-up.

This study also raises the issue of how to best evaluate clinicians' MI adherence and competence. Standardized role-played sessions have the advantage of providing consistent stimuli across programs, clinicians, and time points, making adherence and competence assessments more attributable to changes resulting from clinician training efforts [17]. However, role-played clients may not vary their responses like actual clients [13] and these interactions might not reflect how clinicians implement MI in practice. In this study, results based on ratings from actual and role-played client assessments were not interchangeable. In comparison to SS, clinicians in EX showed significantly more competent performance in client sessions whereas those in TT showed more adherent and competent performance in role-played sessions. If only client or role-played assessments had been used, one training strategy might have appeared better than the other when compared to a self-study approach. Using multiple methods (client and role-played assessments) to examine different facets of clinician fidelity may be the most prudent way to understand the effectiveness of clinician training strategies. Future research is needed to determine why clinician performance may vary with the type of assessment methods used.

Limitations

This study's limitations include: 1) unequal control for attention and time in the self-study condition; 2) attrition of recorded client and role-played sessions; 3) use of only one expert trainer in the EX condition that confounds the condition with the trainer's skills and shortcomings; 4) self-selected client sessions that might not reflect clinicians' use of MI more broadly within their programs or over-estimate the actual effects obtained in this study. In addition, we did not assess 1) the impact of training on the clients' verbal statements within sessions (e.g., frequency of statements that favor or disfavor change), a good proxy for behavior change [56], 2) organizational features that might have moderated training effects [26,28], or 3) independent fidelity checks on the expert and program-based trainers in the workshops and supervision.

Conclusion

This study lends additional empirical support for the use of workshops followed by clinical supervision as an effective way to train community program clinicians in addiction treatments. It also provides the first evidence that program-based trainers, adequately prepared to teach MI, can help clinicians learn MI with training outcomes similar to those achieved by an expert. The train-the-trainer approach continues to hold promise as an effective strategy for disseminating empirically supported practices in community program settings.

Acknowledgments

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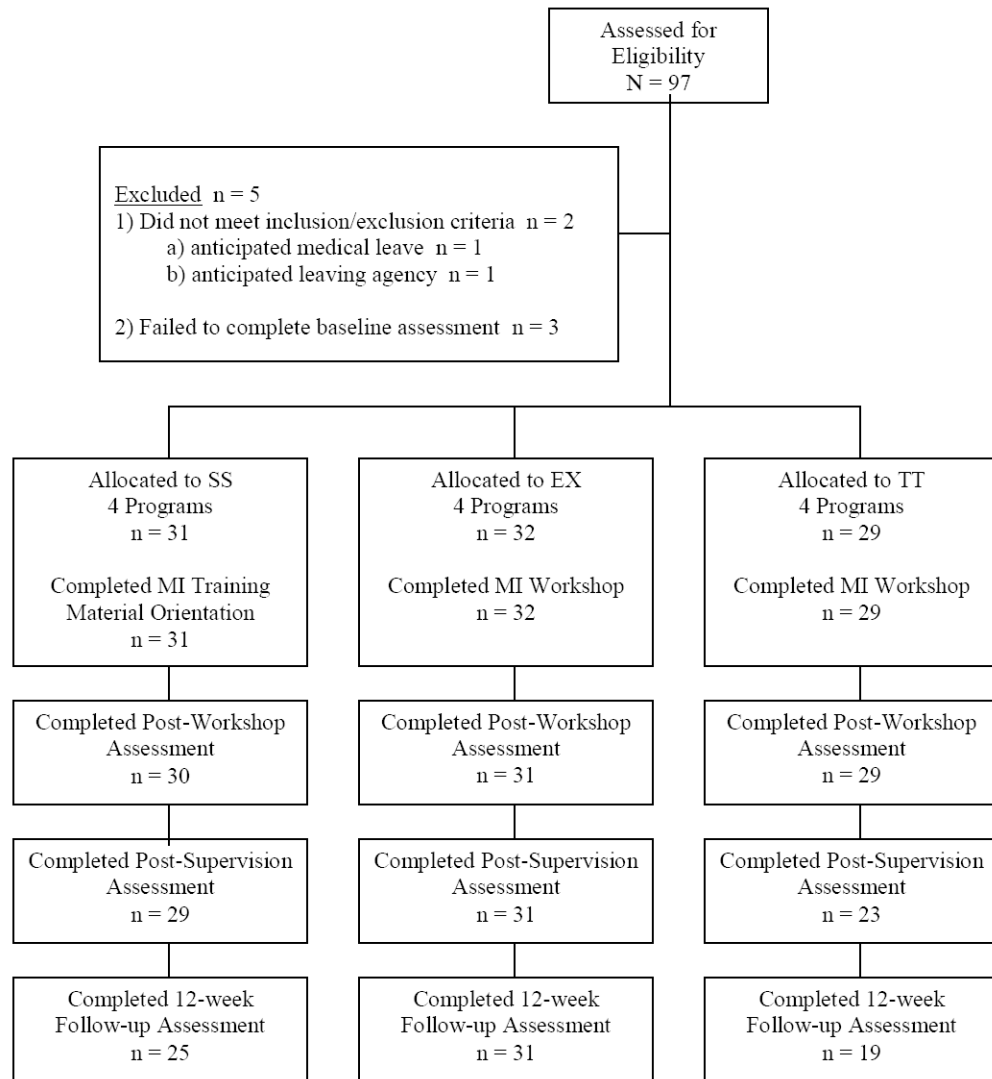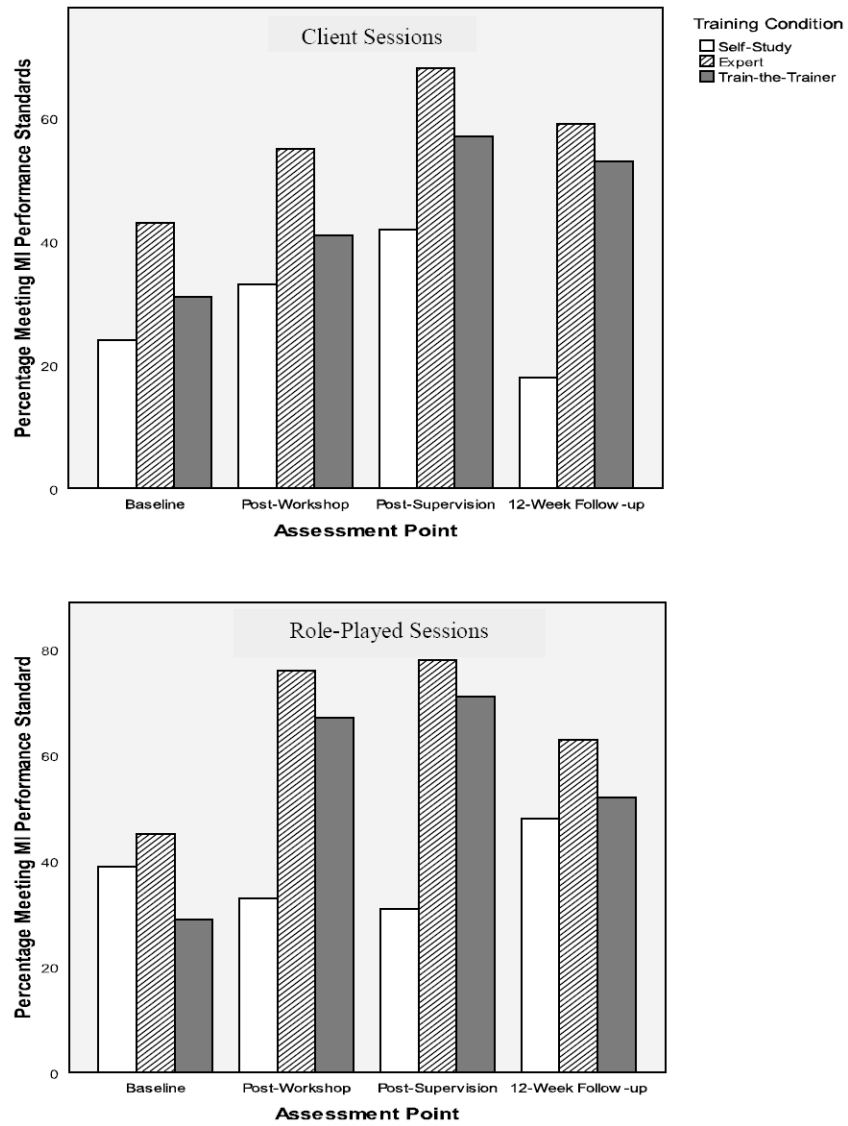
Figure 1.
CONSORT Flowchart

Figure 2.
Percentage of clinicians meeting MI performance standards in client and role-played sessions

Table 1

Independent Tape Rater Scale item definitions for the fundamental and advanced MI strategy factors

Fundamental MI Strategies	Definition
Open Questions	Questions that elicit more than yes/no responses and encourage the client to talk about his/her problems, motivation, change efforts, and plans
Reflective Statements	Repeating (exact words), rephrasing (slight rewording), paraphrasing (e.g., amplifying the thought or feeling, use of analogy, making inferences) or making reflective summary statements about what the client said
Affirmations	Verbal reinforcement of the client's strengths, abilities, or efforts to change his/her behavior
Fostering a Collaborative Relationship	Statements or questions that convey that the therapy is a collaborative relationship in contrast to one where the therapist is in charge
Motivational Interviewing Style/Spirit	Demonstration in the session of the therapist's supportive, warm, and non-judgmental stance, empathic sensitivity to the client's experiences, and attentiveness to the client's motivation for change
Advanced MI Strategies	
Client-centered Problem Discussion and Feedback	Explicit facilitation of a discussion about the problems for which the client entered treatment, as well as the provision of personalized feedback about the client's substance abuse and the evidence or indications of related problems in other life areas
Pros, Cons, and Ambivalence	Exploration of the positive and negative effects of the client's substance use, what might be gained and lost by abstinence or reduction in substance use, and reflections capturing the client's ambivalence about the change process
Heightening Discrepancies	Efforts made to heighten the internal conflict a client's continuing substance use poses to the client's self perceptions, life goals or values
Motivation for Change	Efforts made to elicit client discussion of change (self-motivational statements) through questions or comments designed to promote greater awareness/concern for the problem, increase intent/optimism to change, or encourage elaboration on a topic related to change
Change Planning	Discussion with a client about his or her readiness to prepare a change plan and facilitation of a discussion about the client's self-identified goals, steps for achieving those goals, supportive people available to help the client, what obstacles to the change plan might exist, and how to address impediments to change

Table 2

Clinician demographic variables and experience levels by training condition

Variable	Condition			
	SS	EX	TT	
Female, *n* (%)	24 (77%)	23 (72%)	13 (45%)	*
Mean (SD) age	45.9 (12.5)	42.2 (10.9)	46.3 (10.3)	
Ethnicity, *n* (%)				
African-American	4 (13%)	1 (3%)	5 (17%)	
Caucasian-American	25 (81%)	29 (91%)	22 (76%)	
Hispanic-American	2 (6%)	2 (6%)	1 (3%)	
Other	0	0	1 (3%)	
Mean (SD) Years Education	17.4 (2.4)	17.3 (1.9)	17.3 (3.5)	
Highest Degree Earned, *n* (%)				
Doctorate	1 (3%)	1 (3%)	3 (10%)	
Master's	17 (55%)	21 (63%)	11 (31%)	
Bachelor's	10 (32%)	5 (34%)	7 (59%)	
Associates	2 (6%)	3 (9%)	3 (10%)	
High School	1 (3%)	2 (6%)	5 (17%)	
Discipline, *n* (%)				
Alcohol/Drug Counseling	23 (74%)	21 (66%)	21 (72%)	
Marriage and Family Counseling	2 (6%)	2 (6%)	0	
Social Work	9 (29%)	11 (34%)	6 (21%)	
Psychology	0	0	1 (3%)	
Nursing	0	1 (3%)	0	
Internal Medicine	0	0	1 (3%)	
Licensure Status, *n* (%)				
Alcohol/Drug Certification	12 (39%)	12 (38%)	11 (38%)	
Licensed Professional	15 (48%)	17 (53%)	9 (31%)	
Primary Role				*
Clinician	25 (81%)	21 (66%)	28 (97%)	
Program Manager/Director	6 (19%)	11 (34%)	1 (3%)	
Mean (SD) Years Experience				
General Counseling	10.7 (1.0)	9.1 (6.5)	8.9 (8.3)	
Substance Abuse Counseling	9.2 (8.1)	7.6 (6.0)	7.7 (8.0)	
Past substance abuse problem, *n* (%)	10 (32%)	10 (31%)	12 (41%)	
Level of Clinical Care, *n* (%)				
Outpatient/intensive outpatient	23 (74%)	20 (62%)	18 (62%)	
Residential	8 (26%)	12 (38%)	11 (38%)	
Past year MI training				
Mean (SD) hours	1.1 (2.5)	0.4 (2.1)	1.3 (3.6)	
Lecture/presentation, n (%)	5 (16%)	1 (3%)	5 (17%)	
Workshop, *n* (%)	4 (13%)	1 (3%)	3 (10%)	

Variable	Condition		
	SS	EX	TT
Supervision, *n* (%)	1 (3%)	0 (0%)	1 (3%)
Read 2002 MI Textbook	2 (6%)	2 (6%)	3 (10%)
Used MI Manuals	6 (19%)	3 (9%)	3 (10%)

Note. SS = Self-Study, EX = Expert, TT = Train-the-Trainer. For the Discipline category, the percentages in the SS and EX conditions exceed 100% because some clinicians belonged to more than one discipline.

*
p < .05.

Table 3

Coverage of MI strategies in workshops and supervision by training conditions

MI Skill	Workshop			Supervision		
	EX	TT		EX	TT	
MI spirit	6.8 (0.4)	6.1 (0.8)	*	6.3 (0.8)	5.3 (1.3)	**
Open questions	6.7 (0.5)	6.5 (0.6)		6.2 (1.0)	5.4 (1.6)	*
Reflections	6.9 (0.3)	6.4 (0.7)	*	6.2 (0.9)	5.0 (1.5)	*
Affirmations	6.1 (0.8)	5.9 (0.8)		6.1 (1.1)	5.2 (1.7)	*
Fostering collaboration	6.4 (0.6)	6.1 (0.7)		5.8 (1.1)	5.1 (1.6)	*
Motivation for change	5.9 (0.8)	6.0 (0.8)		5.5 (0.9)	5.5 (1.5)	*
Client-centered discussion/feedback	6.4 (0.8)	6.1 (1.0)		6.0 (1.1)	5.0 (1.9)	**
Exploring pros/cons/ambivalence	6.5 (0.6)	6.3 (0.8)		6.1 (0.9)	5.2 (1.7)	**
Developing discrepancies	6.1 (0.9)	5.9 (1.0)		5.6 (1.2)	4.8(1.5)	*
Change planning discussion	5.8 (0.9)	5.4 (1.2)		5.2 (1.2)	5.0 (1.6)	
Reducing MI inconsistent strategies	6.6 (0.6)	6.0 (0.9)	**	5.0 (1.4)	5.4 (1.5)	
Overall skillfulness	6.8 (0.4)	6.4 (0.6)	**	6.6 (0.8)	6.1 (1.0)	*

Note. SS = Self-Study, EX = Expert, TT = Train-the-Trainer. Coverage was rated 1=not at all, 2=a little, 3=infrequently, 4=somewhat, 5=quite a bit, 6=considerably, 7=extensively.

*
$p < .05$.

**
$p < .01$.

Table 4

Primary measures of clinician MI performance in client and role-played sessions

	Condition								
	SS			**EX**			**TT**		
Variable	*M*	*SD*	*N*	*M*	*SD*	*n*	*M*	*SD*	*N*
<u>Client Sessions</u>									
Fundamental MI Strategies									
Adherence									
Baseline	3.7	0.9	29	4.1	0.9	30	4.1	1.0	27
Post-workshop	3.7	1.1	27	4.5	0.8	31	4.5	0.9	27
Post-supervision	4.0	1.2	26	4.6	0.8	31	4.4	1.1	21
12-week follow-up	3.9	0.9	22	4.6	0.8	27	4.4	0.9	17
Competence									
Baseline	3.8	0.8	29	4.1	0.7	30	4.0	0.7	28
Post-workshop	3.8	0.9	27	4.8	0.9	31	4.4	0.9	27
Post-supervision	4.3	0.9	26	4.6	0.8	31	4.8	0.7	21
12-week follow-up	3.9	0.8	22	5.0	0.9	27	4.4	0.9	17
Advanced MI Strategies									
Adherence									
Baseline	2.3	0.8	29	2.6	0.8	30	2.5	1.1	28
Post-workshop	2.5	1.1	27	2.7	0.9	31	2.6	1.2	27
Post-supervision	2.7	1.0	26	2.9	0.9	31	2.9	1.2	21
12-week follow-up	2.2	0.7	22	2.7	0.8	27	2.6	1.1	17
Competence									
Baseline	4.1	0.8	28	4.1	0.7	30	4.0	0.9	26
Post-workshop	3.9	0.9	26	4.4	0.8	31	4.2	0.7	26
Post-supervision	4.3	0.9	26	4.5	0.6	31	4.6	0.6	21
12-week follow-up	4.0	0.7	22	4.9	0.7	25	4.3	0.7	16
MI Inconsistent Adherence									
Baseline	2.4	0.8	29	1.9	0.7	30	2.2	0.7	28
Post-workshop	2.0	0.9	27	1.4	0.4	31	1.6	0.8	27

Variable	SS			EX			TT		
	M	**SD**	**N**	**M**	**SD**	**n**	**M**	**SD**	**N**
Post-supervision	1.8	0.5	26	1.4	0.5	31	1.8	0.8	21
12-week follow-up	1.8	0.9	22	1.5	0.5	27	1.8	0.7	17
% Meeting MI Performance Standards									
Baseline	24%			43%			32%		
Post-workshop	33%			55%			41%		
Post-supervision	42%			68%			57%		
12-week follow-up	18%			59%			53%		
<u>Role-Played Sessions</u>									
Fundamental MI Strategies									
Adherence									
Baseline	4.0	0.8	31	4.0	0.9	31	3.8	1.0	28
Post-workshop	4.0	1.0	30	4.5	0.7	25	4.6	0.6	27
Post-supervision	4.2	0.8	29	4.5	0.6	32	4.4	0.8	21
12-week follow-up	4.2	0.7	23	4.5	0.7	30	4.1	1.0	19
Competence									
Baseline	3.8	0.9	31	4.3	0.8	31	3.6	1.0	28
Post-workshop	4.1	0.9	30	4.7	0.8	25	4.5	0.8	27
Post-supervision	4.1	1.0	29	4.9	0.8	32	4.4	0.7	21
12-week follow-up	4.2	1.0	23	4.6	0.7	30	4.5	0.9	19
Advanced MI Strategies									
Adherence									
Baseline	2.9	1.1	31	2.7	1.0	30	2.7	0.8	28
Post-workshop	2.8	0.9	30	3.3	0.9	25	3.3	0.9	26
Post-supervision	2.7	0.9	29	3.3	0.8	32	3.4	1.1	21
12-week follow-up	2.8	1.1	23	3.1	0.8	30	3.2	1.0	19
Competence									
Baseline	4.0	0.6	30	4.2	1.0	31	3.7	1.0	28
Post-workshop	4.1	0.9	30	4.6	0.7	25	4.3	0.6	27
Post-supervision	4.1	0.9	29	4.6	0.6	32	4.4	0.6	21

Condition (column group heading)

	Condition								
	SS			EX			TT		
Variable	M	SD	N	M	SD	n	M	SD	N
12-week follow-up	4.3	0.9	23	4.6	0.7	30	4.4	0.9	19
MI Inconsistent Adherence									
Baseline	2.2	1.0	31	2.2	0.9	31	2.1	1.1	28
Post-workshop	1.9	0.9	30	1.5	0.5	25	1.8	1.1	27
Post-supervision	2.1	1.1	29	1.3	0.4	32	2.0	0.9	21
12-week follow-up	1.8	0.6	23	1.4	0.5	30	1.9	0.8	19
% Meeting MI Performance Standards									
Baseline	39%			45%			29%		
Post-workshop	33%			76%			67%		
Post-supervision	31%			78%			71%		
12-week follow-up	48%			63%			53%		

Note. SS = Self-Study, EX = Expert, TT = Train-the-Trainer. Adherence was rated 1=not at all, 2=a little, 3=infrequently, 4=somewhat, 5=quite a bit, 6=considerably, 7=extensively. Competence was rated 1=very poor, 2=poor, 3=acceptable, 4=adequate, 5=good, 6=very good; 7=excellent.

Table 5

Effects of training condition on primary outcomes at post-workshop, post-supervision, and 12-week follow-up points: results of random regression analyses

	Fundamental MI Strategies				Advanced MI Strategies				MI Inconsistent Strategies	
	Adherence		Competence		Adherence		Competence		Adherence	
	t	p	t	p	t	p	t	p	t	p
Client Sessions										
Intercept	20.94	.000	28.03	.000	14.40	.000	27.62	.000	17.38	.000
Training Condition										
EX vs. SS	1.39	.167	1.18	.239	1.25	.214	0.26	.794	-2.16	.034
TT vs. SS	1.21	.231	0.68	.496	0.77	.44	-0.46	.650	-0.83	.410
Time (baseline to)										
Post-workshop	-0.04	.967	-0.21	.835	0.56	.575	-0.87	.386	-2.12	.036
Post-supervision	0.86	.391	2.66	.009	1.35	.181	1.03	.306	-3.24	.002
12-week follow-up	0.46	.643	0.26	.792	-0.39	.695	-0.28	.781	-3.02	.003
Training Condition by Time (baseline to)										
EX vs. SS at post-workshop	1.36	.175	2.67	.009	-0.31	.760	1.57	.120	-0.74	.458
EX vs. SS at post-supervision	0.86	.391	0.20	.839	-0.16	.878	0.75	.453	0.08	.934
EX vs. TT at 12-week follow-up	1.25	.214	2.84	.005	0.38	.705	2.92	.004	0.33	.744
TT vs. SS at post-workshop	1.30	.197	1.58	.109	-0.16	.873	1.30	.196	-1.08	.282
TT vs. SS at post-supervision	0.43	.667	1.51	.166	0.22	.828	1.62	.108	0.56	.577
TT vs. SS at 12-week follow-up	0.56	.577	1.01	.296	0.72	.475	1.40	.165	0.51	.609
Role-Played Sessions										
Intercept	26.71	.000	24.36	.000	16.52	.000	25.77	.000	12.74	.000
Training Condition										
EX vs. SS	0.16	.876	2.01	.047	-0.74	.462	1.18	.241	-0.30	.768
TT vs. SS	-1.07	.289	-1.17	.244	-0.87	.387	1.34	.182	-0.59	.554
Time (baseline to)										
Post-workshop	0.17	.866	1.48	.142	-0.61	.541	0.90	.368	-1.72	.087
Post-supervision	0.82	.416	1.28	.203	-0.84	.401	0.44	.664	-0.73	.466
12-week follow-up	1.26	.211	1.80	.076	-0.50	.617	1.34	.182	-2.22	.028

| | Fundamental MI Strategies | | | | Advanced MI Strategies | | | | MI Inconsistent Strategies | |
| | Adherence | | Competence | | Adherence | | Competence | | Adherence | |
	t	p	t	p	t	p	t	p	t	p
Training Condition by Time (baseline to)										
EX vs. SS at post-workshop	1.73	.086	0.67	.503	2.31	.022	0.99	.324	-1.03	.307
EX vs. SS at post-supervision	1.15	.253	1.40	.163	2.47	.015	1.18	.241	-2.60	.010
EX vs. TT at 12-week follow-up	0.93	.355	0.08	.935	1.50	.135	0.29	.772	-1.26	.210
TT vs. SS at post-workshop	3.00	.003	2.60	.011	2.39	.018	1.77	.080	0.31	.755
TT vs. SS at post-supervision	2.03	.045	2.60	.011	2.74	.007	2.66	.009	0.06	.952
TT vs. SS at 12-week follow-up	0.48	.635	2.16	.033	1.75	.083	1.87	.064	0.60	.546

Note. SS = Self-Study, EX = Expert, TT = Train-the-Trainer