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Intensive Motivational Interviewing for women with concurrent alcohol problems and methamphetamine dependence

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Abstract

Motivational interviewing (MI) for the treatment of alcohol and drug problems is typically conducted over 1 to 3 sessions. The current work evaluates an intensive 9-session version of MI (Intensive MI) compared to a standard single MI session (Standard MI) using 163 methamphetamine (MA) dependent individuals. The primary purpose of this paper is to report the unexpected finding that women with co-occurring alcohol problems in the Intensive MI condition reduced the severity of their alcohol problems significantly more than women in the Standard MI condition at the 6-month follow-up. Stronger perceived alliance with the therapist was inversely associated with alcohol problem severity scores. Findings indicate that Intensive MI is a beneficial treatment for alcohol problems among women with MA dependence.

Keywords

Motivational Interviewing; Randomized Clinical Trial; Women; Alcohol Treatment; Methamphetamine Treatment

1. Introduction

Motivational Interviewing (MI) is a brief counseling intervention that was originally designed to increase motivation for change in problem drinkers (Miller, 1983; Miller, 1985). The intervention uses a client-centered, directive approach that emphasizes collaboration between the client and therapist. A variety of supportive techniques are used such as simple and amplified reflections, open questions, summary statements, and affirmations (Miller & Rollnick, 2012). Techniques also include directive interventions such as developing discrepancies between drinking and personal goals, providing feedback, and developing a change plan.

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Meta-analyses of treatment studies have shown MI to be effective for alcohol use disorders (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005; Miller & Rollnick, 2012). Further, MI has been shown to be effective in several different contexts. For example, studies have shown MI to be effective both as a stand-alone treatment for alcohol problems (Heather, Rollnick, Bell, & Richmond, 1996; Project MATCH Research Group, 1997; Sellman, Sullivan, Dore, Adamson, & MacEwan, 2001) and also as a preparation for more intensive treatment (Bien, Miller, & Boroughs, 1993; Brown & Miller, 1993).

Many of the early studies supporting the effectiveness of MI were based on the treatment of problem drinkers, or individuals with less severe levels of alcohol dependence. In addition, most of these studies included participants who did not have serious co-occurring drug or mental health problems. For example, Project MATCH (1997), a large national study of alcohol dependence, excluded individuals with unstable housing and co-existing drug dependencies. However, these are precisely the types of individuals that addiction treatment practitioners are likely to encounter in publicly funded treatment programs. More recent reviews of the MI literature for individuals with substance abuse and comorbid psychiatric conditions found MI to be highly effective at establishing a therapeutic alliance (Kelly, Daley, & Douaihy, 2012) and found that multiple sessions of MI can be effective at reducing substance use (Cleary, Hunt, Matheson, Siegfried, & Walter, 2008; Cleary, Hunt, Matheson, & Walter, 2009).

Studies of standard MI for illicit drug addiction have found MI to be more effective than weak comparison conditions but equivalent to stronger, active comparison conditions (Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). Additionally, many of the drug studies examined MI as preparation for more intensive treatment (Burke, et al., 2003) and outcomes for these studies have been mixed. While a number of reviews and meta-analyses have concluded standard low-dose MI is effective as a preparation for more intensive drug treatment (Burke, et al., 2003; Dunn, Deroo, & Rivara, 2002; Hettema, et al., 2005), several other studies contradict these findings by not finding significant effects (Donovan, Rosengren, Downey, Cox, & Sloan, 2001; Miller, Yahne, & Tonigan, 2003; Mullins, Suarez, Ondersma, & Page, 2004; Schneider, Casey, & Kohn, 2000; Winhusen et al., 2008). As noted by Carroll and colleagues (Carroll et al., 2002), most of these studies used relatively large samples and rigorous, well-controlled study designs.

1.1 Development of Intensive Motivational Interviewing

Surprisingly few papers have been written on modifying MI to address the needs of special populations such as those with comorbidities or a prolonged substance abuse history. Intensive Motivational Interviewing (Galloway, Polcin, Kielstein, Brown, & Mendelson, 2007; Polcin, Galloway, Palmer, & Mains, 2004) was conceptualized primarily as a way to assist clients with illicit drug disorders who might benefit from a larger dose of MI. One goal was to provide 9 MI sessions over 9 weeks to first mobilize and then maintain motivation. We reasoned that ongoing mobilization of motivation to achieve and maintain abstinence would result in better outcomes. Recent research by Korcha et al. (Korcha, Polcin, Bond, Lapp, & Galloway, 2011) has borne this out by showing motivation to maintain abstinence over 18 months is associated with better outcomes. We also posited that the client change plan should not be a static process that is completed after one or two sessions. Rather, clients' change plans should be reassessed and modified based on achievement of goals, need for different approaches to achieving goals, or formulation of new goals. Additionally, research has shown that approximately three months of residential treatment is needed to maximize efficacy of substance abuse treatment (National Institute on Drug Abuse, 1999). The 9 sessions of Intensive MI is long enough to facilitate the transition into the third month of treatment, the critical point of maximizing treatment effect.

The pilot testing of Intensive MI involved recruitment of 30 methamphetamine (MA) dependent individuals who received the 9-session intervention as a stand-alone treatment. Pilot study participants receiving Intensive MI showed statistically significant and clinically meaningful within-group reductions of self-reported MA use as well as decreases in MA-positive urine samples (Galloway, et al., 2007).

These promising findings resulted in implementation of a randomized clinical trial. Individuals with MA dependence were randomly assigned to a Standard MI intervention (Martino et al., 2006) with an attention control activity to achieve time equivalence for the Intensive MI intervention. Findings support significant increases in the percent days abstinent from MA between baseline and the 2-month follow-up and these improvements were maintained at the 6-month follow-up. Overall, comparisons did not show significant differences between standard and intensive MI.

Among our sample of MA dependent participants, a majority (75%) also reported some level of problem with alcohol. The current paper examines outcomes for alcohol problem severity among men and women in both study conditions. It was hypothesized that men and women assigned to Intensive MI would have lower severity of alcohol problems at the 6-month follow-up than men and women assigned to Standard MI. In addition, we sought to explore how measures of the therapeutic alliance were associated with alcohol severity outcomes for men and women.

2. Methods and materials

Participants were randomly assigned to either a single 90-minute session of MI (Standard MI) or nine 50-minute sessions of Intensive MI provided weekly. Individuals in both study conditions took part in outpatient group sessions consisting of cognitive behavioral interventions that emphasized craving identification and management (Galloway et al., 2000; Stalcup, Christian, Stalcup, Brown, & Galloway, 2006).

Group sessions took place 3 times a week for up to 12 weeks. To achieve equivalence in the two study conditions the standard MI participants also attended 8 education classes on nutrition. Two trained MI therapists treated clients in both study conditions. Brief research interviews were conducted weekly during the first 9 weeks. More extensive interviews were conducted at 2, 4, and 6 months after the baseline assessment. The research study provided 12 weeks of outpatient treatment at no cost to the participants, payment of \$30 for the baseline interview, \$10 each week during the first 9 weeks of study participation, and \$50 at the 2-, 4-, and 6-month interviews. Follow-up rates were excellent, with over 90% completing interviews at each follow-up time point. Table 1 provides study protocols for each study condition.

2.1 Recruitment

Study participants were recruited onsite at a Northern California outpatient substance abuse treatment facility and by advertisement in local newspapers, community bulletin boards, and online postings. Study procedures were described by a research associate and interested participants were asked to sign an informed consent before beginning the baseline interview. To maximize generalizability of findings, few inclusion and exclusion criteria were implemented: participation in the study required that participants be 18 years or older, meet past 12 month DSM-IV criteria for methamphetamine dependence, have the ability to speak and read English, be able to give informed consent, and be likely to be living in the area in the next 6 months. Individuals were screened by the outpatient treatment facility staff for serious medical or psychiatric problems that would exclude them from study participation and referrals were made accordingly. Individuals with psychiatric conditions that could be

managed on an outpatient basis were referred to mental health services while they participated in the study. Once assessed as meeting criteria for participation, individuals signed an informed consent for the study, completed a baseline interview and scheduled their first MI session. All study procedures were approved by the Public Health Institute institutional review board.

2.2 Randomization

Randomization to either the Standard MI or Intensive MI occurred prior to the first MI session. Participants were assigned to a condition using stratified permuted blocks to ensure that gender and MA severity were balanced in both conditions. MA severity was determined by past 30 day use at the baseline interview, operationalized as 10 or more days of MA use vs. less than 10 days of MA use.

2.3 Intensive MI (Polcin, Brown, & Galloway, 2010)

Participants randomized to the Intensive MI condition met with a therapist weekly over a 9-week period (Table 1). The first three sessions were taken from MI-based manuals used by National Institute on Drug Abuse Clinical Trials Network studies (Ball et al., 2007; Winhusen, et al., 2008). The first session focused on problem identification, feedback, and reasons for seeking treatment while the second session examined the pros and cons of substance use, expanding on the participant's reasons for using as well as their desire to make changes. During the third session clients developed a change plan outlining goals and strategies for achieving them. Sessions four through eight enabled the therapist and client to discuss the process of implementing the change plan over time, including addressing obstacles and barriers, modifying goals, and identifying new issues to be addressed. All MI sessions were audiotaped and 34% were randomly selected and rated using the Yale Adherence and Competence Scale (YACS) (Ball, et al., 2007; Carroll et al., 2006; Nuro et al., 2005). All three study therapists readily met minimum standards for competence and adherence throughout the study. For further details about the intervention manual and adherence monitoring please see Galloway et al. (2007).

2.3.1 DSM-IV Checklist for Drug and Alcohol Dependence—A checklist was used at baseline to determine inclusion criteria of past 12-month MA dependence as well as 12-month dependence on other drugs, including alcohol. Items were based on DSM-IV diagnostic criteria (American Psychiatric Association, 2000; Forman, Svikis, Montoya, & Blaine, 2004).

2.3.2 Addiction Severity Index – Lite (ASI)—The ASI is a standardized, structured interview that assesses past 30 day problem severity in seven areas. These seven areas include medical, employment, drug, alcohol, legal, family/social, and psychological problems. Problem severity is rated on a scale of 0.0–1.0 with a higher score indicative of more problem severity. The ASI-Lite version eliminates the interviewer ratings of problem severity, which do not enter into the composite score calculations (Cacciola, Alterman, McLellan, Lin, & Lynch, 2007; McLellan, Luborsky, Woody, & O'Brien, 1980). The ASI was administered at baseline and again at 2-, 4-, and 6-month follow-ups. Only the alcohol severity measure is used for the present paper. Items included in the alcohol severity algorithm include the number of days of alcohol use, the number of days on which enough alcohol was used to feel the effects (e.g., 'drunk' or 'buzzed'), the amount of money spent on alcohol, the number of days that problems directly related to alcohol use were experienced, feeling troubled or bothered by alcohol problems (ranging from 'not at all' to 'extremely') and the importance of treatment for alcohol problems (ranging from 'not at all' to 'extremely').

2.3.3 Helping Alliance Questionnaire – II (HAQ)—The HAQ asks 19 questions designed to measure the working alliance between the therapist and client. Questions assess the perceived therapeutic relationship from the client’s perspective (e.g., “I feel I can depend upon my therapist”, “The therapist and I have meaningful exchanges”) with similar questions asked of the therapist (e.g., “The patient feels he/she can depend on me”). The HAQ was administered after each therapy session to both the study participant and the therapist. Those assigned to the Standard MI condition completed only one HAQ whereas the Intensive MI participants and their therapists could complete up to 9 questionnaires. The values for the HAQ items ranged from 1 (“strongly disagree”) to 6 (“strongly agree”) and reverse coded items (e.g., “The therapist and I sometimes have unprofitable exchanges”) were scored accordingly. Items were summed and divided by the number of completed items to obtain an average score for each MI session, with higher values demonstrating greater alliance. Strong reliability and validity have been reported for this instrument (Luborsky et al., 1996).

2.3.4 Timeline Follow-back (TLFB)—The TLFB was used to record the subject’s self-reported MA use. MA use was recorded dichotomously for each day (yes/no) beginning at 2 months prior to study entry and ending at the 6-month follow-up interview, for a total of 8 months. The number of days of non-use between study entry and the 6-month follow-up interview were summed and divided by the total number of days to obtain a percentage of days of abstinent (PDA). This instrument has been used extensively in a variety of drug and alcohol studies (Sobell et al., 1996), including the Clinical Trials Network study of MI (Carroll, et al., 2006) and has shown strong test-retest reliability as well as construct validity using collateral reports and urine samples.

2.3.5 Demographics—Demographic information includes gender, age, marital status, highest educational attainment, and race/ethnicity collected at the baseline interview.

2.4 Analytic plan

Data were analyzed using SPSS version 17 and Stata version 11. ANOVA and χ^2 tests of independence were used to test for differences in baseline demographic variables (age, marital status, education, and race/ethnicity) attendance to treatment groups, and average ASI alcohol scores across time, separately for each study condition and gender combination. Post hoc comparisons using a Bonferroni correction were implemented ANOVA was also used to compare average HAQ scores between men and women receiving intensive MI.

Longitudinal analyses were carried out using random effects modeling via the ‘xtmixed’ function in Stata to estimate changes in alcohol ASI scores from baseline to each of the follow-up interviews. Two longitudinal models are presented in Table 3, each of which controls for the main effects of gender, age, race, education, marital status, and the dichotomous indicator of baseline MA severity described above. The first model tests for differential main effects of study condition at each follow-up interview; the second includes all two- and three-way interactions of gender, study condition, and time. To account for the skew in distribution for the ASI alcohol scores, the dependent variable analyzed was $\ln(1+x_{i,t})$ where $x_{i,t}$ is ASI score for respondent i at interview t and $\ln$ indicates the natural log transformation. Average log ASI scores, by study condition and gender, are depicted in Figure 1.

3. Results

3.1 Sample demographics at baseline

The sample consisted of 163 study participants that had an alcohol ASI score above zero at study entry or reported at least one DSM-IV alcohol dependence symptom in the past 12 months. The distribution of participants among study conditions consisted of 83 participants in Standard MI (n=36 men; n=47 women) and 80 participants in Intensive MI (n=40 men; n=40 women). No differences were found between treatment conditions, either overall or within gender, on baseline age, ethnicity, marital status and education. The average age ranged from 36 (Intensive MI men) to 40 (Intensive MI women). Over half of the participants in all four groups had received at least some college education. The majority of participants in the study were Caucasian, with the highest percentage being among women in the Intensive MI condition (75.0%). Both treatment conditions showed significant improvement in the PDA from MA between baseline and 6 months, but there were no significant differences between the two conditions. Attendance to outpatient therapy groups during the study did not differ between the study conditions however, men and women in the Intensive MI condition attended significantly more MI sessions compared to nutrition session attendance by women in the Standard MI condition.

A graphic display of the logged composite ASI alcohol scores are shown in Figure 1. Comparatively, the baseline average ASI alcohol scores were lower than the normative data for alcohol abusers but similar to clients with a primary dependence of cocaine (McLellan et al., 1992). Examining Figure 1, women in the Intensive MI condition showed a steady decline in average ASI scores over the four time points, while men in the Intensive MI condition had average scores that remained relatively constant throughout the 6-month study. The men in the Standard MI condition showed declines in ASI scores at the 2- and 4-month interviews but increased at the 6-month interview to an average score nearly identical to that of the baseline value. The women in the Standard MI condition showed an initial average score decline at the 2-month interview but increases at the 4- and 6-month interviews, which resulted in an average score at 6 months that was slightly higher than the baseline value ($x=0.17$ ($sd=0.19$) at baseline, $x=0.19$ ($sd=0.19$) at the 6-month interview). The average ASI score for women in the Intensive MI condition at 6 months was $x=0.09$ ($sd=0.12$) while for Standard MI women it was $x=0.19$ ($sd=0.19$). The effect size for the average difference between these two groups at the 6-month interview was $d=0.63$, indicating a medium to large effect (Cohen, 1988).

To test whether ASI scores differed by treatment condition and gender over the course of the study, random effects regression models were performed (Table 3). A comparison between the Intensive MI and the Standard MI conditions that included all participants showed no significant differences at any time point. However, inclusion of an interaction term of gender by treatment was significant ($\beta=0.09$ 95% CI 0.01–0.17; $p<0.05$; results not tabled). Regression models comparing gender by condition by time showed women in the Intensive MI condition reduced alcohol problem severity at the 6-month interview significantly more than women in the Standard MI condition as well as men in the Intensive MI condition. Additionally, men in the Standard MI condition significantly lowered alcohol severity at the 4-month interview compared to the Intensive MI men.

An additional analysis used random effects regression models assessing the number of days of alcohol use as the dependent variable. Results indicated that women in the Intensive MI condition demonstrated significantly larger declines in alcohol use at the 6-month interview compared to women in the Standard MI condition ($\beta=-5.1$, 95% CIs (-8.9 to -1.3); $p<0.01$). No other group or gender comparisons were significant (results not tabled).

Average scores on the Helping Alliance Questionnaire were generally high at each session, indicating a high degree of client alliance with the therapist (Table 4). The range of average scores was narrow: 5.2 to 5.9. Comparisons between the Intensive MI men and women were conducted for sessions 1–8. Session 9 was too unstable to include due to the small number of subjects completing all 9 MI sessions. Women in the Intensive MI condition reported higher alliance scores than men at all 8 sessions. Three of the 8 comparisons between men and women were statistically significant. Client ratings of therapeutic alliance showed an association with lower ASI alcohol severity scores at the 6-month interview ($r = -0.07$; 95% CIs = $[-.15$ to $0.01]$; $p < 0.05$) although no association was found at the 2- and 4-month interviews.

4. Discussion

Substance dependent individuals frequently present with serious comorbidities that can complicate treatment efforts (Kay-Lambkin, Baker, & Lewin, 2004). This is particularly true for persons that are MA dependent as they present with more cognitive impairment and mental health problems compared to persons dependent on other substances (Kono et al., 2001; Van der Plas, Crone, Wildenberg, Tranel, & Bechara, 2009). Additionally, the physical toxicity resulting from long-term use is compounded when MA is used in conjunction with alcohol (Darke, Kaye, McKetin, & Dufrou, 2008). As previously noted, most MI research has generally not included persons with high levels of comorbid impairment and, as there is indication that Standard MI has a shrinking treatment efficacy over time (Hettema, et al., 2005; McCambridge & Strang, 2005), more sessions of MI may be warranted for these populations.

Because the MI literature suggests that a higher dose of MI might be more effective for both men and women (Burke, et al., 2003), we expected that the Intensive MI condition would reduce co-occurring alcohol problems regardless of client gender. However, our findings suggest that Intensive MI may be particularly effective for reducing alcohol problems among women.

Several factors may explain why women in the intensive MI condition would have significantly greater reductions in alcohol problem severity compared to men in the same condition. While research supports the contention that MA dependent individuals experience a multitude of problems (Darke, et al., 2008; Van der Plas, et al., 2009), women have additional vulnerabilities including physical and sexual victimization, symptoms of trauma, and post-traumatic stress disorder (Cohen, Greenberg, Uri, Halpin, & Zweben, 2007; Polcin, Buscemi, Nayak, Korcha, & Galloway, 2012; Salo et al., 2011; Sonne, Back, Zuniga, Randall, & Brady, 2003). Women, especially those who have been victimized and/or traumatized, may respond well to Intensive MI because it emphasizes a collaborative alliance using supportive interventions with more ongoing contact than traditional MI therapy. The therapist works with the client by “rolling with resistance” to meet the client at their level of readiness.

The supportive style of Intensive MI is consistent with much of the literature on substance abuse treatment for women and the principles of intensive MI are consistent with Relational Therapy for women (DeYoung, 2003) which emphasizes interpersonal connections with the therapist and others as essential healing agents. From this perspective, self-efficacy, self-esteem, and perhaps reduction in drinking are built from interpersonal connection with others rather than autonomy or use of new skills to manage challenges and problems. Our findings that Intensive MI women tended to have stronger therapeutic alliances than Intensive MI men during the later MI sessions adds to Relational Theory as a potential explanatory mechanism.

Therapeutic alliances was inversely related with alcohol problem severity at 6 months and supports the contention that client-therapist collaboration is central to MI therapy and contributes substantially to substance abuse outcome (Heather, Raistrick, & Godfrey, 2006). Not surprisingly, average alliance scores tended to be higher at later sessions as persons that had a stronger alliance with a therapist would be more likely to keep attending MI sessions. However, it might also be the case that brief MI interventions do not allow sufficient time to establish the strong therapeutic relationships that fuel better outcomes seen in Intensive MI. Though these findings are intriguing, further work on causal links using larger samples is needed. In particular, future research should parse out the relative effects of the therapeutic alliance and number of sessions within the context of other selected variables. However, these findings are consistent with the spirit and philosophy of MI as well as other studies showing an association between the therapeutic alliance and outcome (Miller & Rollnick, 2002.)

Results of this work should be interpreted bearing some limitations in mind. Findings are based on ASI scores and self-report of alcohol use that was not confirmed using biologic or collateral reports of drinking. Second, the primary focus of the study was to treat methamphetamine dependence, not alcohol problems. There was attention directed toward alcohol problems as therapists used results from all of the ASI scales as a way to facilitate problem identification in the first MI session. If alcohol problems were indicated on the ASI or there was regular use of alcohol in the past 30 days, the therapist was directed to elicit discussion of alcohol use, its role in the client's life, and what if any concerns the client had about their drinking. Change plans developed during the MI sessions were a collaborative process between the therapist and client. Drinking was only included when it was identified as a problem though the MI manual did not mandate discussion about alcohol. Because Intensive MI included more sessions than Standard MI, there was sufficient time to address the myriad problems associated with MA dependence, including co-occurring addictions such as alcohol. It is difficult to know at this point whether improvement of alcohol problems was part of a larger recovery process involving multiple areas of improvement or was alcohol specific. More work will be needed on the mechanisms of action that account for improvement of specific problems addressed in therapy sessions.

The strengths of the study include careful randomization to two treatment conditions with longitudinal outcome measures and an alliance measure that was assessed immediately following each MI session when recall was fresh. Overall, our sample included study participants with relatively low levels of alcohol problem severity and limited room for improvement. Further study assessing the efficacy of Intensive MI for women with alcohol dependence is needed. Additional limitations include an MA dependent sample from urban and suburban areas of Northern California with results that may not generalize easily to other populations of women with alcohol problems. Although the study included a time and attention control condition, it lacked a usual care control condition that would have permitted assessment of improvement relative to treatment as usual.

Given the widespread popularity of MI, it is interesting that there have been comparatively few studies examining its effectiveness specifically for women (Grella, 2008; Vasilaki, Hosier, & Cox, 2006) and that more efforts have not been made to adapt MI to the needs of different clinical populations (Polcin, et al., 2004). Findings from this study suggest the need for more research on Intensive MI for treating alcohol problems among women and potential mediators of treatment success, such as the therapeutic alliance.

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Figure 1.
Mean logged ASI alcohol composite scores by study condition and gender (*sd*).

Table 1

Standard MI and Intensive MI study protocols.

	Standard MI	Intensive MI
Baseline Intake	X	X
Week 1	One 90-minute session of MI Outpatient treatment begins	One 50-minute session of MI Outpatient treatment begins
Weeks 2–9	8 weekly 60-minute nutrition sessions	8 weekly 50-minute MI sessions
Week 12	Outpatient treatment ends	Outpatient treatment ends
2-month follow-up interview	X	X
4-month follow-up interview	X	X
6-month follow-up interview	X	X

Note: X denotes research interviews

Table 2

Characteristics of treatment conditions by gender (N=163).

	Standard MI		Intensive MI	
	Men (n=36)	Women (n=47)	Men (n=40)	Women (n=40)
% Never married	61.1	46.8	55.0	37.5
% Any college education	58.3	61.7	52.5	62.5
% White ethnicity	66.7	70.2	57.5	75.0
% DSM dependence other than MA	58.3	63.0	60.0	52.5
% Legally mandated to treatment	11.1	4.3	2.5	5.0
% days MA abstinent 2-mos prior to baseline	60.1	39.0	52.1	38.6
% days MA abstinent 6-mos after baseline	81.1	65.9	82.5	70.3
Continuous measures (<i>sd</i>)				
Mean age	39.0 (10.7)	36.7 (10.8)	35.8 (10.8)	39.7 (9.1)
Mean # of MI/nutrition sessions	4.3 (3.0)	3.0 (2.5) *	5.6 (2.9)	4.8 (2.9)
Mean # outpatient sessions	18.3 (11.8)	13.6 (10.9)	16.4 (10.9)	12.4 (9.7)
Mean # of years stimulant use	15.3 (12.9)	14.1 (8.8)	12.7 (8.2)	15.2 (11.5)

* p 0.05; Standard MI women attended significantly fewer MI/nutrition sessions than the Intensive MI men and women using Bonferroni post-hoc comparisons.

Table 3

Random effects regression coefficients comparing mean ASI alcohol scores by study conditions and gender at baseline and follow-up.

	2-month		4-month		6-month	
	95% CI		95% CI		95% CI	
MODEL 1 [†]						
Intensive MI – Standard MI	0.02	-0.03, 0.07	0.01	-0.04, 0.06	-0.03	-0.08, 0.03
MODEL 2 [^]						
Women						
Intensive MI – Standard MI	0.00	-0.07, 0.07	-0.04	-0.11, 0.03	-0.09**	-0.16, -0.02
Men						
Intensive MI – Standard MI	0.05	-0.02, 0.13	0.08*	0.00, 0.15	0.05	-0.02, 0.13
Other comparisons						
Intensive MI men - Intensive MI women	0.02	-0.05, 0.10	0.05	-0.02, 0.13	0.08*	0.01, 0.16
Standard MI men - Standard MI women	-0.03	-0.10, 0.04	-0.07	-0.14, 0.01	-0.06	-0.13, 0.01
Intensive MI women - Standard MI men	0.03	-0.05, 0.11	0.02	-0.06, 0.10	-0.03	-0.11, 0.04
Intensive MI men-Standard MI women	0.02	-0.05, 0.09	-0.01	-0.06, 0.08	-0.01	-0.08, 0.06

*
p .05;

**
p .01

[†]Model 1 controls for gender, age, race, education, marital status and MA severity

[^]Model 2 controls for age, race, education, marital status and MA severity

Table 4

Intensive MI participant mean rating of alliance with the therapist at each session.

	Men			Women		
	<i>n</i>	<i>X</i>	<i>(sd)</i>	<i>n</i>	<i>X</i>	<i>(sd)</i>
Session 1	33	5.2	0.64	31	5.3	0.57
Session 2	25	5.3	0.47	23	5.5	0.49
Session 3	25	5.2	0.81	19	5.5	0.49
Session 4	24	5.4	0.46	17	5.5	0.45
Session 5	21	5.4	0.54	15	5.5	0.61
Session 6 *	20	5.3	0.58	10	5.9	0.11
Session 7 *	16	5.4	0.48	9	5.9	0.18
Session 8 *	9	5.3	0.43	7	5.9	0.17
Session 9	5	5.5	0.60	3	5.9	0.09

*. p<0.05, ANOVA comparison between Intensive MI women and Intensive MI men