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Intensive Motivational Interviewing for Heavy Drinking among Women

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Abstract

Objectives—Women suffer more severe consequences related to heavy drinking than men.

Relative to men, women who are heavy drinkers experience higher severity of medical, psychiatric, and social problems, even when they have fewer years drinking. Currently there are few gender-specific, evidence-based interventions for heavy drinking among women.

Methods—A randomized clinical trial was conducted with 215 women with alcohol problems. Half were randomly assigned to receive a 9-session, “Intensive Motivational Interviewing” (IMI) intervention (N=107) and half were randomly assigned to a standard single session of MI (SMI) along with 8 sessions of nutritional education (N=108) to achieve time equivalence. Both conditions received weekly outpatient group counseling. Follow-up interviews were conducted at 2 months. Primary outcomes included percent drinking days (PDD), percent heavy drinking days (PHDD, 4+ drinks), and the Addiction Severity Index (ASI) Alcohol scale. Longitudinal changes were assessed using generalized estimating equations (GEE).

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THERE ARE NO CONFLICTS OF INTEREST TO REPORT

Results: The sample was predominantly white (83.3%), college educated (61.4%), and married (53.5%). The mean age was 50.9 ($sd = 11.3$). Relative to baseline, both study conditions showed significant reductions in PDD, PHDD, and ASI alcohol severity ($p < .001$). Among heavy drinkers, defined as women drinking 14+ days to the point of intoxication over the past 30 days at baseline ($N = 153$), those assigned to IMI ($n = 67$) showed larger reductions in PDD ($p < .01$) and PHDD ($p < .05$) at 2-months compared to women receiving SMI.

Conclusions—Findings support the efficacy of IMI for heavy drinking among women. Additional studies are needed that assess drinking over longer time periods.

Keywords

Women; Alcohol; Motivational Interviewing; Intensive Motivational Interviewing; heavy drinking

Introduction

Compared to men, women have higher vulnerability related to alcohol. They become intoxicated after drinking half as much as men, develop cirrhosis of the liver more rapidly, and have a greater risk of dying from alcohol-related accidents.¹ In addition, women advance more rapidly from use, to onset of alcohol related problems, to first treatment episode than do their male counterparts. On average women have fewer years of drinking than men at treatment entry. However, they present more serious medical, psychiatric, and social consequences.² Despite more serious consequences related to drinking, treatment for women with alcohol use disorders has been understudied relative to treatment for men.¹ Although recent research has demonstrated that a number of treatment interventions are effective for alcohol problems among women and men,² effect sizes are typically small or small-medium. In addition, longitudinal studies of alcohol treatment show improvements decrease over time, especially for individuals with more serious alcohol problems.^{3, 4} There is therefore an urgent need for interventions that have a larger and more sustained impact. For women, the necessary improvements may require gender specific interventions that consider their unique needs.

Most studies of alcohol treatment efficacy have not reported significant gender differences.⁵ However, one exception involved outcomes for co-occurring alcohol problems among persons with primary methamphetamine dependence.⁶ That study compared a 9-session, Intensive Motivational Interviewing (IMI) intervention with a standard single session of motivational interviewing (MI). Persons in the comparison condition also received 8 weeks of nutrition education to achieve time equivalence between groups. Participants in both study conditions attended 3 outpatient groups per week. Study findings showed persons in the IMI group had better psychiatric outcomes, but there were no differences in methamphetamine use.⁶ However, some participants had secondary problems with alcohol and significant gender differences were noted for alcohol outcomes. Women with co-existing alcohol problems made significant reductions in their drinking over the 6-month follow-up. However, men did not show similar improvements on drinking measures.⁷

Development of Intensive Motivational Interviewing

The rationale for developing a more intensive dose of MI was initially that a higher number of sessions delivered over a longer period of time might be more effective for persons with more severe drug and other co-occurring problems.⁸ Nine sessions were/ chosen because it was far more substantive than standard MI yet brief enough to fit within the time frames of most residential and outpatient programs. The intent was that the intervention would be used primarily within the context of structured inpatient or outpatient treatment.

The higher number of sessions was designed to enable the therapist and client to address the diversity and variety of problems presented by persons with more severe substance abuse problems, such as those with methamphetamine dependence.⁶ In addition, IMI creates a context for change planning where these and other issues can be addressed over time. In standard MI, the change plan is typically developed during or shortly before the final session. Thus, it is a static document with no opportunity to monitor how the plan is proceeding or make adjustments in the goals or the methods for achieving them. IMI is different because the larger number of sessions allows for ongoing monitoring, follow-up, and modification of plans. Within a collaborative relationship the client and therapist address problems and obstacles that emerge as the change plan is implemented. Thus, rather than representing an endpoint to the therapy process, the change plan is continually evolving. As some goals are met, new ones are developed. An additional advantage of IMI is that the therapists and client can address challenges related to maintaining abstinence over time. For example, they can process the benefits and costs associated with abstinence, strategies for maintaining recovery, new concerns that arise during abstinence, and the need for additional services.

The IMI manual integrates all of the standard MI strategies and provides a general focus for sessions.⁹ The first three sessions of the 9-session manual are largely taken from the MI intervention developed by Obert and Farentinos¹⁰ for NIDA Clinical Trials Network (CTN) studies.^{11,12} The theme of the first session is “problem identification.” A few minutes before the session, the client completes a brief questionnaire about their reasons for seeking treatment. The therapist uses the responses to inquire more about problems the client has experienced related to their drinking.

The theme of the second session is ambivalence. Again, using brief structured questionnaires to facilitate discussion, the therapist and client discuss the “pros and cons” associated with substance use and the challenges of making a change in substance use. The theme of the third session is developing the change plan, which specifies changes the client wishes to make and strategies for achieving them. Change plans might address a variety of issues that affect and are affected by substance use, including mental health issues, relationship problems, vocational needs, or health concerns.

Sessions 4–8 represent innovation in MI in terms of conceptualization and implementation of the change plan. Typically, MI-based interventions end with formulation of the change plan. In IMI the change plan is followed by six additional sessions which allows the client and therapist to address change plan implementation over time. The client and therapist focus on progress made on the client’s change plan, setbacks, revision of goals, revision of strategies

for achieving goals and development of new goals. Session 9 focuses on termination. The therapist and client review what has transpired over the course of therapy, gains the client has made, and ongoing plans for change.

Modification of IMI for Women with Alcohol Disorders

Implementation of the current study began with modification of IMI to address the needs of women. The revised IMI manual directed therapists to consider how the following issues were relevant to drinking among the women with whom they worked: 1) relationship issues, 2) parenting/single parenting, 3) domestic violence, 4) sexual and physical abuse, 5) self-esteem, 6) challenges and obstacles encountered upon entering the treatment program, 6) employment and finances, and 7) co-occurring mental health problems. Because women face a variety of social, emotional, and practical barriers to engaging in treatment,¹ the intervention included an “initial change plan” that addressed strategies for handling potential obstacles. Examples included plans to address issues such as stigma associated with drinking, social anxiety, counterproductive relationships that exacerbated drinking problems, and practical issues such as transportation and child care.

Consistent with psychotherapy approaches for women in the general psychotherapy literature (e.g., DeYoung¹³), therapists elicited discussion about ways drinking and making changes in drinking impacted and were impacted by various relationships. Reducing drinking as well as related issues, such as building self-efficacy and self-esteem, were primarily approached from interpersonal perspective. Therapists and clients collaborated to think through how these and other issues could be addressed by building or changing interpersonal relationships. Implementation of the intervention revealed that discussion of drinking naturally led to discussions about ways interpersonal relationships fueled and hindered drinking and related problems. For more details of the content of the IMI intervention, its development, and its implementation see Polcin et al.¹⁴ A copy of the manual can be obtained by contacting the corresponding author.

Purpose

The current study aimed to expand on the alcohol findings from the methamphetamine study by developing and testing a 9-session IMI intervention for women who presented with primary alcohol use disorders. The goal was to compare drinking, heavy drinking, and severity of alcohol problems between the two study conditions at 2-month follow-up. Additional goals included assessing treatment effects for subgroups of women, such as those who were heavy drinkers and those with higher psychiatric severity.

Methods

Sample

The data collection site was an outpatient treatment program in Northern California. Women were primarily recruited through radio and newspaper advertising. All participants were age 18 or older, able to speak English, and capable of giving informed consent. At the time participants were recruited they were required to meet DSM V criteria for current alcohol use disorder. Women with significant mental health disorders that required a medication

assessment were required to engage in these services before beginning the study. Women with serious and persistent mental health problems that hindered their ability to provide informed consent or engage in the treatment services offered were referred to mental health services. The study included women with low severity co-occurring drug problems (<3 criteria items from the DSM endorsed) but excluded those with moderate to high severity.

Comparison Condition: Standard MI Intervention

The standard MI intervention used as part of the comparison condition used the single session manual described by Martino et al.¹⁵ To achieve time equivalence between the two groups, we added 8 hours of nutrition education. Women in both study conditions received one outpatient group treatment session each week as a standard treatment intervention. The group approach consisted of Craving Intervention Management,¹⁶ which is roughly based on principles of cognitive behavioral therapy.

Procedures

Women who were interested in participating in the study were initially screened by phone for compliance with the inclusion and exclusion criteria described above. All participants who passed the phone screen were assessed by treatment staff for serious medical, detoxification, and mental health problems. Women who presented significant problems with alcohol withdrawal, psychiatric symptoms, or medical issues were referred for appropriate services before participating in the baseline interview. After signing the informed consent, the baseline assessment was conducted. All participants provided contact information that could be used to locate women for follow-up interviews. Upon completion of the baseline interview, participants were randomly assigned to the 9-session IMI intervention or the single session of MI plus 8 sessions of nutrition education to ensure time and attention equivalence between study conditions. Randomization included a block design to ensure equivalence of low and medium/high severity of alcohol problems in the study conditions. Severity was determined using DSM V criteria.

During the two months of active treatment, all women in both conditions were offered weekly outpatient group treatment at the clinic using a Craving Intervention Management (CIM)¹⁶ model that was largely based on cognitive behavioral therapy principles. All participants were re-interviewed at 2-month follow-up, which was the point at which treatment ended. The follow-up rate at 2 months was 87%. Women who completed the 2-month interview were older ($t=-2.83$, $p<.01$) and white ($X^2=9.11$, $p<.01$). We therefore controlled for these variables in our multivariate GEE models. Participants were paid \$30 for their time participating in the study at baseline and \$50 at 2 months. All study procedures were approved by the Institutional Review Board at the Public Health Institute.

Measures

Baseline Only—*DSM V Checklist for Drug and Alcohol Disorders* was used to assess the inclusion criteria of current alcohol use disorder. Items were based on the previous version of the instrument,^{17, 18} the DSM IV, but items were updated to reflect new criteria in the DSM V.

Demographics include ethnicity, age, education, and marital status.

Primary Outcomes—*Timeline Follow-Back (TLFB, drinking days and heavy drinking days)* was used to record the participant's self-report of percent drinking days (PDD) and percent heavy drinking days (PHDD) (4+drinks) during the past 60 days. This instrument has been used extensively in a variety of drug and alcohol studies¹⁹ and has shown strong test-retest reliability as well as construct validity using collateral reports, breathalyzer tests, and urine samples.

The current study used EtG metabolite testing at each time point as a way of establishing concordance with self-report of alcohol use. EtG testing can detect alcohol use up to 80 hours after use.

*Addiction Severity Index Alcohol Scale*²⁰ is a standardized, structured interview that was used to assess alcohol problem severity over the past 30 days. In addition to using the ASI Alcohol scale as an outcome, we used an item asking the number of days the respondent drank to intoxication during the past month to assess heavy drinking at baseline.

Predictors of Drinking Outcome—The *Addiction Severity Index Psychiatric Scale*²⁰ and demographic characteristics were assessed as predictors of outcome.

Monitoring Fidelity of Study Interventions

Throughout the course of the active clinical phase of the study, the IMI and SMI interventions were delivered by three master's degree therapists. Two of the three therapists had previous experience with IMI manuals. All received training on the specific aspects of IMI for women. To ensure competence and adherence to the IMI and SMI interventions, therapists audiotaped all sessions. A sample of 146 tapes (16%) for IMI and SMI sessions were assessed using a modification of *Yale Adherence and Competence Scale II for Motivational Interviewing*.²¹ In addition to assessing standard items on the YACS, such as frequency and skillfulness of MI interventions, trained raters examined compliance with modifications that were made to adapt to the needs of women. Raters provided written feedback and phone supervision to therapists to help them improve implementation of the intervention. The ratings and feedback helped ensure that IMI sessions did not become generic psychotherapy. All sessions assessed by all therapists were rated well above the minimum level for competence defined by the YACS for frequency and skillfulness of MI.

Analysis

Data analyses began with a description of the demographic characteristics of the sample at baseline. Descriptive analyses were then conducted on outcome measures and ASI psychiatric severity at baseline and 2-month follow-up. Paired t-tests assessed whether there was significant improvement on outcomes between the 2 timepoints. We then used generalized estimating equation (GEE) models that controlled for the influence of demographic characteristics (i.e., age, ethnicity, marital status, and education) to assess the primary hypotheses: 1) Between baseline and 2 months there will be significant within group improvement on primary outcome measures (PDD, PHDD, and ASI Alcohol) for

women assigned to the IMI and SMI conditions. 2) Women assigned to IMI will have significantly better drinking outcomes (PDD, PHDD, and ASI Alcohol) than women in the control condition at 2 months.

GEE models assessed treatment effects for the total sample as well as the subsample of women with heavy drinking problems (14+ days drank to intoxication during the past month). Because psychiatric severity is frequently a predictor of outcome in alcohol studies and especially problematic among women, we entered ASI Psychiatric severity into the models as well.

Results

Demographic Characteristics

Among the 215 women recruited, the mean age at baseline was 50.9 ($sd=11.3$). Demographic characteristics included participants who are mostly white (83.3%), married (53.5%) and college educated (61.4%). Nearly all the women (94.4%) reported residence in a stable living situation, such as renting an apartment or owning a house. Over half (50.2%) reported an income over \$65,000; 25% reported an income over \$150,000. There were no significant demographic differences between the two study conditions using the total sample and the subsample of heavy drinkers.

Engagement in Treatment

Engagement in the treatment protocols was excellent. Women randomized to IMI attended an average of 7.4 ($sd=2.3$) of the 9 IMI sessions offered. These women also on average attended 5.9 ($sd=2.5$) of the 9 group sessions. Among women assigned to SMI, all 108 attended the single session of MI. Attendance at the nutrition group that was added to achieve time equivalence between the study conditions was lower. Women attended an average of 2.8($sd=2.7$) of the 8 nutrition sessions offered. However, attendance at the CIM group for these women was better. On average, women in the control group attended 5.1($sd=2.7$) groups.

Paired Analyses

Table 1 shows the means for outcome variables at baseline and 2 months for both study conditions. The table includes separate analyses of the total sample as well as a subgroup of heavy drinkers, which was defined as women drinking 14+ days to intoxication during the month before entering the study. There were no significant baseline differences between the study conditions for PDD, PHDD, or the ASI Alcohol scale. The absence of baseline differences was evident for the total sample as well as the subsample of heavy drinkers. Measures of concordance between self-reported alcohol use and EtG metabolite testing were acceptable using a 3-day assessment period. At baseline, 2.4% of the sample had a positive urine test but indicated they did not drink during the past 3 days. At 2-month follow-up, 8.1% of the sample had a positive urine screen but indicated they did not use during the past 3 days.

There is a clear pattern for both study conditions of decreased drinking and alcohol severity between the two time points. Paired t-test comparisons of all outcomes (ASI Alcohol scale, PDD, and PHDD) showed significant reductions in drinking and alcohol severity ($p<.001$). The findings were consistent for both study conditions in total sample ($N=215$) as well as both study conditions using the sample of heavy drinkers ($N=153$). In the heavy drinking subsample, there were two findings worth noting. PDD in the sample of heavy drinkers showed variation between the two study conditions. A 2-month follow-up, the SMI group reported drinking 61% of the days over the past 60 days, whereas for the IMI group drinking was reported on 47% of the days. Similar differences were noted for PHDD in the sample of heavy drinkers. At 2-month follow-up, the SMI group reported heavy drinking an average of 32% of the last 60 days. In the IMI group the PHDD was 23% at 2 months.

Multivariate Models

Table 2 shows results for GEE models assessing longitudinal changes for the three primary outcome variables controlling for baseline characteristics. The within group findings were consistent with the paired analyses reported in Table 1. Among participants in the overall sample, the significant time effect for all three outcomes indicates that both SMI and IMI participants improved on drinking outcomes from baseline to two months. Non-significant condition by time interactions using the total sample indicate that IMI participants and SMI participants did not change differentially. Among the subsample of heavy drinking participants, significant time effects again show that both SMI and IMI conditions improved on drinking outcomes from baseline to two months. However, here we found that IMI participants had greater improvement than SMI participants on PDD (*coef.* = -0.155 , $p<.001$) and PHDD (*coef.* = -0.135 , $p<.01$).

We also used condition by time interaction models to assess whether ASI Psychiatric severity was a predictor of outcome. We found that greater psychiatric severity (as indicated by positive coefficients) was associated with greater ASI alcohol severity for the overall sample and the heavy drinking subsample (*coef.* = 0.159 , $p<.01$ and *coef.* = 0.142 , $p<.01$, respectively). In addition, psychiatric severity was significantly associated with the PHDD outcome in the heavy drinking subsample (*coef.* = 0.216 , $p<.05$).

Discussion

The most important finding was that women in the IMI condition who entered the study with higher frequency of drinking to intoxication (14+ days during the past 30 days) reported larger reductions in PDD and PHDD at 2 months than their counterparts in the SMI condition. However, using the full sample, we found women in both study conditions made large, significant reductions in drinking (PDD), heavy drinking (PHDD), and severity of alcohol problems (ASI Alcohol scale). Although we did not find significant time by condition interactions using the full sample, we did observe that coefficients indicating improvements were all larger for the IMI condition compared to the SMI condition. One important implication is that IMI might be best targeted to the subgroup of women who present more serious drinking problems. For women with less serious drinking, the

combination of a single session of MI plus the CIM group appeared to be sufficient to reduce drinking and drinking problems.

One potential reason for the lack of between group differences for total sample could be that women in both study conditions showed large within group declines on all drinking outcomes between baseline and 2-month follow-up. There was therefore less room for significant between group differences. Another factor that may have diminished between group differences was the positive response the women had to the CIM groups. Women in both study conditions attended a substantial number of groups (an average of 5.1 for the control group and 5.9 for the IMI group). In addition to being well attended, anecdotal reports from study therapists and fieldwork staff suggested the group was well liked and experienced as helpful.

The finding that women with heavier drinking reported larger reductions in drinking and heavy drinking is intuitively appealing. It suggests that more significant problems require a more intensive intervention. The additional sessions provided by the IMI intervention may be an example of the type of more intensive treatment needed. However, the study findings beg the question about what aspects of the IMI intervention helped these women.

A variety of aspects of the intervention might have been helpful, including characteristics of relevant to Relational Therapy.¹³ For example, the effect of the collaborative relationship with the therapist over the nine sessions rather than the single session of MI may have been important. In our study of secondary alcohol problems among women with methamphetamine dependence⁷ we found measures of the therapeutic alliance increased over time and were associated with better outcome. Another issue related to Relational Therapy that requires more research was identified through anecdotal reports from study therapists and clinical supervisors. They suggested discussions about drinking in relation to interpersonal relationships were common and appeared to be helpful. However, we need to know more about when and how focusing on interpersonal relationships in the sessions may have been helpful.

Other aspects of IMI that require additional research to assess their influence on outcomes include: 1) implementation of the change plan over time, which allows for modifications and revision as needed, 2) additional time to address issues related to drinking, such as psychiatric symptoms, employment, and other issues, and 3) additional time to discuss issues related to attendance and participation in the CIM groups, thus making them potentially more helpful.

The findings here add to the existing literature in several ways. First, it reaffirms previous studies that suggested a larger number of MI sessions may be associated with better alcohol outcomes for some populations (e.g., Burke, et al.³). However, the findings also support previous studies that suggested the benefits of a larger number of MI sessions may not be uniform for all clients or problems. For example, the study of IMI for methamphetamine dependence⁶ found benefit in terms of reducing psychiatric severity, but not methamphetamine use. The current study of IMI showed a significant reduction in PDD and PHDD relative to the SMI condition among heavy drinkers but not all drinkers. Finally, like

the previous study of IMI for methamphetamine dependence,⁶ current study results showed support for the comparison condition, a single session of MI in combination with CIM groups.

Need for Additional Research

Study results point to a need for variety of additional research. First, although large, statistically significant reductions were found for drinking and severity of alcohol problems for both study conditions, the level of drinking at 2 months was still of some concern. In the total sample, women on average were drinking heavily 24% of the days over the past 60. Additional studies are needed to assess whether the improvements between baseline and 2 months continue to decline, remain the same, or increase at subsequent time points. In our analysis of secondary alcohol problems among women with methamphetamine dependence⁷ we found effects for IMI on drinking were stronger at more distant time points from baseline, well after treatment had ended. Whether this is the case for women with primary alcohol problems is unclear.

Another area needing more research is how the women who have reduced their drinking but not stopped completely are functioning. What problems related to their drinking have subsided? Which have continued unabated or gotten worse? Importantly, how do women view their current level of drinking and what, if any, changes do they want to make? Are there women for whom IMI works as a harm reduction intervention, where drinking is reduced, and the severity of drinking consequences decreases, but some level of drinking continues? Some anecdotal reports from study therapists suggest that some women began treatment with a goal of reduced drinking and continued with that goal throughout treatment. However, others shifted to a goal of abstinence at some point. Longer term follow-up could help identify the characteristics of women who succeed in a goal of reduced drinking and those who are successful in achieving a goal of abstinence.

There are also questions about whether a more intensive dose of IMI sessions would render better results. More sessions could be delivered within the 9-week period (multiple sessions within one week) or over a larger number of weeks. Alternately, a study could assess the effect of booster sessions after completion of the 9 sessions. For example, 6 months after completion of the 9-week active treatment period, women could receive 2 or 3 sessions over the course of a month. Comparisons could be made with a control group that did not receive the additional sessions.

Limitations

There are several limitations in terms of demographic characteristics. The study was conducted in a suburban area in Northern California and the sample that was recruited reflects the characteristics of the surrounding community. Relative to the overall population of women with drinking problems, the sample was older, better educated, and included a larger proportion who were white. Studies in other geographical locations are needed that reflect broader sample characteristics.

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Table 1.Descriptive statistics of primary outcome measures and predictor variable[^]

<i>Outcome Measures</i>	Total Sample			14+Days of Heavy Drinking at Baseline			
	Total N=215	SMI (control) n=108	IMI (intervention) n=107	Total N=153	SMI (control) n=86	IMI (intervention) n=67	
<i>ASI Alcohol</i>							
Baseline	0.72 (0.15)	0.74 (0.15)	0.70 (0.15)	0.79 (0.11)	0.79 (0.11)	0.79 (0.11)	
2-month	0.43 (0.24)	0.47 (0.24)	0.40 (0.23)	0.47 (0.24)	0.50 (0.23)	0.43 (0.24)	
<i>TLFB PDD (past 60 days)</i>							
Baseline	0.73 (0.28)	0.76 (0.26)	0.69 (0.30)	0.84 (0.20)	0.83 (0.20)	0.85 (0.20)	
2-month	0.48 (0.33)	0.57 (0.33)	0.41 (0.32)	0.54 (0.32)	0.61 (0.31)	0.47 (0.32)	
<i>TLFB PHDD (past 60 days)</i>							
Baseline	0.50 (0.33)	0.52 (0.32)	0.49 (0.33)	0.60 (0.32)	0.58 (0.32)	0.62 (0.32)	
2-month	0.24 (0.29)	0.28 (0.32)	0.20 (0.25)	0.28 (0.31)	0.32 (0.33)	0.23 (0.28)	
<i>Predictor</i>							
<i>ASI Psychiatric</i>							
Baseline	0.24 (0.20)	0.26 (0.21)	0.22 (0.19)	0.24 (0.20)	0.26 (0.21)	0.21 (0.18)	
2-month	0.19 (0.19)	0.18 (0.19)	0.20 (0.19)	0.19 (0.20)	0.19 (0.20)	0.19 (0.19)	

[^] ASI Alcohol and Psychiatric scales mean scores are raw scores (not transformed).

Table 1a.

Paired-samples t-tests comparing Baseline and 2-month results for the total sample and within conditions.

	Total Sample			14+Days of Heavy Drinking at Baseline		
	Total N=215	SMI (control) n=108	IMI (intervention) n=107	Total N=153	SMI (control) n=86	IMI (intervention) n=67
	<i>t</i> (95% CI)	<i>t</i> (95% CI)	<i>t</i> (95% CI)	<i>t</i> (95% CI)	<i>t</i> (95% CI)	<i>t</i> (95% CI)
ASI Alcohol	16.03 (0.25–0.32)	11.34 (0.23–0.32)	11.43 (0.25–0.35)	15.42 (0.28–0.37)	11.46 (0.25–0.35)	10.55 (0.29–0.42)
TLFB PDD	10.30 (0.21–0.30)	6.47 (0.15–0.28)	8.06 (0.22–0.36)	10.39 (0.25–0.37)	6.92 (0.17–0.31)	8.00 (0.29–0.48)
TLFB PHDD	11.32 (0.22–0.31)	6.79 (0.16–0.30)	9.18 (0.23–0.36)	10.83 (0.26–0.38)	6.58 (0.18–0.34)	8.99 (0.30–0.47)

Note: All comparisons significant at $p < 0.001$.

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Notes: Models adjusted for age, race/ethnicity, education, marital status, and baseline ASI psychiatric severity. Time: Change from baseline interview (reference) to 2-month interview. Sample: SMI condition (control, n=108) and IMI condition (intervention, n=107) SMI: standard motivational interview condition. IMI: intensive motivational interview condition. TLFB PDD: Timeline follow back percent drinking days. TLFB PHDD: Timeline follow back percent heavy drinking days.

Coef.=coefficient.