

Effects of a Pretreatment Brief Motivational Intervention on Treatment Engagement in
CBT-based and Mindfulness-Based Relapse Prevention

Joel C. Grow

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Reading Committee:

Mary Larimer, Chair

Susan Collins

Robert Kohlenberg

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Joel C. Grow

University of Washington

Abstract

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Joel C. Grow

Chair of the Supervisory Committee:

Mary Larimer, Professor
Psychology

Treatment for substance use disorders has been shown to be effective for the individual and to reduce costs to society. The effectiveness of these approaches, however, is substantially hampered by poor treatment engagement. Pretreatment engagement strategies have not been widely tested using Randomized Clinical Trials methodology in an outpatient substance use treatment context. Additionally, recent years have seen a surge of development of mindfulness-based treatment programs based on mindfulness-based stress reduction (MBSR). One such program is mindfulness-based relapse prevention (MBRP) for addictive behaviors. Mindfulness-based programs often suggest the use of a pretreatment interview to enhance treatment engagement, but no research has been conducted to test the efficacy of such an intervention. Employing a 2 x 3 randomized intervention design, the current study sought to fill these gaps in the literature. A pretreatment brief motivational interview (BMI) was developed. A sample of 286 adults with substance use disorders who had recently completed intensive inpatient or outpatient treatment were randomized to receive or not receive the pretreatment BMI, as part of a

larger randomized clinical trial comparing three aftercare relapse prevention programs in a community setting. Logistic, Poisson, and zero-inflated negative binomial regression analyses revealed that participants who received the pretreatment BMI were significantly more likely to attend the first aftercare session, and attended aftercare at a higher rate, compared to those who didn't receive the interview. Substance use outcomes following aftercare treatment did not differ between the groups, however. This study provides support for the utility of including a pretreatment BMI for increasing treatment entry and engagement for aftercare relapse prevention groups and mindfulness-based groups.

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Dedication

This dissertation is dedicated to G. Alan Marlatt.

In addition to your groundbreaking contributions to the field of addictive behaviors, you were a great connector, bringing together an amazing group of people dedicated to reducing suffering.

I am forever grateful for your mentorship.

May all beings experience peace.

Background and Previous Studies

Aftercare Treatment for Substance Abuse

Drug and alcohol abuse presents a serious problem faced by societies worldwide, and affects people from all social strata and walks of life (Catford, 2001; Klag, Creed & O'Callaghan, 2010). Substance misuse has a major negative impact on an individual's physical and psychological wellbeing and, through its association with crime and social deprivation, on society as a whole (Meier, Donmall, Barrowclough, McElduff, & Heller, 2005). In the U.S. alone, annual costs of substance abuse exceed half a trillion dollars (ONDCP, 2004).

Relapse Prevention. Many programs have been developed over the past few decades to address the need for improved substance abuse treatment. Marlatt and colleagues developed one such program, Relapse Prevention (RP), as an aftercare treatment for individuals who have completed intensive inpatient or outpatient treatment for substance use disorders (Marlatt & Gordon, 1985). Early work (Marlatt, 1978) detailed a taxonomy of high-risk situations for relapse, based on eight subcategories of relapse determinants. This was developed into a cognitive-behavioral model of relapse that forms the basis of RP. The model has become an influential treatment framework for clinicians working with addictive behaviors (Carroll, 1996; Irvin, et al., 1999), and has been empirically supported as a treatment for alcohol, cocaine, stimulants, polysubstance and opioid abuse, marijuana dependence, and smoking (e.g., Baker, Boggs, & Lewin, 2001; Kosten, 2003; Schmitz et al., 2001; Roffman, et al., 1990).

The RP model posits that maladaptive drinking and drug use are learned behaviors, with biological, psychological, and social determinants and consequences. RP focuses on responses to situations in which the interaction between individual factors (e.g., motivation, coping, self-efficacy, and outcome expectancies) and environmental factors (e.g., social influences, access to

substances, and cue exposure) increases risk for relapse (Witkiewitz & Marlatt, 2004). RP thus combines skills training with cognitive interventions to prevent or decrease severity of lapses (i.e., initial use of a substance after a period of abstinence or reduced use).

Mindfulness-Based Relapse Prevention. Recently, Bowen and colleagues (Bowen, Chawla, & Marlatt, 2010) developed Mindfulness-Based Relapse Prevention (MBRP), a manualized, structured aftercare program that integrates features of cognitive-behavioral RP with mindfulness-based practices. Based on the evidence-based Mindfulness-Based Stress Reduction program for chronic pain (MBSR; Kabat-Zinn, 1990) and Mindfulness-Based Cognitive Therapy program for relapse to depression (MBCT; Segal, Williams & Teasdale, 2002), MBRP aims to help participants increase awareness of and create changes in patterns of reactive behavior that commonly lead to relapse.

MBRP addresses skillful responses to situations that are potentially triggering for substance use. The specific goals of MBRP are to heighten awareness of and foster a nonjudgmental attitude towards these internal and external triggers. MBRP is hypothesized to interrupt habitual craving responses, thus decreasing subsequent reactive behaviors. Meditation practices used in MBRP are designed to increase tolerance of negative physical, emotional and cognitive states, thereby decreasing an individual's need to alleviate the associated discomfort by engaging in substance use. These practices were combined with elements from traditional RP, including a focus on developing effective coping skills, enhancing self-efficacy, and learning to recognize common antecedents of substance use. The identification of high-risk situations for relapse remained a central component of the treatment. The addition of mindfulness training provided clients with a new way of processing situational cues, monitoring internal reactions to contingencies, and using awareness to make proactive behavioral choices.

Substance Misuse and Treatment Dropout

There is substantial scientific evidence demonstrating that, regardless of modality, treatment reduces substance abuse and related problems by producing behavioral and psychological changes (Kosten, 2002; Prendergast, Podus, Chang, & Urada, 2002; Wexler, De Leon, Thomas, Kressel, & Peters, 1999; Simpson, Joe, & Brown, 1997). Given tightening of resources in the health care system, efforts continue to be made to provide the most effective and efficient treatments for clients with substance use disorders. However, these efforts are hindered by client's lack of treatment engagement (i.e., inconsistent attendance and attrition) (Graff, et al., 2009).

While treatment dropout is common across a wide range of health services (Wierzbicki and Pekarik, 1993; Grant et al., 2004; Masson et al., 2007), it is especially prevalent in the substance abuse treatment arena, where 50% or more of new admissions may exit in this manner (Substance Abuse and Mental Health Services Administration, 2008; Pulford, Adams, & Sheridan, 2010). Clinical research trials involving substance abusers exhibit rates of attrition anywhere from 25 to 90 percent (DeLeon, 1991; Wickizer et al., 1994; Carroll, 1997).

Evidence suggests that treatment dropout most often occurs in the early stages of service contact (Pulford, Adams, & Sheriden, 2010). Greenfield and colleagues (2007) note that most patients in drug and alcohol treatment drop out of treatment within the first month. Simpson and Joe (1993) point to the early phase of treatment as a time of "major hemorrhaging", in terms of client dropouts. Donovan and colleagues (2001) highlight that even after substance users take some initial step toward treatment entry, such as undergoing an initial assessment, the likelihood that they actually will enter treatment or attend even one therapy session is often less than 50%.

This process of dropping out without engaging in treatment (i.e., after intake or an initial screening) has been described as “preinclusion attrition” (Gottheil et al., 1997).

Therefore, because of a lack of treatment engagement, many clients who initially seek or enter substance abuse treatment services receive only a minimal level of specialist assistance.

Why focus on engagement and dropout? Treatment attrition can lead to an increase in overall health care costs (Carroll, 1997), as programs spend considerable resources on individuals who do not subsequently engage in treatment. Also, specialized treatment interventions may be ineffective for clients who do not persist for the clinically recommended duration (Wallace and Weeks, 2004). Additionally, clients who do not show up for treatment often contribute to staff frustration and burnout (Deane, et al., 2012; Stark, 1992).

Researchers have studied the relationship between time in treatment and substance use outcomes. Many studies have found longer periods of treatment to be associated with better outcomes (Moos & Moos, 2003; Simpson, Joe, & Brown, 1997; Daley, Salloum, Zuckoff, Kirisci, & Thase, 1998; Fiorentine & Anglin, 1997). Significant relationships have been found between treatment retention and symptomatic improvement, life functioning, and client well being (Zweben & Zuckoff, 2002). Simpson (2004) notes that this relationship between treatment retention and outcomes holds across both residential and outpatient programs in several national evaluation studies. Monahan and Finney (1996) found that the amount of treatment for alcohol problems was related to abstinence rates across 150 groups included in 100 studies. Thus, attrition may contribute to poorer outcome compared to clients who remain in treatment.

Results have not always supported this relationship between length of treatment and outcome. For example, Moyer and colleagues (2002) conducted a meta-analysis of brief interventions and found no differences between the effects of brief interventions and more

extended treatment in treatment-seeking samples. The authors note, however, that this conclusion should be restricted to clients with relatively less severe problems.

Overall, while some questions persist, the preponderance of evidence suggests that people with addiction problems do better if they attend treatment, and a substance abuse treatment's ability to retain patients significantly impacts its effectiveness (Miller, Forcehimes, & Zweben, 2011; Carroll, 1997).

Despite the problems stemming from early termination of substance abuse treatment, relatively few studies have been conducted to examine methods for reducing dropout rates. In addition, Connors and colleagues (2002) note that data interpretation and generalizability of results from this body of research are difficult, as existing studies frequently lack methodological rigor. Among the strategies suggested for reducing dropout are providing a welcoming environment for patients and facilitating continuity of care (Chafetz, Blane, & Hill, 1970), using treatment contracts (Craig, 1985), increasing counselor availability (Craig, 1985), decreasing time until initial appointment (Festinger, Lamb, Kirby, & Marlowe, 1996; Miller, 1985; Stasiewicz & Stalker, 1999), and contacting clients who miss their intake appointment (Nirenberg, Sobell, & Sobell, 1980). Although these strategies have had some effect, their impact on the overall high dropout rate has not been substantial.

Developing more effective approaches to reduce participant attrition and improve treatment engagement is a critical challenge confronting substance abuse treatment providers. One such approach, the use of a prelude session prior to starting substance use treatment, has received increasing attention in recent years.

Treatment Preludes

Researchers suggest that the minimal impact of the aforementioned engagement strategies may be the result of not focusing sufficiently on preparing clients for treatment and enhancing their motivation for behavior change (Connors, Walitzer, & Dermen, 2002). Not everyone enters treatment with the same level of motivation or problem severity, so some patients may benefit from special induction efforts. The use of systematic efforts to improve treatment engagement reflects a fairly recent change in drug treatment practice. Historically, patient motivation was not assessed comprehensively at intake, but pretreatment induction strategies are becoming viewed as a promising tool for treatment engagement (Simpson, 2004).

Role of motivation in engagement and dropout. Motivation has long been regarded as an important factor in the treatment of addictive behaviors (Karoly, 1980). It is frequently described as a prerequisite, without which the therapist or counselor can do nothing (Beckman, 1980), and lack of proper motivation has been used to explain the failure of individuals to enter, continue in, and succeed in treatment (Miller, 1985). Over the past two decades, researchers have found substance users' motivation to be a key variable in predicting treatment outcomes (De Leon, Melnick, & Kressel, 1997; Lemke & Moos, 2002). In particular, a lack of motivation (i.e., ambivalence) toward cessation or reducing consumption, which is characteristic of the majority of chronic substance users, has been identified as a major obstacle in drug and alcohol treatment (Oser, et al., 2010; Roffman, Klepsch, Wertz, Simpson, & Stephens, 1993; Klag, Creed & O'Callaghan, 2010).

Increasing motivation leads to treatment engagement. In a program of study, researchers at Texas Christian University found a positive effect of pretreatment motivation on treatment engagement, and that the positive effects of treatment engagement were significantly related to positive treatment outcomes (Broome, Joe, and Simpson, 2001). Clients manifesting

higher motivation remained in treatment, and this engagement in treatment predicted positive treatment outcomes (Simpson, Joe, Rowan-Szal, & Greener, 1997). Several other interventions aimed at shifting motivation for change have demonstrated efficacy, including the Motivational Enhancement Therapy (MET) employed as one of the primary interventions in the National Institute of Alcohol Abuse and Alcoholism-sponsored treatment matching study (Project MATCH Research Group, 1997). Thus, techniques that increase motivation for treatment engagement may result in decreased attrition and improved end-state functioning among treatment participants.

Motivational Interviewing

Motivational interviewing (MI) is an evidence-based, relatively brief psychotherapeutic method that elicits from patients their own motivation or reasons for changing their behavior. Originally developed by Miller (1983) for the treatment of problem drinking, motivational interviewing has now been tested across a wide range of target behavior changes. The treatment developers recently defined MI as, “a collaborative, person-centered form of guiding to elicit and strengthen motivation for change” (Miller & Rollnick, 2009). The number, duration, and even specific content of individual MI sessions are flexible, and adaptations using MI have ranged from a very brief (5 to 15 minutes) office intervention (Rollnick, Heather, & Bell, 1992) to the standardized, four-session therapy used in Project MATCH (mentioned above; Miller, Zweben, DiClemente and Rychtarik, 1992).

Motivational interviewing works from the assumption that many clients who seek treatment are ambivalent about change and/or engaging in treatment, and that motivation may ebb and flow during the course of therapy. An evolution of Rogers’s client-centered therapy (Rogers, 1959), MI combines an empathic and supportive counseling style with a consciously

directive method for helping people work through ambivalence and commit to change. Clients are not viewed pejoratively as “unmotivated” or “resistant,” but rather, as “stuck” due to their internal experience of ambivalence, which consists of forces for and against change (Westra & Arkowitz, 2011).

Heavy emphasis is placed on cultivating and providing “MI spirit” (Westra, Arkowitz, & Dozois, 2009). This relational context consists of collaboration, evocation, and preserving client autonomy. In MI, the therapist does not take the role of change advocate, but instead tries to help the client become the advocate for change (Arkowitz & Miller, 2008). In addition to the spirit, MI consists of four central principles: (1) express empathy; (2) develop discrepancy between behaviors and values; (3) roll with resistance rather than confronting it directly; and, (4) support self-efficacy. Specific MI skills include: asking open-ended questions, listening reflectively, affirming, and summarizing.

Brief motivational intervention (BMI). Throughout this document, we will refer to a “brief motivational intervention” or “BMI”. While the term BMI has been used to refer to a specific treatment program (Rollnick, Bell and Heather, 1992), our use of the term is a more general one, in line with numerous studies (e.g., Bernstein, et al., 2005; Dunn, DeRoo, & Rivara, 2001; Stein, et al., 2009) describing BMI as any relatively brief intervention that adheres to the motivational interviewing principles and techniques.

Motivational interviewing as a treatment prelude. Motivational interviewing would appear to be a particularly promising pretreatment approach, since it is specifically directed at increasing motivation and resolving ambivalence about change. Also, individual substance abuse clients describe many different barriers to treatment and reasons for minimal treatment engagement. The structure of MI (e.g., open-ended questioning, reflective listening) permits the

exploration and identification of individual clients' reasons, enabling the therapist to target treatment barriers specific to individual patients (Simpson and Zuckoff, 2011). If such ambivalence is not addressed, it seems likely that clients will show relatively low motivation for change in treatment (Westra, Arkowitz, & Dozois, 2009).

Several studies have provided initial evidence for the ability of a pretreatment BMI to increase treatment engagement and improve substance use outcome in substance abusing samples. For example, MI was tested as an induction to traditional outpatient alcoholism treatment at a VA Medical Center (Bien, Miller, & Boroughs, 1993). In this small study ($n = 32$), participants received either a 2-hour assessment and short attention-placebo interview, or the same assessment plus a 1-hour motivational feedback session. The experimental subjects showed significantly better outcomes at 3-month follow-up on a composite drinking outcomes variable. At 6 months the difference was no longer statistically significant, however. Treatment engagement was measured by the number of subjects in each condition who attended their first treatment session. The experimental manipulation did not affect treatment engagement, as defined. However, the researchers note the measure was "a crude measure of participation," and highlighted the need for further study on engagement specifically (Bien, Miller, & Boroughs, 1993). So while the pretreatment BMI impacted alcohol consumption in the expected direction (at least until the 3-month follow-up), its impact on treatment engagement remains unclear.

Brown and Miller (1993) evaluated the impact of Motivational Interviewing as preparation for entering inpatient treatment for alcoholism. In this small study ($n = 28$), participants were randomized to receive or not receive an additional assessment session (45-60 minutes), plus a personalized MI feedback session (length of this session was not reported) of the results. All participants were encouraged to participate in the standard treatment offered to all

subjects through the hospital program (an abstinence-oriented residential milieu program with strong emphasis on Twelve Steps and group therapy). Both groups showed significant improvement on two alcohol consumption measures at the 3-month follow-up. Participants receiving MI demonstrated significant reductions on one of the two consumption measures, compared with the control group. Two measures of treatment engagement were available: participant self-report of treatment participation and therapist ratings of participant engagement with treatment. While the self-report ratings revealed no main effect of the intervention, therapists' ratings of participant engagement (averaged across raters) reflected a significant effect of the motivational intervention. Thus, counselors rated participants as having participated more fully in treatment, even though they were unaware of the treatment condition to which participants were randomly assigned. Further analysis (through covariance analysis) showed that the positive effects of the MI group on post-treatment drinking outcome were mediated by the increased treatment engagement. The study suggests that participants receiving the MI assessment engaged more fully in their treatment program (at least as rated by therapists), and this engagement significantly impacted drinking at 3-month follow-up.

In a doctoral dissertation study, Aubrey (1998) evaluated a MI-based prelude intervention for adolescents presenting for outpatient substance abuse treatment at a university-based clinic. Participants ($n = 77$) were randomized to receive or not receive a 30-60 minute feedback session immediately after the initial assessment interview. At the 3-month follow-up assessment, participants in the experimental group demonstrated significant increases in the percent of days abstinent and significant reductions in heavy use of substances and tobacco. Regarding treatment engagement, participants in the MI condition attended significantly more treatment sessions than the control group. The researchers also highlight that most of this population

presented for treatment due to coercion from external forces (e.g., probation or parents), and that heightened oppositionality might be expected from participants when told to consider changing their substance use. This seems to lend support to the utility of the empathic and respectful MI style when working with clients mandated to treatment.

It is noteworthy that the Aubrey (1998) study, compared to the two previous pretreatment BMI studies, involved modifications in the format (e.g., assessment and feedback were completed in one day) and content of the MI intervention (e.g., used different feedback graphics, targeted a new population, targeted substance use beyond just alcohol), but these modifications did not appear to lessen the effectiveness of the pretreatment on substance use outcomes. While respecting the spirit of MI, these early studies lend support that the intervention appears to be flexible in terms of content and generalizability to multiple target populations.

Several other studies have found results supportive of a pretreatment BMI. Martino and colleagues (2000) examined MI's ability to engage patients in a small sample ($n = 23$) of dually diagnosed individuals (i.e., mood or psychotic disorder and substance use disorder). In this study, MI participants received a 45-60 minute motivational interview, and were less likely than the control participants to be late for treatment and depart treatment early, suggesting an influence of MI on treatment engagement. Saunders and colleagues (1995) found a 1-hour MI intervention promoted a greater number of mean treatment days than did a 1-hour psychoeducational intervention among opiate-dependent clients ($n = 122$) in a methadone treatment program. Swanson and colleagues (1999) showed that MI was effective for retaining psychiatric patients ($n = 121$, 93 of whom were dually diagnosed with a substance abuse disorder) in an aftercare program following discharge from acute patient treatment: significantly more patients from the MI group attended their first outpatient appointment. Connors and

colleagues (2002) compared a pretreatment BMI to role induction, an educational approach used to improve treatment engagement. The researchers randomly assigned alcohol-disordered clients ($n = 126$) to a motivational intervention (90 minutes), a role-induction interview (90 minutes), or a treatment as usual control group, before starting an outpatient alcoholism treatment program. The treatment groups did not differ in terms of treatment entry (i.e., attending the first session), but MI subjects reported significantly higher treatment engagement and post treatment abstinence than role induction or control group subjects.

Limitations of studies supporting pretreatment BMIs. While the previous studies provide support for pretreatment BMIs, they are limited in ways that require some caution in interpreting them. Several of these studies (Bien, Miller, & Burroughs, 1993; Brown & Miller, 1993; Aubrey, 1998; Martino, et al., 2000; Saunders, et al., 1995) contain the possibility for therapist effects due to single or unspecified intervention providers. Two studies (Martino, et al., 2000; Swanson, et al., 1999) don't describe the MI-based manual or curriculum. One (Aubrey, 1998) is an unpublished study. Most were designed to assess treatment outcomes, and engagement was looked at secondarily rather than systematically. The Connors et al. study (2002) had the fewest caveats, although the researchers in that study did exclude clients mandated to treatment (e.g., court mandated) and clients with formal treatment during the past year. While these aren't overly stringent exclusion criteria for a research study, it might limit the generalizability to routine outpatient substance abuse treatment settings, where court mandated clients and those who come in and out of treatment are common.

Other MI-based pretreatment studies. Not all studies found evidence that a pretreatment BMI encourages treatment engagement and improves substance use outcome, however. For example, Donovan and colleagues (2001) investigated a motivational "attrition

prevention" intervention for clients waiting to enter inpatient/residential substance use treatment. Results showed the attrition prevention intervention did not improve treatment entry or engagement, or substance use outcomes, compared with clients who received standard care while awaiting admission. The motivational procedure was more complicated than previously mentioned studies (e.g., it included clinical follow-up and support services), but it was implemented as a prelude to treatment. The researchers suggest several reasons for their findings: relatively little empirical support for pretreatment BMIs for polysubstance users, and that the intervention might be more effective for higher functioning substance abusers who have fewer barriers to change.

Dench and Bennett (2000) examined the impact of providing a pretreatment BMI to clients ($n = 51$) prior to the start of a 6-week day program for alcoholism treatment. Their intervention was modeled on the Saunders (1995) study, and consisted of an initial interview (up to 60 minutes), and a brief (5-10 minute) follow-up one week later. Results were mixed: the motivational intervention reduced client ambivalence and increased motivation to change, but it did not impact clients' engagement in treatment, operationalized as number of days in treatment and percent dropout. The researchers highlight that drop-outs had lower pre-treatment Ambivalence scores, potentially reflecting a client failure to acknowledge uncertainty about the cons of drinking. They suggest that treatment programs could benefit from openly encouraging clients to identify ambivalence during pretreatment sessions, so that the client may use treatment more efficiently, especially around residual doubts about change.

In a larger RCT, Miller and colleagues (2003) evaluated a single session pretreatment BMI for clients entering outpatient ($n = 152$) or inpatient ($n = 56$) treatment for substance abuse. Participants in the experimental condition received an initial MI session (up to 2 hours duration),

while control participants simply proceeded with treatment as usual. Study therapists followed a manualized protocol similar to Project MATCH (Miller, Zweben, DiClemente and Rychtarik, 1992). Similar to Donovan et al. (2001), the researchers found no effect of the MI intervention on substance use outcomes or treatment engagement. The researchers concluded that they were “puzzled” by their failure to replicate prior positive findings regarding a prelude treatment, and emphasized the need for further study of this method, especially with polysubstance users in naturalistic (i.e., community-based) treatment settings.

Role of baseline motivation in BMIs. The possibility that MI-based interventions work better for some people and some problems is an area in need of further research (Dunn, DeRoo, & Rivara, 2001). One potential moderator, readiness to change (i.e., baseline level of motivation) has received mixed support in the literature. For example, in Project MATCH (Project MATCH Research Group, 1997), most of the matching variables did not predict outcome of particular treatments (e.g., MET) as hypothesized, including readiness to change. In another study, Monti and colleagues (1999) evaluated the use of a standalone BMI to reduce alcohol use and alcohol-related negative consequences among older adolescents treated in an urban hospital emergency room. While the BMI did not differentially affect alcohol use outcomes after the event--participants in both treatment conditions reduced their drinking--those who received the BMI reported significantly fewer alcohol-related problems (e.g., drinking and driving, alcohol-related injuries). However, the researchers did not find support for their hypothesis that readiness to change would moderate outcomes.

On the other hand, Butler and colleagues (1999) compared a motivational consulting condition to a brief advice condition in general practitioner's offices in Britain, targeting smoking cessation. The researchers found significant reductions in smoking across seven

outcome variables for those in the motivational consulting condition, and readiness to change was a significant moderator of the effect for several of the variables (with non-significant trends for the other variables): the likelihood of a successful outcome from motivational consulting was greater among those with lower baseline motivation. Heather and colleagues (1996) evaluated a BMI to reduce alcohol consumption among male heavy drinkers on general hospital wards in Australia. Male patients were randomized to a skills-based counseling, BMI, or no treatment control group. Six months after discharge, participants in the active treatment conditions showed a significantly greater reduction in alcohol consumption compared with controls, but there were no significant differences between the two intervention groups. However, patients who were lower in baseline motivation showed greater reductions in use if they had received the BMI than if they had received skills-based counseling. In a pilot study, Stotts and colleagues (2001) evaluated a BMI compared to a no-treatment control group in the context of an outpatient cocaine-detoxification program. The researchers found that detoxification treatment completers who received the BMI were more likely to be abstinent from cocaine and had lower rates of cocaine use during aftercare. Also, the BMI was more effective at detoxification completion for those with lower baseline motivation. In another study with cocaine-dependent participants, Rohsenhow and colleagues (2004) examined two sessions of a cocaine-specific MET compared to a relaxation control treatment during the first 3 days of a hospital-based day treatment substance abuse treatment program. Participants in the MET condition with low baseline motivation reported significantly improved substance use outcomes at several follow-up time points compared with participants in the MET condition with higher baseline motivation to change. Thus, the researchers supported the Stotts and colleagues (2001) finding that MET

appears to be more beneficial for less motivated participants than for more motivated participants.

Turning to pretreatment BMIs, Chaffin and colleagues (2009) conducted a study examining a pretreatment BMI on treatment attendance for a parent training program, compared to standard orientation. The researchers found that baseline motivation moderated the effect of the BMI on attendance, such that individuals with low or moderate baseline motivation benefitted from the pretreatment BMI. Participants with relatively high baseline motivation actually had elevated dropout when they received the pretreatment BMI. Although not substance use related, this study provides some initial data for the effects of baseline motivation as a moderator of efficacy of pretreatment BMIs. Further research in this area is needed.

Summary of evidence for pretreatment BMIs. The evidence from available studies for the effectiveness of brief, pretreatment motivational interventions is best described as providing preliminary guidance and direction for further study (Pulford, et al., 2010). Positive findings were reported in several cases, but not all, and some positive findings that were reported were contradictory across studies. Nevertheless, the results do suggest that motivational strategies are likely to be successful in promoting treatment engagement, with more studies needed using sound methodological designs. A recent review of treatment dropout prevention strategies (Pulford, et al., 2010) concludes that:

1. Increasing rates of treatment engagement remains an important area of work, especially in adult, psychosocial-based, outpatient substance abuse treatment services,
2. Further development of motivational-based interventions in particular is indicated.

The relationship between treatment engagement and outcome is an open question and important direction for pretreatment intervention research. The positive effects of pretreatment BMIs may be at least partially mediated by increased treatment engagement. Brown and Miller

(1993) were the only investigators to explicitly examine this hypothesis, and they found that treatment engagement mediated improved treatment outcomes among those receiving the pretreatment BMI. While several other studies provided support for the ability of pretreatments to improve future treatment participation, none of them employed specific mediation analyses in this respect. Further studies examining this mediating relationship are needed.

Mindfulness-Based Treatment Programs

Recent decades have seen an explosion of interest in clinical treatment programs based on mindfulness meditation, particularly those modeled after the Mindfulness-Based Stress Reduction (MBSR) program of Jon Kabat-Zinn and colleagues (Kabat-Zinn, 1990). As taught in these programs, mindfulness refers to the development of a mental state characterized by nonjudgmental awareness of present moment experience. This awareness includes physical sensations, thoughts, emotions, and the environment, and is characterized by an attitude of openness and curiosity. Recent meta-analyses (Hofmann, et al., 2010; Grossman, 2004) found that MBSR was being successfully applied to a broad range of chronic disorders, and there are now hundreds of such programs around the world. Evidence-based adaptations of MBSR include MBCT for depression (Teasdale, et al., 2000), MBSR-T for stress reduction for adolescents (Biegel, et al., 2009), MB-EAT for eating disorders (Kristeller, Baer, & Quillian-Wolever, 2006), and MBRP for addictive behaviors (Bowen, et al., 2009).

Factors affecting engagement with mindfulness-based treatment programs.

Reviewing the burgeoning mindfulness literature, themes have emerged related to factors affecting treatment engagement and outcome in mindfulness-based (MB) programs. For example, Davis and colleagues (2007) examined the effects of an MBSR course for smokers. In this small study, they found that those who stopped meditating within the first 4 weeks of the

intervention dropped out before the quit date. They note that subjects left the study primarily because they were unaware of the high time commitment or unaware of the nature of the intervention (i.e., of the mindfulness practices). The researchers conclude that discussing the nature and intensity of the intervention with potential participants could increase treatment engagement. Crane and Williams (2010) echo this, emphasizing that facilitators of MB programs should work to establish realistic expectations about mindfulness before the program starts (i.e., that early mindfulness practices may be challenging and may include the experience of distressing emotions). They also suggest providing strategies for responding if such emotions do arise.

Sears and colleagues (2011) examined the perceived benefits and doubts of participants in a meditation intervention study. Doubts fell broadly into cognitive and physical challenges during meditation sessions, difficulty finding the time and motivation to meditate outside class sessions, and questions about the efficacy of meditation and self-efficacy to engage in it. Speaking to the theme of ambivalence, the researchers found the majority of participants reported at least one benefit of meditation, and many of these individuals also reported at least one doubt. They conclude that experiencing doubt is common in these groups, and does not preclude experiencing benefit, something that could be elucidated in a pretreatment interview.

Astin and colleagues (2003) experienced a high attrition rate in their trial of mindfulness for fibromyalgia. They found that the majority of dropouts never attended any of the sessions, suggesting that facilitating treatment entry (i.e., attending the first session) may help with prolonged engagement.

Motivational interviewing to promote engagement in mindfulness-based programs.

A pretreatment BMI may be a viable approach for targeting these factors affecting engagement

in MB treatment programs. Simpson and Zuckoff (2011) note that many aspects of MI are complementary with MB program treatment goals. For example, MB programs rely upon strong treatment engagement (since the client is going to be asked to try a novel and potentially anxiety provoking exercise, meditation), a sense of collaboration (since the treatment focuses on the client's direct experience with mindfulness), and on a client's sense of self-efficacy (since the ultimate goal of treatment is for clients to practice mindfulness in everyday life). MI was designed to promote all of these. Also, MI does not include techniques that could undermine mindfulness, such as "neutralizing" (i.e., canceling out unwanted thoughts with positive alternatives). Thus, a pretreatment BMI holds promise for enhancing engagement and outcome in mindfulness-based treatment programs.

Despite the need to improve engagement and the fact that researchers and clinicians have suggested pretreatments are an important tool for addressing these issues (e.g., MBCT suggests a 1-hour "initial assessment interview" [Segal, Williams, & Teasdale, 2002]), no research has been conducted to examine the efficacy of such pretreatment interventions for mindfulness-based programs. The current project addressed this gap in the literature.

The Current Study

Overview

The proposed study sought to assess the effectiveness of a pretreatment BMI on treatment entry, treatment engagement, and substance use outcomes among participants in relapse prevention aftercare groups in a community treatment setting. The study also aimed to examine the mediating and moderating influences of these effects, highlighting the components that potentially influence lowered rates of substance use after outpatient treatment.

The long-term goals of this research were to inform researchers and providers about the effects of pretreatment BMIs on treatment engagement and substance use outcomes in relapse prevention aftercare groups, generally. The study also sought to clarify the specific impact of a pretreatment BMI on mindfulness-based relapse prevention programs, which are experiencing an increase in research and clinical interest. The results could inform agency decision makers faced with choices about how best to reduce attrition and improve substance use outcomes, and clinical investigators curious about the impact of adding a pretreatment BMI to aftercare relapse prevention programs.

Overview of Parent Study

Following on the promising results (Bowen, et al., 2009) from a pilot randomized controlled trial (RCT) of MBRP compared to treatment as usual (TAU), a larger prospective RCT was designed to compare the relative efficacy of MBRP with both RP and TAU. This project constituted the parent study for the current investigation. As part of the parent study, participants were randomly assigned to one of three treatment conditions--MBRP, RP, or TAU--in an outpatient substance use treatment facility. Participants assigned to MBRP or RP stepped out of TAU and received eight weeks of MBRP or RP treatment, while individuals assigned to TAU received standard TAU programming. All participants ($n = 286$) completed baseline and post-treatment questionnaires, as well as 2-, 4-, and 6-month follow-up assessments.

Components and Aims of the Current Study

A pretreatment BMI protocol was developed, and therapists were identified and trained to deliver the pretreatment intervention. The pretreatment BMI was then delivered as part of the larger randomized clinical trial described above. Participants in the 3 parent study conditions (i.e., RP, MBRP, and TAU) were randomly assigned to receive or not receive the pretreatment

BMI immediately after completing their baseline measures. Efficacy of the pretreatment BMI was evaluated by employing a 3 (parent study treatment condition) x 2 (received or didn't receive the pretreatment BMI) randomized design.

Specific Aim 1: Evaluation of the pretreatment BMI on treatment entry and engagement. *Hypothesis 1a.* Participants who received the pretreatment BMI would enter treatment at a higher rate than control participants. Following others (Donovan, et al., 2001; Campbell, 2009), treatment entry was operationalized as either attending or not attending the first treatment session.

Hypothesis 1b. Participants who received the pretreatment BMI would exhibit greater treatment engagement than control participants. Following the research of Simpson, Joe, and colleagues (Simpson, et al., 1997; Joe, et al., 1999), engagement was operationalized as the number of treatment sessions attended (i.e., 0-8).

Specific Aim 2: Evaluation of potential moderators of pretreatment BMI efficacy on treatment entry and engagement. *Hypothesis 2a.* While mindfulness practices have seen a significant increase in popularity over the past decade, previous research emphasizes the importance of addressing participant expectations and barriers before entering mindfulness based treatment groups (Crane & Williams, 2010; Davis 2007). This research demonstrates that the novelty of these practices may lead participants to have significant misperceptions about the nature of mindfulness practice, which may lead to dropout. Therefore we hypothesized that response to the pretreatment BMI (which targets these misperceptions) would vary as a function of parent study treatment group. Those in the MBRP condition would experience greater treatment entry and greater treatment engagement compared to the other two parent study conditions.

Hypothesis 2b. Previous research suggests those who are less motivated or more ambivalent about change may benefit more from a pretreatment BMI (Stotts, et al., 2001; Rohsenow, 1998; Chaffin, et al., 2009). Therefore, we hypothesized that baseline motivation would moderate the pretreatment BMI effects. Those with lower baseline levels of motivation would experience greater treatment entry and greater treatment engagement compared to those with high baseline levels of motivation.

Specific aim 3: Evaluation of the pretreatment BMI on substance use outcomes. We were interested in exploring the distal impact of the pretreatment BMI on substance use outcomes at follow-up.

Hypothesis 3a. Participants who received the pretreatment BMI would experience greater substance use decreases following treatment than control participants. Following Bowen and colleagues (2009), substance use was operationalized as the frequency of use (i.e., total number of days of substance use during the six-month follow-up window). We also examined a dichotomous substance use outcome (i.e., any use during the follow-up window) to see if that better captured the variability in the data.

Hypothesis 3b. We were interested in exploring baseline substance use severity as a moderator of pretreatment BMI efficacy on substance use outcomes. Previous research suggests baseline substance use severity predicts follow-up substance use severity after completing substance use treatment (Tiet, et al., 2007). In addition, Witkiewitz, Hartzler, and Donovan (2010) re-examined Project MATCH data and found support for the matching hypothesis in aftercare groups: males with high levels of baseline alcohol dependence benefited less from less intensive treatment (i.e., MET). Therefore, we hypothesized that baseline substance use severity would moderate the pretreatment BMI effects on substance use outcomes. Among participants

who received the pretreatment BMI, those with lower baseline levels of substance use would experience less substance use at follow-up compared to those with high baseline levels of baseline substance use.

Hypothesis 3c. We were interested in exploring treatment engagement as a mediator of pretreatment BMI efficacy on substance use outcomes. Previous research suggests BMIs may exert their effects at least partially by promoting treatment engagement (Brown & Miller, 1993). Therefore, we hypothesized that treatment engagement would mediate the relationship between study condition (i.e., received or didn't receive the pretreatment BMI) and substance use outcomes. Participants who received the pretreatment BMI would demonstrate greater treatment engagement, and this increased treatment engagement would lead to reduced substance use at follow-up compared to participants who didn't receive the pretreatment BMI.

Research Design and Methods

Pretreatment BMI Protocol Development

Combining the evidence-based features of prior pretreatment research and principles of motivational interviewing, a brief motivational session to be delivered before participants enter relapse prevention aftercare groups was developed. The pretreatment BMI utilized motivational techniques described in Miller and Rollnick (2002) and was intended to last 15-20 minutes. The session was designed to elicit and resolve ambivalence about treatment, as well as foster collaboration with participants to solve practical barriers in order to engage in treatment.

The pretreatment BMI emphasizes MI microskills, captured with the OARS acronym (Miller & Rollnick, 2002). OARS stands for: asking Open-ended questions, using Affirmations (recognizing client strengths), making Reflections (guiding towards change), and offering Summaries (e.g., highlighting both sides of client ambivalence, if appropriate). By incorporating

the four basic principles of motivational interviewing: (a) expressing empathy, (b) developing discrepancy, (c) rolling with resistance, and (d) supporting self-efficacy (Burke, Arkowitz, & Menchola, 2003), the BMI sought to elicit self-motivational statements from the participant. A key goal was to increase the importance of treatment engagement, from the client's perspective. The therapist's use of empathic, careful listening and OARS directed the participant toward any discrepancy between his or her behavior and personal values.

The BMI began with a short statement introducing the therapist and covering the purpose of the interview, and then the therapist was encouraged to ask an open-ended question (e.g., "What questions do you have about the course?") and follow the lead of the participant. A pretreatment BMI guide was created for this project (see Appendix A) and provided to study therapists to use as a guide or framework during BMI sessions. While the interview was not intended to follow a predefined script, the treatment engagement literature offered guidance on important topics to be covered.

Several researchers (Lash, 2006; Carroll, 1997; Meyer, et al., 2010) have outlined the importance of addressing potential barriers to treatment, including reliability of transportation, childcare arrangements, housing status, scheduling conflicts, and finances. Eliciting barriers to treatment, therefore, was a key element of the pretreatment BMI.

Carroll (1997) highlights that treatment attendance is enhanced when the client's expectations match what the program actually provides. Misunderstandings between the client and group therapist about the nature of the treatment can lead to the client terminating prematurely. Foundational work in this area was conducted by Overall & Aronson (1963), who found that misperceptions about the process of treatment were associated with early treatment termination among clients seeking mental health treatment. Verinis (1996) found that clients

newly admitted to treatment for alcohol abuse had significant misconceptions about the nature of substance abuse treatment and of their own and their counselors' roles within treatment.

This is echoed in the mindfulness literature, where Crane and Williams (2010) emphasize setting appropriate expectations (e.g., that mindfulness practices might be physically challenging and could include the experience of distressing emotions). They recommend providing strategies for responding if such emotions do arise (e.g., going at their own pace, encouraging contact with the group therapist about the difficulties, and the need for perseverance). Sears and colleagues (2011) describe a set of doubts that frequently come up for mindfulness practitioners, including cognitive and physical challenges during meditation sessions and difficulty finding the time and motivation to meditate outside of class. They also highlight the importance of paying attention to expectancy violations, where a client could have a meditation experience that is discrepant from his or her preconceived notions about what mindfulness is supposed to do (e.g., "it will instantly transform me", "it will relax me/make me happy"). Therefore, describing the treatment accurately, eliciting participant expectations, and attending to any misunderstandings were emphasized in the pretreatment BMI.

Simpson and Joe (1993) discuss how opioid dependent individuals who had goals of quitting immediately didn't do as well in treatment as those with more modest goals. The results suggested that those with slightly more modest (i.e., more realistic) expectations are more likely to remain engaged in treatment. Because of this, the pretreatment BMI incorporated paying attention for participants with overly optimistic views of treatment.

Zweben and Zuckoff (2002) mention paying attention to signs that the participant was frustrated at their randomization assignment (e.g., they really wanted RP but got MBRP). This also was incorporated into the pretreatment BMI.

Finally, Ball and colleagues (2006) collected data on the reasons people dropped out of substance use treatment. Their ordered list of reasons (Appendix A), broken out by different categories, was included in the pretreatment BMI guide as a source for therapists to generate questions that could be useful for targeting the most frequently cited reasons for attrition (e.g., “I lost hope in my ability to change right now”).

Therapists

Therapists ($n = 5$) who facilitated the pretreatment BMI groups had extensive experience working on addictive behaviors research studies and working with substance abuse populations. Three held masters degrees in psychology or social work, 2 were licensed Chemical Dependency Professionals in Washington state, and 4 were employed by the parent study treatment agency. All were experienced in delivery of cognitive-behavioral interventions, all had at least basic previous exposure to motivational interviewing, and 2 had some background in mindfulness meditation. Therapists participated in several blocks of group training with the study author, for a few hours each training session. Training consisted of didactics on MI, taken primarily from the Miller and Rollnick (2002) text; review of the pretreatment BMI guide (Appendix A); and significant time devoted to role play and question and answer. Therapists received supervision throughout the trial from the study author, via phone, email, and in-person. All pretreatment BMI sessions were audio recorded, with consent from the participant.

Participants

Participants were recruited from Recovery Centers of King County (RCKC), a large community treatment agency providing a full range of addiction treatment services, including detoxification, inpatient and intensive outpatient (IOP) programs, and continuing care. Participants in all treatment conditions recently completed inpatient or IOP treatment and were

transitioning into step-down aftercare. RCKC has two separate facilities in different regions of the Greater Seattle Metropolitan Area (GSMA), serving 675 clients per month in IOP programs, of whom 85% enroll in continuing care. RCKC accepts both insured and uninsured/publicly-funded individuals, and serves a broad spectrum of the GSMA.

Recruitment. Research participants were recruited through voluntary referrals from RCKC facilities. RCKC providers also referred individuals who were within 2 weeks of termination of the IOP or inpatient phase of treatment, and were medically cleared to participate in outpatient continuing care. Also, research study staff conducted monthly recruitment sessions at RCKC, introducing the study to clients, responding to questions, and providing study information flyers to those who were interested. In addition, study information flyers were posted at the RCKC treatment facilities with contact information for the research lab.

Screening and eligibility. Interested individuals contacted the lab by phone, where they were read an information statement containing all elements of informed consent, and asked to verbally consent to complete a 20-30 minute screening to determine eligibility. Based on similar documents used in the MBRP efficacy trial (Bowen, et al., 2009), the phone screen included questions regarding contact information and demographic variables, diagnostic items for psychosis from the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-1, First, Gibbon, Spitzer, & Williams, 1995), imminent suicide risk, and potential medical risks.

Study inclusion criteria were: 1) participants between the ages of 18 and 70; 2) who had completed intensive outpatient or inpatient treatment in the previous two weeks; 3) demonstrated English fluency; 4) had a continuing care plan through RCKC and were medically cleared for participation; and 5) were willing to be randomly assigned to treatment conditions, complete questionnaires at multiple time points and attend eight treatment sessions in addition to their

continuing care. Participants were excluded from the study if they: 1) had not been enrolled in or completed intensive outpatient or inpatient treatment within the previous two weeks; 2) met criteria for a psychotic disorder (including schizophrenia, schizoaffective or schizophreniform disorder) or dementia; 2) were acutely suicidal or presented an imminent danger to others; 3) were screened as at significant risk for withdrawal or other medical complications; and/or 4) were not medically cleared to participate in continuing care services; and/or 5) participated in the pilot MBRP study.

At the end of the screening, participants were informed of their eligibility for the study. Those who did not meet criteria or who were not interested in participation continued to receive standard care at RCKC. Those referrals who were eligible and wished to proceed were scheduled to complete the consent process and baseline measures with study staff on-site at RCKC.

Participant demographics. A total of 571 participants showed initial interest in the current study, of whom 402 participants were screened for eligibility. Of the 329 eligible participants, 296 completed baseline assessment and were randomized. Of these, 10 were determined to be protocol deviates post-randomization because they were found not to meet eligibility criteria. This resulted in a final sample of $N=286$ (see participant flow diagram, Appendix B). Participants reported a mean age of 38.44 ($SD = 10.92$), and approximately 70% were male. Approximately half identified as Caucasian or White (51%), followed by 21% identifying as African American or Black, 10% as Multiracial, and 6% as Native American. 8% identified as Hispanic. Detailed information on additional demographics and other individual characteristics is provided in Table 1 below.

Measures

Demographics. Demographics were assessed at baseline, including age, gender, height, weight, education, NIH race/ethnicity, socioeconomic status, and partnership status.

Substance use quantity and frequency. The Timeline Followback (TLFB; Sobell et al., 1992) was used at all assessment time points to assess daily alcohol and substance use for the past 60 days in a calendar format. This tool allowed participants to record the number of drinks consumed on each day of the past 60 days, and whether or not substances (other than alcohol, nicotine, and prescribed medication) were used. The TLFB allowed participants to see a visual representation of the past 60 days and contained holidays to assist with retrospective reports of behavior. Participants were asked to think about other important events that occurred during the time period and had space on the calendar to record these personal markers (e.g., “my sister’s birthday”). Participants used these personal markers to assist with recall. The TLFB has demonstrated good reliability and validity with both online and in-person administration (Sobell, et al., 1996).

Motivation. Motivation, which likely plays a key role as a moderator of responses to high-risk situations (Witkiewitz & Marlatt, 2007), was measured with a 10-point readiness ruler discussed in Miller & Rollnick (2002). The measure asks participants to indicate how ready they are to make a change in their use of a list of drugs and alcohol, on a scale of 1 (“Not ready to change”) to 10 (“Trying to change”).

Alcohol and drug severity of dependence. Alcohol and drug severity of dependence was measured using the Severity of Dependence Scale (SDS; Gossop et al., 1995), a 5-item scale which assesses degree of psychological dependence for AOD. It has been validated across a wide range of drugs (e.g., heroin, cocaine, and amphetamines). SDS total scores for cocaine, cannabis,

and alcohol were significantly correlated with severity of dependence as measured by DSM-IV (Ferri, et al., 2000). Internal consistency in the present study ranged from $\alpha = .85$ to $\alpha = .91$.

Treatment entry. Treatment entry was measured (dichotomously) by session attendance at the first treatment session. Attendance records were collected from study therapists weekly (for the active treatment conditions) and from RCKC approximately once per quarter (for TAU).

Treatment engagement. Treatment engagement was measured by session attendance, assessed by attendance records collected from study therapists (for the active treatment conditions) and by records provided by RCKC with participant consent (for TAU).

Drug of choice. Drug of choice was assessed at baseline by self-report. Participants selected a primary and (optionally) a secondary drug of choice from a list.

Assessment Procedures

Data collection at all assessment time points was conducted using DatStat Illume, which provides a secure web-based interface to the study assessment measures. All participants completed the same assessments, with TAU assessment windows yoked to the treatment conditions. Participants received a \$40 local merchant gift card for completing each assessment, and were eligible for a bonus gift card for completing all assessment time points.

Baseline Assessment. Participants completed the baseline session in private sessions at RCKC with study staff. The staff member first explained informed consent procedures and HIPAA, and obtained appropriate releases of information and collateral contact information. The staff member then completed the Timeline Followback assessment in paper-and-pencil format with the participant. Participants then completed baseline measures on provided computers, with staff available to assist.

Following completion of baseline assessment measures, participants were randomly assigned to parent study treatment condition (i.e., RP, MBRP, or TAU). Participants were also randomly assigned to receive or not receive the pretreatment BMI. If the participant was randomly assigned not to receive the pretreatment BMI, the baseline session was complete. If the participant was randomly assigned to receive the pretreatment BMI, the study staff member immediately began the pretreatment BMI.

Follow-up Assessments. Similar to baseline, participants completed follow-up assessments in private sessions at RCKC. Study staff were present, and completed the Timeline Followback assessment in paper-and-pencil format with the participant. The participant then completed the remaining measures on the provided study computer, with the staff member available to assist.

Description of Treatment Conditions

Treatment as usual (TAU). TAU participants received aftercare provided by RCKC, conducted by Chemical Dependency Professionals (CDP) certified by the Washington State Department of Health. TAU consisted of weekly aftercare groups for clients who had completed inpatient or intensive outpatient treatment. The TAU program adopted a process-oriented format and was based on the 12-step recovery model. Participants were encouraged to attend Alcoholics Anonymous (AA) meetings during the entire phase of aftercare. TAU topics included rational thinking skills, grief and loss, spirituality, assertiveness, stages of recovery, self-esteem, stress management, goal setting, the effects of alcohol and other drugs on sexual relations, and related themes. Psychoeducation on recovery-related issues and relapse prevention were also implemented through films and presentations.

Relapse Prevention (RP). A manualized 8-week adaptation of RP was developed for the previously mentioned pilot study (Bowen, et al., 2009), and this same program was used for the parent study. The protocol consisted of eight weekly sessions, each two hours long. Strategies incorporated in the RP protocol included coping skills training (i.e., how to effectively cope with high-risk situations), viewing habit change as a learning process, and lifestyle modification such as exercise and spiritual practices.

Mindfulness-Based Relapse Prevention (MBRP). The MBRP protocol (Bowen, Chawla, & Marlatt, 2010) consisted of eight weekly sessions, each two hours long, and each designed to build upon the theme, practices, and experiences of the previous week. In addition to in-session practices, participants were given a set of mindfulness audio recordings to guide home practice, helping to integrate mindfulness practices and skills into participants' daily lives.

Procedures

As described above, after completing baseline measures, participants were randomly assigned to receive or not receive the pretreatment BMI. Participants randomized to the control condition were simply finished with the baseline interview, and received standard concluding remarks from study staff (e.g., thanking for their participation). Participants in the experimental condition were first provided a document explaining the reason for audio recording the pretreatment session (i.e., to assess treatment fidelity), and asking permission to audio record the session. Participants could refuse to be audio recorded with no penalty (no participants refused). For those who agreed, pretreatment sessions were recorded on a provided digital audio recorder, which was stored in the onsite lockbox used to store study remunerative gift cards. The audiotape did not have personally identifiable markers associated with it. Participants then received the pretreatment BMI, and finally the standard concluding remarks.

Procedures for this study received UW IRB approval. Several steps were taken to ensure participants understood the voluntary and confidential nature of the study during the recruitment process and during participation. These included the use of randomized personalized identification number (PIN) codes to ensure confidentiality, the storage of data in encrypted form on a secure server accessible only by the PI and mentors, inaccessibility of participant responses or participation status by RCKC, explanation of the sensitive nature of some questionnaire items, and the option to decline to participate at any stage.

Data Analyses

Data preparation. All data aside from the Timeline Followback (TLFB) and session attendance were collected and maintained on the web via the secure web-based DatStat Illume program. Use of web-based surveys can reduce the chances of errors that occur when data are manually entered. As described above in the Methods section, TLFB self-report data were recorded by research staff during assessment sessions with participants, and attendance data were gathered from study therapists' weekly attendance records (for the active treatment conditions) and from RCKC approximately once per quarter (for TAU). At the conclusion of the study, 2 independent study staff entered the TLFB data and attendance data into IBM SPSS, version 20.

In SPSS, outcome variables were computed from TLFB data for days of substance use and any use across the follow-up time period. The former was a count variable, while the latter was dichotomous. Baseline variables were created for each of these substance use variables, to be used as control variables. Baseline was defined as the period between 31 days prior to the baseline assessment date and the day prior to the baseline assessment date.

Variables for attendance were also created, including attended first session, number of sessions attended, and number of sessions expected. The first of these was dichotomous, while

the latter two were count variables. The “number of sessions expected” variable served as an offset variable, to account for the difference in expected treatment sessions for some TAU participants who were assigned by RCKC to twice weekly or three times weekly sessions.

Because some participants provided incomplete TLFB data, an offset variable was created for days of substance use to capture the number of days of valid data for each participant (a range from 0-180).

A “baseline motivation to change” variable was created from the raw readiness ruler variables. For each participant, the baseline readiness ruler value corresponding to his/her drug of choice was selected. To avoid problems with multicollinearity, a centered variable was computed from this raw readiness ruler variable.

Hypothesis 1A, treatment entry. A logistic regression was performed to examine the effect of the predictor variable, BMI treatment condition (0= no pretreatment BMI, 1= pretreatment BMI), on treatment entry (0 = did not attend the first session of treatment, 1=did attend the first session of treatment). In Step 1, two dummy-coded parent treatment group variables (1 = MBRP, 0 = others; 1= RP, 0 = others), baseline motivation to change, and baseline severity of substance use dependence were entered as covariates. In Step 2, pretreatment BMI was entered as a predictor to test its additive effects on treatment entry above and beyond the covariates. After deletion of 3 cases with missing values, data from 283 participants were available for analysis.

Hypothesis 1b, treatment engagement. Treatment attendance was a count variable (i.e., integer valued and bounded at zero), which can have a skewed distribution. Therefore, the Kolmogorov-Smirnov and Shapiro-Wilk tests were run on this variable to test for normality. Both were significant, $p < .001$, indicating a non-normal distribution. In addition, a normal Q-Q

plot showed non-linear deviation from the line, also indicating a non-normal distribution. Since this variable distribution violates several assumptions of statistical models assuming normally distributed errors, a Poisson regression was chosen for this analysis. To enhance interpretability, the log link was used, and coefficients were exponentiated to yield incident rate ratios (IRRs). The natural log of the number of expected attendance days was entered as an offset variable. After deletion of 3 cases with missing values, data from 283 participants were available for analysis.

The first model included 3 predictors: a dummy-coded parent treatment group variable (1 = MBRP, 0 = others; 1 = RP, 0 = others), baseline motivation to change, and baseline severity of substance use dependence. The second model added pretreatment BMI as a predictor to test its additive effects on treatment engagement above and beyond the covariates.

Hypothesis 2a, moderation with parent study treatment group. This moderation hypothesis was first tested in relation to treatment entry. The pretreatment BMI x parent study treatment group (MBRP, RP) interactions were entered as Step 3 of the nested logistic regression model outlined in 1a, above. This moderation hypothesis was then tested in relation to treatment engagement. The pretreatment BMI x parent study treatment group (MBRP, RP) interactions were added to the variables in the second model of the Poisson regression outlined in 1b, above, to create a third model.

Hypothesis 2b, moderation with baseline motivation to change. This moderation hypothesis was first tested in relation to treatment entry. The pretreatment BMI x baseline motivation to change interactions were entered as Step 3 of the nested logistic regression model outlined in 1a, above. This moderation hypothesis was then tested in relation to treatment engagement. The pretreatment BMI x baseline motivation to change interactions were added to

the variables in the second model of the Poisson regression outlined in 1b, above, to create a third model.

Hypothesis 3a, pretreatment BMI effects on substance use outcomes. All study participants had been through inpatient or intensive outpatient treatment before enrolling in the study. Further, nearly 70% ($n = 200$) of the participants had one or more legal motivations for treatment (e.g., DOC/probation, CPS involvement, drug court involvement). Therefore, many participants had recent experience with sobriety and/or high motivation to remain abstinent (e.g., facing the loss of child custody). In addition, inspecting the count variable revealed a preponderance of zeroes (i.e., people who were using alcohol or other substances zero days during the follow up period.) Following Neal & Simons (2007) recommendations for statistical methods that may best approximate the distributions observed in alcohol, drug, and other low base rate risk behavior research, we opted for a zero-inflated negative binomial (ZINB) regression when analyzing this count variable. For this analysis, baseline substance use days, parent study treatment condition (TAU, RP, MBRP), and motivation to change were entered as covariates. A second model added pretreatment BMI as a predictor to test its additive effects on treatment engagement above and beyond the covariates.

A logistic regression was performed to examine the effect of the predictor variable, BMI treatment condition (0= no pretreatment BMI, 1= pretreatment BMI), on any use at follow up (0 = no use during the follow up, 1= substance use during the follow up). In Step 1, two dummy-coded parent treatment group variables (1 = MBRP, 0 = others; 1= RP, 0 = others), baseline motivation to change, and baseline “any use” were entered as covariates. In Step 2, pretreatment BMI was entered as a predictor to test its additive effects on treatment entry above and beyond the covariates.

Hypothesis 3b, moderation with baseline substance use severity. This moderation hypothesis was first tested in relation to days of substance use across the follow-up window. The pretreatment BMI x baseline days of substance use interaction was added to the variables in the ZINB regression outlined in 3a, above, to create a third model.

This moderation hypothesis was then tested in relation to any use across the follow-up window. The pretreatment BMI x any use at baseline interaction was entered as Step 3 of the nested logistic regression model outlined in 3a, above.

Results

Preliminary Analyses

Preliminary analyses were conducted to detect and describe extreme values, missing data, and variable distributions among outcome variables. RCKC staff was consulted regarding whether it was possible to achieve certain high values for substance use outcomes. After consultation, these values were retained.

Primary Analyses

Hypothesis 1a, treatment entry. An omnibus test of the full model with four predictors against a constant-only model was statistically significant, $\chi^2(5, N = 271) = 11.08, p < .05$, indicating that the variables, as a set, significantly predicted attendance at the first treatment session. The variance in treatment attendance accounted for is small, however, with pseudo R^2 values ranging from .04 (Cox & Snell) to .06 (Nagelkerke). Also, no change to classification occurred, with the model continuing to simply predict that everyone had attended the first session.

Table 3 shows regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for odds ratios for the predictor variable. According to the Wald criterion, BMI

treatment condition significantly predicted treatment entry, $\chi^2(1, N = 271) = 5.30, p < .05$. The odds ratio of 1.98 indicates that participants who received the pretreatment BMI had 1.98 times higher odds of attending the first session.

Hypothesis 1b, treatment engagement. The second Poisson model, with pretreatment BMI added as a predictor, was statistically significant, delta $\chi^2(1, N = 271) = 10.2, p < .01$. Table 4 shows regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for odds ratios for the predictor variable. Pretreatment BMI was a significant predictor of treatment attendance, $\chi^2(1, N = 271) = 13.3, p < .01$. The odds ratio of 1.19 indicates that participants who received the pretreatment BMI attended treatment sessions at a rate 19% more than people who did not receive it.

Moderation Analyses

Hypothesis 2a, parent treatment group. When the pretreatment BMI x parent study treatment group (MBRP, RP) interactions were added to the logistic regression outlined in 1a, above, the omnibus model was not significant, $\chi^2(9, N = 283) = 14.05, p > .05$. Parent treatment group also did not moderate the effect of pretreatment BMI on treatment engagement, delta $\chi^2(1, N = 283) = 2.7, p > .05$.

Hypothesis 2b, baseline motivation to change. When the pretreatment BMI x baseline motivation interactions were added to the logistic regression outlined in 1a, above, the omnibus model was not significant, $\chi^2(9, N = 283) = 14.05, p > .05$. Baseline motivation to change also did not moderate the effect of pretreatment BMI on treatment engagement, delta $\chi^2(1, N = 283) = 2.7, p > .05$.

Analysis of Pretreatment BMI on Substance Use Outcomes

Hypothesis 3a. It was hypothesized that participants who received the pretreatment BMI would experience greater substance use decreases following treatment than control participants. However, the overall model for the ZINB regression analyzing frequency of use was not significant, $\chi^2(5, N = 255) = 9.39, p > .05$.

Regarding any use at follow up, an omnibus test of the full model with four predictors against a constant-only model was statistically significant, $\chi^2(5, N = 238) = 33.84, p < .001$, indicating that the variables, as a set, significantly predicted any substance use at follow up. Table 5 shows regression coefficients, Wald statistics, odds ratios, and 95% confidence intervals for odds ratios for the predictor variable. According to the Wald criterion, however, BMI treatment condition did not significantly predict any use at followup, $\chi^2(1, N = 238) = .01, p > .05$.

Hypothesis 3b. It was hypothesized that baseline substance use severity would moderate study condition on substance use outcomes. However, the model for the ZINB regression analyzing frequency of use, including pretreatment BMI x baseline days of substance use interactions, was not significant, $\chi^2(9, N = 255) = 9.14, p > .05$.

Hypothesis 3c. It was hypothesized that treatment engagement would mediate the relationship between study condition and substance use outcomes. There was no evidence for a direct effect of study condition on substance use outcomes, so the mediation hypothesis was not tested for these variables.

Discussion

Treatment for substance use disorders has been shown to be effective for the individual and to reduce costs for treatment providers and society. Across nearly all forms of mental health

treatment, however, dropping out after only one or a few sessions is quite common (Barrett et al., 2008; Pulford, Adams, & Sheridan, 2010). The current study sought to evaluate a pretreatment brief motivational intervention to boost treatment entry and engagement. Results of the current study provide evidence for the feasibility and efficacy of this intervention for promoting treatment entry and engagement in relapse prevention aftercare groups in a community setting. In addition, this study is the first empirical test of the efficacy of a pretreatment BMI for increasing treatment entry and engagement in a mindfulness-based treatment program.

Three main hypotheses were tested in this RCT study. First, it was predicted that individuals given a pretreatment BMI would enter treatment at a higher rate; and secondly, that they would engage with treatment at a higher rate, compared with control participants. In support of these hypotheses, individuals who received the pretreatment BMI were significantly more likely to attend their first treatment session, compared to participants who did not receive the intervention. Furthermore, participants receiving the pretreatment BMI attended significantly more treatment sessions than control participants. While several previous studies provide support for pretreatment BMIs positively impacting treatment entry and engagement, they have limitations, including potential therapist effects, lack of a manual or curriculum, stringent exclusion criteria, and unclear or inconsistent definitions of treatment entry and engagement (see Pulford, et al., 2010 for a recent review of treatment dropout prevention strategies). Also, several previous studies did not find support for a pretreatment BMI on treatment entry and engagement (e.g., Donovan, et al., 2001; Miller, et al., 2003). The current study represents an important contribution to this literature as it accounted for prior study limitations in several ways: randomizing participants, using a standard curriculum and 5 different providers to implement the pretreatment BMI, and being conducted in a naturalistic treatment setting (i.e., community-

based) with minimal exclusion criteria. In this context, the positive findings of BMI impact on treatment entry and engagement are noteworthy.

For the third main hypothesis, the distal effects of the pretreatment BMI on post-course substance use were tested. It was hypothesized that individuals who receive a pretreatment BMI would experience reduced substance use following treatment, compared to control participants. Contrary to the hypothesis, there were no significant between-group differences on measures of substance use outcomes during the follow up period, above and beyond parent treatment group. There are several possibilities to explain this outcome. One is that the subsequent 8-week aftercare treatment program the participants received, considered the “gold standard” for aftercare, overshadowed the impact of a single, very brief (<20 minute) session on post-treatment substance use outcomes. Another very real possibility is that the low rates of substance use during follow-up across all study conditions limited variability, and thus power, to find significant between-group differences. A further possibility concerns the use of feedback. Adding personalized feedback to motivational interviewing has received substantial support for reducing drinking among college students (Larimer & Crouce, 2007; Walters, et al., 2009). In one of the few studies dismantling MI and personalized feedback, Walters and colleagues (2009) found that MI with feedback led to a lower level of drinking at 6 months post-treatment compared to either MI alone or feedback alone, among college students. While the current study primarily targeted treatment entry and engagement, future research could investigate the effect on substance use outcomes of adding personalized feedback to the pretreatment session.

Analyses of mediating and moderating factors of the main variables were also conducted. Contrary to hypotheses, parent treatment group did not moderate the effect of the pretreatment BMI on treatment entry or engagement. Considering previous research suggesting the

importance of eliciting barriers, expectations, and misperceptions of mindfulness-based treatments, this result is surprising. Perhaps there were as many barriers, expectations, and misperceptions for the other treatment conditions as there were for MBRP. Or perhaps the increasing popularity of mindfulness-based treatments and their increasing mention in the media has increased the general public's interest in these treatments (and/or decreased the general public's misperception of them). Future research could further elucidate participant responses regarding barriers.

Additionally, baseline level of motivation to change did not moderate the effect of the pretreatment BMI on treatment entry or engagement. While some researchers (Chaffin, et al., 2009; Stotts, et al., 2001; Rohsenow, et al., 2004) found support for the moderating effects of baseline motivation on outcome, others (Monti, et al., 1999; Project MATCH Research Group, 1997) did not. In the present study, a lack of variability in baseline motivation to change may have impacted this finding. Overall, study participants reported a high level of baseline motivation. Only 3.4% ($n = 10$) of all study participants reported a baseline motivation to change of 5 or less, on a scale from 1 to 10, and 82.2% ($n = 235$) reported a baseline motivation of 10 out of 10. Perhaps a state of readiness to change behavior was implied by the mere presence of the client in treatment (Amrhein, et al., 2003). Alternatively, their reported readiness to change may be influenced by social desirability bias, in that many clients were in mandated treatment, and thus may feel a sense they *should* be highly motivated.

Limitations and Future Directions

We carefully considered limitations of the proposed research and took steps to minimize these limitations. Use of self-report substance use measures was one potential limitation, although self-reported substance use has been shown to be reliable and valid (Babor et al., 2000;

Chermack et al., 1998; Darke 1998). While computerized assessments may be of concern, research suggests this mode is preferable to face-to-face interview, particularly for assessment of sensitive information (Joinson, 1999). Another potential limitation was retrospective reporting of substance use. However, both the paper-and-pencil and computerized versions of the TLFB have been shown to be reliable and valid (Sobell et al., 1996).

The fact that participants assigned to receive the prelude intervention received more individual attention during the intake process than those who didn't receive it may account for some portion of the differences in treatment entry and engagement between the two groups. Inclusion of an attention control condition in future research would increase confidence in the current findings.

Given that several therapists provided the pretreatment session, a further limitation was the potential for differential therapist effects. However, all therapists received extensive training and continued to receive ongoing support throughout administration of the intervention to ensure treatment integrity and reduce drift over time (Bellg, et al., 2004). Future research could consider utilizing an existing MI coding system, or developing one specifically for this intervention. Adherence and competence could then be independently assessed and used as covariates in the analyses, if necessary.

Analyzing session tapes would provide insight into another element of therapist and client behavior that might have impacted outcomes in the current study. While MI has substantial empirical evidence for its efficacy with a number of client populations and behaviors, the mechanisms through which MI exerts its effects are unclear (Vader, et al., 2010; Burke, Arkowitz, & Menchola, 2003). Recently, there has been an increasing interest in understanding these mechanisms. Because the developers of MI hypothesized that MI shapes clients' language

by eliciting and selectively reinforcing statements in support of change (Miller & Rollnick, 2002), researchers have investigated the role of therapist and client in-session language as predictors of outcome. Apodaca & Longabaugh (2009) conducted a meta-analysis of within-session mechanisms of change in MI and found the most consistent support for therapist MI-inconsistent behaviors (e.g., confrontations) in relation to poor substance use outcomes. They also found client intention and commitment statements related to positive substance use outcomes. “Change talk” has been defined as client expressions of the benefits of change, or dissatisfaction with current behavior, while “sustain talk” has been defined as client expressions of the benefits of current behavior or pessimism around change (Vader, et al., 2010). In individual studies, change talk has been related to positive changes in substance use among alcohol and illicit drug users (Baer, et al., 2008; Amrhein et al., 2003; Moyers, et al., 2007). Moreover, therapist MI-consistent behaviors have been associated with client change talk (Vader, et al., 2010). Baer et al. (2008) reported that teens’ sustain talk predicted substance use at the follow-up among adolescent substance abusers, while change talk predicted abstinence at follow-up. Amrhein and colleagues (2003) found that it wasn’t the frequency of change talk, but the pattern of change talk (and specific subtypes of change talk) during the session that impacted outcomes.

Thus, the results of the current investigation might be clarified through an analysis of in-session client and therapist language. For example, the extent to which the style and content of therapist feedback changes the nature of client speech and how client speech is related to treatment entry, engagement, and outcome could be investigated.

General Conclusion

The current study has several strengths. The study provides preliminary support for feasibility, acceptability, and efficacy of a pretreatment BMI for improving treatment entry and engagement for aftercare relapse prevention groups in an ethnically diverse and challenging population, with high rates of homelessness and involvement with the legal system. Furthermore, to our knowledge, this is the first RCT evaluating the efficacy of a pretreatment BMI for improving treatment entry and engagement for participants in a mindfulness-based group.

This study's findings could inform treatment developers interested in maximizing treatment engagement in aftercare relapse prevention programs or mindfulness interventions, as well as organizational leaders and counselors working to reduce attrition and improve substance use outcomes in their relapse prevention aftercare groups.

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Table 1
Characteristics of Study Participants (N = 286)

Characteristic	<i>n</i>	%*
Gender		
Female	79	28
Male	201	70
Other	1	1
Not reported	5	1
Race		
Asian	2	1
Black	61	21
Hawaiian	2	1
Native American	18	6
White	146	51
Other	5	1
Multiracial	30	10
Ethnicity		
Hispanic	22	8
Partnered Status		
Single (Never Married)	142	50
Divorced	61	21
Separated	38	13
Unmarried, Live with Partner	21	7

Widowed	7	2
Married	16	6
Not reported	5	1
Education		
No High School	26	9
Through High School	135	47
Some college	74	26
Community College	42	15
Bachelor's Degree	8	3
Some Graduate School	1	1
Employment Status		
Full Time	20	7
Half time	10	4
Unemployed	182	64
Public Assistance	71	25
Social Security	19	7
Household Income		
0-\$4,999	169	59
\$5,000-\$9,999	26	9
\$10,000-\$14,999	14	5
\$15,000-\$19,999	14	5
\$20,000-\$34,999	10	4
\$35,000 or Higher	9	3

Unknown	44	15
Primary Drug of Choice		
Alcohol	140	50
Crack cocaine	36	13
Powder cocaine	6	2
Marijuana	27	10
Methamphetamine	34	12
Heroin	27	9
Other Opiates	13	5
Other	2	1
Secondary Drug of Choice		
None	42	15
Alcohol	63	22
Crack cocaine	42	15
Powder cocaine	12	4
Marijuana	69	24
Methamphetamine	19	7
Heroin (and other opiates)	11	4
Other opiates	13	5
Hallucinogens	4	1
Other	4	1
	<i>Mean</i>	<i>SD</i>
Age	38.44	10.92

Drug Use and Treatment History

Times in Detox	.62	1.57
Alcohol Quit Attempts	2.44	1.72
Length of Sustained Alcohol Quit (days)	628.60	840.34
Drug Quit Attempts	2.44	1.69
Length of Sustained Drug Quit (days)	754.08	1190.98

Note. * percentages rounded to nearest whole number. Times in Detox = Number of times admitted to detox facility for withdrawal from alcohol or other drugs; Alcohol/Drug Quit Attempts = Number of attempts to discontinue or limit alcohol/drug use; Length of Sustained Alcohol/Drug Quit (days) = Length of time.

Table 2
Frequencies for Treatment Entry and Any Use; Means (Standard Errors) for Alcohol and Other Drug Use and Treatment Engagement During the Study (n=286)

	Did not receive pretreatment BMI				Received pretreatment BMI			
	TAU	RP	MBRP	Total	TAU	RP	MBRP	Total
Attended first session	34	33	36	103	37	39	41	117
Sessions attended [expected]	5.69 (.53) [8.17]	4.34 (.41)	3.76 (.38)	4.02 (.28)*	6.20 (.51) [8.19]	5.29 (.37)	5.32 (.36)	5.30 (.25)*
<i>Days of substance use</i>								
Baseline, out of 30	1.89 (.83)	1.24 (.83)	.44 (.22)	1.16 (.38)	.30 (.12)	.18 (.10)	.22 (.13)	.23 (.07)
Post-Tx, out of 180	10.88 (4.90)	8.90 (5.82)	9.02 (4.41)	9.58 (2.83)	18.81 (6.65)	3.31 (1.76)	9.61 (4.15)	10.33 (2.63)
<i>Participants who reported any days of use</i>								
Baseline	9	4	6	19	7	4	5	16
Post-tx	19	11	20	51	20	17	13	49

Notes: RP and MBRP participants were expected to attend 8 sessions (one per week). Some TAU participants were expected to attend more than one session per week. [expected] is the mean number of days of attendance expected. * Totals for sessions attended are for RP/MBRP only. For substance use days, cases ($n = 235$) were included in this table who had at least 170 days of follow-up data available.

Table 3
*Logistic Regression Analysis of Treatment Entry as a function of BMI Treatment condition
 (n=283)*

Variables	B (SE)	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio	
				<i>Lower</i>	<i>Upper</i>
Tx Condition					
RP	.42 (.38)	1.20	1.53	.72	3.26
MBRP	.02 (.35)	.01	1.02	.51	2.02
Baseline readiness to change	-.07 (.09)	.65	.93	.79	1.10
Baseline substance use severity	-.06 (.04)	2.15	.94	.86	1.02
Received pretreatment BMI	.66 (.31)*	5.30	1.98	1.10	3.69
Constant	.85 (.29)**	8.40	2.31		

*Note: *p < .05, **p < .01.*

Table 4
Poisson Regression Evaluating Pretreatment BMI Effects on Treatment Engagement

Variables	<i>B</i> (SE)	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio <i>Lower Upper</i>	
Tx Condition					
RP	-.11 (.07)	2.95	.89	.78	1.02
MBRP	-.19 (.06)*	8.60	.83	.73	.94
Baseline readiness to change	.01 (.01)	.20	1.01	.98	1.04
Baseline substance use severity	-.02 (.01)	3.13	.98	.97	1.01
Received pretreatment BMI	.20 (.06)*	13.30	1.19	1.09	1.39
Constant	-.40 (.05)*	55.16	.67		

*Note: *p < .01.*

Table 5
Logistic Regression Model Evaluating Pretreatment BMI on Substance Use Outcome

Variables	<i>B</i> (SE)	Wald	Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio	
					Lower	Upper
Tx Condition						
RP	-.31 (.36)	.74		.73	.36	1.49
MBRP	-.35 (.35)	1.03		.71	.36	1.39
Baseline readiness to change	-.03 (.09)	.09		.97	.81	1.16
Any use at baseline	2.33 (.52)*	19.99		10.25	3.69	28.41
Received pretreatment BMI	.03 (.28)	.01		1.03	.59	1.79
Constant	-.42 (.29)	2.13		.65		

*Note: *p < .01.*

Appendix A

Brief Baseline Interview Guide

Research question: “Does a 15-20 minute MI-based interview help the participants in terms of entering treatment, attending groups, and substance use outcomes?”

Background

The goal is to meet with participants individually, providing an opportunity:

- To elicit individual motivations for attending the group, what interests them.
- To clarify expectations about home practice (i.e., homework for RP, mindfulness practices in MBRP, 12-step groups or other assigned homework for TAU), and the level of commitment involved.
- Basic logistics of the group (e.g., schedule, expectations, attendance), highlighting the significant commitment that such a course requires.
- To elicit any potential barriers to participation they anticipate.
- To elicit why they’d participate in such a course, given the level of commitment required.
- To normalize anxiety about change.
- To explore values.
- To affirm small steps.

The brief motivational interview is designed to resolve ambivalence and strengthen commitment to engage in regular weekly group attendance. The intention is to elicit from individuals their own motivations and commitment, rather than attempting to “sell” them on the course.

The interview is based on the principles of motivational interviewing, as described by Miller and Rollnick (2002). As we discussed in the training, this approach employs accurate empathy, warmth, and genuineness, and confrontation is discouraged. The “spirit” of MI is really the most important thing, and is based on collaboration (vs. confrontation) and evocation (drawing out rather than imposing upon).

Remember the 4 principles: Express Empathy, Support Self-efficacy, Roll with Resistance, and Develop Discrepancy.

Remember also the essential microskills, the OARS: Open ended questions, Affirmations (recognizing client strengths), Reflections (guiding towards change), Summaries (can highlight both sides of ambivalence, if appropriate).

You do not have to follow a rigid script for this interview. As we talked about in training, open-ended questions that elicit information from the client are preferred.

Components of the interview:

- Turn on digital recorder. Please say the participant ID number (not their name) out loud.
- Introduce self.
- State purpose: to give the participant more information about the group, to give the participant the opportunity to ask questions, and to understand the participant's anticipated barriers and expectations. (don't have to use this exact sentence)

Things to keep an ear out for:

Any signs that the participant was frustrated at their randomization assignment (e.g., they really wanted RP but got MBRP). If it's appropriate, this can be asked as an open-ended question: "I wonder if you have any concerns about being assigned to the X group."

Any unrealistically high sounding treatment goals (expectancy violation; e.g., they think this treatment program is going to be perfect and solve all their concerns/problems in just a few weeks). There is evidence that clients who have goals of quitting immediately don't do as well as those with more modest/realistic goals. More realistic expectations seem to have better holding power in treatment. *Specific to MBRP:* some have a preconceived notion about what meditation is supposed to do. E.g., "it will instantly transform me," "it will relax me/make me happy." Good to clarify that mindfulness actually is all about developing awareness of whatever is happening, good or bad, rather than achieving any particular state. Those states might happen, and they might not, but the goal is to practice getting off of automatic pilot, as best we can.

Environmental barriers to treatment participation, including housing status, employment, finances, transportation, child care.

Sample questions:

What questions do you have about the format of the course?

What interests you about this course?

What barriers do you anticipate?

Why would you commit to this?

How confident are you that you can commit to this?

What's been helpful, if anything, in your recovery process thus far?

What's been missing, if anything? What do you need? How do you think you might get that?

How might a course like this be helpful or not helpful to you?

In what ways?

Tell me more.

For MBRP:

Tell me about your past experience with meditation.

Do you currently have a meditation practice? Can you tell me about it?

What ideas or concerns do you have about the meditation practice?

For RP:

Tell me about your past experience with relapse prevention groups.

What ideas or concerns do you have about implementing these skills in your life?

For TAU:

Tell me about your past experience with aftercare groups.
 What ideas or concerns do you have about implementing these skills in your life?

Key points to keep in mind:

Attendance (provide the contact number for cancellations: 206-543-5481)
 Willingness to practice skills/exercises daily
 Being on time each week

For MBRP:

Meditation usually isn't easy, but anyone can practice it. It takes time and commitment. Setting appropriate expectations, that early mindfulness practices can be challenging and may include the experience of distressing emotions. The client gets to set the pace, so they're in control. There are strategies for how to respond if such emotions do arise (for example, going at their own pace, encouraging contact with the teacher about the difficulties, and the need for perseverance).

Group format information:

8 2-hour sessions.
 Groups include meditation exercises, discussion, worksheets and other exercises
 Focus on raising awareness of how your mind works, identifying the "automatic pilot" that our minds frequently fall into, and learning ways to respond differently to triggers or stress in your life.
 Daily practice (with CDs).
 Worksheets/tracking sheets each week.

For RP:

8 2-hour sessions.
 Groups include analysis of relapse situations, discussion, worksheets and other exercises.
 Worksheets/tracking sheets each week

For TAU:

Continue with the current aftercare group they are in at RCKC.
 They will complete the post-course surveys on the computer in 8 weeks.
 Their counselor will likely encourage attending AA/NA meetings.

For All:

Prepare for week 1:
 Know date/time and where the room is.
 Use restroom prior to class – no break.
 Bring something to lie on (*MBRP only*).

Factors for dropout from substance abuse treatment:

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Table 1
Reasons for leaving treatment questionnaire scales and item endorsements

<i>Motivational inconsistencies</i>	% endorsed
4. I changed my mind about being in the program at this point.	46
11. I had no good reason to stop using alcohol or drugs.	46
18. I did not feel motivated enough to keep coming.	54
25. I lost hope in my ability to change right now.	54
Coefficient alpha=.31	Any item endorsed=83
<i>Staff conflicts</i>	% endorsed
3. I had a negative interaction with another client or staff.	38
10. I did not like or trust some of the staff.	38
13. I felt that staff did not like, respect, or want to help me.	25
17. I had a personality conflict with people at the program.	38
Coefficient alpha=.83	Any item endorsed=54
<i>Boundary concerns</i>	% endorsed
6. I felt my privacy or confidentiality might not be respected.	25
20. Somebody I know is a client or staff in the program.	33
24. I said or did some things that would make it hard for me to go back.	29
27. I was worried I would get involved in the wrong things like drugs, sex, or crime because of people around the program.	25
Coefficient alpha=.54	Any item endorsed=64
<i>Outside influences</i>	% endorsed
7. Problems with family or acquaintances kept me from coming in.	13
14. I felt that I could get better on my own or with self-help meetings.	38
21. I did not have enough support from people in my life to stay in the program.	29
28. I decided to go to another program for help.	29
Coefficient alpha=.06	Any item endorsed=75
<i>Program expectations</i>	% endorsed
5. I did not like the rules the program had.	33
12. I was confused about what the program wanted me to do.	13
19. I did not like the kind of services offered at the program.	42
26. The wait to start the program was too long.	13
Coefficient alpha=.60	Any item endorsed=54
<i>Problem severity</i>	% endorsed
1. My medical problems kept me from coming.	4
8. My drug use was so heavy I could not come in.	25
15. My alcohol use was so heavy I could not come in.	13
22. My mental health or psychological problems kept me from coming.	25
Coefficient alpha=.55	Any item endorsed=42
<i>Logistical problems</i>	% endorsed
2. I had transportation problems that kept me from coming.	21
9. I had childcare problems that kept me from coming in.	8
16. The hours of the program were not good for me.	25
23. I did not have money or insurance to pay for the program.	8
Coefficient alpha=.51	Any item endorsed=38

