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Heterogeneity in Pathways to Abstinence among Women in Treatment for Alcohol Use Disorder

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Abstract

Background—Although many providers recommend alcohol abstinence as an initial step in the treatment of alcohol use disorders (AUD), there is a scarcity of research on specific behavioral strategies to achieve this step. The current study examined efficacy of a unique abstinence planning intervention for alcohol in a cognitive behavioral therapy (CBT) outpatient protocol.

Design—128 women enrolled in a randomized controlled trial of CBT for AUD at a university-based clinic comprised the sample.

Measurements—Session 1 manual-guided interventions included an abstinence planning discussion in which each woman chose a specific plan for achieving initial abstinence in collaboration with her therapist. Drinking data were collected via participant logs during the 16 week within-treatment period and via Timeline Follow-Back interview at 12 month follow-up.

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Findings—For 32.8% ($n=42$) of women who stopped drinking during the pre-treatment assessment period, their abstinence plan was to maintain abstinence (MA). 18.0% ($n=23$) of women chose a “cold turkey” approach (CT, abrupt cessation without medical assistance), and 46.1% ($n=59$) chose a “winding down” approach (WD, systematic reduction of drinking toward a specified quit date). Generalized Estimating Equations (GEE) analyses showed that type of abstinence plan chosen was differentially associated with percent days drinking (PDD) in later treatment (weeks 7–16) ($p < .01$) and during 12 month follow-up ($p < .01$). Women in the WD group had the highest PDD for both time frames and women in the CT group drank more frequently during later treatment compared to those in the MA group. The association between plan and PDD during follow-up was moderated by early treatment PDD (weeks 1–7; $p < .01$), such that women in the MA and WD groups had lower follow-up PDD if they were able to decrease their drinking during early treatment.

Conclusions—Women who were maintaining abstinence at treatment entry or had planned to stop using alcohol abruptly (i.e., “cold turkey”) after starting treatment had better overall drinking outcomes than those who chose to wind down. A plan to wind-down drinking appeared to be the most appealing option to women in the study and, among those who were able to successfully execute this winding down approach, was related to positive long-term drinking outcomes.

Keywords

Alcohol; Treatment; Women; Abstinence; Treatment Planning

1. Introduction

Many addiction specialists and providers who treat alcohol use disorders (AUD) recommend alcohol abstinence to their patients as a first step in treatment (Cox, Rosenberg, Hodgins, Macartney, & Maurer, 2004), and research has shown better outcomes for patients who select abstinence as a treatment goal when compared to non-abstinence goals (Duckert, 1993; Sobell et al., 1995; Hodgins et al., 1997; Long et al., 1998; Adamson et al., 2010). The American Society for Addiction Medicine (ASAM) provides recommendations to help patients achieve abstinence by negotiating a drinking goal with patients, considering referral for evaluation by an addiction specialist, self-help groups, or – for patients who are physiologically dependent – medically managed withdrawal/detoxification from alcohol (ASAM, 2005). Medical management of AUD is typically prescribed for patients with severe AUD, chronic relapses, and/or physiological dependence (ASAM, 2005), but many patients with AUD meet criteria for mild or moderate AUD (Grant et al., 2015), or do not choose or have access to medical care. Indeed, the majority of treatment-seeking individuals with AUD do not ever receive treatment from medical providers (Grant et al., 2015).

At the outpatient level of care, the addiction treatment field has historically lacked specific behavioral strategies to achieve initial abstinence from alcohol; instead, treatment planning typically includes seeking detoxification at a higher level of care, stop drinking cold turkey, or attending Alcoholics Anonymous (Kranitz & Cooney, 2013). While there are empirically-supported cognitive behavioral therapy (CBT) protocols for overall treatment of AUD (see Mastroleo & Monti, 2013; MATCH, 2003), these manuals have not historically included any specific abstinence planning intervention (Kranitz & Cooney, 2013). For our CBT

treatment protocol for AUD (Epstein & McCrady, 2009), we created a unique abstinence planning intervention in session 1 to collaboratively help the patient delineate specific strategies to stop drinking in a safe manner; in addition to considering higher level of care (detoxification), or abruptly stopping cold turkey, we discussed a third option, an explicit behavioral strategy of winding down (i.e., tapering) alcohol intake toward a quit date. Notably, in 1991, Miller & Page had suggested alternative pathways to achieving abstinence from alcohol (as opposed to strictly recommending a cold turkey approach) including sobriety sampling, tapering down, or trial moderation, and cited the need for further research on this issue. However, we have found no studies that empirically test an explicit abstinence planning intervention in an abstinence-based treatment protocol.

Only one study of behavioral pathways to abstinence among substance users was found in the literature to date, conducted with a population of smokeless tobacco users with no immediate plans to quit (Schiller et al., 2012), and compared the efficacy of an immediate quit strategy to gradual reduction of use to a quit date. Participants were randomized to immediate cessation or to a reduction condition (choice of nicotine lozenge or brand switching to help them reduce their use or levels of nicotine exposure, with a quit date of six weeks after study onset). Participants did not receive any treatment in between their condition randomization and their initial quit date. Abstinence rates were significantly higher in the immediate cessation compared to the reduction condition, but there were significant reductions in use among non-quitters for both conditions.

Since availability of evidence-based behavioral reduction strategies would be useful to help patients to achieve abstinence safely, the current study examined our unique abstinence planning intervention (Epstein & McCrady, 2009) that helps patients pursue a specific strategy (including tapering down, if clinically indicated) to safely achieve abstinence in the context of outpatient CBT for AUD. The goal was to empirically examine the association of particular abstinence plans (established in an abstinence planning intervention in a 12-week cognitive-behavioral therapy (CBT) protocol for AUD) with long-term alcohol use. As part of a larger randomized controlled trial (RCT) for women with AUD, session 1 included a manual-guided intervention to discuss an abstinence plan. Each woman chose one of several specific strategies for achieving abstinence during early treatment (i.e., by session 5, which corresponded to week 7, see below) in collaboration with her therapist. This standardized, manual-guided collaborative abstinence planning is unique to the CBT protocols tested in this RCT, and thus far has not been tested empirically in terms of treatment outcome. We sought to test whether certain abstinence plans were associated with differential alcohol-related outcomes during later treatment (sessions 6–12) and 12 month follow-up (12 months post-session 12). The study examined the three most commonly chosen abstinence plans – winding down (gradually decreasing quantity then frequency of drinks consumed each week over the first five sessions of treatment), quitting cold turkey (immediate cessation of use), and maintaining abstinence (for those who had stopped drinking between the initial study screen and session 1). Women in these three groups were compared on: (1) patient characteristics at baseline; (2) alcohol use during later treatment, after the latest target date for achieving abstinence (session 5); and (3) alcohol use during 12 months follow-up. Further, we tested if success of the abstinence plan by the fifth treatment session (i.e., less drinking during early treatment) moderated better long-term drinking outcome during post-

treatment follow-up. The extent to which the women's abstinence plans are associated with better or worse treatment outcomes has substantial bearing on how clinicians might negotiate effective plans for achieving alcohol abstinence at the start of treatment. Findings from this study would provide empirically valid data to support which plan or plans are most effective, information that could be used by clinicians in treatment planning phases.

2. Method

2.1 Design

Data were collected as part of a larger RCT for women with AUD (McCrady, Epstein, Hallgren, Cook, & Jensen, 2016) in which participants chose one of two study arms – individual or couple CBT—and were then randomized to one of two conditions within each study arm. In the individual arm, women were randomized to either gender-neutral CBT or female-specific CBT. In the couple arm, women were randomized to Alcohol Behavior Couple Therapy (ABCT) or a blended couple therapy, in which male partners attended 6 of 12 sessions.

2.2 Participants

Inclusion criteria for women in the RCT were: (a) age 18 or above, (b) in a committed heterosexual relationship, defined as married, separated with hopes of reconciliation, cohabitating for at least six months, or in a committed dating relationship of at least one year's duration; (c) consumed alcohol in the past 30 days; (d) met criteria for DSM-IV current alcohol abuse or dependence. Exclusion criteria were: (a) meeting criteria for another current substance use disorder with physiological dependence on drugs other than marijuana or nicotine; (b) psychotic symptoms in the past six months; (c) evidence of gross cognitive impairment; (d) in the couple condition, intimate partner violence (IPV) in the past 12 months that resulted in injury and/or fear of participating in conjoint therapy. For the couple arm, these exclusion criteria extended to the partner as well. Participant characteristics by abstinence plan and results of ANOVAs examining differences between groups are in Table 1.

2.3 Measures

2.3.1 Stages of Change Readiness and Treatment Eagerness Scale

(SOCRATES; Miller & Tonigan, 1996)—The SOCRATES is a 19-item self-report instrument used to assess motivation for change in individuals with AUD. Individual items are rated on a 5-point Likert scale (“strongly disagree” to “strongly agree”). The measure has three subscales: Recognition (range of 7–35), Ambivalence (range of 4–20), and Taking Steps (range of 8–40). A high score on the Ambivalence subscale reflects participants’ “wondering” about whether they are in control of drinking, drinking too much, hurting others, and/or has an alcohol use disorder. A low score on the Ambivalence subscale can reflect confidence that a participant *either* feels sure that he/she has no problem or sure that he/she does have a problem with alcohol; therefore a low ambivalence score needs to be interpreted in consideration of a respondent's Recognition score. The recognition subscale reflects the extent to which individuals acknowledge that they are experiencing problems related to their drinking (resulting in a high score, versus denying that alcohol is causing

them serious problems), and the extent to which they have a desire to change (resulting in a high score, versus no desire to change their drinking). Cronbach alphas in the present study were .85 (Recognition), .74 (Ambivalence) and .89 (Taking Steps).

2.3.2 Short Index of Problems (SIP; Miller, Tonigan, & Longabaugh, 1995)—The SIP is a 15-item version of the Drinker Inventory of Consequences, a self-report measure of individuals' physical, social, intrapersonal, impulse, and interpersonal consequences related to alcohol use. For this study we used the total SIP score, which yielded a Cronbach alpha of .77.

2.3.3 Coping Behaviors Inventory (CBI; Litman, Stapleton, Oppenheim, & Peleg, 1983)—The CBI is a 36-item self-report to measure frequency of use of various behaviors to cope with alcohol-related thoughts, situations, and cravings on a scale of 0 ("I have never tried this") to 3 ("I have usually tried this"). The total CBI score (0 to 108) was used with a Cronbach alpha of .93.

2.3.4 Timeline Follow-back Interview (TLFB; Sobell & Sobell, 1996)—The TLFB uses a calendar and other memory aids to determine an individual's drinking over a specified time period. Using data derived from the TLFB, we calculated three indices of drinking behavior: percent days drinking (PDD), percent days heavy drinking (PDHD), and mean drinks per drinking day (MDPDD). At baseline, participants were interviewed about their drinking during the 90 days prior to last drink before treatment entry; the TLFB was also administered at all follow-up research appointments. The TLFB has excellent reliability (Sobell & Sobell, 1978) and validity for alcohol use (Sobell, Maisto, Sobell & Copper, 1980).

2.3.5 Daily Drinking Log (DDL)—Women kept daily records of drinking for the within-treatment period. Data from the follow-up TLFB were used to supplement within treatment DDL data when missing (which occurred in 0–3 participants per month during treatment). Previous studies of the DDL have revealed correlations of .90 or greater between patient and partner reports (e.g., McCrady et al., 1999).

2.4 Procedure

Participants first completed an initial telephone screen, during which they chose to participate in either the individual or couple arm; the couple or individual was then scheduled for an in-person clinical intake depending on choice of treatment arm. At the clinical intake, in addition to confirming study eligibility and obtaining informed consent, study intake clinicians conducted an evaluation of each participant's withdrawal risk based on medical history, current medical conditions, age, family history of serious medical problems, drinking patterns, symptoms of withdrawal during prior periods of abstinence, and past history of withdrawal. Risk of alcohol withdrawal for each participant was discussed with the study team in a weekly clinical supervision meeting. After the clinical intake, women were scheduled for a baseline research assessment the following week where they met with a trained research assistant to complete additional self-report questionnaires and a structured interview to obtain baseline measures of the outcome variables. They were then

randomized to treatment condition within their respective treatment arm (gender neutral vs. female-specific in the individual arm, or ABCT vs. blended couple in the couples arm; see McCrady et al., 2016 for additional detail about the parent study). Each woman or couple was then assigned a therapist and began the weekly outpatient therapy sessions.

2.4.1 Treatment (see Epstein & McCrady, 2009; McCrady, Epstein, Hallgren, Cook, & Jensen, 2016, for more detail on the treatment protocol and parent study)—Treatments were manual-guided 12-session outpatient CBT protocols (written by the second and fourth authors) with an explicit and agreed-upon goal of abstinence from alcohol. Sessions were 90 minutes for couples (two hours for session 1) and 60 minutes for the individual (90 minutes for session 1) arm of the study. The within-treatment period could extend up to 16 weeks to allow for missed sessions. Treatment was provided by 12 female and 3 male clinicians (7 doctoral; 8 masters level) whose training included review of session materials, role play demonstrations, and role play rehearsal of each session, followed by participation in weekly team supervision. The principal investigators or other doctoral level study clinicians listened to all 12 session recordings for at least the first two clients in each treatment condition for each therapist. Therapists were also assigned a study clinical supervisor who provided individual supervision as needed to supplement.

2.4.2 Collaborative selection of abstinence plan—This was done with each participant as a prescribed 15–20 minute manual-guided intervention in the first treatment session (note that women had been told and agreed that the program was abstinence-based at the clinical intake). As part of this intervention, the therapist and participant collaboratively generated a plan to achieve abstinence by the fifth treatment session. This intervention was as follows: After first providing a rationale for abstinence planning, the therapist presented five possible types of abstinence plans, describing what each plan entailed, who would be involved (e.g., therapist, outpatient addiction psychiatrist), advantages/disadvantages for each potential plan, and information about indications and contraindications for each plan (e.g., inpatient detoxification for heavy, regular drinkers). Options for abstinence plans included the following:

- a. Maintaining Abstinence was discussed as an abstinence plan for women who had stopped drinking during the pretreatment assessment period (i.e., between the telephone screen and session 1).
- b. Inpatient detoxification (a higher level of care for medical management of withdrawal symptoms) was recommended for heavy, regular drinkers, those who felt they could not stop drinking unless on an inpatient unit, and/or those at risk for serious medical complications of alcohol withdrawal.
- c. Outpatient detoxification with medical management was recommended for heavy, regular drinkers, those at some risk for medical complications, and/or those who were appropriate for but refused inpatient detoxification.
- d. “Cold turkey” or immediate cessation of drinking, i.e. quitting abruptly, with the onset at session one (i.e., the plan would be to not have any more drinks now that she had started treatment) without medical management of withdrawal

symptoms, was described as an option for participants who drank episodically, did not drink daily at heavy levels, had no history of severe withdrawal symptoms, and were at low risk for medical complications.

- e. “Winding down” to abstinence, with a goal of quitting safely as soon as possible and no later than by session five; therapist and participants then devised a mutually agreeable schedule of gradual reduction to abstinence. Winding down guidelines were: (a) first decrease intensity (number of standard drinks per drinking day) over days and then decrease frequency of days per week drinking, once the number of drinks per day was low enough to avoid serious withdrawal symptoms on non-drinking days; (b) quantity per day and frequency of drinking days per week should always be on a linear downward trajectory – i.e., patients should always be drinking less, not more than at a previous date, to avoid a cycle of heavy drinking days then abstinent days with withdrawal symptoms then more heavy drinking days; (c) reduction should be guided by the principle of reaching a quit date as soon and efficiently as possible while avoiding serious withdrawal symptoms and no later than session five.

After each option was reviewed, the therapist and participant discussed which plan appealed most to the participant and also which plan was most recommended by the therapist as the safest yet most efficient, based on the participant’s clinical presentation and estimated risk for withdrawal symptoms. The agreed-upon abstinence plan and detailed strategy to execute this plan was written on an “Abstinence Planning Worksheet” during this session. The participant took her plan home and the therapist was instructed to keep a copy of the plan in the participant’s chart so that (s)he could check in with the participant at each session regarding progress on the plan. In the couple condition, partners were present in session during abstinence planning. There were no significant differences in abstinence plan chosen based on treatment arm/presence of the partner during abstinence planning ($\chi^2 = 2.86, p > .05$).

There were 30 women out of 158 in the RCT, who were excluded from analyses in the current study because information regarding their choice of abstinence plan was not available to code due to therapist error in retaining a copy in the patient chart. Analyses examining baseline and outcome variables (scores on the SOCRATES, SIP, CBI, or drinking variables – PDD, MDPDD) for the 30 missing participants compared to the 124 women included in the current study analyses were non-significant (all $p > .05$). We also checked for systematic therapist effect in this error, and found that no one therapist was less likely to record an abstinence plan than other therapists ($\chi^2 = 21.89, p > .05$).

Of the 128 women whose abstinence plans were categorized, 42 (32.8%) had stopped drinking during the pre-treatment assessment period and so their abstinence plan was maintaining abstinence (MA), 23 (18.0%) chose a cold turkey approach (CT), and 59 (46.1%), chose a winding down approach (WD). Three women (2.3%) chose a moderated drinking approach, despite the study’s emphasis on abstinence goals, and one participant was required to seek a higher level of care. Thus, the final sample size was $n = 124$ for the current study, including the three most common abstinence plans tested in analyses (MA, CT, and WD).

2.4.3 Follow-up—Women were assessed 3, 9, and 15 months after the baseline interview (corresponding to one year after session 12, i.e., 12 month follow-up); the 3 month assessment was delayed to the end of treatment (up to 16 weeks after baseline) for women who were still in treatment at the end of twelve weeks. Eighty six women (54.4%) completed all 12 sessions and the average number of sessions completed was nine. Follow-up rates were 91% at 3 months, 85% at 9 months, and 80% at 15 months. The current analyses used outcome drinking data from weeks 7–16 of the within treatment period (i.e. the later within treatment period after the targeted latest quit date of 5th session, to avoid confound of differences in continued drinking during the first 7 weeks of treatment depending on abstinence plan chosen), and drinking data from the 12 month post-treatment follow-up period for longer term outcome. This provided 28 longitudinal data points, 16 weekly data points from within treatment period and 12 monthly data points from follow-up period, that were used in our GEE analyses (see below for additional detail).

2.5 Data Analytic Plan

One-way Bonferroni corrected ANOVAs were conducted to examine how abstinence plan was associated with baseline patient characteristics – drinking data (PDD, MDPDD, PDHD), behaviors used to cope with drinking urges (CBI), consequences from alcohol use (SIP), and motivation to quit (SOCRATES).

Generalized Estimating Equations (GEE) analyses were used to test the relationship between abstinence plan and drinking (PDD and MDPDD). Bivariate correlations showed that a measure of PDHD was highly correlated with both PDD ($r = 0.69, p < .01$) and MDPDD ($r = 0.64, p < .01$). PDD and MDPDD, however, were more moderately correlated ($r = 0.23, p < .01$), and statistically and conceptually represent more disparate outcome variables. Therefore, we used PDD and MDPDD in our GEE analyses; however, the analyses were run with PDHD as an outcome variable as well and results showed similar results/trends as the analyses using PDD as the dependent variable.

We first tested the association between abstinence plan (MA, CT, WD) and later treatment drinking (PDD, MDPDD weeks 7–16). As described above, women were encouraged to achieve abstinence by session five. We chose to use week-to-week rather than session-to-session drinking data in order to keep the timing and week-to-week interval of data points consistent across participants during the treatment period. Because sessions were not always held weekly due to cancellations, holidays, etc., we examined frequency distributions to determine the optimal estimate for number of weeks engaged in treatment that corresponded to session 5, with data showing that the majority (88%) of women had their fifth session by week seven. Three (7.1%) women in the MA group, 5 (21.7%) women in the CT group, and 7 (11.9%) women in the WD group completed session 5 in more than 7 weeks. A chi-square test indicated no significant differences across abstinence plan groups in days taken to complete session 5 ($\chi^2 = 2.98, p > .05$). The lack of significant differences in time to session 5 supports the benefit of using the weekly data and estimating 7 weeks to reflect the 5 session period.

For the GEE examining the association of abstinence plan and later treatment drinking after week 7 (i.e., session 5), we used post-session 5 PDD and MDPDD as our outcome variables

(in separate models). These time points corresponded to weeks 7 to 16, during which time the majority of women completed sessions 6 to 12. We took this approach to avoid redundancy of information between the independent and dependent variables [i.e., women who chose WD were, by definition, likely to have higher PDD in weeks 1–7 than women who were categorized as CT or MA, ($F=48.86$, $p < .01$)]. We used growth curve analyses to examine change in PDD over weeks 1–7 (early treatment) in each of the abstinence plan groups as well.

We then used GEE to test the association between abstinence plan and drinking behavior during 12 month follow-up. Lastly, we used GEE to examine the moderating effect of drinking during early treatment (weeks 1–7) on the association between abstinence plan devised at session 1, and drinking behavior during 12 month follow-up. For all GEE analyses, we controlled for baseline drinking (pre-session 1) and the number of sessions attended. Given that the core alcohol-related interventions were the same across conditions, we also controlled for treatment arm (rather than condition) in our analyses. Chi-square and ANOVA analyses showed that in no one condition or treatment arm were women more likely to choose a particular abstinence plan ($p < .05$) or to have different drinking outcomes during treatment or follow-up ($p < .05$). We also conducted the GEE analyses with the baseline constructs entered as covariates (i.e., SIP total score, CBI total score, and subscales of the SOCRATES), to determine whether any differences between abstinence plan groups were not due to differences in these baseline variables; results were the same regardless of whether these covariates were entered.

3. Results

3.1 Baseline Correlates of Women's Abstinence Plan Selections

Results from ANOVA analyses showed significant differences in baseline characteristics among women in each of the three abstinence plan groups (Table 1). The groups differed on PDD and PDHD at baseline, as well as consequences from drinking (SIP score), coping behaviors (CBI total score), and motivation to stop drinking (SOCRATES Taking Steps and Ambivalence subscales). Specifically, women in the WD group had significantly greater PDD than those in the MA or CT group, and greater PDHD than women in the MA group. However, MA women had more consequences from drinking than WD women. Women in both the MA and CT groups reported more coping behaviors than WD group; MA women scored higher than CT and WD on Taking Steps, yet also scored higher on the Ambivalence scale than WD group.

3.2 Association between Abstinence Plan and Drinking during Early Treatment, Weeks 1–7

Though the implementation of abstinence plan (i.e., the trajectory of actual changes in drinking before session 5, i.e., week 7), was not the focus of this paper, we conducted growth curve analyses using mixed models to test whether women in the WD had a steeper slope for drinking reduction between weeks 1 and 7, compared to those for women in CT or MA. Growth curve analyses showed a significant difference among abstinence plan groups in terms of their reduction in drinking during early treatment (weeks 1–7) (time by plan interaction $p < .05$) with the WD group being the only group to demonstrate significant

linear decreases in their drinking during this time ($p < .05$). See Figure 1. Based on these analyses, on average, abstinence plan devised at session 1 appeared to be reflective of type of drinking cessation during early treatment.

3.3 Association between Abstinence Plan and Drinking during Later Treatment, Weeks 7–16

GEE analyses showed a main effect of abstinence plan on PDD during weeks 7–16 ($p < .001$). All plans differed significantly from each other on PDD ($p < .05$) (Table 2, Figure 2). Women in the WD group had the highest PDD, followed by women in the CT group, with women in the MA group having the lowest PDD during later treatment. Analyses showed only a trend ($=.069$) for a main effect of abstinence plan on mean drinks consumed per drinking day (MDPDD) during later treatment (Table 2, Figure 2).

3.4 Association between Abstinence Plan and Drinking During 12 Month Follow-Up

There was a main effect of abstinence plan on PDD during 12 month follow-up ($p < .001$) (Table 2, Figure 2). Women who chose WD had higher PDD during 12 month follow-up than women who chose either CT or MA ($< .05$). There were no differences between CT and MA during follow-up ($p > .05$). Analyses with MDPDD during follow-up showed no main effect of abstinence plan (Table 2, Figure 2).

3.4 Moderating Effect of Early Treatment Drinking on Association between Abstinence Plan and Drinking during 12 Month Follow-up

When we introduced two new predictor variables into our analyses – PDD during the first 7 weeks of treatment (early treatment PDD), and an interaction term of early treatment PDD and abstinence plan – there was no longer a main effect of abstinence plan on PDD during 12 month follow-up. Specifically, the interaction effect was significant ($p < .001$) for the WD and MA groups (both $p < .001$) but not for women who chose CT (Table 3, Figure 3). For women in the WD and MA group, their PDD during follow-up was positively associated with their PDD during early treatment; women in these two groups who had higher PDD during treatment weeks 1–7 had significantly higher PDD during 12 month follow-up, whereas women who had lower PDD during weeks 1–7 had significantly lower PDD during 12 month follow-up. Thus, choice of winding down or maintaining abstinence at the abstinence planning intervention in session 1, in conjunction with reducing or stopping drinking by session 5, predicted better long term success in drinking reduction compared to women who chose those abstinence plans at session 1, but did not reduce or stop drinking by session 5.

4. Discussion

In this study, we empirically examined the impact of a novel, manual-guided abstinence planning intervention in session 1 of a 12-session outpatient CBT protocol for AUD (Epstein & McCrady, 2009). This intervention was designed to guide therapist and patient through a conversation about alternative pathways to attaining abstinence from alcohol at the start of treatment for alcohol use, and included a behavioral drinking reduction (tapering) strategy called winding down to abstinence. First, we compared baseline characteristics of patients

who chose one of three plans – immediate cessation of alcohol use (cold turkey), winding down (a behavioral alcohol reduction to quit date strategy), and maintaining abstinence (among those who already achieved between initial study screen and treatment session 1). Second, we examined how these chosen plans were associated with treatment outcome, i.e., actual drinking frequency and quantity during later treatment and in the 12 months following treatment. Third, we tested the relationship of successful execution of abstinence plans with alcohol use over the 12 months follow-up; that is, we tested the moderating effect of early treatment drinking (between sessions 1 and 5) on the efficacy of the selected abstinence plan. Although many addiction specialists and clinicians recommend abstinence for patients seeking treatment for AUD (Cox, Rosenberg, Hodgins, Macartney, & Maurer, 2004), there is little information to the authors' knowledge on behavioral alternatives to inpatient detoxification or immediate cessation of alcohol use. The current study sought to address this gap (Miller & Page, 1991).

About a third of our sample had quit drinking between the initial study screen and session 1 of treatment, and chose continued maintenance of abstinence as their abstinence plan in session 1. A smaller number of women (18%) decided to quit drinking abruptly (immediate cessation, or cold turkey) once they started treatment. The majority of women (46%) chose an abstinence plan of winding down, in which they were to gradually decrease the quantity and frequency of their drinking toward a mutually agreed upon quit date. These women had the highest frequencies of drinking days and heavy drinking days at baseline, but not the greatest number of consequences from drinking. Women who had quit drinking before treatment (maintaining abstinence/MA group) reported a greater number of pre-treatment consequences from drinking compared to the winding down group, and, along with women who chose cold turkey, reported using more alcohol-related coping behaviors prior to treatment than the winding down group. These findings suggest that women who were more proactively working toward abstinence at the start of treatment had experienced more consequences from their drinking (but were not necessarily drinking more frequently than other women) and were more likely to use a variety of coping behaviors to deal with alcohol-related situations at baseline. These findings support the idea that perceived negative consequences may be a significant motivator prompting actions toward becoming abstinent from alcohol, and are in line with previous findings on motivation to seek treatment (Tucker, Vuchinich, & Gladsjo, 1994; Grosso et al., 2013). Women who were in the maintaining abstinence category reported taking more steps toward quitting at baseline than the other two groups, but they also reported more ambivalence, which in the SOCRATES (Miller & Tonigan, 1996) indicates heightened “wondering” about the negative consequences of continued alcohol use and about the possibility of having an alcohol problem. In this study, all three groups were equal in terms of their recognition that they had a problem with alcohol use. Therefore, the maintaining abstinence group as a whole was more actively thinking about the consequences of their alcohol use while also having high recognition that they needed to stop drinking, consistent with the fact that they had stopped drinking prior to starting treatment. As measured in this context, higher ambivalence (i.e., heightened sensitivity to the notion of “having an alcohol problem”) was associated with taking proactive steps toward abstinence, translating into abstinence before starting “treatment proper”.

In terms of the association between abstinence planning and treatment outcome, abstinence plan did predict women's frequency but not intensity of drinking during the later weeks of treatment (weeks 7–16) and during the 12 months following treatment. Compared to the cold turkey or maintaining abstinence groups, a choice of a winding down plan before session five predicted worse drinking outcomes during later treatment (weeks 7–16) and during follow-up. However, this finding appears to be relevant only for the women who did not successfully execute a winding down plan, as women who had a lower percentage of drinking days across the first five sessions also had less drinking during follow-up. This finding was specific to the maintaining abstinence and winding down group, whereas women who quit cold turkey had the lowest frequency of drinking during follow-up, regardless of their drinking during early treatment. These results suggest that winding down can be an effective abstinence plan, but the extent to which women are actually able to wind down successfully early in treatment significantly impacts long-term success. Winding down may be a difficult option for achieving abstinence, particularly among certain women who find it difficult to control and slowly reduce their alcohol intake. Women who take a winding down (i.e., tapering or behavioral alcohol reduction strategy) pathway to attaining initial abstinence may do just as well as women who more assertively pursue initial abstinence – *if* the women tapering are able to successfully wind down over the first five sessions of treatment. It is possible that successfully reducing drinking week by week enhances a woman's self-efficacy, therefore spurring further abstinence, particularly when established early on in treatment. Another possibility is that the gradual reduction approach minimizes withdrawal symptoms that the women might be drinking to avoid, and if she is able to wind down gradually (as planned with her therapist in session 1), then she is more successful in the long-run. If a woman is attempting a winding down approach to achieving abstinence, but is unable to successfully wind down by session 5, a different plan such as cold turkey (if safe) or inpatient detox/intensive outpatient may be more effective. These findings also support previous research that has emphasized the importance of therapeutic gains early in treatment (e.g., Hildebrandt, McCrady, Epstein, Cook, & Jensen, 2010), showing that early treatment response in individuals with AUD is a strong predictor for less drinking in the long-term.

It should be noted that the majority of women in this study drank heavily and regularly at baseline, and several were encouraged to seek medically managed detoxification. However, essentially all of the women were unwilling or unable to engage in inpatient detox (only one attended). Although a poorly executed winding down approach to abstinence was directly related to poorer outcomes, winding down does appear to be a preferred approach to establishing abstinence, especially among women who drink frequently and who feel they lack effective coping skills for quitting. Additionally, if women are unwilling or unable to seek inpatient or outpatient detoxification, winding down is likely the safest way to quit and may help them stay in treatment if they are working toward an immediate goal. Therefore, the findings from this study are promising – especially the finding that winding down may be a viable option for some women *if* they are able to cut down in early sessions. In delivering the protocol (Epstein & McCrady, 2009), therapists are trained to monitor success of the abstinence plan at each session, and especially to recognize by the fifth session whether the winding down approach was effective. By monitoring the patient's progress

with their abstinence plan, therapists can make sure to re-visit the abstinence plan during therapy and redirect the patient to a different plan, as needed.

The findings must be considered in light of this study's limitations. First, we had unequal sample sizes across abstinence plan groups and a smaller number of women in the cold turkey group. This limitation emerged especially when conducting the interaction analyses and when testing mean drinks per drinking day as the outcome variable. We did not report results of the interaction GEE for mean drinks per drinking day, as this analysis included only 41 of the original 158 women due to higher rates of abstinence (precluding calculation of MDPDD). Relatedly, as women were not randomly assigned to abstinence plan in this study, we were unable to determine causal associations between abstinence plan approach and long-term drinking outcomes. Lastly, this study was conducted with a sample of women with AUD; therefore we do not know the extent to which these findings would apply to men with similar levels of alcohol problem severity. Given that we know that women's motivators for seeking treatment are different from those of men (Greenfield et al., 2007), the effectiveness of different approaches to abstinence may be moderated by gender.

Findings elucidate a number of directions for future research. Our initial analyses showed that alcohol consequences were significantly associated with chosen approach to abstinence plan, as were taking steps to achieve abstinence at baseline. As mentioned above, research that clarifies the extent to which frequency and intensity of consequences from drinking are associated with treatment response and motivation for treatment in women – and how this informs treatment planning – is an important area for continued empirical study. The results also highlight the importance of women's ability to actually achieve and maintain abstinence early in treatment. Future research may further examine person-centered variables that determine which women are able to wind down successfully in the first few weeks. Such research would be informative in clarifying the nature of women for whom winding down is a feasible approach, particularly given the popularity of this approach to abstinence when given the option and the safety associated with this approach in terms of reducing risk of withdrawal symptoms.

The findings from this study also have important clinical implications. Women who are presenting to treatment for their alcohol use may benefit from a structured, detailed discussion with their therapist in which a personalized plan for achieving abstinence is outlined. Therapists may begin teaching skills for avoiding alcohol use and/or teaching relapse prevention early in treatment; however, explicitly establishing abstinence might be an important first step. Understanding a woman's motivation for stopping, her perceived ability to cope with thoughts about using, and the severity of her use may be useful to consider when providing recommendations about achieving abstinence. This appears to be particularly relevant for women who want to take a winding down approach to achieving abstinence. For women who do choose to take this approach (either because of withdrawal risk or personal preference), setting a definitive abstinence date over the first few weeks of treatment and adhering to that date appears to be an important aspect of successfully executing this plan and having positive, long-term abstinence outcomes.

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Highlights

- Examined link between plan for achieving abstinence and alcohol treatment outcomes
- Chosen approaches were associated with clinical presentation at start of treatment
- Approaches were associated with drinking outcomes during treatment and follow-up
- Early treatment drinking moderated abstinence plan efficacy on long-term outcomes

Figure 1.
Women's average change in percent days drinking over the first seven weeks of treatment (early treatment), by abstinence plan

Figure 2.

Marginal means estimated from GEE analyses, representing percent days drinking (PDD) and mean drinks per drinking day (MDPDD) by abstinence plan: later treatment (weeks 7–16) and during 12 month follow-up.

Note: MDPDD is only among non-abstinent women

Figure 3.
Predicted values of percent days drinking (PDD) during 12-month follow-up, based on interaction of abstinence plan with early treatment PDD

Table 1

Participant Information by Abstinence Plan Selected

	Maintaining Abstinence <i>n</i> =42 (32.8%)	Cold Turkey <i>n</i> =23 (18.0%)	Winding Down <i>n</i> =59 (46.1%)	<i>p</i> -value for ANOVA test between groups
Age	47.1(9.4)	46.7(5.8)	46.7(10.3)	0.98
Ethnicity				
Hispanic/Latino	0	2	2	–
Not Hispanic/Latino	42	21	57	–
Race				
White	41	22	55	–
Black/African American	1	1	2	–
Mixed Race/Not Hispanic or Latino	0	0	1	–
Asian	0	0	1	–
Education – years	15.1 (2.3)	15.2 (3.4)	15.3 (2.4)	0.93
# Sessions completed	8.8 (4.4)	7.9 (4.3)	9.2 (4.0)	0.45
# Axis I disorders – current	0.7 (0.9)	0.8 (1.0)	0.6 (0.9)	0.89
# Axis I disorders – lifetime	1.2 (1.1)	1.2 (1.2)	1.3 (1.4)	0.88
PDD, pre-baseline assessment	53.8 (28.9) ²	67.5 (23.6) ¹	82.1 (20.4) ^{1,2}	0.00
PDHD pre-baseline assessment	43.7 (31.8) ¹	60.2 (26.9)	60.3 (31.9) ¹	0.02
MDPDD pre-baseline assessment	8.2 (6.0)	7.9 (2.6)	6.4 (3.6)	0.12
SIP total score	10.9 (3.0) ¹	9.8 (2.6)	9.1 (3.1) ¹	0.01
CBI total score	42.5 (16.8) ¹	40.9 (13.9) ²	30.6 (15.7) ^{1,2}	0.00
SOCRATES				
Recognition	16.5 (4.2)	15.8 (4.0)	16.2 (2.9)	0.74
Ambivalence	26.6 (3.9) ¹	24.1 (4.2)	23.8 (4.1) ¹	0.00
Taking Steps	33.1 (5.6) ^{1,2}	27.9 (8.8) ¹	26.4 (5.7) ²	0.00

Notes: PDD = Percent days drinking; PDHD = Percent days heavy drinking; MDPDD = Mean drinks per drinking day; SIP = Short Index of (Alcohol-Related) Problems; CBI = Coping Behaviors Inventory; SCORATES = Stages of Change Readiness and Treatment Eagerness Scale.

^{1,2} Reflect significant group differences in ANOVA Bonferroni post-hoc analyses.

Table 2

GEE results tests for association between abstinence plan type and drinking during late treatment (weeks 7–16) and 12-month follow-up period

Test of Model Effects		parameter	95% Wald CI		Hypothesis test	
Wald Chi-Square	p-value	B(SE)	Lower	Upper	Wald Chi-Square	p-value
<i>Later Treatment (Week 7–16)</i>						
PDD	29.82	0.00				
Intercept		0.14 (.03)	0.08	0.21	17.97	0.00
MA		–	–	–	–	–
CT		0.09 (.08)	–0.06	0.23	1.32	0.25
WD		0.29 (.05)	0.19	0.40	29.71	0.00
MDPDD	5.34	0.07				
Intercept		6.62(1.10)	4.46	8.79	36.04	0.00
MA		–	–	–	–	–
CT		–2.52(1.23)	–4.93	–0.11	4.18	0.04
WD		–2.69(1.17)	–4.98	–0.40	5.31	0.02
<i>12 Month Follow-Up</i>						
PDD	20.99	0.00				
Intercept		0.20(.05)	0.10	0.29	16.90	0.00
MA		–	–	–	–	–
CT		0.09(.09)	–0.08	0.26	0.98	0.32
WD		0.29(.06)	0.16	0.42	20.19	0.00
MDPDD	4.17	0.13				
Intercept		5.95(1.02)	3.94	7.95	33.67	0.00
MA		–	–	–	–	–
CT		–2.24(1.14)	–4.48	–0.00	3.85	0.05
WD		–1.44(1.13)	–3.65	0.77	1.64	0.20

Note: MA as reference variable; AP = Abstinence Plan; PDD = Percent days drinking; MDPDD = Mean drinks per drinking day; CT = Cold turkey; WD = winding down; MA = maintaining abstinence

Table 3

GEE results for association between abstinence plan type by early treatment PDD (weeks 1–7) with PDD during 12 month follow-up.

	Test of Model Effects		parameter B(SE)	95% Wald CI		Hypothesis test	
	Wald Chi-Square	p-value		Lower	Upper	Wald Chi-Square	p-value
Main Effect AP	2.39	0.30					
AP*Early Treatment PDD (weeks 1–7)	81.71	0.00					
Intercept			0.09(.04)	0.01	0.17	5.37	0.02
MA			–	–	–	–	–
CT			0.14(.10)	–0.05	0.36	2.17	0.14
WD			0.07(.09)	–0.12	0.25	0.50	0.48
MA*PDD weeks 1–7			1.03(.13)	0.78	1.28	66.56	0.00
CT*PDD weeks 1–7			0.12(.26)	–0.38	0.62	0.22	0.64
WD*PDD weeks 1–7			0.55(.14)	0.27	0.82	14.93	0.00

Note: MA as reference variable; AP = Abstinence Plan; PDD = Percent days drinking; MDPDD = Mean drinks per drinking day; CT = Cold turkey; WD = winding down; MA = maintaining abstinence.